DOCUMENT RESUME

ED 048 137 24 SP 004 773

AUTHOR Guba, Egon G.; Gephart, William J.
TITLE Training Materials for Research, Development and Diffusion Training Programs. Final Report.
INSTITUTION Indiana Univ., Bloomington.
SPONS AGENCY National Center for Educational Research and Development (DHEW/OE), Washington, D.C.
BUREAU NO BR-7-1018
PUB DATE 70
GRANT OEG-1-7-071018-4501
NOTE 770p.

EDRS PRICE EDRS Price MF-$0.65 HC-$26.32
DESCRIPTORS Catalogs, *Diffusion, *Educational Development, *Educational Research, *Instructional Materials, Material Development, *Professional Training, Training

ABSTRACT

The first 80 pages of this report describe procedures used in assembling, cataloging, and annotating a large group of instructional materials used in educational research, development, and diffusion training programs. This section also compares the characteristics of the materials and outlines procedures used in improving four of them which were selected as exemplars for further development. A 300-page appendix contains a subject index and annotations of the 327 materials collected. Each annotation details title, author, topical focus, purpose, description, restrictions on use, and general character (such as textual material, test, slides). Subsequent appendixes contain the four materials selected for further development: 1) The Evaluation of Educational Programs; 2) Segmenting the Classroom Environment; 3) Questionnaire Design: A Case History Approach; and 4) Profiling Instructional Package. The final appendix lists persons contacted in the search for training materials. (RT)

ED048137

BR 7-1018
APR 5 1971

FINAL REPORT
Project No. 7-1018
Grant No. OEC-1-7-071018-4501

TRAINING MATERIALS FOR RESEARCH, DEVELOPMENT AND DIFFUSION TRAINING PROGRAMS

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY

EGON G. CUBA
INDIANA UNIVERSITY
&
WILLIAM J. GEPHART
PHI DELTA KAPPA

1970

SP 004 773

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
Office of Education
National Center for Educational Research and Development

ACKNOWLEDGMENTS

Because of their participation in the role of Project Director for a portion of the period covered by this study and their many contributions to it, recognition must be given to Arliss R. Roaden and David Beggs. Professor Beggs was, as many of his friends will remember traveling on project business at the time of the tragic auto accident which took his life. Any positive contributions made by this study are dedicated in his memory.

In the emergency created by the unfortunate loss of David Beggs, this writter filled in as Project Director on a very limited part-time basis. That time limitation plus the professional and political pressure to attend to the planning of an extensive R&D program on reading (NCERD Project No. 8-0737) deferred the completion of this report for two years. In light of this credit for an exceptional amount of patience is due to Egon G. Guba, the Principal Investigator on the project, and to the staff of the Research Training Branch of NCERD. The latter group recognized the importance of the reading effort, the potential contribution of that effort to this one, and accepted oral and written recommendations during the period in which active work on this report was set aside.

Bruce B. Bartos, now at the Southwest Regional Laboratory should receive recognition also. He along with Mary Lake, an Indiana University secretary, handled all of the communications and record keeping in the acquisition of the training materials annotated herein. The final report was produced thanks to the efforts of Patti Brennan.

Finally, credit is due to those persons who have and who will in the future develop research training materials. Theirs is an activity born out of concern for aiding their students and nurtured in a hostile environment. Little prestige is accorded the developer of research training materials. And, although the activity is costly in terms of time and resources, little financial support has been provided in the past. Despite these obstacles the concern of a number of individuals has created a bank of instructional materials. Hopefully, this bank will grow in quantity and quality as others, similarly concerned, dedicate their time in the future.

William J. Gephart
Director of Research Services
Phi Delta Kappa

TABLE OF CONTENTS

Chapter		Page
1	Nature of the Problem and Procedures Followed	1
	Nature of the Problem	1
	A Proposed Solution	5
	Procedures	7
2	Review of the Literature	12
	Generation and Conversion of Knowledge to Educational Practice: A System	12
	Four Training Program Subsystems	15
	The Researcher Training Program Subsystem	15
	The Developer Training Program Subsystem	19
	The Diffuser Training Program Subsystem	23
	The Evaluator Training Program Subsystem	24
3	The Collection of Instructional Materials Used in Teaching about the Research Process	31
	The Collection Process	31
	The Nature of the Materials Received	33
4	The Development of Four Instructional Materials Exemplars	47
	Selecting the Development Efforts	47
	The Four Exemplars	48
	The Evaluation of Educational Programs	48
	Segmenting the Classroom Environment	51
	Questionnaire Design: A Case History Approach	52
	Profiling Instructional Package	53
5	Toward a Program of Research and Development on Research Training	59
	Developments Related to the Nature of Research and Research Training	60
	A Proposal for the Planning of a Programatic R&D Effort On the Process and Roles in a System for the Generation and Conversion of Knowledge to Educational Practice (GCKEP)	65
	The Convergence Technique	67
	Possible Elements of a GCKEP System Program Plan	70
Appendix A.	The Training Materials Collected	80
	Index of Materials by Topical Focus	81
	Annotations for Each of the Collected Materials	92
Appendix B.	The Evaluation of Educational Programs by Sidney C. Eboch and Daniel L. Stufflebeam	256
Appendix C.	Segmenting the Classroom Environment by Paul V. Gump	301

Appendix D. Questionnaire Design: A Case History Approach by Walter Schenkel and Sam Sieber 687
Appendix E. Profiling Instructional Package by William J. Gephart and Bruce B. Bartos 723
Appendix F. Persons Contacted in the Search for Research Training Materials 753
Appendix G. Abstract of Arlis Roaden's Reports on Research Training Printed in the Clark-Hopkins Study of Research Manpower Needs 762

CHAPTER I

NATURE OF THE PROBLEM AND PROCEDURES FOLLOWED

The years immediately following Sputnick I produced a public mandate that education in the United States be improved. With the passage of the Elementary and Secondary Education Act of 1965 (ESEA), opportunities to work toward educational change and improvement multiplied significantly. The Act provided funds for efforts designed to resolve several of the problems which had been generally identified as impediments to progress. Included were funds: (1) for strengthening the schools serving the disadvantaged; (2) for implementation and diffusion of existing innovations; (3) for research and development; (4) for strengthening state leadership; and (5) for the training of researchers. The goals implied in the Elementary and Secondary Education Act have not been quickly achieved. Modifications have been made in some schools but these modifications have not resulted in the creation of an education system that is meeting society's needs.

Securing the desired improvements in education requires the creation of a system which has as its function the generating of knowledge and the conversion of that knowledge to educational practice. Nadler (1969) states that a system has seven characteristics:

1. Function - "... the mission, aim or purpose of a system. What is the system supposed to be accomplishing, not how it is to be accomplished."

2. Inputs - those physical, informational, or human items that enter, are processed, and are changed in serving the function of the system.

3. Outputs - "... the end result of converting the inputs." Outputs of a system are not the same as that system's function. As a system operates to serve a function, a number of products are created. If the system is operating effectively, a combination of some or all of its outputs should fulfill the function.

4. Sequence - "... the order or steps for converting the inputs to outputs."

5. Environment - those physical and/or attitudinal elements which affect and/or are affected by the operation of the system.

6. Physical catalysts - "... any physical items which help convert the inputs into outputs, but do not become part of the output."

7. Human agents - "People and the methods they use aid in converting the inputs into the outputs, but do not become part of the outputs."

The achievement of a rapid and significant increase in the rate of educational change and improvement clearly cannot be accomplished simply by making funds for revolutionary activity available as was done through the passage of ESEA. Funding is indeed important as an input in the system that generates knowledge about education and converts it to practice. Of equal importance are personnel, the human agents of the system, who invent, develop, and implement ideas for change and improvement. A fairly large number of personnel to guide and participate in educational improvement must be recruited and trained if the available funds are to have the desired impact.

Four categories of human agents have been described for the knowledge generation and conversion to practice system: researchers, developers, diffusers, and evaluators (Clark and Hopkins, 1969; Miles, 1967; and Havelock et al, 1969). A fifth category is also involved, the practitioner. The listing of the practitioner role separately from the other four should not be interpreted as a diminution of its importance in the system. Rather, it is listed separately because it has long been recognized, because a sizeable quantity of practitioners exist and are trained annually, and because many efforts have been directed at the improvement of the quality of preparation to fulfill this role. It should be recognized that the sequence in which the remaining four categories of human agents are listed has no significance in this report. It is not herein assumed that the route to improved educational practice is a linear one which starts with research and progresses sequentially through development, diffusion, and evaluation. There are changes in education which can be made simply by systematic diffusion efforts. Others may start with a diffusion attempt in which an inadequacy in the innovation of interest is noted requiring either further development then implementation or additional research. Still other innovations may start with a development effort followed by any combination of the others. The point to be made clear is that all four categories of human agents are required for a complete system for the generation and conversion of knowledge to educational practice.

The current personnel and personnel training situation in the research, development, diffusion, and evaluation (RDD&E) areas can be characterized as desperate. This is true because of:

1. Existing shortages. Trained research personnel are in short supply and trained development and diffusion personnel are almost non-existent.

   A current Office of Education sponsored research project (Clark & Hopkins, 1969) provides preliminary data on the current and projected personnel needs in the RDD&E areas. According to these data, approximately 15,000 positions requiring trained R, D, and D personnel existed and were occupied during fiscal 1966. Only about 6,000 of these positions, however, were filled by individuals who had formal training to fit them for their position. Even of the 6,000 "trained" individuals, many received their training solely through attendance at six to nine week summer workshops.

In terms of future needs, data indicate that by 1972 the R and D funding programs of the USOE alone will require a total of: (a) 7,050 full-time equivalent researchers, (b) 17,000 full-time equivalent developers, and (c) 9,800 full-time diffusers.

2. Insufficient numbers being trained. Too few research, development, and diffusion personnel are being trained to meet the projected demand for them. About 100 hard-core or classical educational researchers (excluding developers and diffusers) were produced each year prior to 1965. If this level of production of trained researchers continues, and is added to the output of researchers produced through ESEA training components, it is estimated that 4,500 to 5,000 educational researchers will be available to fill 7,050 positions which will exist by 1972. Thus, under the best of conditions the under-supply of researchers in five years will be on the order of 30 percent. And this estimate does not consider at all the personnel who will be needed for development, diffusion, and other educational engineering efforts.

3. Gaps in existing research training programs. Existing research training programs do not provide the breadth of training required by educational researchers in today's market. Not only are more researchers needed, but the requirements of educational research, development, and diffusion programs have changed so dramatically over the last few years as to require the redefinition of the existing (traditional) role of the researcher.

   Educational researchers are being called upon to perform functions that they have not been trained to handle. For example, the researcher is being asked to engage in field and applied research activities which are quite different from the traditional laboratory research activities for which he has been trained. He is being asked to create "quality control" programs and evaluation designs for "process" and "context" evaluation, but his experience with classical experimental designs does not prepare him to meet these new demands.

4. Lack of middlemen training programs. There are few existing programs for the training of educational developers, engineers, evaluators, diffusers, and other middlemen roles. While there are demands for educational development specialists, program implementors, dissemination specialists, evaluation experts, etc., existing training programs are not responsive to the need to train personnel for such roles. This is largely because the roles of such personnel are quite obscure--very little is known about them. Insofar as practitioners of such roles now exist, hard data are not available to describe

what individuals in these roles do or how their efforts relate to the efforts of other roles, either newly emerging or old. For these reasons, at least, there are precious few training programs specifically designed to produce the needed middlemen personnel.

5. Lack of training materials and trainers. There is clearly a shortage of effective training materials and of qualified trainers for use in RDD&E training programs. The exentsive growth of research training programs which can be expected to occur, and the growth of new training programs for development and diffusion personnel will create an even more severe shortage of materials and trainers than now exists.

   Because of the present shortages, a self-perpetuating cycle is likely to develop. This is due to the fact that where such shortages exist, training institutions will resist using their limited number of qualified trainers in the development of totally new courses and materials. They will, almost certainly, use such personnel in areas where their skills can be shown to have immediate payoff, i.e., in traditional training courses. Unless packaged materials and curriculum outlines are developed by agencies or projects set up specifically for this purpose, new materials will not be developed or will be developed at a pace that does not keep up with needs.

Obviously, the need for expanded and improved training programs for R, D, and D personnel is immediate and great. Efforts to mount such programs, in existing or newly created organizations, are likely to flounder on two counts, however. First, very few substantive data are available regarding the gaps and deficiencies in existing traditional educational research training programs and very little is known about the nature and needs of the emergent educational development, diffusion, and evaluation roles. Until such information is gained, it will be nearly impossible to invent the necessary new training programs or to improve and revise existing programs. Second, suitable training materials for the improvement of existing research training programs, or for the creation of new programs, are not readily available. Those materials which do exist are widely scattered and usually not well-developed. Thus, agencies that wish to "fill the gaps" in their traditional research training program or to create new training programs for development, diffusion, and evaluation personnel must, in effect, develop these materials de novo.

A Proposed Solution

In February, 1967, a group of individuals[1] met in New York City to consider the problems described above. This group agreed to assist in the development and implementation of an effort to resolve some of these problems. The hope was expressed that, eventually, a concerted nationwide effort would grow out of this project so that the sparse R, D, and D training resources available in education might be maximally utilized. As a beginning step in this direction, the National Institute for the Study of Educational Change at Indiana University accepted the responsibility for developing the proposal which was the basis for this project.

There appeared to be two feasible methods for attacking the problem of improving the training of educational researchers, developers, and diffusers. One method involves engaging in an extensive, in-depth study of existing training programs and of probable training needs. The findings of such a study would then be used as a basis for the development of training methods, materials, and programs for use with RDD&E personnel. This method is the more rational of the two and is likely to be the more productive. However, to mount such a program would require fairly large expenditure of funds and would probably require five to seven years to complete. While it was accepted that such a study should be conducted, the emergency situation in this area requires that some immediate steps be taken to improve the training of RDD&E personnel.

These immediate steps are suggested by the second feasible method of attack which involved conducting an intensive search to discover and collect all possible extant ideas and partially developed materials and processes that might be refined, developed, and adapted for use in existing training programs. This method clearly did not involve careful study of current training program problems, nor did it involve careful development of strategies to improve these programs. It was, rather, an emergency tactic designed to respond to an emergency situation. It was recognized that some risk was involved in using this second method since it was based upon four assumptions that could eventually prove to be unwarranted. These assumptions were:

1. There are sufficient fugitive and partially developed training materials and ideas available in the field to make the project of collecting them worthwhile in terms of probable payoff.[2]

---

[1]Individuals present at the meeting are listed in Appendix E.

[2]The work of Barker and his staff at the University of Kansas on field experimentation, the work of Sieber at Columbia University on survey methodology, and the work of Stufflebeam at Ohio State University on new evaluation techniques are examples of such ideas and materials.

2. Several of the ideas and materials that may be discovered will be at such a stage of developemnt and refinement that they can be developed into useful form without a major expenditure of time and funds.

3. The quality of the "grass roots" ideas and materials will be such that they will improve training programs.

4. There are now, or soon will be, receptive audiences for such materials at the college, university, regional educational laboratory, etc. levels.

The project which was developed had both short and long range objectives as follows.

1. Short Range Objectives:

   a. To identify, collect, and describe semi-developed materials, ideas, and methods which are appropriate for use in the training of educational researchers and developers.

   b. To develop a number of the various materials and ideas identified in "a" above so that:

      i. The feasibility of the training materials "search-development" processes can be assessed.

      ii. A methodology and experience background in the training materials "search-development" processes can be developed.

      iii. A small number of newly developed training materials can be made available as exemplars for demonstration and dissemination.

2. Long Range Objective: to design a proposal which has as its ultimate objectives:

   a. To identify gaps in existing in-service and pre-service training programs for educational researchers and developers.

   b. To develop descriptions of and requirements for the emerging roles in educational research, development, and diffusion.

   c. To develop training and curriculum rationales, and methods and materials, to fill the gaps in existing programs and to create new programs for the emerging role positions.

d. To field test, produce and disseminate the methods and materials developed in "c" above and to engage in further development of materials identified in "1-a" above.

Procedures

Procedures for attaining the short range objectives. The identification of extant training ideas, methods, and materials was accomplished as follows.

1. Indivduals who have developed relevant training ideas, methods, and materials were identified by means of:

   a. Placing notices in a number of educational journals in order to solicit information from potential contributors for the ideas-materials bank.

   b. Soliciting nominations of potential contributors of ideas and materials from and ad hoc committee of advisors and from the individuals that this committee nominates.

   c. Personal contact with approximately fifty attendees at the Phi Delta Kappa sponsored National Symposium for Professors of Educational Research.[3]

   d. Contact with university departments offering programs in research training.

   e. Conducting a survey of existing training projects supported by the Office of Education.

   f. Examining materials used in recent American Educational Research Association conference "pre-sessions."

2. Specific ideas and materials were collected by:

   a. Soliciting descriptions of ideas and samples of materials from the individuals and projects identified in "1" above.

   b. Searching the recent literature for ideas and descriptions of materials.

---

[3]Phi Delta Kappa hosted this National Symposium in August, 1967. Two of the goals of this Symposium were directly related to the work of the proposed project: (1) the description of several contrasting approaches to the "what" and "how" of research instruction currently in progress, and (2) the identification of types of information needed for the improvement of research training and research strategies which might be employed to obtain such information.

The selection of ideas and materials for further development involved:

1. All ideas, methods, and materials identified by the activities listed above were classified and stored by the project staff. Each item was seen as a possibility for further development at a later date within the project or in the context of some other project which may be established.[4] The ideas and materials were classified according to the following categories:

   a. Substantive content of the idea or material.

   b. Level of sophistication of the idea or material.

   c. Stage of development of the idea or material.

   d. Significance and quality of the idea or material.

   e. Probable audience (e.g., researchers, developers, evaluators, diffusers) to which the idea or material may be relevant.

   f. Potential magnitude or complexity of the idea or material.

2. Criteria used to select a limited number (four) of the identified ideas or materials for further development included:

   a. The quality of the materials and ideas.

   b. The potential impact and importance of the materials and ideas.

   c. The timeliness of the materials and ideas.

   d. The availability of talent to develop the materials and ideas.

   e. The cost, or probable value for cost, of development of the materials and ideas.

3. The criteria developed above were applied to the bank of ideas and materials in order to select the items for further development. The project staff, members of NISEC, and project consultants constituted a decision-making committee in making these choices.

---

[4]All items which came to the attention of the project staff during the project will be classified and stored, but only those items identified during the first seven months of the project were considered for further development within this particular project.

4. The development of useable training devices involved:

   a. The inventors of materials or originators of ideas selected in 3 above were contacted and asked to produce detailed product or process specifications for further development. The project staff worked with the inventors in this effort by providing them with information and assistance.

   b. A panel constituted of the project staff, the NISEC staff, and a small number of consultants assessed the specifications and either approved them for further development or suggested needed refinements.

   c. The specifications developed above were to be followed in developing prototype training devices. The inventors assumed major responsibility for this developmental work. The advice and assistance of the project staff during this stage of development was offered.

   d. The prototype materials were reviewed to determine if they comply with the inventors' specifications. Opportunities to conduct limited field tests of the prototypes were considered, along with suggestions for production, dissemination, and full-scale evaluation of the materials.

Procedures for attaining the long range objective. Efforts to achieve the long range objective proceeded concurrently with efforts directed toward the short range objective. The long range objective is that of planning and designing an extensive study of existing training programs and of probable RDD&E training needs. It was anticipated that the products of this study would be used as a basis for the systematic development of new training methods, materials, and programs. The elements of such a study design were thought to include at least the following elements:

1. Empirical and theoretical identification of deficiencies in existing research training programs.

2. Empirical and theoretical descriptions of emergent development and diffusion (middlemen) roles.

3. Development of training curriculum rationales to improve and expand RDD&E training programs.

4. Development and testing of methods, strategies, and materials which will enable the implementation of the rationales developed in 3 above.

5. Dissemination of ideas, strategies, and materials to relevant audiences.

Anticipated output of the project. The individuals who planned this effort specified outputs of two types: those physical items produced in this effort; and, plans for continued research and development efforts focused on the nature of the roles in RDD&E, the skills and knowledge needed to participate in these roles, and the materials and procedures needed to prepare people for them.

REFERENCES

Clark, David L. and Hopkins, John E., A Report on Educational Research, Development, and Diffusion Manpower, 1964-1974. USOE Cooperative Research Program Project, Bloomington, Indiana: Indiana University 1969.

Havelock, Ronald G., et al., Planning for Innovation through Dissemination and Utilization of Knowledge. USOE Cooperative Research Program Project, Ann Arbor, Michigan: University of Michigan. 1969.

Miles, Mathew B., "Emerging Research Utilization Roles in Education." In PREPARING RESEARCH PERSONNEL FOR EDUCATION David L. Clark and Blaine R. Worthen Editors. Bloomington, Indiana: Phi Delta Kappa, Inc. 1967. pp. 7-13.

Nadler, Gerald, "Systems Engineering and Concern for People: Compatible or Contradictory?" The Technical Papers: Twentieth Institue, Conference and Convention, American Institute of Industrial Engineers. New York, May 1969. pp. 279-292. (An expansion of this work is available in G. Nadler, WORK DESIGN: A SYSTEMS CONCEPT. Homewood, Ill.: R. D. Irwin, Publishers, Inc. 1970.)

CHAPTER II

REVIEW OF THE LITERATURE

The focus of this project was on the education of personnel necessary for research and research-related roles in education. In effect the proposal on which it was based assumed the existence of a system which has as its function the generation and conversion of knowledge into effective instructional practices. To set the stage for a report on the review of the literature that was conducted, a discussion is presented below which describes (in systems terms) that generation-and-conversion-of-knowledge-to-education-practice system. That presentation is followed by a description of four training subsystems required for the effective functioning of the larger system.

GENERATION AND CONVERSION OF KNOWLEDGE TO EDUCATIONAL PRACTICE: A SYSTEM

The description of this system, and of its four training program subsystems which follows, will use a format proposed by Nadler (1969). He indicates that a system has seven characteristics:

1. FUNCTION - The mission, aim, results sought, or primary concern of the system.
2. INPUTS - Any physical items, information, or human beings, combination of any or feedback of previous outputs entering the system on which processing will be done to arrive at an output.
3. OUTPUTS - The physical items, human beings, or services that result from the processing of inputs. Function tells what is to be accomplished, and output is each item or service which contributes or is related (even scrap and trash) to the total accomplishment of the function.
4. SEQUENCE - The process or transformation required to change the inputs into the outputs. Sequence is the word used for the conversion process.
5. ENVIRONMENT - The physical and sociological setting within which all the other system elements take place. Physical factors include noise, temperature, humidity, dirt, color, and light, while sociological factors include the attitudes and morale of the workers and managers, operating controls and rules, and the social system within which the people operate.
6. PHYSICAL CATALYSTS - Physical resources that aid in each step of the sequence for changing the inputs into the outputs, but do not become part of the output. These include machines, chairs, computers, filing cabinets, buildings, tools, jigs, lubricating oil, desks, and pallets. Physical items involved in a system can therefore be either inputs, which become part of the outputs, or physical catalysts, which do not.

7. HUMAN AGENTS - Human resources that aid in each step of the sequence for changing the inputs into the outputs, but do not become part of the output. Humans involved in a system can therefore be either input and output, as patients into and out of a hospital, or human agents, as nurses in a hospital, which do not become part of the output. Humans are extremely important to a system; human agent is placed seventh only because the other elements in a system must be defined or assumed before this one.

This educational knowledge to practice supra-system functions to facilitate education's ability to modify itself to effectively and efficiently contribute to the achievement of society's goals. Its inputs are of five sorts: (a) information or knowledge about the educational process both in the form of knowns and unknowns; (b) information about society's needs; (c) educational goals currently held; (d) educational procedures; and (e) resources both physical, financial, and human. As the supra-system operates, that is, as education becomes more effective in meeting society's needs, the information base must change. Many of the unknowns must be converted to knowns and understandings of existing knowns must be revised to incorporate new information. At the same time the existing educational goals and procedures must change.

Output of this supra-system includes effective educational institutions, modified goals, and expanded knowledge about the educational process and about man's social and physical environment. Two distinct by-products can also be identified as outputs of this knowledge-generation-and-conversion-to-practice system: instructional programs which prepare people for roles of research, development, diffusion, and evaluation; and people trained for these roles.

The sequence inherent in the supra-system is not clearly established. For some time a generally linear knowledge to practice continuum has been hypothesized which calls for the production of knowledge through research, the design of new instructional procedures and materials, the diffusion of these to settings in which practice occurs, and the evaluation of their effectiveness (Clark & Guba, 1965). Experience indicates that the sequence is neither unidirectional nor linear. Some development efforts make problems clear which demand research. In some cases the needed research must be completed before the development activity can be completed. In others, research efforts are made possible as a result of development. The same statements can be made about the other two roles. Apparently each of these roles is a subsystem in that they truly interact. That is, change either in or produced by one of them affects the nature and output of the others.

The environment in which this generation and conversion of knowledge to educational practice supra-system operates is structured by the political, economic, and social goals of society. These relate to, are augmented by, and compete with education. For example, society makes advances through the production of knowledge and

conversion of that knowledge to practice for technology, material goods, and societal development. The environment also has physical characteristics that are both facilitative and constraining. Education is practiced in schools that have physical characteristics. Knowledge is generated and developments are affected in physical settings. The physical nature of these and other items must be considered to understand the supra-system.

The physical catalysts involved in the conversion of the human and knowledge inputs to the outputs of the supra-system cannot be completely delineated here for two reasons. First, the space does not permit the itemization of all of them that now exist. Second, as the supra-system is improved more physical catalysts must be developed. Examples of those things now available are computers used in the processing and analysis of data in the research and evaluation processes, communication vehicles (publications, conferences, mass media) used in the diffusion process, tests and materials used in development efforts, etc.

Five categories of human agents involved in the supra-system are readily identified in existing literature: researchers, developers, diffusers, practitioners, and evaluators. Each of these categories contribute to the generation and conversion of knowledge to educational practice. Although each of these human agents can be changed in the process, their roles, or rather the function of their roles, is not changed. The function of the research role is the conversion of unknowns to knowns through direct empirical observations or through the inferential tests of hypotheses. Developers serve a different function. They design operational procedures and products for accomplishing specific tasks. The researcher concentrates on bits of problem areas, unknown pieces of a phenomenon. In contrast, the developer concentrates on workable wholes (Nadler, 1967). The diffusion role function is the expeditious transmission of information among the several human agents in the supra-system, researchers, developers, evaluators, and practitioners. It should be recognized that this is not a unidirectional transmission (Lippitt, 1967 and Jung, 1967). The evaluation role function is the facilitation of decision-making in a specified setting through the systematic delineation, obtaining, and provision of information on alternatives (Stufflebeam, et al. 1970). Since each of these roles serve different functions they are seen as component elements of the system despite the fact that the individuals in them may at times be seen as inputs in the system.

One more human agent role is involved in the supra-system, the educational practitioner, the individuals who are the continuing operators in educational organizations. They are inherent in the system as it is their performances which provide the operational definition of current educational programs. The practitioner role will not be further elaborated or discussed below as a subsystem. This omission is neither a rejection of the importance of the practitioner role nor a suggestion that the actual work of the other four can be structured without attention to the practitioner's role. It is simply a delimitation of this study.

The order in which the training program subsystems for the remaining four roles are presented below should not be interpreted as an order of importance or as a sequence in which educational change takes place. They are considered here as interactive roles. Their sequential presentation is an artifact of printed media.

In some instances the four roles enumerated above are performed by one person at different times. In other situations specialization is obvious. One can identify individuals whose professional activities require them to conduct research at one point in time, evaluation activities at another, and sometimes development efforts at still other times. Occasionally the same person undertakes diffusion efforts. One can also find individuals who concentrate in only one of these roles; that is they are researchers full time and do no development, evaluation, or diffusion. Manpower studies (Clark and Hopkins, 1969) and proposals from the field (See for example Miles, 1967) indicate the need for specialization in these roles. Since these roles serve differing functions, it is assumed that each of them must be developed through an educational program designed to develop the skills and knowledge needed to perform the role. For this reason the discussion below treats each role as if it will be the primary focus of the individual.

FOUR TRAINING PROGRAM SUBSYSTEMS

The Researcher Training Program Subsystem

The function of this element of the supra-system is the preparation of a quantity of personnel who possess the skills and knowledge necessary to convert the unknowns in the field of education to knowns. The inputs to this subsystem are generalized knowledge about the research process itself and students with varied levels of knowledge and skill development relevant to (a) the educational process in general, (b) some specialty within that process (e.g., administration, counseling, curriculum, learning, etc.), and (c) the research process.

Outputs of the researcher training program subsystem can be described in two ways: that which now prevails; and, the desired state of affairs. Interviews with employers of research personnel undertaken by the AERA Task Force on Research Training (Worthen and Gagné, 1969, Sanders and Worthen, 1970) combined with several follow-up studies of doctoral degree holders (Buswell et al., 1966, Bargar and Okorodudu, 1967) lead to the characterization of the current output of research training programs.

Products of research training programs can be placed in two categories. Some persons completing these programs have partially developed understanding of the research process and some of the skills deemed necessary for productive work, varying ability to perceive problems in edcuation, and a less than total commitment to a life style that includes research as a part of their work. A second,

and much smaller, category consists of individuals who have mastered the logic and techniques of the research process as presented in current training programs. These two categories seem to differentiate along another descriptive dimension. The first category seems to encompass those individuals who profess interest in a substantive aspect of education (e.g., English education, administration, early childhood education, etc.) while the latter includes those whose life style is oriented toward research methodology (e.g., measurement specialists, statisticians, computer applications personnel, etc.). These two dimensions, level of skill development and professional focus, can be displayed in a 2X2 grid if only the extremes are considered.

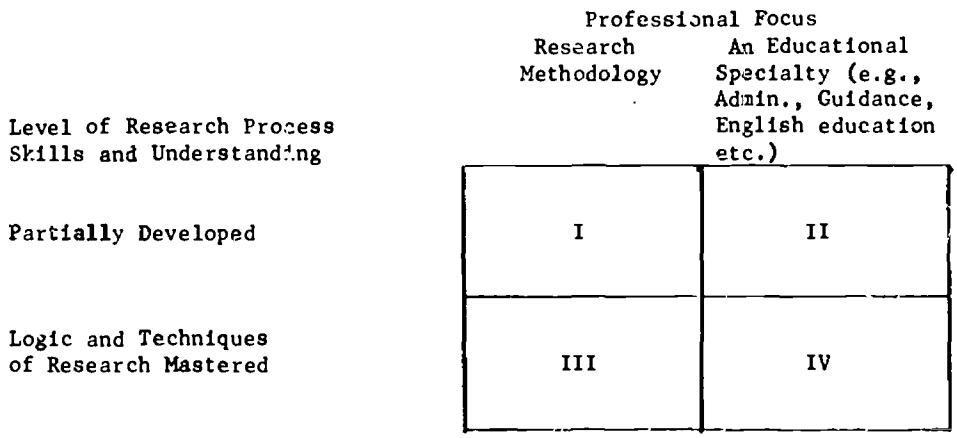


Figure 1. Categories of output of research training programs.

Quadrant I includes those persons whose professional focus is research methodology and whose skills and knowledge about the research process are only partially developed. Quadrant II includes persons with a substantive specalty whose skills and knowledge about the research process is only partically developed. These two categories are the most common output of existing research training programs (Barger, 1967). In a few cases research training program output can be categorized into Quadrant III, the methodologically focused individual who has mastered the logic and techniques of the process. Quadrant IV output is seldom found even in the programs which are successful producers of Quadrant III types.

In summary then, the existing training programs seem to be most effective in preparing research methodologists but inadequate for the preparation of substantive specialists who use empirical inquiry activities as needed to convert unknowns to knowns in their areas of specialty. This weakness in the output of the researcher training programs should be corrected. It is not likely that research methodologists can perform the needed investigations in all of education's

substantive aspects. Few of them have invested sufficient time to understand the details of the problems that exist in these substantive areas nor can they do so without neglecting their continued study of methodology.

These statements should not be interpreted as a denigration of the importance of research methodologists. They are a desired output of research training programs. Their existence is vital to the continued expansion of our knowledge about the research process and effective research procedures. However, they must be augmented by a second category of researchers who: (1) have specialized in some aspect of education; (2) are skilled at perceiving problems in their areas of specialty; (3) are capable of analyzing those problems to determine their nature, their components, and the information needed to resolve the (4) are capable of utilizing the skills and knowledge possessed by competent research methodologists to generate the information needed; and (5) are skilled in the interpretation of that information and synthesis of it into relevant theories.

The means of transforming the student input to the desired output Nadler calls the sequence element of a system. The research training program employs experience, coursework, and more experience as its sequence. The discussion of this sequence in research training below is based upon Krathwohl's survey (1965) and information gained through the Annual National Symposia for Professors of Educational Research (1967, 1968, 1969). Krathwohl's paper exemplifies the level of empirical investigations on the education of researchers. He examined the course offerings in 104 institutions in the country offering the Ph.D. or Ed.D. degree. This is not a sufficiently deep enough investigation to know what comprises training in research. Studies are needed which identify the experiences included in these courses and which detail the skills, knowledge, and attitudes developed through them. One study of skills and knowledge needed in the research role exists (Gephart, Bartos, & Antonoplos, 1968). However, the emphasis here is on skills and knowledge researcher-employers believe are needed rather than on those skills and knowledge that are the focus of research training programs. As a general statement it can be said that although there is much written about the research process and some about training for that process (Stanley, 1966, Glass, 1968, and Kerlinger, 1968), little if any empirical study exists on the skills, knowledge and attitudes developed in research training programs.

The first set of experiences in the sequence typically involves work as a practicing educator, a teacher or an administrator. The coursework is of two sorts, some focused on a specialty in education and the remainder, part or all, of a sequence which includes courses on research techniques, measurement, statistics, research design, and computer applications. Those persons focused on research methods typically take several courses in each of these areas. The substantive specialists on the other hand typically take only a sampling of the sequence. The second experiential component involves a practical

research experience either structured as a supervised learning activity, operated to supply a cheap labor supply (Worthen and Roaden, 1968), or for the program requirement, the dissertation. In either case the research experience is remote in time and space from the coursework, a factor which reduces the possibility of practice reinforcing the learning in the classroom and vice versa.

The desired sequence for converting the student to a researcher cannot be expressed absolutely at this point in time. Research is needed which definitively details the skills and knowledge needed to productively engage in the research process. Further, the program must rectify its deficiencies in preparing substantive specialists who consistently utilize empirical inquiry methods. There is much speculation as to how this may evolve but little hard data. Some prototypes exist. They are individuals who have concentrated their formal education on some educational specialty AND have learned how to work with methodologists. A program which contains those elements, that is, substantive specialization, the logic of the research process, and instruction on the use of and procedures for working with research methodologists, is logically worth undertaking and evaluating.

The environment for formal research training programs is almost exclusively a university setting. Even that segment of research training which involves upgrading knowledge and skills of individuals already in the field relies heavily on the university. In that setting research training competes with other program elements for resources and time. Often a university, although it verbally asserts the importance of research, fails to affirm that importance through institutional allocations and through faculty activities (Sieber, 1966 and Millikan, 1967). Thus, the environment of the research training program is one that typically underfunds the program in time and resources and provides and rewards models that counter the behavior sought in the program.

Equipment and materials of two sorts make up the physical catalyst element of the research training program subsystem. Some of it facilitates instruction without providing any content (e.g., overhead projectors, chalkboard, desks, etc.) while others either are relevant to or provide program content (e.g., desk calculators, texts, instructor prepared handouts, computer hard- and software, and occasionally physical representations of some of the concepts to be learned). The semideveloped content-laden physical catalysts are the foci of this study. The most prevailing method of developing students' understanding of the concepts and skills needed in the research process is verbal presentation. Words descriptive of these concepts and skills are presented by the professor and the student responds in words. Alternative presentation modes including physical representations of these concepts which the students can manipulate are few in number. The necessary concepts must be identified and ways of representing or modeling them must be developed to produce learning materials that provide a true alternative to the verbal mode now employed.

The human agents in the research training program can be categorized into three types: collegiate instructors with a specialty in research methods; faculty members with substantive specialties, a few of whom are actively engaged in research; and a variety of support personnel such as computer, clerical and administrative personnel. The first of these three categories is typically centrally involved in the research training program. The other two are usually peripherally involved if at all.

The Developer Training Program Subsystem

The function of this subsystem is to equip a quantity of personnel to develop instructional materials and procedures by putting together known items in combinations which serve specified purposes in the educational system. This focus differs from the researcher in at least two respects (Nadler, 1967). First it is a concentration on and use of items that are known. Second, the developer focuses on wholes in contrast to the researcher's concentration on the parts that are unknown. This does not mean that the two do not have some common techniques. Rather, that the techniques which are common to the two roles when merged with techniques specific to one of the roles serve different purposes.

The inputs to the developer training program subsystem are almost identical to those of the research training subsystem, some generalized knowledge about the development process and students with varying knowledge about and skills in the educational process. The amount of generalized knowledge about the development process is considerably smaller than that held about the research process. Students in both programs possess a problem focus, but they differ somewhat in goals. Researchers approach problems with an intent to make something known, developers with an intent to make something work.

Developer training program outputs are limited in number due to two factors. First, there are few institutions with programs that contain this focus. Second, those institutions which do have such a focus have not produced long enough to have made possible extensive studies of their outputs. Effective means for training developers are not widely known, if known at all. There are a few audio-visual specialist programs that are an exception to this statement. This does not include all A-V programs. A large majority of them concentrate on the use of existing A-V materials rather than on their creation. This reference to A-V programs should not mislead the reader into thinking that development always is concerned with material things. Programs, procedures, organization, etc., must also be systematically developed if education is to progress. Thus, development training cannot be equated to A-V training.

The desired output of developer-training programs cannot be specified until the nature of the development process is better

understood. Two descriptions of that process are available in the literature to date and are discussed below. Other articles are available which discuss aspects of the development process. Some of these (See for example, Goodlad, 1966 and Glaser, 1966) tend to focus on principles of learning that should be taken into account in a development effort. Others (See for example, Twelker, 1968) illustrate the development process applied in the production of a specific kind of instructional materials. This same approach, however, with less directness, can be found in the historical accounts of some of the major curriculum development projects such as BSCS, CHEM, etc. Hamreus (1967) presents materials used in the National Research Training Institute for participants in the Consortium Research Development (CORD) projects. These materials have a heavy research process focus and, as Nadler (1967) argues, fails to make clear the distinctiveness of the development process. Still another description of the development process can be observed in the materials used in the 1970 AERA Presession, A Systems Approach to Instructional Research and Design (Yelon and Scott, 1970).

Popham (1968) has enumerated the following steps based on work done at the Southwest Regional Laboratory.

1. Formulation - the decision as to what the instructional product ought to accomplish.
2. Instructional specification - the delineation of instructional objectives to be accomplished by the product.
3. Prototype item tryout - the development and use of tests of the entry, enroute, and terminal behaviors inherent in the instructional objective (2 above).
4. Product development - the preparation of first version materials.
5. Product tryout - monitored use of the product with samples of learners in the target population.
6. Product revision - changing the product based upon analysis of the product tryout step. (Steps 5 and 6 are cycled until the product enables learner achievement of the specified objectives.)
7. Operations analysis - the appraisal of the adequacy of the procedures used in preparing the product as a basis for modifying activities in the next product development task.

Nadler's (1967) description of the development process was evolved after conducting case study analyses of the procedures followed by successful developers.

1. Function determination - The mission or purpose of the system, and of the higher level systems of which the project system is a part, are identified to select the highest level function. Boundary values in terms of the other six system characteristics (inputs, outputs, sequence, environment, physical catalysts, and human agents) are also expanded to provide the largest solution space within which to design the system.

2. Ideal system development - Several very high level and advanced systems (or products) are developed. One of them is selected to serve as a guide for developing a recommended solution. The selection involves a portion of scientific and analytic endeavor: the need roughly to predict the performance of the system. These ideal systems are actually designed--not just discussed in the abstract.
3. Information gathering - The process of selecting an ideal system raises many questions related to the design of a system, its manner of implementation, basic organizational data, and so forth. This step gathers only this kind of information, not everything, nor does it bring together information about what is now going on, as is done in the analysis step of the research approach. Only the precise information which is required is gathered. Experience has shown this information to be far more pertinent and the amount far less than that typically gathered in the research approach used for design.
4. Alternative systems suggestions - The information gathered will show that some of the components of the ideal system will not be feasible as designed. Thus, alternatives need to be developed which will conform as closely as possible to the ideal system.
5. Select the feasible solution - Basic evaluation factors, such as economic, hazard, control, psychological, and organizational factors, are used to select the recommended system or solution.
6. Formulate the system or solution - The exact details of the solution are prescribed in this step. All of the design parameters must be precisely specified in their multidimensional form.
7. Review the system design - Other persons as well as the designer need to re-examine the system design to: avoid premature installation, correct details, and determine if it is at all possible to move closer to the ideal system.
8. Test the system design - Because a few components of the recommended system require verification in real life, the test step is used.
9. Install the system or solution - The changes or new items must be ordered, people must be trained, and shakedown or debugging activities must be arranged.
10. Performance measures established - A measurement is made to determine how well the objective of the project has been met, and to establish the operating expectations of the system or solution.

Nadler recognizes that this approach is an iterative one, that work may sometimes call for regression to an earlier step or movement forward to a later step. He also recognizes that research may be involved at some points.

There are differences in the methods outlined above. Popham's listing builds products after the specification of an objective and testing to determine what can and cannot be done by the learner.

Nadler calls for the description of an "ideal system," the identification of alternative products, and selection of a feasible solution on which to focus the work. They are presented here as methods for development which have been derived from practice.

Desirable output from a developer training program would be individuals who have mastered the knowledge and skills which comprise the development methodology. Another output should be seen simultaneously with the development of such individuals, the creation of a quantity of useable instructional products.

Sequence in the developers training program is a major question mark as should be expected given the confusion about the nature of the process discussed above. Other than putting individuals into situations in which they are forced to develop an instructional product, there is little to suggest as the process for training the developer. Both Nadler (in the field of industrial engineering) and Popham (in education) are in the process of developing instructional programs at this writing.

Some of the knowledge the developer needs can be extrapolated. Such an analysis yields the following list of concepts: behavioral objectives, system, task analysis, flow charting, test and test item development, etc. An associated list of skills is inferred. The point to be emphasized here is that the sequence, the process for educating the developer is not known. Research is needed that documents the development process; that details the skills and knowledge needed to productively engage in that process; and that explores ways of teaching those skills and knowledge.

The environment for the developer training program subsystem is similar to that of the researcher program. Since new institutions with a development focus are now in operation the atmosphere toward this program may be improving. These new institutions (R&D Centers, Regional Labs, and education industries in the private sector) could provide a realistic setting for practical training of developers. They ought to be encouraged to participate in attempts to detail the process, the skills and knowledge, and the instructional programs for preparing educational developers.

As in the researcher training program, the physical catalysts for the developer training program are of two sorts. Content sterile items include rooms, desks, overhead projectors, etc. Content relevant items include texts, tests, examples of development efforts. This latter category must be expanded as knowledge about the development process and the training of developers increases. It is another point of focus for future research. This type of project is, of course, dependent upon efforts which would specify the sequence of the developer training program and should not be proposed independently.

Few human agents are available for roles in the developer training program. This does not imply that no individuals exist who ar or have

developed instructional products. Rather it asserts that such individuals have not examined the process they used in product development. Interest in the education of developers is growing both on the part of universities and newly established agencies charged with the development of products (Sanders and Worthen, 1970). Individuals who have participated in these agency development efforts along with university personnel currently displaying interest in the education of the developer provide the human agent pool from which selection can be made. When greater specificity about the nature of the developer training program is achieved, individuals in this pool should be invited to participate in seminars designed to solidify their understanding of the process and to encourage their active participation in the training of future generations of developers.

The Diffuser Training Program Subsystem

The function of this subsystem is to prepare a quantity of personnel to effectively communicate with decision makers in educational institutions about newly developed educational materials and procedures. Numerous writers (See for example, Miles, 1967) have recognized the need for this role to assure the adoption of proven products by educational institutions. The role has another dimension that should be explored. The function described above has a unidimensionality to it, from developed products to practitioners. If communication is taking place the needs of the practitioners ought to be taken to the developer (Jung, 1967). This second direction is consistent with the assertions that the diffuser role interacts with the others identified and discussed herein.

Inputs to this subsystem must be described as potential rather than actual. It includes minimal information about the diffusion process and students with varying knowledge about and skill in the education process. These students also display varying communication skills and understanding of the decision making process. They are few in number at this point in time as the role is one which is not clearly specified nor does it have a long history or a secure institutional base. A most positive contribution to our understanding of the diffusion role and its institutional bases can be seen in the literature search and synthesis effort recently completed by Havelock, et al (1969). That report does not, however deal with the instructional program needed to prepare personnel for the role.

Outputs of a diffuser training program are also hard to describe because of the inattention currently afforded the subsystem. Some individuals become partially capable of fulfilling the role due to practical experiences either as editors of publications, staff members in information centers such as ERIC, SRIS or other local agencies, or with educational product developers such as R&D centers or publishers. Typically these experiences equip the individual to perform only a one-way communication role with a concentration on the particular product rather than on the process of diffusion.

The desired output of this subsystem is also difficult to describe specifically. Certainly, it should produce individuals who can use alternative ways of acquainting practicing educators with developed products and interpreting the practitioner's needs to the researcher and developer. A subsystem which can perform this function will also produce models for the diffusion process, techniques effective for specific diffusion tasks, and should reduce the time lag between certification of a product's effectiveness and widespread use. Recognition of this difficulty pinpoints still another focus for needed research. Projects need to be undertaken which will delineate the elements of the diffuser role before systematic training program development can be undertaken.

There is little that can be said regarding the sequence of this subsystem. Only one university (University of Massachusetts) is currently attempting to train diffusers (they call them change agents) and that program is admittedly exploratory. Havelock, in an effort that is not reported at this writing, has undertaken the design of educational programs for the preparation of change agent personnel. That effort should provide models which can serve as the basis for empirical efforts related to the education of educational diffusion personnel.

In some respects the diffusion role in the generation-and-conversion-of-knowledge-to-educational-practice parallels the marketing role in business and industry. That specialty has a long history which may contribute to the understanding of the educational diffuser role. An examination of marketing practice and the training of marketing specialists might help in delineating the diffuser role and training necessary. Diffusion and adoption of medical, agricultural, and technical developments also have histories which could be examined. These specialties along with the field of information science are a part of the environment in which the diffusion specialist will operate. Analysis of procedures for training marketing specialists should be conducted. Finally, Paul Mort's work at Columbia University effectively served a diffusion function for several decades. A historical case study might produce some leads regarding the nature of the role.

Because of the lack of detail for this role it is not possible to describe the physical catalysts or human agents needed in the diffusion training program subsystem

The Evaluator Training Program Subsystem

The function of the evaluator training subsystem is to prepare a quantity of personnel who can use rational empirical methods to generate information on which to base decisions about educational programs. Many techniques employed by evaluation specialists are identical to those used by researchers. The difference in the two roles lies in the purposes served. The researcher generates information which is applicable across places and time. The evaluator generates information applicable to a specific place and time (Cronbach and Suppes, 1969).

Inputs to an evaluator training program subsystem are generalized knowledge about the evaluation process and individuals with varying knowledge of and skills in the education process, little understanding of the concept "evaluation," and few, if any, skills in designing and conducting efforts which will generate the information decision makers need to make a choice between alternative solutions to an educational problem in a given educational setting.

Despite the existence of a growing convergence regarding the role of evaluation in education vestiges of earlier and fragmentary definitions guide attempts to educate persons for the role of an evaluation specialist. Statements in recent literature by Stake and Denny (1969), Cronbach and Suppes (1969), Provos (1970), Cook (1970), Stufflebeam et al. (1970), and others describe evaluation as a process which serves decision making through the provision of rational information about the alternatives in a given decision. This definition of evaluation is in contrast to earlier ones which equated evaluation with measurement (Thorndike and Hagen, 1961); with the comparison of outcomes to expectancies (Tyler, 1950); with expert judgement as structured by the regional accrediting agencies; or with generalized self-studies as proposed by some of the same groups. That these approaches continue despite the growing convergence of meaning for the term evaluation is not surprising. The convergence has not as yet been accompanied by a generally accepted theory of evaluation and voids in methodology exist which interfer with the effective service of decision making (Stake and Denny, 1969 and Tyler, 1969). Again a most promising contribution toward the resolution of these problems appears to have been made by the Phi Delta Kappa National Study Committee on Evaluation (Stufflebeam, et al. 1970).

Outputs of this evaluation training program subsystem are now being produced as several institutions have programs for training educational evaluation specialists (The Evaluation Center, Ohio State University, CIRCE, University of Illinois, EPIC, University of Arizona, and the R&D Center on Evaluation, UCLA). Individuals completing programs which include work with these units have an understanding of the concept "evaluation" and skills in designing and conducting evaluative efforts. Similar results are begining to appear through on-the-job training in some of the federally funded R&D Centers and Regional Labs (Sanders and Worthen, 1970).

There are other programs throughout the country which purport to train evaluation specialists. Most of these are research training programs which fail to develop a full understanding of the evaluation role and procedures. The graduates of these programs seldom design and conduct studies that meet the criteria of a good evaluation: internal validity, external validity, reliability, objectivity, relevance, significance, scope, credibility, timeliness, pervasiveness, and efficiency (Guba and Stufflebeam, 1968). They typically handle the first four well but miss on the remaining seven.

The desired outputs of evaluator training programs are personnel who are capable of: (1) focusing evaluation efforts so that the alternatives possible in a specific decision are compared on criteria which decision makers will use in arriving at a choice; (2) collecting the information on each criterion for each alternative; (3) organizing the information into a format understandable by and acceptable to the decision makers in question; (4) analysis and interpretation of the information for its inherent meaning; and (5) reporting the information to the decision makers (Stufflebeam et al, 1970). Given personnel with these capabilities two additional outputs seem likely. The first is an increase in the importance of evaluation as an ongoing element of educational institutions. The second would be an increased understanding of educational program decision making.

The sequence or process of the evaluator training program is not as yet definitively stated. Each of the institutions cited above uses a slightly different model. Most of them concentrate training heavily on the same courses and content included in the research training program (especially measurement, statistical analysis, and computer applications). Their variation occurs in specialized symposia and the nature of the practical experiences in which students are involved. There has not been sufficient experience with these programs to be able to conclude that one approach exceeds the others.

Recent analyses of the evaluation process (Stake and Denny, 1969; Stufflebeam et al, 1970) indicate that evaluators must interact with decision makers in a way which involves skills in interpersonal relationship and small group dynamic skills not normally a part of existing programs. There is also an indication in these reports that systems analysis skills may play a valuable part in the evaluator's role in the future. The tentativeness of these recommendations is still another point of needed research. Projects need to be undertaken which examine these areas for their importance in evaluators' roles as well as the means for generating them.

The environment of the evaluator training program is typically a combination of a university setting and one or more public school systems. Some of the forces in this physical setting are supportive of the evaluator training program while others are detracting. The supportive elements include the mandated commitment of time and funds for evaluation in federal programs and the current emphasis on educational accountability. A detracting aspect of environment is the negative model set by regional labs, R&D Centers, universities, the state departments of instruction, and the Office of Education when they fail to use evaluation specialists in their own program operation decisions. Still another detractor is the generally higher regard accorded to the conclusion-oriented inquiry that characterizes research.

Physical catalysts can again be classified as content sterile and content relevant. The latter category includes texts, measuring instruments, film strips, calculators, computers, sets of overhead transparencies, and simulation games. Much more work needs to be

done in this area so that balance can be attained between the use of manipulable physical items and words as students attempt to learn the necessary concepts and skills. Identification of items of this sort was a focus of this project.

The human agents in the evaluator training program subsystem are of three sorts: (1) university professors whose background is heavily laden with the research process; (2) evaluation specialists in school systems which provide apprenticeship experiences; and (3) decision makers in those systems with which the evaluator-to-be interacts during an apprenticeship. Since few of these human agents have been trained in evaluation as it is being defined today, improvement in the subsystem might be affected through the development of in-service materials focused toward these human agents.

SUMMARY

Through this review of the literature a supra-system for the generation and conversion of knowledge to educational practice has been described. Four human agents are identified as elements of that supra-system: the researcher, developer, diffuser, and evaluator. The systems for training personnel for these roles were also described in terms of their function, inputs, outputs, sequence, environment, physical catalysts, and human agents. Professional literature indicates that the researcher and evaluator roles are the best defined of the four but that even for these roles there is much to be known before effective educational programs can be established.

REFERENCES

Bargar, Robert, and Okorodudu, Corahann, "Review of Research Related To Training for Research in Education." USOE Cooperative Research Project No. 3191. Columbus, Ohio: Ohio State University, 1967.

Buswell, Guy T., et al., "Training for Educational Research" USOE Cooperative Research Report No. X-007, Berkeley, California: University of California, Berkeley, 1966.

Clark, David L. and Guba, Egon G., "An Examination of Potential Change Roles in Education," paper presented at the Symposium on Innovation in Planning School Curricula, Airlie House, Virginia, Oct., 1965.

Clark, David L. and Hopkins, John E., A Report on Educational Research, Development, and Diffusion Manpower, 1964-1974. Cooperative Research Project No. X-022, Bloomington, Indiana: Indiana University 1969.

Cook, Desmond L., "Management Control Theory as the Context for Educational Evaluation." Journal of Research and Development 3:13-26; Summer 1970.

Cronbach, Lee J., and Suppes, Patrick, (Eds.), Research for Tomorrow's Schools: Disciplined Inquiry for Education. Toronto, Ontario: The Macmillan Company, 1969.

Gephart, William, Bartos, Bruce, and Antonoplos, Daniel, "Skills and Knowledge Wanted by Directors of Educational Research Units" NSPER News & Notes 1:4-6; February 1968, and 1:3-6; April 1968.

Glaser, Robert, "Psychological Bases for Instructional Design," Pittsburgh: Learning Research and Development Center University of Pittsburgh, 1966.

Glass, Gene V, "Some Observations on Training Educational Researchers." Paper presented at the Second National Symposium for Professors of Educational Research. Boulder Colorado: Phi Delta Kappa and the University of Colorado, November 1968.

Goodlad, John I., The Development of a Conceptual System for Dealing with Problems of Curriculum and Instruction. Cooperative Research Project No. 454, Los Angeles: University of California, Los Angeles, 1966.

Guba, Egon, and Stufflebeam, Daniel L., "Evaluation: The Process of Stimulating, Aiding, and Abetting Insightful Action." Presented at the Second National Symposium for Professors of Educational Research, Phi Delta Kappa, 1968.

Hamreus, Dale G., Self Instructional Meterials for Research Training: Supporting Document to a Final Report. Cooperative Research Project No. 7-1096, 1967.

Havelock, Ronald G., et al., Planning for Innovation through Dissemination and Utilization of Knowledge. Cooperative Research Project No. 2143. Ann Arbor, Michigan: Center for Research on Utilizaiton of Scientific Knowledge, University of Michigan. 1969.

Jung, Charles, "Two Kinds of Linkage for Research Utilization in Education," paper presented at the American Educational Research Association 1967 Annual Meeting, New York, February 1967.

Kerlinger, Fred N., "The Doctoral Training of Research Specialists." The Record 69:477-483; February 1968.

Krathwohl, David R., "Current Formal Patterns of Educating Empirically Oriented Researchers and Methodologists." In The Training and Nurture of Educational Researchers. Egon Guba and Stanley Elam (Eds.), Bloomington, Indiana: Phi Delta Kappa, 1965.

Lippitt, Ronald, "The Teacher as Innovator, Seeker and Sharer of New Practices." in Miller, R. I. (Ed.), Perspectives on Educational Change. New York: Appleton-Century-Crofts, 1966.

Miles, Mathew B., "Emerging Research Utilization Roles." in Preparing Research Personnel for Education. D. L. Clark and B. R. Worthen (Eds.) Bloomington, Indiana: Phi Delta Kappa, 1968.

Millikan, Nancy M., The Development of Professional Personnel in Educational Research. Cooperative Fesearch Project No. S-487-64. New York: Teachers College, Columbia University, 1967.

Nadler, Gerald, "An Investigation of Design Methodology" Management Science 13:B-642-B-655; June 1967.

Nadler, Gerald, "A Universal Apprach to Complex System Deisgn." The Engineering Manager: Survival in the Seventies. Montreal, Quebec, Canada: The Engineering Institute of Canada, 1969. pp. 121-139.

Popham, W. James, "Product Research: A New Curriculum Specialty." Educational Leadership 24:507-513; March 1966.

Popham, W. James, "Two Proposals for Educational Researcher Training," presentation to the Second National Symposium for Professors of Educational Research. Phi Delta Kappa, November 1968.

Provos, Malcolm, "Preface-Evaluation for Decision-Making, Choice and Value." Journal of Research and Development. 3:1-12; Summer 1970.

Sanders, James R. and Worthen, Blaine R., "An Analysis of Employers' Perceptions of the Relative Importance of Selected Research and Research-Related Competencies and Shortages of Personnel with Such Competencies." Technical Paper No. 3. USOE Project No. 0-3757, Boulder, Colorado: University of Colorado, 1970.

Sieber, Sam D. and Lazarsfeld, Paul F., The Organization of Educational Research. Cooperative Research Project No. 1974. New York: Bureau of Applied Social Research, Columbia University 1966.

Stake, Robert E., and Denny, Terry, "Needed Concepts and Techniques for Utilizing More Fully the Potential of Evaluation." In Educational Evaluation: New Roles, New Means. The Sixty-eighth Yearbook of the National Society for the Study of Education Part II. Chicago: University of Chicago Press 1969.

Stanley, Julian C., "Preparing Educational Research Specialists for School Systems." Phi Delta Kappan 48:110-114; November, 1966.

Stufflebeam, Daniel L. et. al, Educational Evaluation and Decision-Making. Itasca, Ill.: F. E. Peacock, Publishers (in press).

Thorndike, Robert L. and Hagen, Elizabeth, Measurement and Evaluation in Psychology and Education. New York: John Wiley [illegible], 1961.

Twelker, Paul A., Simulation: an Overview. Monmouth, Ore[illegible]aching Research, 1968.

Tyler, Ralph, Basic Principles of Curriculum and Instruct[illegible] Syllabus for Education 360. Chicago: University of Chicago Pr[illegible] 1950.

Tyler, Ralph, "Outlook for the Future." In Educational E[illegible]: New Roles, New Means: The Sity-eighth Yearbook of th[illegible]nal Society for the Study of Education Part II. Chicag[illegible]ity of Chicago Press, 1969.

Worthen, Blaine R., and Gagné, Robert M., "The Developm[illegible] Classification System for Functions and Skills Requi[illegible] Research and Research-Related Personnel in Educatio[illegible], Technical Paper No. 1. USOE Project No. 0-3757, B[illegible]orado: University of Colorado, 1969.

Worthen, Blaine R. and Roaden, Arliss L., "The Impact of Assistantship Experience on the Subsequent Career D[illegible]t of Educational Researchers." An interim report of [illegible]ta Kappa supported project. Columbus, Ohio: The Eva[illegible]n'er, Ohio State University, 1968.

Yelon, Stephen L. and Scott, Roger O., "A Systems Appro[illegible]truc-tional Research and Design." Unpublished material [illegible] during the AERA presession. February 1970.

CHAPTER III

THE COLLECTION OF INSTRUCTIONAL MATERIALS USED IN TEACHING ABOUT THE RESEARCH PROCESS

This project, as indicated in Chapter I, included an effort to identify and collect instructional materials of a semi-developed nature that were being used in teaching about the research and research-related processes. The discussion which follows describes the identification and collection process and the nature and characteristics of the 327 items that were secured through this effort.

THE COLLECTION PROCESS

The identification and collection strategy employed had three aspects: a search through the professional literature; indirect contact with persons involved in research instruction through announcements in professional literature; and, direct contacts through presentations at professional meetings, visits to selected training programs, and letters to individuals engaged in research instruction. The literature search was notably unproductive. Not only did it fail to produce instructional materials that were in use, it failed to identify any quantity of published writing on the problems and general procedures used in educating the researchers-to-be. The indirect contacts consisted of announcements about the project and its objectives in the AERA newsletter, Educational Researcher, Phi Delta Kappa's newsletter, News Notes & Quotes, and the newsletter created by PDK's Research Service Center, NSPER News and Notes. Again, the lack of response was of major proportions. The direct contacts were several in nature and quite productive. A total of 327 separate items were collected and catalogued as a result of these activities.

The direct contacts could be categorized three ways: presentations about the project to groups of individuals involved in instruction about the research process; visits to selected training programs; and, mail contacts inquiring about the existence of materials. Presentations were made at the National Symposium for Professors of Educational Research (NSPER) held at the University of Maryland, at the NSPER session held at the University of Colorado, and at meetings of the directors of Pre-sessions sponsored by the American Educational Research Association. Approximately 80 different persons were contacted in this manner. Each such contact involved a description of the project, a discussion of the types of materials that were sought, and a request that individuals who had such materials send copies of them to the project office in Bloomington, Indiana. The visits were made by Arliss Roaden who was at that time the project director. Those visits, made for the purpose of analyzing the nature of research training programs in 47 institutions, focused on the overall nature of training programs and did not produce specific materials used in instruction. Since these visits are reported elsewhere (Roaden, 1969) they will not be elaborated on here. (An abstract of the referenced report is presented in Appendix G.)

Three types of mail contact were made. The first was a letter that described the project, requested a general program description, and posed four questions: (1) What program content is considered unique? (2) What curriculum materials are used that are not normally available through commercial publishers? (3) What is the nature of the apprenticeship experiences required of the trainees? and (4) To what extent are persons being prepared to fill newly emerging R, D, and D roles? A second mailing was made that described examples of training materials sought by the project and requested the submission of such items along with course outlines, bibliographies, statements of objectives and course examinations. This letter also asked that other persons who had or used similar materials be identified. All persons so identified were sent a letter that requested the specific items identified.

The first letter was sent to all directors of Title IV research training programs and to 340 professors of educational research. The latter mailing list was generated in the establishment of the National Symposium for Professors of Educational Research. In the spring of 1967 Phi Delta Kappa's Research Service Center sent a letter to the administrators of educational programs in colleges and universities throughout the country. That letter expressed interest in developing a vehicle through which individuals who teach about the research process might communicate about their work. The contacted administrators were asked to list all faculty members who were assigned to teach or who had recently taught any courses that would fall into the following categories: (1) introductory or research techniques courses; (2) measurement courses; (3) statistics courses; and (4) advanced design courses. Responses were received from 107 institutions identifying 340 persons engaged in teaching about the research process.

The second letter was sent as a follow-up to the first to a total of 466 persons. That list included those persons to whom the first letter was addressed and individuals mentioned in the responses that had arrived in the four months that had elapsed. The second letter stated an intention to:

1. Identify semi-developed materials, ideas and methods used for training Research, Development, and Diffusion personnel (RD&D).
2. Screen those items, select potential exemplars, and support their originators in the development of available-for-use materials.
3. Design strategies to identify and resolve the major problems of RD&D training programs.

It asked that the person addressed examine their training program and send copies of materials used that fit one of the following categories: statements of objectives; course outlines; bibliographies used in instruction; handouts, non-published instructional materials or procedures; and tests or evaluation procedures.

As indicated earlier 327 different items were submitted in response to these communications. As they arrived they were examined for content

and classified. The discussion below presents a description of the materials received.

THE NATURE OF THE MATERIALS RECEIVED

As materials arrived they were examined for their topical focus and general character. An abstract was prepared on each item (See Appendix A) which lists author, address, title, topical focus, purpose, description of the materials, restrictions to use, and general character. Topical focus in this case means the content of the material. Purpose statements indicating the intent of the author in preparing the material, are presented in those abstracts where it was possible to quote directly from the material or where a purpose statement was implicit. The remaining cases do not have a purpose statement. The description section of the abstract presents the physical characteristics and selected narrative statements about the document.

The general characteristics section of the abstract of each Training Materials Project (TMP) document encompasses the set of categories shown in Table 1. These categories exemplify kinds of items that might be related to the instructional process. Before discussing the distribution of the TMP documents among these categories, each of them will be discussed briefly.

(1) Textual Materials. Documents which present concepts to be learned or skills to be mastered.

(1a) Programed format. The presentation of textual material via a linear or branching series of frames complete with exercises to be completed and feedback regarding the adequacy of the learner's performance. These items always present content to be mastered. Thus, this is a sub-category under (1) Textual Materials.

(2) Learning exercises. Problems to be solved, or assignments to be done by the learner. Some of the documents presenting learning exercises also provide the textual material for those exercises; others do not. In a few cases the answers or solutions are given but for the most part the learner is required to obtain feedback information from the instructor.

(3) Bibliography. Listings of references, annotated in some instances and not in others. Some present page referenced reading assignments while others refer generally to the publication.

(4) Examinations. Instruments used to determine the progress of the learner to master the content and skills presented. This category subsumes the complete range of acheivement testing from essay to multiple choice objective tests.

(5) Course description. Documents in this category are typically brief (1-4 pages) and seem to be used to acquaint the learner with the general nature of the content to be mastered and an equally general description of the procedures to be employed.

(6) Objectives. The focus on objectives is of two sorts. Some of these documents present objectives toward which research training is directed. Others focus on the nature and development of objectives.

(7) Description of a curriculum approach. Documents included in this category present a general strategy for instruction either of a specific concept or an entire role.

(8) Program outline. Numerous institutions have prepared descriptions of their programs in outline form. These outlines include some or all of the following content: role description toward which the program is oriented; underlying philosophy; listing of the courses and requirements to be met by the student; costs and financial aid information; description of the institution and its setting; and, procedures for applying for admission.

(9) Course evaluation instrument. This category encompasses documents developed to obtain feedback about instruction from students about specific courses.

(10) Student Data Instrument. Documents developed to standardize the collection of data about student characteristics.

(11) Learning equipment. Those physical items other than texts and printed matter used to assist students in the mastery of specific content.

(12) Demonstrations. This category is included to house those documents (and/or equipment) that present a demonstration of a concept or phenomenon for the purpose of assisting students in understanding that concept.

(13) Video tapes. Self-explanatory.

(14) Flow-charts. The documents in this category outline complex procedures by identifying the elements of the procedure, the sequence in which the elements need to be accomplished, and sometimes the decision alternatives in that sequence.

(15) Grids. Some of the content of the research and research related processes can be classified under two sets of rubrics. In such cases understanding is enhanced by displaying that content in a format that details the two sets of rubrics and the position of the concepts within the matrix established by the rubrics.

(16) Institutional research paradigm. A category for documents presenting strategies for conducting studies on the nature and effects of an institution's operation.

(17) Institutional research instrument. A means for generating data on the nature of an institution's operation or its output.

(18) Diagram of the research process. A category for documents which pictorially display the components of the research process.

(19) Research report. Documents which state a problem, procedures used to investigate it, the nature of the data generated via that procedure, and the conclusions that can be reached given the nature of that data.

As can be seen in Table 1, the majority (almost 2/3) of the documents collected in the Training Materials project are textual materials; documents which present content to be mastered; documents which require student reading. Almost one-quarter (50) of these textual materials documents also present learning exercises through which their content is to be mastered. This quarter of the textual materials could be more valuable to research training if it were not for the fact that none of these documents are accompanied by information on the effectiveness of those exercises in facilitating student mastery of the content covered. Twelve of the fifty documents categorized as textual materials and learning exercises are prepared in a programed instruction format.

Approximately one-quarter (79) of the documents were classified under the learning exercises rubric. As already indicated fifty of these present content to be mastered. The remaining twenty-nine require that that content be presented either orally by the instructor or by unidentified reading assignments.

TABLE 1

GENERAL CHARACTER OF THE TRAINING MATERIALS PROJECT DOCUMENTS

	Category	No.	%*
1.	Textual Materials	206	62.8
	1a. Programed Format (15)		
2.	Learning Exercises	79	24.1
3.	Bibliography	24	7.3
4.	Examinations	42	12.8
5.	Course Description	3	.9
6.	Objectives	3	.9
7.	Description of Curriculum Approach	16	4.9
8.	Program Outline	13	4.0
9.	Course Evaluation Instrument	2	.6
10.	Student Data Instrument	1	.3
11.	Learning Equipment	3	.9
12.	Demonstrations	2	.6
13.	Video-Tapes	1	.3
14.	Flow-charts	1	.3
15.	Grids	3	.9
16.	Institutional Research Paradigm	1	.3
17.	Institutional Research Instrument	1	.3
18.	Diagram of the Research Process	1	.3
19.	Research Reports	2	.6
	Total	404	

*Figured on the basis of 327 documents.

Only four other categories are descriptive of more than three of the collected Training Materials Documents. Those are Examinations (42 TMP Documents), Bibliographies (24 TMP Documents), Descriptions of a Curriculum Approach (16 TMP Documents), and Program Outline (13 TMP Documents). Three TMP Documents were classified under each of the categories Course Description, Objectives, Learning Equipment, and Grids. Two TMP Documents fit in each of the Course Evaluation Instruments, Demonstrations, and Research Reports.

The careful observer will note that the total of the frequencies in Table 1 exceeds the total number of TMP Documents (327) by 92. This is due to the fact that some of the TMP Documents could be classified under several of the general characteristics headings.

As indicated earlier the materials received were also categorized according to their Topical Focus. As was the case in the general characteristics categorizing, some of the materials had multiple topical focii. For that reason the total frequency in Table 2 exceeds the number of materials annotated in Appendix A.

As shown in Table 2, the materials received focus with greater frequency on the research process and its components than they do on the processes of development, diffusion, or evaluation. Categories one through sixteen in the topical focus categorization represent the research process, components of that process, or content related to the training of researchers. Categories seventeen to nineteen cover the development, diffusion, and evaluation processes. Of the 363 topical focii identified in the 327 TMP Documents, 332 are encompassed in categories one through sixteen. The emphasis on the research process is even stronger when only the research process and its components are examined (categories one to thirteen). Three hundred five of the 363 topical focii are encompassed in these thirteen categories.

The most common topic was statistics. Eighty-five TMP Documents had a topical focus on either the general area of statistics or on a specific statistical analysis. It appears that there are more readily available instructional materials in the area of statistics than on any other aspect of the research process. This observation suggests two hypotheses, neither of which can be tested with the data generated in this project. The first hypothesis is; in the minds of many persons the primary ingredient in the research process is statistical analysis. The second; the quality of commercially available materials for teaching about statistical principles and procedures is below that of materials available for other aspects of the research process.

The next largest frequency of topical focus was measurement, a topic concentrated on in 43 documents, just over half of the statistics frequency. Following measurement in order, the five most frequent topics in the documents were: research process-general (39), research design (37), computer applications (25), research training (23), and development process (17). None of the other thirteen categories individually approached 5 percent of the total. Together those

thirteen categories represent 25.1 percent of the topical focus classifications.

The observation that research is the central focus in 92 percent of the topics contained in the TMP Documents is not surprising for two reasons. The procedures used to secure the materials called attention to the project on the part of persons who see themselves as research trainers. This coupled with the fact that few programs existed in 1967-68 which specialized in the preparation of developers, diffusers, or evaluators, accounts for the imbalance. This is not an assertion that the situation would be different if the solicitation were repeated now or in the near future. The institutions concentrating on the D,D&E roles are still small in number.

TABLE 2

TOPICAL FOCUS OF THE TRAINING MATERIALS PROJECT DOCUMENTS

	Category	No.	%*
1.	Research Process-General	39	11.9
2.	Research Problems and Problem Formulation	13	4.0
3.	Related Research	11	3.4
4.	Research Evaluation	4	1.2
5.	Research Interpretation	3	.9
6.	Objectives	11	3.4
7.	Research Design	37	11.3
	7a. Experimental Design (9)		
	7b. Social Research Methodology (2)		
8.	Sampling	7	2.1
9.	Measurement	43	13.1
10.	Statistics	85	25.9
11.	Computer Applications	25	7.6
12.	Reporting	15	4.6
13.	Research Proposals	9	2.7
14.	Teaching Methods	4	1.2
15.	Research Training	23	7.0
16.	Course Evaluation Instruments	3	.9
17.	Development Process	17	5.2
18.	Evaluation Process	5	1.5
19.	Diffusion Process	2	.6
20.	Other (Not Directly Related to Research)	7	2.1
	Total	363	

*Figured on the basis of 327 documents.

Another point should be made about the recognition above that the vast majority of the TMP Documents focus on the research process and its components. That point involves the failure of the field to establish to date descriptions of the D,D,&E roles in ways that detail the skills, knowledge, and attitudes that should be prossessed by incumbents of those roles. That failure exists both at the conceptual

and empirical level. That is, there are neither conceptual elaborations nor empirical studies which establish the skills, knowledge, and attitudes most productive in the work of developers, evaluators, and diffusers. Progress toward the resolution of this failure has been made in the work on evaluation done at Ohio State University's Evaluation Center, Teaching Research at Monmouth, Oregon, the University of Illinois' CIRCE, and at UCLA's R&D Center on Evaluation.

Given the imprecision that currently exists in role definition and differentiation, it is possible to assert that there are some common skills and knowledge in the RDD&E roles, and that some of those skills are included in categories 1-13 of Table 2, categories that have been described herein as aspects of the research process. A case in point is sampling. Knowledge about and skill in sampling has been recognized for some time as an integral component of the research process. It is also a logical component of the development and evaluation processes. It is difficult to conceive of any sizeable development effort that lacks a population referent and thus a concern for sampling. The same is true in evaluation. If information is to be provided to a decision maker relative to a specific decision the data from which that information is extracted have a population referent and an implicit sampling task.

Similar assertions can be made regarding the topics of measurement, statistics, computer applications, research evaluation, research interpretation, and reporting. Thus in one sense there is an applicability of some of the TMP Documents to all four roles. The recognition of the appropriateness of some of the techniques is not a concurrent recognition that the roles are essentially the same. The roles take their shape from the four pocesses and the processes serve different functions. The function served by research is the cummulative creation of generalizable bits of information where unknowns exist. The function of development is the creation of workable physical or physical-conceptual units for serving a specific function. The evaluation function is the generation and provision of information which provides rational relative weights to decision alternatives. Finally, the diffusion function is spreading of information. Roles which take their shape from such diverse functions cannot be interpreted as essentially the same even in the face of commonality in some of the techniques employed.

As the TMP Documents were received and analyzed an effort was made to determine which of the roles they were most applicable for. The determination of relevance to a role was not possible however, for two reasons. The first has already been discussed. A conceptually or empirically based description of the roles and the skills, attitudes, and knowledge necessary for them does not exist. The second reason eminates from the content of the materials themselves and is best illustrated by reference to specific TMP Documents. It is readily accepted that a researcher needs to know analysis of variance procedures. It is logical that a diffusion specialist must be able to interpret research reports involving analysis of variance, and thus, he too should understand it. BUT, is the understanding that is necessary on the part of the researcher and diffuser identical? To assume that it

is poses a model in which: the research role is the least arduous of the four; the developer must know all that a researcher knows plus the skills and knowledge specific to the development process; the diffuser must know all that a developer must know plus that which is specific to diffusion; and, the evaluator, since he concentrates on decisions having input from all three, must know all that the diffuser knows and then some. Such a model is difficult to accept. In its place this report assumes that the understanding of topics that are common to the several roles is not identical, and, that the majority of the TMP Documents, since they were prepared for the training of researchers are not readily appropriate for the training of individuals for the other three roles.

A description of the general character of the documents encompassed by each of the categories in Table 2 gives a clearer picture of the collection of TMP Documents. This breakdown is presented in Table 3. It includes the number of TMP Documents in each of the twenty topical focus categories and then shows the number and percent of those documents for each of the different general characteristics. This display again highlights the fact that the preponderance of the 327 TMP Documents are textual in nature, that is, they present content to be mastered. This display also highlights the failure of this training materials project to identify any quantity of items other than textual materials, written learning exercises, examinations, and bibliography. In other words, the training of researchers and research related personnel in education does not seem to be conducted through the use of physical demonstrations, learning equipment, flow charts, grids, or video and audio tapes. Also missing in any frequency in the TMP collection are course evaluation instruments and student data instruments. One might hypothesize that the failure to find items of this sort is an indication that individuals who teach about the research and research related processes fail to identify the nature and needs of their students in advance of instruction and that they fail to systematically evaluate their courses. An exception to this latter point must be noted. Evaluation does take place through the examinations administered in instruction. However, it is asserted here that evaluation in such instruction requires more than the measurement of student achievement via examinations.

Another group of materials that are underrepresented in the TMP Documents are those which describe or outline a course, curriculum, or a curricular approach. The number of documents collected in these categories might have been increased had the letters specifically requested the program description materials used by almost all schools to advertise the programs they offer. This type of material was not solicited, however, for two reasons. First, that type of information has been summarized by Krathwohl (1965). Second, although those materials do give an overview of the general structure within which training for research and research related roles takes place, they do not give explicit information about the concepts, skills, and attitudes taught nor about the procedures used to teach those concepts, skills, and attitudes.

TABLE 3
GENERAL CHARACTERISTICS OF THE TMP DOCUMENTS BY TOPICAL FOCUS

Topical Focus	No. of Docs. with Topical Focus	Textual Materials		Learning Exercises		Bibliography		Examinations		Course Description		Objectives		Description of Curric. Approach	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1. Research Process-General	39	18	46.2	4	10.3	7	17.9	9	23.1	-	-	-	-	-	-
2. Research Problems & Problem Formulation	13	11	84.6	3	23.1	1	7.7	-	-	-	-	-	-	-	-
3. Related Research	11	9	81.8	3	27.3	-	-	1	9.1	-	-	-	-	-	-
4. Research Evaluation	4	3	75.0	1	25.0	1	25.0	-	-	-	-	-	-	-	-
5. Research Interpretation	3	3	100.0	-	-	-	-	-	-	-	-	-	-	-	-
6. Objectives	11	8	72.2	8	72.2	1	9.1	3	27.3	-	-	-	-	-	-
7. Research Design	37	23	62.1	12	32.4	4	10.8	7	18.9	-	-	-	-	4	10.8
(Experimental Design)	*(9)	(4)	(44.4)	(5)	(55.5)	-	-	(2)	(22.2)	-	-	-	-	-	-
(Social Research Methodology)	(2)	-	-	-	-	-	-	-	-	-	-	-	-	(1)	(50.0)
8. Sampling	7	4	57.1	-	-	-	-	-	-	-	-	-	-	-	-
9. Measurement	43	29	67.4	11	25.6	4	9.3	6	14.0	3	7.0	1	2.3	1	2.3
10. Statistics	85	61	71.7	21	24.7	3	3.5	10	11.8	1	1.2	-	-	2	2.4
11. Computer Applications	25	16	64.0	3	12.0	1	4.0	4	16.0	-	-	-	-	2	8.0
12. Reporting	15	12	80.0	3	20.0	-	-	2	13.3	-	-	-	-	-	-
13. Research Proposals	9	7	77.8	2	22.2	-	-	2	22.2	-	-	-	-	-	-
14. Teaching Methods	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15. Research Training	23	5	21.7	2	8.7	-	-	-	-	1	4.3	2	8.7	11	47.8
16. Course Evaluation Instruments	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17. Development Process	17	14	82.3	9	52.9	2	11.8	1	5.9	-	-	-	-	-	-
18. Evaluation Process	5	4	80.0	1	20.0	-	-	-	-	-	-	-	-	-	-
19. Diffusion Process	2	2	100.0	-	-	1	50.0	-	-	-	-	-	-	-	-
20. Other (Not directly related to research)	7	3	42.9	2	28.6	2	28.6	3	42.9	-	-	-	-	-	-
Totals	363	232		85		27		48		5		3		20	

*(Not calculated in totals as those classifications are included in the Research Design Topical Focus.)

TABLE 3 (CONTINUED)
GENERAL CHARACTERISTICS OF THE TMP DOCUMENTS BY TOPICAL FOCUS

Topical Focus	No. of Docs. with Topical Focus	Program Outline		Course Eval. Instrument		Student Data Instrument		Learning Equipment		Demonstration		Video Tapes		Flow Charts	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1. Research Process-General	39	3	7.7	-	-	-	-	-	-	-	-	-	-	-	-
2. Research Problems & Problem Formulation	13	1	7.7	-	-	-	-	-	-	-	-	-	-	-	-
3. Related Research	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4. Research Evaluation	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5. Research Interpretation	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6. Objectives	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7. Research Design	37	2	5.4	-	-	-	-	-	-	-	-	-	-	-	-
(Experimental Design)	*(9)	(1)	(11.1)	-	-	-	-	-	-	-	-	-	-	-	-
(Social Research Methodology)	(2)	(1)	(50.0)	-	-	-	-	-	-	-	-	-	-	-	-
8. Sampling	7	1	14.3	-	-	-	-	1	14.3	2	28.6	-	-	-	-
9. Measurement	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10. Statistics	85	1	1.2	-	-	-	-	1	1.2	-	-	-	-	1	1.2
11. Computer Applications	25	1	4.0	-	-	-	-	-	-	-	-	-	-	-	-
12. Reporting	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13. Research Proposals	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14. Teaching Methods	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15. Research Training	23	2	8.7	-	-	1	4.3	-	-	-	-	1	4.3	-	-
16. Course Evaluation Instruments	3	-	-	3	100.0	-	-	-	-	-	-	-	-	-	-
17. Development Process	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18. Evaluation Process	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19. Diffusion Process	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20. Other (Not directly related to research)	7	-	-	-	-	-	-	1	14.3	-	-	-	-	-	-
Totals	363	11		3		1		3		2		1		1	

*(Not calculated in totals as those classifications are included in the Research Design Topical Focus.)

TABLE 3 (CONTINUED)
GENERAL CHARACTERISTICS OF THE TMP DOCUMENTS BY TOPICAL FOCUS

Topical Focus	No. of Docs. with Topical Focus	General Characteristics: Grids		Institutional Res. Paradigm		Institutional Res. Instrument		Diagram of Research Process		Research Report		Total No. of General Characteristic Classifications by Topical Focus
		No.	%	No.	%	No.	%	No.	%	No.	%	
1. Research Process-General	39	-	-	-	-	-	-	1	2.6	-	-	42
2. Research Problems & Problem Formulation	13	-	-	-	-	-	-	-	-	-	-	16
3. Related Research	11	-	-	-	-	-	-	-	-	-	-	13
4. Research Evaluation	4	-	-	-	-	-	-	-	-	-	-	5
5. Research Interpretation	3	-	-	-	-	-	-	-	-	-	-	3
6. Objectives	11	-	-	-	-	-	-	-	-	-	-	20
7. Research Design	37	-	-	-	-	-	-	-	-	-	-	52
(Experimental Design)	*(9)	-	-	-	-	-	-	-	-	-	-	(12)
(Social Research Methodology)	(2)	-	-	-	-	-	-	-	-	-	-	(2)
8. Sampling	7	-	-	-	-	-	-	-	-	-	-	8
9. Measurement	43	-	-	1	2.3	2	4.6	-	-	-	-	58
10. Statistics	85	2	2.4	-	-	-	-	-	-	-	-	103
11. Computer Applications	25	-	-	-	-	-	-	-	-	-	-	27
12. Reporting	15	-	-	-	-	-	-	-	-	-	-	17
13. Research Proposals	9	-	-	-	-	-	-	-	-	-	-	11
14. Teaching Methods	4	-	-	-	-	-	-	-	-	-	-	
15. Research Training	23	-	-	-	-	-	-	-	-	1	4.3	26
16. Course Evaluation Instruments	3	-	-	-	-	-	-	-	-	-	-	3
17. Development Process	17	-	-	-	-	-	-	-	-	1	5.9	27
18. Evaluation Process	5	1	20.0	-	-	-	-	-	-	1	20.0	7
19. Diffusion Process	2	-	-	-	-	-	-	-	-	-	-	3
20. Other (Not directly related to research)	7	-	-	-	-	-	-	-	-	1	14.3	12
Totals	363	3		1		2		1		4		453

*(Not calculated in totals as those classifications are included in the Research Design Topical Focus.)

Despite the fact that the program description advertisement documents were not requested explicitly some were received. None of them or any of the other documents in these program, course, or curriculum descriptive categories are of sufficient detail or length to make it possible to empirically substantiate the skills, knowledge, or attitudes focused on in research or research-related programs. The fact that students must take a specific statistics course or that they must select x number of courses from a listing just does not provide that information.

The analysis procedures initially designed for the study of the TMP Documents proposed three things that could not be accomplished. The first of these has already been discussed, the determination of the role for which the materials were most appropriate. The second is the detailing of student entry and outcome behaviors related to the materials. This type of analysis was potentially possible for those documents which are classified as textual materials, learning exercises, demonstrations, learning equipment, video tapes, and the several course or program description categories. Because the materials in these categories routinely fail to discuss either student entry or outcome behaviors in terms that are explicit or enumerative, such analysis would require gross speculations. For that reason such an analysis was not undertaken.

The third omitted analysis procedure involved a judgement of the quality or value of each TMP Document. General statements about quality can be made. For example, there appears to be little value in a piece of textual material which presents in essence the table of contents of the Encyclopedia of Educational Research and calls it a list of research problems. A second general criticism is that many of the materials are insufficient to be considered transportable; that is, useable in some other location. Examples of TMP Documents for which this evaluative statement is applicable are those learning exercises which are not accompanied by text and some of the examinations. The latter are deserving of the criticism because not infrequently a multiple choice item is presented for which there is apparently no correct response category. In such cases two conclusions are possible: (1) the examination item in unacceptable; or (2) the information presented either orally by the professor or through reading assignments defines the terms used in a way that makes one of the response alternatives a correct answer. If the former conclusion is correct there is no value to the test item other than as a negative example. If the latter is correct the item is of no generalizable value since the explanatory material is not identified.

The establishment of quality for each TMP Document requires either a clear conceptual criterion by which to judge the document's quality or empirical evidence regarding its utility. Neither are available. Thus, rather than impose the value base of the TMP staff, a value base that cannot claim either universality of acceptance or consistency, the attempt to attach qualitative statements to each document was dropped.

SUMMARY

Through a series of direct and indirect communications 327 items were collected that relate to the process of training research and/or research related personnel. Seven of those items are related only in the sense that they come from other specialities but might serve as models. The collected items were analyzed in terms of their general characteristics and topical focii. Nearly two-thirds (206) of the collected items were classified as textual materials because they presented content to be mastered. The three next most common general characteristics of the collected documents were learning exercises (79), examinations (42), and bibliographies (24).

The vast majority of the TMP Documents have as their topical focus the research process or its components. Only twenty-one had a clear focus on the training of developers, diffusers, or evaluators. It was recognized that some of the techniques useful in the research process are also helpful in the other three. However, until clarification is achieved between what a researcher has to know, about analysis of variance for example, and what a diffuser needs to know about it, it is difficult to assign such techniques as part of the preparation for the other three roles.

The most frequently identified topical focii were: statistics (in 85 of the 237), measurement (43), the research process in general (39), and research design (37).

Analysis of the collected documents highlights: (1) the semi-developed nature of the majority of them; (2) the dependency of the individual items on either other printed material or on oral presentations by a professor; (3) the lack of conceptual criteria or empirical evidence to judge the quality of the collected items; and (4) their general failure to include a detailing of student entry or terminal behaviors or evaluative data on their worth as instructional materials.

REFERENCES

Krathwohl, D. R., "Current Formal Patterns of Educating Empirically Oriented Researchers and Methodologists." In The Training and Nurture of Educational Researchers. E. G. Guba and S. Elam (Eds.) Bloomington, Indiana: Phi Delta Kappa, 1976.

Roaden, A. L., "An Analysis of Research Training Programs." Appendix G in A Report on Educational Research, Development, and Diffusion Manpower, 1964-74. D. L. Clark and J. E. Hopkins. Cooperative Research Project Number X-022. Bloomington, Indiana: Indiana University, 1969.

CHAPTER IV

THE DEVELOPMENT OF FOUR INSTRUCTIONAL MATERIALS EXEMPLARS

Among the objectives of the Training Materials Project, was the production of a small number of newly developed training materials which could be made available as exemplars. It was recognized at the time the proposal was submitted that individual teachers of the RDD&E processes prepared materials to be used in their instructional efforts. Items developed in these circumstances were suspected to have the following characteristics:

1. The materials were assembled to serve a specific informational need in a specified institutional setting.
2. They were assembled under conditions that mediated against their effectiveness. Included in those conditions were financial and personnel constraints. The financial constraints limit both the raw materials that go into the construction of a set of instructional materials and the time available for conceptualization, construction, and evaluation. The instructional materials about which the proposal writers knew were typically type- or hand-written mimeographed verbal presentations that were put together hastily, used one time, and either discarded or modified for a subsequent use without systematic analysis. The personnel constraints referred to above centered on the lack of preparation possessed by teachers of RDD&E regarding the development and evaluation of instructional materials.

Given these characteristics, it was reasoned that the actual number of semi-developed materials for use in teaching the RDD&E processes would be small and that those that did exist would be of limited value in settings other than the one for which they were developed. That reasoning plus the need for improving the effectiveness of training for these roles led to the short term objective, the production of a limited number of newly developed training materials as exemplars.

The procedures set up for the development of these exemplars included:

1. The selection of ideas or materials for further development based on the following criteria.
   a. The quality of the materials or ideas as determined by the project staff and its consultants.
   b. The potential impact and importance of the materials and ideas as perceived by the project staff and consultants.
   c. The timeliness of the materials and ideas.
   d. The availability of talent to develop the materials and ideas.

2. Potential magnitude or complexity of the idea or material to be developed.

This second point encompasses a financial constraint. The project budget allocated $4,800 for the development of exemplars. Given that level of funding it was necessary to select ideas or materials for further development work that might be accomplished for $1,200 apiece, a level of funding that grossly underestimates the cost of developing instructional materials.

A listing of the training materials items collected during the first seven months of the project plus other ideas or materials learned about by the staff were submitted to the project consultants. From that listing four were selected for further development.

1. A set of overhead transparencies and a coordinated text entitled, "The Evaluation of Educational Programs." to be developed by Sidney C. Eboch and Daniel L. Stufflebeam, Ohio State University.
2. An instructional manual, exemplars, and practice materials for teaching the ecological psychology technique of segmenting the classroom environment to be developed by Paul V. Gump, University of Kansas.
3. An analysis of the process and procedures used in the development of questionnaires in survey research to be developed by Walter Schenkel and Sam Sieber, Columbia University.
4. A set of flow charts and instructional materials for their use in analyzing the methodological adequacy of completed research to be developed by Bruce B. Bartos and William J. Gephart, Phi Delta Kappa.

After the four items were selected the individuals named were contacted and asked to produce detailed product or process specifications. A panel constituted of the project staff, the National Institute for Studies of Educational Change staff, and project consultants on the Indiana University campus reviewed the specification and either approved them for further development or suggested refinements. Following that review the identified individuals assumed the responsibility for developing the prototype instructional materials. Assistance of the project staff was offered to the developers.

THE FOUR EXEMPLARS

The complete set of materials for each of the four exemplars are presented as Appendices B through E of this report. The discussion which follows is a description of those materials with an emphasis on their physical characteristics and their content.

The Evaluation of Educational Programs. Eboch and Stufflebeam developed twenty-two overhead transparencies and a coordinated twenty-two page script which elaborates on the material displayed on the

transparencies. Through the use of fold-out flaps covering parts of some of the transparencies the concepts are developed through a total of 56 different visual displays.

The items presented via the transparencies and elaborated in the text are terms and concepts inherent in the evaluation process. The detailing of these terms and concepts is based on the Context-Inputs-Process-Product Model of Evaluation as presented by Stufflebeam (1968).

A quick review of the content is afforded by the annotation of the twenty-two overhead transparency frames presented below. It should be clear that this listing was developed by project staff rather than Eboch and Stufflebeam. The transparencies themselves are untitled.

Frame 1 - Defines evaluation as the process of providing information for decision-making. Crucial terms are emphasized by use of color. These terms are elaborated in subsequent frames.

Frame 2 - Presents four categories of decisions: Planning, structuring, implementing, and recycling. A fold out then associates these decision categories with two categories of change, neo-mobilistic and homeostatic.

Frame 3 - Focuses first on information and then via a fold-out on the nature of information related to context, inputs, process, and product evaluation. A second fold-out indicates four activities involved in the provision of information. A third fold-out displays two categories of information related to evaluation, contingency and congruency.

Frame 4 - Illustrates the two roles inherent in evaluation and decision-making, the evaluation specialist and the decision maker. It also associates the terms already presented with one of these two roles.

Frame 5 - Displays a sequence from the recognition of a need for a decision through the production of information to the making of the decision. Intermediate steps of criteria and alternatives specification and weighting of alternatives are also shown.

Frame 6 - Returns to the concept of information and indicates the need for focusing with the decision maker to assure that useable information is generated and the need for the evaluation team to collect, organize and report.

Frame 7 - Displays a cycle of information need and provision which through color coding indicates a division of the cycle into the aspects which are the major concern of the evaluation specialist and those of the decision maker.

Frame 8 - Returns to the concept of the decision situation and defines it through the presentation of its seven elements.

Frame 9 - Displays the definition of the decision situation to be sought through interaction of the evaluation specialist and the decision maker.

Frame 10 - Further elaborates on the decision situation. Fold-outs display antecedent, current, and terminal aspects.

Frame 11 - Turns the emphasis of the presentation to the system being evaluated by concentrating attention on the system's boundaries, elements, characteristics of the elements, and models of the system.

Frame 12 - Elaborates graphically on the four points in frame 11 by using fold-outs to cummulatively build their meaning and interrelationships.

Frame 13 - Emphasizes evaluation specifications derived by detailing: the authority and responsibility for the evaluation; resources available; report requirements; and by defining policies, operating guidelines, and constraints.

Frame 14 - Displays graphically a relation between evaluation design and the concepts of authority, resources, and resposibility plus the concepts of policies, guidelines, and constraints. It further illustrates the relationship between evaluation design and report requirements.

Frame 15 - Presents the concept of decision alternatives and their processing in evaluation.

Frame 16 - Through the use of fold-outs this frame graphically elaborates on the points presented in frame 15. The final fold-out displays a decision matrix in which the rows are labeled by alternatives, the columns by criteria, and the cells of the matrix contain information generated in the evaluation process.

Frame 17 - Is the first of four frames dealing with processes involved in generating the information which is the heart of an evaluation. This frame presents seven points related to information collection.

Frame 18 - Concentrates on information organization and related subpoints.

Frame 19 - Through a series of fold-outs presents a sequence of subpoints related to information analysis.

Frame 20 - Details four points to be considered in reporting information. Again fold-outs are used.

Frame 21 - Turns attention to the need for administration of the evaluation process. Fold-outs are used to disclose six subpoints.

Frame 22 - Presents a double matrix which provides a scheme for integrating intentions-achievements and ends-means using the first two as labels for the columns in the matrix and the second two for the rows. The cells shown first call attention to goals, outcomes, design, and procedures. Fold-outs then relate the concepts of context evaluation, input evaluation, process evaluation, and product evaluation.

Operating within the funding allocation Eboch and Stufflebeam were unable to design and conduct a systematic evaluation of the set of materials described above. A member of the project staff used the

text and transparencies with a group of graduate students at Indiana University studying the evaluation process. Objective evaluation was not possible in this instance. However, evaluation reports prepared by this group were cited as exemplary by the professor in charge of the program in which they were working. An additional piece of unobtrusive data on the value of this set of materials exists. Individuals in the group to which the presentation was made have borrowed the transparencies and text on several occasions to either expand their own understanding or to make presentations to others. Discussion with these individuals indicates that the materials developed by Eboch and Stufflebeam assist students in the development of understanding of the terms and concepts basic to the CIPP evaluation model, information that helps them see procedural strategies in evaluation tasks.

Segmenting the Classroom Environment. The work of Barker (1968) has led to a recognition of the need to study behavior and the environment in which that behavior takes place concurrently. As Gump asserts in the preface to the "Manual for Segmenting the Classroom Environment" (Appendix C), "...present research conceptions and methods for investigations of environments are fragmentary and primitive." As a initial step to correct this state Gump developed for this project a set of instructional materials for describing and segmenting the environment in which school learning takes place.

The "Manual for Segmenting the Classroom Environment" contains five sections. Section one presents: a description of the technique of segmenting; definitions of terms required for and used in segmenting; instructions for generating chronicles of classroom activities and milieu; procedures for identification and description of the natural parts of such chronicles, their environmental segments; and suggestions for using sections two through five for learning the technique. Section two is a chronicle of one-quarter of a day in Mrs. Carr's third grade classroom as developed by an observer referred to as Mr. Bond. It starts with a diagram of the room indicating the location of equipment in the room and student desk assignments. That diagram is followed by a brief narrative description of the room and a detailing of the activities, actions, and interactions that took place from 8:45 to 10:29 A.M., April 7, 1965. This chronicle is unsegmented and was selected to represent a segmenting task without too many complications. The manual (Section 1) suggests that the learner use the chronicle in section 2 as a first experience in segmenting. Section 3 of the materials is a chronicle of the same classroom and the same period that has been segmented by a research analyst acquainted with the segmenting process. It is presented to provide the learner with a criterion against which to check his work. Sections 4 and 5 present unsegmented and segmented versions of a full day's chronicle in Mrs. Apple's third grade classroom. Again the segmenting has been done by an experienced research analyst. The full day chronicle is a more complex segmenting task as it presents instances where two and three segments occur simultaneously and others in which segments are contained within other segments.

The materials as provided by Gump are mimeograph reproductions on one-side of 8½ x 11 sheets. Section 1 is 48 pages in length; Section 2, 24 pages; Section 3, 25 pages; Section 4, 142 pages; and Section 5, 144 pages. (Section 1 has been compressed by single spacing in Appendix C.)

No evaluative data is available on the effectiveness of these materials for teaching the segmenting skills. Chronicle development, an activity necessary if the segmenting process is to be applied, is described but no practice in developing a chronicle is presented in these materials. The materials developed do not indicate the prequisite skills and knowledge needed by individuals for optimal use. Study of the materials indicates that an individual wishing to master the skill of segmenting should have knowledge of and experience in teaching. Gump's materials assert that segments have introductory and conclusion components as well as a body. Thus, the segmenting task requires the identification of actions, activities, and materials that are introductory and summary in nature. The individual who does not possess understanding of the teaching process in general and of the teaching process as it relates to the content central to a segment will experience difficulty in segmenting a classroom chronicle.

Questionnaire Design: A Case History Approach. Schenkel and Sieber employed a case history approach to examine the process of questionnaire construction. The instructional materials developed through this effort (See Appendix D) consists of two sections. Section one presents a synopsis of case histories of the development of questionnaires in surveys conducted by staff members of the Bureau of Applied Social Research of Columbia University. Through this synopsis the authors highlight the major components of the process of questionnaire construction. Included are: the general nature of survey methodology; the centrality of a problem and/or hypothesis statements in structuring a questionnaire; and turning points in questionnaire construction.

The turning points section discusses types of changes made in questionnaires by investigators. Changes in format disucssion highlights: changes in relative position of specific questions; open-end vs. pre-coded questions; using synonyms to avoid repetitiousness; and changes in the length of the questionnaire. A second type of turning point recognized, is categorized as changes in content of the questionnaire. Schenkel and Sieber recognize that such changes are made to focus the questionnaire either more closely on the researcher's concepts or varialbes or on the respondents frame of reference. Examples are presented to make the point. A third type of turning point in the life of a questionnaire is labeled by the authors as the elimination of affect-laden terms.

After analyzing the turning points the materials turn to sources of change in the development of questionnaires. Two major source categories are discussed complete with examples. Those categories are: changes based on results of pretests; and other sources such as updated information, sheer rumination, and expert advice.

The second part of the Schenkel-Sieber materials is a case study of the development of a questionnaire used in the study of the organizational basis of educational research (Sieber, 1966). After presenting a brief discussion of the nature of the project in which the questionnaire was used, the authors describe its development through discussion of the major changes made in six drafts of the instrument. Along with the citation of changes, material is presented which discusses the reasoning behind each change, the individuals involved, and their role in effecting specific changes.

The materials developed by Schenkel and Sieber are mimeo-graphed pages, 8½ x 11, printed on one side and stapled. In their original form they covered 52 pages. An abundance of examples are presented throughout, some of which involve educational topics and familar jargon. The materials do not present or suggest structured experiences to be engaged in by individuals to master the questionnaire construction process nor are they accompanied by an identification of prerequisite or terminal behaviors relevant to them. And, as was the case with the two sets of materials already described, no evaluative data is presented to base qualitative statements about these materials for teaching specific skills.

Profiling Instructional Package. Gephart and Bartos have developed a set of flow charts to guide the process of evaluating the methodological adequacy of completed research. The evaluation culminates in the creation of a five item profile of the study analyzed. The items involved are: the logical structure inherent in the study; the sample-to-population-of-interest representativeness; the degree of control exerted over the experiences or treatment studied; the quality of the measurement procedures employed; and the appropriateness of the analytic procedures used to interpret the generated data. The "Profiling Instructional Package" contains both the set of flow charts and instruction for their use.

The instructional material is textual and can be subdivided by describing its two major purposes: (1) to guide or instruct individuals in the use of the five flow charts and the profiling sheet; and (2) to explain the concepts necessary to engage in profiling so that begining masters students in education may effectively use the flow charts. The textual material is presented in two formats to assist the individual in the discrimination between directions for working through a flow chart and general expository material. The flow chart directions are printed in Universal Type and are indented. The general expository material in Press Roman Type and full measure.

Further study help is generated by the use of capitals on words or terms which have a specific meaning in relation to profiling. The first time such a term is presented it is printed in capitals. The reader is told in the introduction that he should expect very shortly after a capitalized term to encounter its definiton and that further use of that term in these materials will use that definition.

The flow charts are presented at the end of the materials on fold-out sheets. As material is presented in the text that is relevant to a flow chart, the reader is asked to fold out the relevant page. In this manner the flow chart is visible as the several pages of relevant text are read.

The charts themselves follow symbol conventions established for flow charting. Rectangles are used to display an activity to be done by the profiler (e.g., read, list, compare, identify, etc.). Rhombic shapes display decisions to be made among several alternatives. Circles at the points of these shapes state the alternatives and connect to a next activity if that alternative is chosen. A four sided figure with a curved base is used to signify documentation. Upon reaching one of these shapes a proflier has identified a quality description of the research project being evaluated, a quality description that can be checked on the profiling sheet. Two other symbols, ex[illegible], a five-sided figure to indicate an off-page connector and an oblong to indicate a terminal point.

The "Profiling Instructional Package" was written for an audience unsophisticated regarding the process of research, the begining masters student in education. The authors of the materials tried out sections of the materials on individuals in that population and on college seniors. In each such try out the individual was asked to underline the points in the text that were not clear and to note in the margin the nature of his confusion. Based upon these reactions the materials were rewritten and packaged. The textual material was printed on both sides of a 5½ x 8½ format and required thirty-eight pages. The "Profiling Instructional Package" also contains nine fold-out sheets having the following content:

1. "Facets of the Research Process." (Page 39) A display of the five facets of the research process - logic; data quality facets of representativeness, treatment, and measurement; and data analysis - and the structuring of these facets into a research profile grid.
2. "The Data Quality Cube." (Page 40) A display of the three data quality facets as if they were orthogonal. An underlying scale for each of these facets is also presented. This data quality cube is an adaptation of a presentation (Gephart, 1969; and Gephart and Ingle, 1969) in which it was used to categorize research methods.
3. "Research Profiling Flow Chart: Logic." (Page 41) A decisional flow chart for describing the nature of the logical structure inherent in a specific research report. By doing the activities listed and making the specified decisions, a discrimination is made which labels an article as either a research report or a non-research artilce. Research reports are further subdivided into answers of empirical questions or tests of hypotheses. The latter category - applicable to historical, descriptive and other methodologies as well as to experiments - is further subdivided into three categories based upon the inherent strength of the logic form in the study (Polya, 1954; and Raths, 1969).

4. "Research Profiling Flow Chart: Data Quality--Representativeness." (Page 42) A continuation of the research report analysis procedures which focuses on the degree to which a sample (or samples) in a specific study is representative of the population of interest in that study. An ordinal scale of representativeness quality is presented which includes: R_1 = an unidentified group was studied; R_2 = volunteers were used; R_3 = purposive sampling from a specified population was used; R_4 = random selection from a specified population was used; and R_5 = the entire population was studied. Following the directions in the flow chart elements leads to the determination of the appropriate term in the Research Profile for a specific study.
5. "Research Profiling Flow Chart: Data Quality-Treatment." (Page 43) A continuation of the research report analysis procedures which focuses on the degree of control over the treatment or experiences of the subjects in a specific study. Again, an ordinal scale is presented which has the following points T_1 = something undefined happened to the units studied; T_2 = the main features of the treatment are known; T_3 = no theory stated but the treatment described in detail; T_4 = theory stated but mediating variables not controlled; T_5 = theory stated and mediating variables controlled; T_6 = theory stated, mediating variables and variables extraneous to the theory were controlled. The activities and decisions presented in the elements of this flow chart lead to the selection of one of these six which is descriptive of the report being analyzed.
6. "Research Profiling Flow Chart: Data Quality-Measurement." (Page 44) The analysis procedures and decisions stated in this flow chart guide the research evaluator to the selection of a qualitative statement descriptive of each measuring procedure used in a research effort. The points on this scale are: M_1 = information available that the instrument is invalid for this use; M_2 = project developed instrument with low validity (V), reliability (R), or objectivity (O), or other instrument with no information about validity or data source; M_3 = commercially produced or other-prject-developed instrument with low VRO for this application; M_4 = project developed or other-project-developed instrument with moderate VRO for this application; M_5 = instrument which was project developed or other-project developed with high VRO or commercially developed with moderate VRO for this application; M_6 = commercially developed instrument with high VRO for this application.
7. "Research Profiling Flow Chart: Analysis." (Page 45) The procedures and decisions in this flow chart, when followed in relation to each statistical analysis of data in a research report, guide the individual to three categories: (1) M = missing analysis elements; (2) I = inappropriately analyzed; and (3) A = appropriately analyzed. Three grids are utilized in reaching one of the descriptors. The first two are on the same page as the flow chart and deal with descriptive and associational analyses.

8. "Chart C." (Page 46) This is the third chart referred to above. It is an adaptation of the Tatsuoka-Tiedeman (1963) work.
9. "Research Profile Sheet." (Page 47) This sheet presents an example of a page to be used in profiling completed research. It calls for listing of the report title, author, and source, and presents a profile and an explanatory statement for each of the possible categories on the profile matrix.

The "Profiling Instructional Packet" is the subject of a doctoral dissertation being conducted by Bartos at Indiana University. At this writing the data from that effort are not available. When completed this dissertation will present information on the interrater reliability of 200 users of the Profiling Flow Charts. Of these 180 are beginning graduate students and twenty are faculty members. The students were subdivided into groups which used and which did not use the thirty-eight pages of text in the materials. Thus, a systematic assessment of the effectiveness of the "Profiling Instructional Packet" is in process as is an assessment of student to student, student to faculty and faculty to faculty interrater reliability. Unobtrusive data regarding the quality of these materials is available. All of the faculty members involved in this study reacted positively to the materials as they completed their part in the study. Further, several of these individuals have used the materials with their own student groups in subsequent sessions.

SUMMARY

The project identified four sets of individuals with ideas for or semi-developed instructional materials. Through modest financial assistance these individuals developed (1) a coordinated set of transparencies and text on the concepts and activities in evaluation; (2) a manual and practice materials on identifying and describing segments of the school day; (3) a description of the elements in questionnaire construction and an illustratory case history; and (4) a set of flow charts and instructional materials for their use in assessing the methodological adequacy of completed research efforts.

Due to financial constraints empirical evidence on which to judge the quality of these materials was not produced. One set has been made the subject of a systematic study in a doctoral dissertation to be reported subsequently. Unobtrusive data on the quality of two of the sets of materials lends support to a conclusion that they are effective in assisting individual learners in the understanding of the content on which they focus. Obviously such data are not conclusive. Those data could be used, however, as the basis for a tentative conclusion that commissioned instructional materials development efforts focused on specific skills, knowledge, and/or attitudes should be undertaken and should be funded at a level that enables both the commitment of time to development and the empirical assessment of the effectiveness of the developed materials.

The four sets of materials are being packaged for distribution via the Phi Delta Kappa Research Service Center as a part of that Center's Occasional Paper Series. Through this packaging the four sets of materials will be available to individuals interested in teaching or learning about their contents at a cost which covers materials and handling.

REFERENCES

Barker, R. G., Ecological Psychology. Stanford California: Stanford University Press, 1968.

Gephart, W. J., "The Eight General Research Methodologies: A Facet Analysis of the Research Process." Occasional Paper #6. Bloomington, Ind.: Phi Delta Kappa Research Service Center

Gephart, W. J. & Ingle, R. B., Educational Research: Selected Readings Columbus, Ohio: Charles E. Merrill Publishing Co., 1969.

Polya, G., Patterns of Plausible Inference Mathematics and Plausible Reasoning. Volume II. Princeton, N. J.: Princeton University Press, 1954.

Raths, J. D., "Plausible Logic in Educational Research" in Educational Research: Selected Readings. W. J. Gephart & R. B. Ingle (Eds.). Columbus, Ohio: Charles E. Merrill Publishing Company, 1969.

Sieber, S. D. (With the Collaboration of Paul F. Lazarsfeld), The Organization of Educational Research. New York: Bureau of Applied Social Research, Columbia University, 1966.

CHAPTER V

TOWARD A PROGRAM OF RESEARCH AND DEVELOPMENT ON RESEARCH TRAINING

A number of negatively critical assertions have been made related to the quality and impact of educational research, assertions which by logical extrapolation lead to the conclusion that research training in this country is ineffective and inefficient. It is asserted that the methodological quality of completed research in education is poor in comparison to other fields; that the problems attacked via educational research are trivial and inconsequential; that the completed efforts when considered together contribute to little understanding of the state of the art; and, few if any educators modify their behavior after having read a research report. These assertions have been made with sufficient frequency and by sufficiently prestigious individuals that they are accepted as fact without empirical documentation.

Several recent developments suggest that this unverified "fact," i.e., that educational research is of sufficiently poor quality as to have little impact, must be questioned. Among those developments are: (1) recognition on the part of scholars of the change process (Rogers, 1962; Beal, Rogers and Bohlen, 1957; Miles, 1967; & Carlson, 1965) and the utilization of scientific knowledge (Havelock, 1969) that education's time lag between the scientific discovery and widespread utilization of that knowledge does not differ significantly from other fields; (2) growing understanding of diversity in empirical methodology between the conclusion- and decision-oriented categories of inquiry (Cronbach and Suppes, 1969); (3) recognition of fundamental differences between research and development in terms of function and method (Nadler, 1967); and (4) recognition that the attainment of complex goals requires careful planning and coordination of numerous individual research efforts (Carrese & Baker, 1967; Platt, 1969). Taken together these points provide a logical description and explanation of the status of educational research; one that is far more appealing than the undocumented, subjectively developed assertions that educational research is bad.

It is recognized that the logic referred to in the concluding sentence in the previous paragraph contains a gross subjective element. That is precisely the point, precisely the problem that is central to the major focus of this chapter, a proposal of a research and development effort on educational research. The basic contextual data has not been confirmed empirically! As a result two camps exist. On one side are those whose sensors tell them that what is done as educational research is bad. On the other are individuals who see and feel the contrary. Neither group has engaged in the empirical inquiry necessary to substantiate or refute their views and, as a result, neither group is effective in convincing the other.

Parenthetically, the condition asserted above is an interesting anomaly. It assumes that the proponents of the use of empirical methods in educational decision making, the educational researchers, fail to use empiricism in connection with their own work. Legitimate questions have been raised about the quality of educational research. How many solid empirical studies of the quality of completed research are available? Legitimate questions have been raised about the quailty and effectiveness of research training. How many solid empirical studies have been done on the skills needed to engage in research? How many empirical studies have focused on the procedures for teaching those skills? How many empirical studies have focused on the skills, knowledge, and attitudes brought to research training by the students? The overwhelming fact is that researchers, and more precisely those of us who teach about the research process, do not practice what we preach!

The discussion which follows has three components. First, an attempt will be made to detail the four developments referred to above and their synthesis into the logic that argues for a systematic and continuing R&D effort in research training. That will be followed with a brief description of a procedure for planning that effort. The final component discusses an array of elements that might be included in an overall R&D effort.

DEVELOPMENTS RELATED TO THE NATURE OF RESEARCH AND RESEARCH TRAINING

Students of the process of change have structured an interesting chronology. It starts with the recognition that there is a time lag between scientific discovery and widespread implementation. Next comes documentation as to the magnitude of that time lag. Mort (1964) substantiated that it was 50 years in education. The work of Miles (1967) and Carlson (1965) indicates that the time lag has been reduced considerably in recent decades. Next the chronology takes on a difference focus. Is the time lag in education different from other fields? Rogers (1962) indicates that it is not. One further step in the chronology is apparent. That step takes the form of a study of relationship. How is the process of change in education like or different from that process in other fields? The work of Beal, Rogers and Bohlen (1967), Clark and Guba (1966), Havelock (1969) and Jung (1969) is illustrative in that they present descriptions of the process and enable comparison. Taken together the works referred to above lead to the conclusions that a time lag exists, that it has been reduced in recent years, and that it is not basicallly different from what is known about other fields.

Growing understanding of the nature and contribution of empirical inquiry is the second development that contributes to questioning the assertion that educational research is bad. Cronbach and Suppes (1969)

present a discussion of categories of empirical inquiry labeled conclusion-oriented and decision-oriented which is central to this point. They state that:

> In a decision-oriented study the investigator is asked to provide information wanted by a decision-maker: a school administrator a governmental policy maker, the manager of a project to develop a new biology textbook, or the like. (p. 20)

That:

> The conclusion-oriented study is not planned with an eye to a definite and useful result. The main benefit is in the unforseen ideas it adds to society's intellectual capital. (p. 23)

And they sharpen the distinction with the statement that:

> Conclusion-oriented research is intended to have a general significance, whereas decision-oriented research is designed for its relevance to a particular institution at a particular time. (p. 25)

In order to produce information which has general significance, that is, to produce generalized truths, laws and principles, the conclusion-oriented inquiry must hold constant or control factors or variables which are situationally determined. The conclusion-oriented researcher finds himself in the position of the physicist who states, "X will cause Y if temperature and pressure are held constant." or "A will go to B, friction not withstanding." Through controls on such variables generalizable truths are uncovered.

In a practical situation though, temperature and pressure are not held constant and friction cannot be ignored. Thus, the engineer cannot operate solely on the basis of the generalizable truths. Rather, as he designs an item to be used he has to take these situational variables into account. The same point applies to educational research and practice. Research that is designed to produce generalized conclusions about education which are applicable across time and space does not take into account important practical variables. To apply the information generated through conclusion-oriented inquiry to the septic conditions of a particular time and place is inappropriate. The practicing educator cannot ignore the variables which define the space within which he works.

The model for "good" research in education is and has been the scientific experiment, a model which has proven effective in other fields for creating generalizable truths. Although the need for decision-oriented empirical techniques and methodology has existed for some time, it has only been in the past two decades that educators have concentrated on their development. Unobtrusive evidence in support of this observation

can be seen in the relative space devoted to examples of studies, discussions of methodology, and training for the two categories of inquiry in the aforementioned report edited by Cronbach and Suppes. Not only is more space taken up for discussion of conclusion-oriented inquiry, the tone of the statements is distinctly different. In discussing training for conclusion-oriented inquiry the authors are explicit, positive and assertive. Their discussion of training for decision-oriented inquiry is tentative and vague:

> Today, those responsible for decision-oriented research are often trained as measurement specialists or as specialists in survey research. The training programs have been essentially the same for applied work and conclusion-oriented inquiry. This is very likely not the final solution. (p. 219)

If training for two things is different obviously the two things are different. And if, as Cronbach and Suppes indicate, we have been training (albeit poorly) for roles as conclusion-oriented but not decision-oriented investigators, then we cannot expect the research that has been completed to have a direct impact irrespective of its methodological characteristics.

The third development that leads to a questioning of the unverified "fact," educational research is bad, comes in part from studies of the process of change and in part from the field of engineering. From the former an awareness is generated to the several functions in a system for creating and applying knowledge to educational practice. Included here are the functions of:

(1) research, which converts unknowns into generalizable knowns in society's intellectual capital;
(2) development, which creates workable products and systems using information and material objects that are known to exists;
(3) diffusion, which effects the exchange of information from the practical application setting to the development and research settings and vice versa; and,
(4) evalution, which provides information which weights alternatives in a specific decision setting.

The research Nadler (1967) refers to in the field of engineering on design (development) methodology provides the latter. He cites empirical efforts which suggests "...a design approach that is different than the research approach." (p. B-647) and which "...shows that this design approach has produced better results for design projects than the conventional approach based on the research methodology." (p. B-648)

Given these points, it is clear that the failure of previously completed research efforts to effectively modify educational practice is not a failure of the research but rather a failure of a system in

which research is but a subsystem. That larger system has as its mission the enabling of educational institutions to effectively meet some of the needs of society. As time passes society's needs change. If educational institutions are to serve their function they must change also.

There are several types of knowledge that are needed if educational institution change is to be efficient and effective. Those types of knowledge parallel the four functions listed above. Educators need to know the broad generalizable truths that provide the basis for effective learning. They also need information on specific workable educational programs, practices and products. Without the development, diffusion, evaluation, and practice or operation functions the system is incomplete. The relative value or accomplishment of complete and incomplete systems has been well documented. Man's first steps on the moon can be attributed to a complete system. General principles were created through research. Working prototypes were created through engineering (development). Information was conveyed from one set of workers to another: from researcher to researcher; from developer to researcher; from developer to operator; from evaluator to developer; etc. If the engineers had not worked out the operational specifications necessary and created a working product the physicists knowledge of action and reaction would not have moved man off the surface of the earth let alone taking him to the moon and back.

The education system for generating and converting knowledge into educational practice is incomplete. Researchers exist and so do practitioners. The development, diffusion and evaluation functions do not in any meaningful way. It can be asserted that educational products have been developed in the past. That this is true is not argued here. It is asserted, however, that the products available have not been developed systematically. Professor X writes a book that company A markets. That is not the systematic development of working solutions to educational problems. Too often Professor X is not in contact with operational personnel in schools and thus does not know the problems for which solutions are needed let alone the development of procedures appropriate in a specific setting. It is also true that efforts called evaluations have been undertaken in the past. Their ineffectiveness can be explained by the fact that most of them have been conducted by people trained to design and conduct conclusion-oriented investigations. Cronbach and Suppes (1969) recognize that we do not know yet how to educate the decision-oriented investigator. The same points can be made about the dissemination function. Education has had publications, has held conferences, and has had salesmen. But these have not filled the diffusion function. Any communication via them has been unidirectional, from the researcher to the practitioner. Thus, the problems of the educational practitioner have gone unattended by the researcher and the information and goods passed through the dissemination vehicles has been rejected by the practitioner.

The system has been incomplete. The field has developed two of five necessary functions: research and practice. It now acts as if the failure of the system is the fault of one of those exist functions. No one would fault his automobile for its failure to transport him across a deep river where no bridge exists. Likewise educational research ought not to be faulted for its failure to directly modify educational practice. Rather significant efforts ought to be expended to building the necessary bridges.

Before leaving this third development, the increased knowledge of the system necessary for educational change, one point should be recognized. The assertions that the development, diffusion, and evaluation functions are missing must be tempered. In the past five years the establishment of research and development centers, regional laboratories, the evaluation components of federal projects, and the ERIC system have provided initial steps in creating vehicles for serving the missing functions. These efforts are imporatant not only for what they have accomplished but also for the assistance they provide as we struggle to understand the complex of structures necessary for efficient educational change.

The fourth development referred to above focuses on the development of knowledge regarding the planning and management of goal oriented efforts of massive size and complexity. Inputs characterizing this development are made by Carrese (with Baker, 1967) and Platt (1969). Platt's effort examines the problems confronting mankind and ranks them based on the number of individuals affected. The problems he identifies are of enormous complexity, complexity which might lead to despair that anything can be accomplished. In an effort to suggest that solutions are possible he lists several examples in which extremely complex problems have been attacked successfully (e.g., the Manhattan project, the Polaris missile system, space efforts, etc.). He indicates that each of these successful cases involved the development of a targeted effort involving large numbers of individual projects planned and coordinated in a way that facilitated progress toward the goal. Carrese and Baker present a detailed description of a procedure called the Convergence Technique for planning and management of heretofore diverse research and development work in the field of bio-medical research. Private correspondence with scientific directors in programs in the cancer research unit of the National Institutes of Health in which the Convergence Technique is being used has produced very positive evaluations of its potential. The utility of the Convergence Technique in the planning of a complex educational research and development effort was the focus of a project conducted by one of the co-directors of this Training Materials Project (Gephart, 1970). That effort produced a plan for research and development focused on a goal in the area of reading. Initial reactions to the plan, the Targeted Research and Development Program on Reading, have been generally positive. Reactions to the utility of the Convergence Technique by those individuals who participated in this educational application are also positive. They agree with the bio-medical researchers

that the Convergence Technique seems to be an effective tool in the planning of an integrated attack on a complex goal.

The improvement of education so that society's needs are met is obviously a complex goal. The sheer magnitude of the persons, number of properties, and processes involved creates complexity. When the variability of society's needs and goals (both in terms of a given point in time and as they change over time) is considered the complexity of a goal of systematically improving education's ability to meet society's goals becomes so complex that it boggles the mind. If as Flatt has said, the achievement of complex goals requires comprehensive, coordinated, and integrated programatic efforts, efforts that have been missing in the general scheme of educational research to date, the assertion that completed individual research efforts are of poor quality must be questioned.

In summary then, the four developing lines of investigation provide us with: increased understanding of the process of change both as it occurs in education and how that compares with other fields; increased understanding of the differential contributions of conclusion- and decision-oriented investigations and the need for increased attention to the latter; clearer understanding of the additional components of a system which along with research contribute to affecting educational change; and, examples of procedures for structuring programs to achieve complex goals. Given these four developments and their contributions to knowledge about the generation and conversion of knowledge to educational practice, it is clear that improvment of education is not a simple process of conducting research and implementing the conclusions of that research in practice. If it is a more complex process and if some of the elements of that process are only now beginning to appear as components of a system (e.g.: development, diffusion and evaluation roles and personnel; creation of decision-oriented inquiry techniques), then it does not follow that current inadequacies in the system lead to the conclusion that existing research is bad.

At the risk of being redundant and pedantic the citation of the four developments above and their synthesis to a conclusion about the state of the art is recognized as a non-empirical activity. It is no more empirical than the syntheses that lead to the contrary conclusion, that educational research is poorly conceived, ineptly carried out, and ineffective when complete. The fact that arguments on both sides are lacking in empirical documentation provides the strongest case for an extensive, systematic, and continuing study of the nature of research and research related processes and of the educational programs which equip people to effectively participate in those processes.

A PROPOSAL FOR THE PLANNING OF A PROGRAMATIC R&D EFFORT ON THE PROCESSES AND ROLES IN A SYSTEM FOR THE GENERATION AND CONVERSION OF KNOWLEDGE TO EDUCATIONAL PRACTICE (GCKEP)

Several attempts have been made to write this section of this report, each of which resulted in two products, frustration and scrap paper. In each of these attempts an effort was made to lay out: (1) the nature of the goal toward which such a program should focus; (2) the objectives that must be accomplished if that goal were to be achieved; (3) the projects, both research and development, that would have to be done to achieve those objectives; and (4) the sequence in which those projects should be undertaken. The impossibility of that undertaking has at least two aspects. First, it is an attempt to order a complex process. No single individual nor group of individuals has to date been able to set down its component elements in a single comprehensive logical plan. Second, it is a complex task because the programatic effort to be developed rests upon two complex entities, the education system and society's needs. As the scrap paper has mounted two points have become clear. A programatic effort is needed if a Generation and Conversion of Knowledge to Educational Practice (GCKEP) System is to be created. Platt's analyses, Carrese's work in the bio-medical field, the application of the Convergence Technique to reading, and cursory analyses of our successes in changing education to meet society's needs support that point. Secondly, it is presumptuous to expect that such a program plan can be generated by one individual or by an individual augmented by well pedigreed consultants who are widely scattered geographically and who can devote only brief and frequently interrupted periods to concentrating on the overall program. Such a statement in no way demeans the individuals involved in this current effort. Rather the task is too large to be dealt with that way.

The realization of these two points is mentally freeing if the design of a programatic effort is needed and if it cannot be done by an individual, the question of an alternative approach becomes paramount. Platt (1969) suggests the general structure of such an alternative. Complex comprehensive programs have been planned by small groups of highly competent individuals who physically and mentally join forces for the period of time that it takes to detail the program plan AND the managerial necessities for its implementation. Carrese and Baker (1967) explicate the details of that type of effort called the Convergence Technique, from their experiences in the National Cancer Institute. Gephart (1970) describes minor modifications necessary and some of the subtleties of the Convergence Technique applied to programatic planning in education. Given these analyses, it is strongly recommended that the U. S. Office of Education fund a Convergence Technique planning project for the purpose of designing a program plan for the development of an efficient system for the generation and conversion of knowledge to educational practice. It is further recommended that that project include funding for the critical analysis of the program plan in terms of comprehensiveness and logic by a sample of reviewers not involved directly in the generation of the plan. Such a review sample should include specialists in empirical inquiry both inside and outside the field of education. It is further recommended that the funded planning project contain a time period designated for the modification of the program plan on the basis of the systematic critiques.

As information supportive to the above recommendations, the remainder of this chapter will address two topics, a brief description of the Convergence Technique and some elements that might become part of a CCKEP System program plan.

THE CONVERGENCE TECHNIQUE

As indicated earlier, the Convergence Technique is a procedure for the planning and management of complex research and development programs that have explicit goals. It is a systems theory derivative that has the following elements.

(1) A planning session which initially delineates:

   (a) The goal to be achieved by the program
   (b) The subobjectives necessary for the achievement of that goal
   (c) The sequence in which those subobjectives logically move to the goal
   (d) The research needed to achieve each subobjective
   (e) The criteria which must be met in order to conclude that each subobjective has been achieved

(2) A diagram, called a Convergence Chart, which displays the five elements listed above

(3) The use of the Convergence Chart in program management for decisions on:

   (a) Specific research projects to be undertaken
   (b) Movement to the next phase

(4) Updating and possible revision of the Convergence Chart on the basis of information generated as the research program progresses

The recommendations presented above concentrate on the first two of these elements, the Planning Session and the generation of the Convergence Chart.

The Convergence Technique is a systems approach derivative developed by Carrese for the express purpose of planning and managing complex research programs. Carrese came to this procedure after trying to apply critical path methods such as Program Evaluation and Review Technique (PERT) to research management. Two assumptions mediate against the utility of PERT and similar approaches when applied to research programing. First, critical path methodologies assume that all the events necessary to achieve a goal can be identified in advance. Second,

all events can be accomplished if a large enough magnitude of effort is exerted. Neither assumption holds when the program being planned contains unknowns. In such a case all the necessary events cannot be predicted in advance for some of them may not be deduced from what is now know. And, even those that can be deduced may be contrary to what is fact. Fallacy or error in deduction is recognized in science. If we deduce that an event can and will take place when in reality a contrary event occurs, no amount of effort will produce the predicted event.

Given failures in research program planning with critical path methodologies, Carrese turned to the method of the scientist for guidance. In his preception the scientist structures a replication of nature, and takes and analyzes measurements of that replication. Carrese reasoned that the same approach was necessary in programatic research efforts. This proposes that a goal must be stated and that the logic of attaining that goal (the replication of nature) must be specified. Such work progresses by: stating the goal; determining the subobjectives that must be accomplished to achieve that goal; sequencing those subobjectives into as sound a replication of nature as possible with the given state of knowledge; the specification of criteria for determining the achievement of each subobjective; and finally the detailing of the research and/or development work needed to satisfy these criteria and meet each of the subobjectives.

At the outset of such a research program the number of research activities and subobjectives are large. As the work progresses, the number of unknowns should be reduced. Concomitant with this reduction, the number of alternative pathways to the goal should reduce allowing for a covergence of resources and effort on that which remains to be accomplished.

To establish a program plan (Carrese calls it a Convergence Chart) a small interdisciplinary planning team is assembled. Carrese recommends one representative of the funding agency through which the program will be implemented, a systems analyst with experience in the use of the Convergence Technique, a specialist on the problem central to the goal, and a generalist in the field in which the problem resides (with competence in the research methodology of that field). This basic team can be augmented by representatives of the disciplines which make major contributions to understanding of the phenomena central to the goal.

It is recommended that the planning team be kept to as small a number as possible to reduce communication problems and to provide an opportunity for all relevant points to be carefully analyzed and either included in the program plan, excluded, or included after modification. The planning sessions are scheduled on a full time basis for four to eight weeks. During that time this planning team should be assisted in obtaining relevant information through the availability of project assistants and consultants.

The Convergence Technique recognizes that this planning team, because of its size, may not have all the available or correct information that exists related to the problem. To compensate for this the technique calls for broad solicitation of critiques of the program plan before it is implemented. Experience with the technique in National Cancer Institute programs indicates that scientists with divergent backgrounds seldom ask for major revisions in a program plan. Rather, they typically see a specific study or two as making contributions in slightly different ways than shown in the program plan. Such an observation would seem to attest to the soundness of the underlying principle in Convergence Charting, the attempt to structure the program plan in a way that replicates the overall phenomenon on which the programatic effort is focused.

Given a completed planning session and critiques of the generated program plan, a funding agency has a guide for funding which states:

1. Specific subobjectives to be achieved and a logical sequence for their attack.

2. Stated criteria for each subobjective on which to base the decision to accept that subobjective as accomplished and move to the next one in the program plan.

3. Specific projects or activities that need to be funded to achieve each subobjective.

The funding agency proceeds by contracting for the activities specified as first in the program plan. Contractors must understand that, in undertaking a project in such a programatic effort, they have two sets of criteria to impose on their work, the accepted criteria of scientific excellence which govern all research, and program relevance criteria. Their work must produce information which shows the degree to which stated criteria for that phase of the program are met.

As the first projects are completed, management aspects of the Convergence Technique come to the forefront. Program management personnel, along with advisors, need to examine the project results against the relevant subobjective criteria. If these criteria are satisfied, the next set of activities are contracted for and the program progresses. If they are not satisfied, two questions need to be explored. Does the newly generated information question the criteria and the logic of the program plan? Or does the newly generated information (including both the results and the methodology of the completed study) indicate that some additional work is necessary to meet the stated criteria and achieve the objective? Answering these questions may require the use of a panel of consultants and might lead to the assembly of another planning team.

This process of funding studies, checking their results against specified criteria, and either moving to a next stage, additional work in the current stage or replanning, is iterated until the program goal is accomplished.

POSSIBLE ELEMENTS OF A GCKEP SYSTEM PROGRAM PLAN

The goal of such a planning effort is the first and singularly most important element of the program plan. The presentation thus far assumes that either such a system does not exist or that, if it exists, it is not serving its function efficiently. The latter is more likely the case. Bits and pieces, subsystems if you will, can be identified. And obviously educational practice has met some of society's needs. If this reasoning is correct, the program goal is not one of the creation of a wholely new system. But rather, it involves: (1) the identification of the system's existing elements, missing elements, existing elements which are inefficient, and incompatabilities between the system and its environment; and (2) creation of elements and/or their modification to enable education's satisfactory service of society's goals.

It is recognized that "the satisfiaction of society's goals" is at this point an abstraction that must be objectified. Without this objectification two difficulties would plague the over all effort. First, the programatic effort is without a target if the goal is abstract. Second, without objectification of the goal it is impossible to tell whether or not it has been accomplished. These points are not submitted with the intention that everything must be held in abeyance until valid and reliable quantification of education's service of society's goals is accomplished. Rather, they are presented as an argument in support of the inclusion in the program plan of a series of projects through which objective specification is possible. These studies would include a variety of research thrusts such as:

(1) What are society's needs at present and in the forseeable future?
(2) Which of these needs is formal education expected to meet?
(3) What are indicators of the meeting of those needs?
(4) Given the change of society over time, what is the rate of need satisfication desired and that society is will to pay for?
(5) How can these indicators (and rate) be measured?

Some of these efforts would involve descriptive research, other policy research, and still others methodology studies.

The second element of a program plan according to Carrese is the logic of the system on which the programatic effort focuses. Conversations with Carrese have lead to the belief that his phrase "logic of the system" refers to the structure of the phenomenon being investigated. Work during the reading application of the Convergence Technique indicates that two logics must be considered and that the planning team needs to have a clear distinction between them. The first logic is the structure of the phenomenon ON which the programatic effort focuses. The other logic is the structure or structures which must be worked THROUGH to accomplish the goal. This is a fine distinction but one which leads to greater clarity of thought and planning.

A suggested set of components of the program focus logic for the proposed planning effort have been presented in the description of the Generation and Conversion of Knowledge to Educational Practice System (Chapter 2) and will not be repeated here. Two subdivisions of the goal accomplishment logic can also be suggested. The first is the set of activities with a long-range focus. The second is the set which focuses on immediate program improvement. This division is based on the assumption that the solution of the overall program, the accomplishment of the major goal, is a combination of the better use of existing knowledge AND the generation and incorporation of additional knowledge. If knowledge exists that is not adequately being used, one subdivision of the solution logic is the systematic modification of current subsystems using that knowledge. On the other hand if some knowledge is missing, the solution logic cannot rest solely on the systematic modification of current subsystems. In this latter case model and theory development activities seem to be required.

The systematic modification of current subsystems involves an approach suggested by Schutz (1967) and elaborated on in the reading Convergence Technique (Gephart, 1970). Schutz suggests that the training of researchers be undertaken in a program that is a self-correcting mechanism. The ingredients of such an approach are:

(1) The specification of objectives to be accomplished.
(2) The monitoring of the processes of achieving those objectives.
(3) The monitoring of variables in the environment that effect the achievement of those objectives.
(4) The systematic measurement of outcomes.
(5) The determination of discrepancies between objectives and outcomes.
(6) The association of those discrepancies to data generated in the monitoring (items 2 & 3).
(7) The modification of the system based upon these data.
(8) Recycling until discrepancies between objectives and outcomes are eliminated.

Shutz asserts that programs operated in this manner reduce the defensiveness of their operators and thus are more easily modified. Such an approach might be quite effective applied to educational programs for training the personnel needed in the GCKEP System. The work initiated by the Research Training Branch of OE toward the development of model training programs (1970) could easily take on this structural format.

The ingredients of the long-range subdivision are far more speculative. Three general categories seem logical. Those categories (shown in Figure 1) are: (1) studies which will delineate the nature of the research and research related processes, the settings in which they are appropriate, and the skills and knowledge needed for engaging in those processes; (2) studies which will comprehensively describe the existing and needed capability for training the personnel to engage in those

processes; and (3) studies of the manpower needs for the various roles in the GCKEP System. Completed studies can be found which serve as illustrative examples of work in these categories. Shannon (1954) some years ago attempted to empirically classify different types of research designs. Although not empirical studies, Stanley and Campbell (1963), Gephart (1969), and Runkel and McGrath (1969) have analyzed and categorized research methods. Empirical studies using the models set in these logical analyses should be undertaken to up date the type of contribution made by Shannon. Still other studies are needed though to clearly detail the nature of the research process and its components. The work of Popham (1968) and that of the Conversion to Practice Research Group (Nadler, 1967) illustrate projects aimed at determining the nature of the development process. Havelock's (1969) work identifies numerous studies helpful in describing the diffusion process. And, work underway at Ohio State University (Merriman, 1969; Owens 1968; and Stufflebeam, 1968) provides examples related to evaluation. As in the case of research additional studies are needed; studies which are designed cooperatively and conducted in a manner which facilitates merger of conclusions. Examples of studies which have looked, or are looking at the skills and knowledge needed in these roles can also be found. Included here are Nadler's case studies of successful developers, Shalock's (1970) work, and the contributions of the AERA Task Force on Research Training. Again, additional studies need to be commissioned to fully establish the set (or sets) of needed skills and knowledge.

Examples of work in the second category can be seen in Krathwohl's (1966) description of research training course offerings, the AACTE-PDK studies of doctorate producing institutions (Robertson, in press), the Buswell et al (1966) work which examines the effects of existing research training. Again, these studies either fail to encompass the full range of needed studies, to detail the components of those training capabilities that do (and/or might) exist, and/or, focus attention on the other roles in the system.

Clark and Hopkins (1969) have provided detailed empirical information in the manpower category. Again, the need for additional information and the up dating of the data on which their projections are based calls for the commission of further manpower descriptions and projections.

Given the funding and satisfactory completion of studies in these three areas, the basic information for developing the training programs for the GCKEP System would exist. Figure 1 suggests some of the activities to be engaged in, the questions to be answered, and directions to be taken to effect movement toward the goal. As displayed in Figure 1, this effort has a general time line running from left to right. It takes up in the upper left with the existing status of RDD&E training in education. The strategy outlined in the figure calles first for research in the three categories described and illustrated in the discussion above. Through the first category knowledge should be generated which would make clear what each of the RDD&E processes are,

ERIC

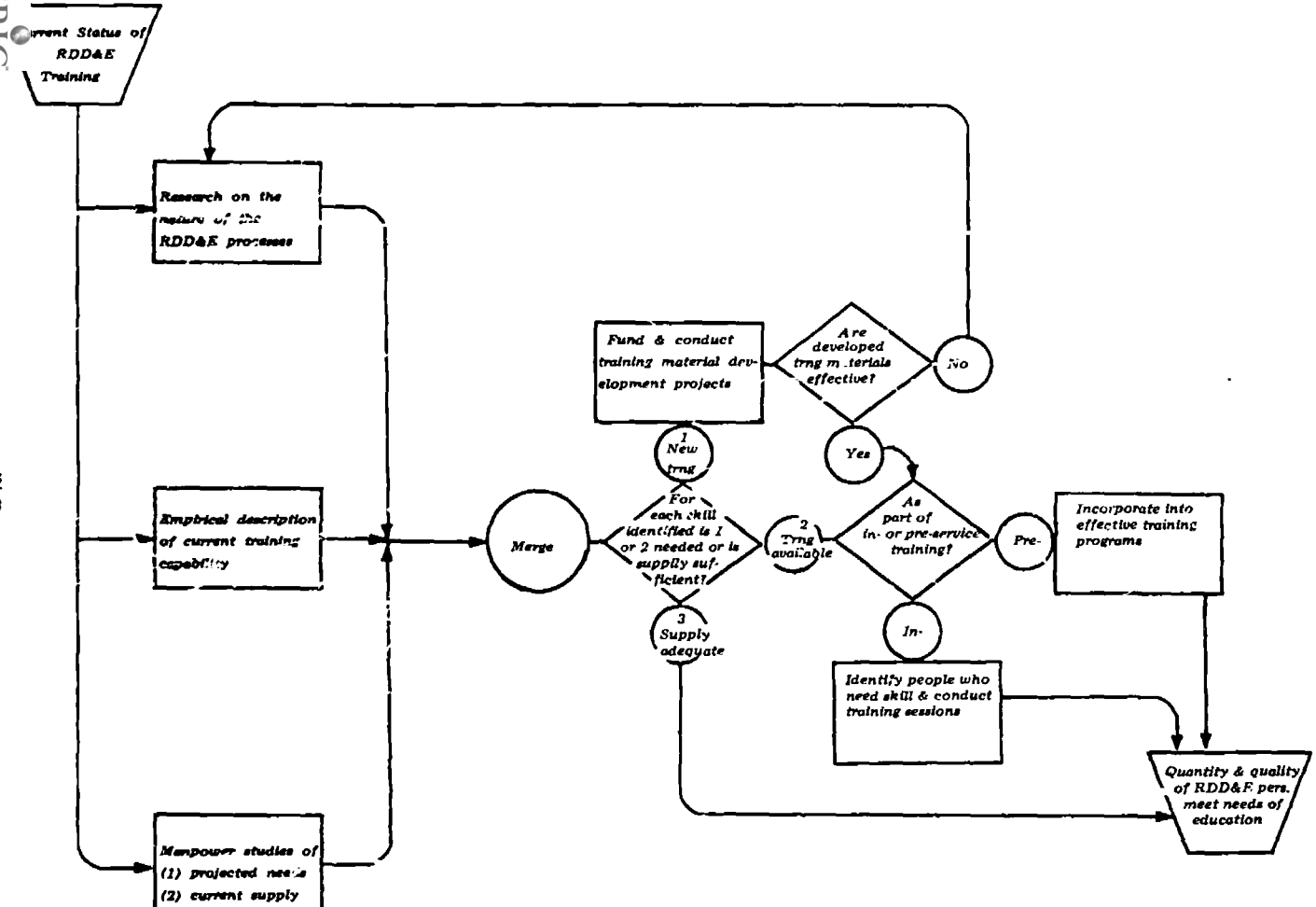


Figure 1 Generating Research, Development, Diffusion and Evaluation Skills: A Program Block Diagram

what skills and knowledge are essential for individuals who engage in those processes, and what kinds of products result from each of these processes.

The second category of investigations should concentrate on the training capability for these processes. The empirical description called for in the second block should focus on two levels. The first level encompasses program capability. Do the programs exist for the adequate preparation of the variety of roles and the performance levels within those roles? A suggestion of the categories is attempted in the matrix below:

FUNCTIONS IN THE GOKEP SYSTEM

LEVELS OF FUNCTIONING	Research	Development	Diffusion	Evaluation
Theorizer				
Administrator				
Artificer				
Technician (with varied specialties				
Para professional				

It would be possible to develop narrative descriptions of the roles represented in each of the cells of this matrix. Since neither the functions nor the levels have been empirically documented, such descriptions have less importance than the structure suggested by the matrix itself.

The other level at which the training questions in the block diagram (Fig. 1.) must be answered is the specific skill or specific factual knowledge level. Do we have the capability to develop each of the skills and knowledge that comprise the necessary set for a given role? When both of these levels can be answered the adequate staffing of a system for the generation and conversion of knowledge to educational practice will be just an implementation effort away.

The third category of investigation, manpower studies, calls for systematic examination of at least two types of information. What are the projected manpower needs in terms of numbers and types of specialties? And, what is the nature of the current supply of manpower? Answers to both of these questions should be merged with information on the nature of the RDD&E processes and training capability. That merger, the circle in the middle of Figure 1, should identify several alternative courses of action by producing information that a specific complex of skills and knowledge is needed for advancement of the field and that either: (1) new training procedures and approaches are needed; (2) training possibilities exist and should be stimulated to produce the needed manpower; or (3) that no additional manpower with that set of skills is needed. Each of these alternatives leads to a different path as shown in Figure 1. If new training programs are needed research and development activities should be funded which would detail the skills and knowledge to be taught and develop and validate procedures and materials for that training.

Once validated training materials and procedures exist the question of the locus of their use must be faced. Can they be used on an in-service basis? Or, must they be incorporated in pre-service programs? This is an important question for it calls into consideration the question of whether the field can progress if large numbers of researchers now on the job are allowed to function with outmoded conceptualizations, methods, and techniques. If the answer to that question is negative, substantial and systematic in-service efforts must be generated.

Two points must be made before leaving the discussion of Figure 1. First, this is a block diagram that is oversimplified. It does not present all of the decisions or activities that are going to be necessary if a programatic attack is to be launched. Second, the elements of this block diagram represent the thinking of but one person at this writing. On that basis no claim can be made that these elements ARE the ones to be included or that the sequence is valid. This simplified figure is presented here solely for the purpose of illustrating the type and extent of programatic planning needed if RDD&E training is to be developed to the point where an efficient GCKEP system might be a reality. It is recognized that even as an illustration it falls short as it fails to detail the criteria to be met as the work is performed in each of the activity boxes. This omission is still another that must be attended to in a Convergence Technique program planning effort.

SUMMARY

The assertion that educational research is poorly conceived and ineffectual when completed has been challenged by understandings generated through the study of the educational change process, more carefully delineated distinctions in the utility of empirical inquiry

methodologies, and the recognition of procedures for planning and managing extensive and complex R&D programs. Given this challenge, it is recommended that planning be initiated which would result in a long-range R&D program plan on the training for roles in a system for the efficient generation and conversion of knowledge to educational practice. A technique for the facilitation of that planning effort, the Convergence Technique, is presented along with a discussion of elements which might be considered in such a planning application of the Convergence Technique.

The underlying thesis is that knowledge of the research and research related processes, the skills necessary for participating in them, and the means for creating those skills has been accumulated through unsystematically analyzed experience and through logical analysis. Empirical documentation is required and should be generated by a long term targeted research and development program.

REFERENCES

Beal, G. M., Rogers, E. M., & Bohlen, J. M., "Validity of the Concept of Stages in The Adoption Process." Rural Sociology 22:166-8; June 1957.

Buswell, G. T., et al, Training for Educational Research. Cooperative Research Project Number 51074. Berkeley: Center for the Study of Higher Education, University of California, 1966.

Campbell, D. T., and Stanley, J. C., "Experimental and Quasi-experimental Designs for Research on Teaching." In Handbook of Research on Teaching. N. L. Gage (Ed.) Chicago: Rand McNally & Co. 1963.

Carlson, R. O., Adoption of Educational Innovations. Eugene, Oregon: University of Oregon. 1965.

Carrese, L. M., and Baker, C. G., "The Convergence Technique: A Method for the Planning and Programing of Research Efforts." Management Science. 13:B-420-38; April 1967.

Clark, D. L. and Hopkins, J. E., A Report on Educational Research Development, and Diffusion Manpower, 1964-1974. Cooperative Research Project Number X-022. Bloomington, Indiana: Indiana University, 1969.

Clark, D. L., and Guba, E. G., "Effecting Change in Institutions of Higher Education." Bloomington, Indiana: National Center for the Study of Educational Change, 1966 (ED 028 685.)

Cronbach, L. J. and Suppes, P., Research for Tomorrow's Schools: Disciplined Inquiry for Education. Toronto, Ontario: The Macmillan Company. 1969.

Gephart, W. J., "The Eight General Research Methodologies: A Facet Analysis of the Research Process." Occasional Paper #6. Bloomington, Indiana. Phi Delta Kappa, 1969.

Gephart, W. J., Application of the Convergence Technique to Basic Studies of the Reading Process. Cooperative Research Project Number 8-0737. Bloomington, Indiana: Phi Delta Kappa, 1970. (ED 037 587)

Havelock, R. G., et al., Planning for Innovation through Dissemination and Utilization of Knowledge. Cooperative Research Project Number 7-0028. Ann Arbor, Michigan, University of Michigan. 1969. (ED 029 171)

Jung, C. C., "An Educational Development Program Viewed in the Context of Re.earch Utilization." Presentation at the American Educational Research Association, Los Angeles, California. 1969.

Krathwohl, D. R., "Current Formal Patterns of Educating Empirically Oriented Researchers and Methodologists." In The Training and Nurture of Educational Researchers. E. G. Guba and S. Elam (Eds.) Bloomington, Indiana: Phi Delta Kappa, 1965.

Merriman, H. O., "Profile of a School Districts' Department of Evaluation--Present and Future." Presented at a conference on educational evaluation sponsored by the Ohio Department of Education, Columbus, Ohio, July 1969.

Miles, M. B., "Emerging Research Utilization Roles in Education." in Preparing Research Personnel for Education. D. L. Clark and B. R. Worthen (Eds). Bloomington, Indiana: Phi Delta Kappa, 1967.

Mort, P. R., "Studies in Educational Innovation from the Institute of Administrative Research." In Innovation in Education M. B. Miles (Ed.) New York: Teachers College Columbia University. 1964.

Nadler, G., "An Investigation of Design Methodology." Management Science. 13:B-642-55; June 1967.

Platt, J. R., "What We Must Do." Science. 166: Nov. 28, 1969.

Popham, W. J., "Two Proposals for Educational Researcher Training" Presented at the National Symposium for Professors of Educational Research. Phi Delta Kappa, Nov., 1968.

Owens, T. R., "The Roles of Evaluation Specialists in Title I and Title III Elementary and Secondary Education Act Projects." Unpublished doctoral dissertation, Ohio State University 1968.

Robertson, N., The Doctorate in Education: The Institutions. Bloomington, Indiana: Phi Delta Kappa (In press).

Rogers, E., Diffusion of Innovations New York: The Free Press of Glencoe, 1962.

Runkel, P., and McGrath, J., "Planning a Study: Settings and Strategies for Research." Unpublished manuscript. Eugene, Oregon, 1969.

Schutz, R. E., "Strategy for the Development of Training Programs for Educational Researchers." In Preparing Research Personnel for Education. D. L. Clark & B. R. Worthen (Eds). Bloomington, Indiana: Phi Delta Kappa, 1967.

Shalock, D., Case studies of research and research related roles (Currently in process under a USOE grant) Salem, Oregon: Teaching Research. 1970.

Shannon, J. R., "Experiments in Education: A New Pattern and Frequency of Types." Journal of Educational Research 48:81-93; October 1954.

Stufflebeam, D. L., "Evaluation as Enlightenment for Decision Making." In Improving Educational Assessment and An Inventory of Measures of Affective Behavior. W. H. Beatty (Ed.). Washington, D. C.: Association for Supervision and Curriculum Development, NEA. 1969.

APPENDIX A

PART I TOPICAL FOCUS INDEX

PART II ANNOTATION OF MATERIALS COLLECTED

TOPICAL FOCUS

Measurement

002 Criterion distinctions by definition (Learning Exercises, Textual Materials)
010 Measurement (Learning Exercises, Textual Materials)
015 Specification of Behavioral Criteria (Learning Exercises, Textual Materials)
037 Test scoring (Textual Materials)
038 Test Scoring programs (Textual Materials)
040 Test construction, probablistic testing, multiple choice testing (Learning Exercises, Textual Materials)
048 Measurement (Textual Materials)
067 Research Design & Measurement (Bibliography)
084 The role of measurement (Textual Materials)
086 Measurement - questionnaires (Textual Materials)
091 Test interpretation (Textual Materials)
092 Test development (Textual Materials)
098 Questionnaires and opinion sampling (Bibliography)
115 Data gathering, components of the research process (Textual Materials)
133 Measurement - Rules for classification of data, Textual Materials)
144 Measurement and analysis of data (Learning Exercises, Discription of Curriculum Approach)
145 Measurement in the classroom (Course Description)
147 Measuring achievement in the classroom (Learning Exercises, Textual Materials)
148 Intelligence testing (Course Outline)
149 Tests and measurement (Examination)
156 Higher education department characteristics measurement (Institutional Research Paradigm, Textual Materials)
157 Academic Staff characteristics measurement (Institutional Research Instrument)
158 Decision making and communications measurement (Instructional Research Instrument)
172 Test of following objectives (Learning Exercises)
177 Measurement planning (Textual Materials)
182 Measurement - Test evaluation sheet, Textual Materials)
184 Measurement - Understanding test scores (Examination)
186 Measurement Scales (Textual Materials)
188 Measurement - Achievement norms (Learning Exercises)
218 Measurement concepts (Examinations)
220 Measurement - Data analysis - criterion (Examinations)
234 Measurement process (Examination)
251 Merits of various types of test construction (Textual Materials)
252 Data gathering by observational methods (Textual Materials)
253 Observation as a method of gathering data (Textual Materials)
262 Measurement - cross validation (Textual Materials)
263 Measurement - Standard score bulletins (Textual Materials)
264 Measurement - data interpretations (Textual Materials)
265 Measurement - Stanines (Textual Materials)

293 Measurement (Learning Exercises, Bibliography, Textual Materials)
295 Measurement levels and research design (Learning Exercises, Textual Materials)
306 Measurement - Course outline, objectives, bibliography, assignments and tests (Learning Exercises, Bibliography, Objectives, Examinations, Course Outline, Textual Materials)
312 Research planning, design, measurement, and analysis; evaluation (Textual Materials)

STATISTICS

003 Analysis of variance techniques (Learning Exercises, Textual Materials)
004 Statistical Concepts, including ANOVA, hypothesis, testing, differences between means (Learning Exercises, Textual Materials)
005 Selection of procedures for analyzing a specific set of data (Learning Exercises, Textual Materials)
032 Matrix algebra (Learning Exercises, Textual Materials)
037 Computer programs, statistical operations, statistical analysis, test scoring (Textual Materials)
041 Analysis of variance (Learning Exercises, Textual Materials)
042 Analysis of variance (Learning Exercises, Textual Materials)
044 Statistics - measures of central tendency (Examination)
047 Statistics - Data matrices, Chi-square (Learning Exercises)
055 Characteristics of analysis of variance (Textual Materials)
057 Multivariate statistical analysis (Learning Exercises)
061 Elementary statistics (Learning Exercises, Textual Materials)
062 Statistics (Textual Materials)
063 Sampling, statistics (Textual Materials)
064 Statistical tables (Textual Materials)
066 Coefficients of correlations (Learning Exercises, Textual Materials)
069 Statistical analyses (Flow Chart, Textual Materials)
070 Tests of significance (Grid, Textual Materials)
071 Coefficients of correlation (Grid, Textual Materials)
078 Coefficients of correlation (Textual Materials)
081 Statistical analyses (Textual Materials)
083 Characteristics of the paired comparison design and analysis (Textual Materials)
085 The Latin Square design (Textual Materials)
088 ANOVA procedures (Textual Materials)
089 Standard error of a mean & standard error of a difference (Textual Materials)
090 Statistics - elementary (Textual Materials)
094 Statistics - correlation (Textual Materials)
097 Statistics (Bibliography)
099 Coefficient of Concordance (Textual Materials)
124 Statistical Analysis - Bartlett's test for homogeneity of variance (Textual Materials)
127 Statistical Analysis - Analysis of variance (Textual Materials)
135 Elementary Statistics (examples) (Learning Exercises)

136 Statistical analysis - concepts (Textual Materials)
141 Statistics - 3-D ANOVAR (Learning Exercises)
144 Measurement & analysis of data (Learning Exercises, Discription of Curriculum Approach)
146 Statistical analysis (Course Description)
154 Statistics (Examination)
155 Statistics (Examination)
163 Statistics - Factor analysis (Textual Materials)
164 Statistics - multiple regression (Textual Materials)
165 Statistics - multiple regression (Textual Materials)
166 Statistics - regression analysis and ANOVA (Textual Materials)
167 Statistics - regression analysis (Textual Materials)
168 Statistics - regression coefficients (Textual Materials)
175 Statistics - the concept of interaction (Textual Materials)
179 Statistics - ANCOVA (Textual Materials)
180 Statistics - ANCOVA (Learning Exercises)
189 Statistical computations - rules of summation (Textual Materials)
190 Statistics - frequency distribution (Textual Materials)
191 Statistics - Computing percentiles and percentile ranks (Learning Exercises)
192 Statistics - Frequency distribution and data displays (Learning Exercises)
193 Statistics - the normal curve (Textual Materials)
194 Statistics - Standard scores and transformations (Textual Materials)
198 Statistics - Testing hypotheses (Textual Materials)
199 Statistics - Hypothesis testing and confidence intervals (Textual Materials)
200 Statistics and research design, estimating needed sample size (Textual Materials)
201 Statistics - Chi square (Textual Materials)
202 Statistical desisions and power of the test (Textual Materials)
203 Statistics - Linear regression (Textual Materials)
204 Statistics - Sample size for t test (Textual Materials)
[illegible] Statistical decisions (Learning Exercises)
209 Statistics - Accepting or rejecting the null hypothesis (Learning Exercises)
220 Data Analysis - criterion (Examination)
221 Statistical analysis of data (Examination)
223 Statistics - Multivariate analysis (Learning Exercises, Bibliography, Course Outline, Textual Materials)
236 Statistics - correlation analysis (Learing Equipment)
258 Null hypothesis, tests of significance (Textual Materials)
267 Statistics - elementary (Textual Materials)
270 Statistics - Multivariate analysis (Textual Materials)
271 Statistics - Multiple regression (Textual Materials)
272 Statistics - Regression (Textual Materials)
273 Data analysis - Regression (Textual Materials)
274 Statistics - Computation of F (Textual Materials)
275 Statistics - Generation of vectors in multiple regression (Learning Exercises)
277 Statistics - Multiple regression (Textual Materials)
278 Statistics - Multiple regression analysis (Textual Materials)

279 Statistics - Vector decomposition example (Textual Materials)
281 Statistics - ANOVA (Examination)
282 Statistics - Multiple Comparisons (Examination)
283 Statistics - ANOVA assumptions (Examination)
284 Statistics - Power of the test (Examination)
287 Statistics - ANOVA (Examination)
296 Statistics - Selection of appropriate analysis procedure (Learning Exercises, Textual Materials)
305 Statistics - A course outline, bibliography, assignments and tests (Learning Exercises, Discription of Curriculum Approach, Bibliography)
311 Statistics - Q-Methodology (Textual Materials)
312 Research planning, design, measurement, and analysis; evaluation (Textual Materials)

DEVELOPMENT PROCESS

001 A presentation of the status and role of developers of technology in education with particular emphasis on Canadian education (Textual Materials)
008 Preparation of Specification for Instructional Packages (Learning Exercises, Textual Materials)
006 Proposal development (Learning Exercises, Textual Materials)
016 A variety of terms in the Development Process - e.g., ends/means dependent/independent variables, manipulable/non-manipulable variables, etc. (Learning Exercises, Textual Materials)
196 Planning and developing instructional systems (Manual) (Textual Materials)
197 Planning and developing instructional systems (WorkBook) (Learning Exercises)
217 The development process (Examination)
224 Development process (Learning Exercises, Textual Materials)
227 Development process (Textual Materials)
228 Principles to be considered in the development of instructional materials (Learning Exercises, Textual Materials)
229 Principles to be considered in the development of instructional materials (Learning Exercises, Textual Materials)
231 Principles to be considered in the development of instructional materials (Textual Materials)
255 Knowledge diffusion and innovation development (Textual Materials)
291 Objectives analysis in the design of instructional systems (Learning Exercises, Bibliography, Textual Materials)
292 Developing instructional materials prototypes (Learning Exercises, Bibliography, Textual Materials)
302 Development efforts of a consortium of Universities (Research Report)
304 Development-Concepts and constructs to be considered in educational change efforts (Textual Materials)

RESEARCH PROBLEMS AND PROBLEM FORMATION

007 Problem formulation (Learning Exercises, Textual Materials)
020 Identification and formulation (Learning Exercises, Textual Materials)
025 Research problem & hypothesis, review of research, operational definitions and research design (Textual Materials)
087 The research problem (Textual Materials)
096 Problem identification (Bibliography)
116 The research problem - examples (Textual Materials)
117 Research problems in selected areas of education (Textual Materials)
119 The locus and nature of educational problems (Course Outline)
120 Identifying and stating research problems (Textual Materials)
121 Suggested list of research topics (Textual Materials)
131 Evaluating the research problem (Textual Materials)
173 Plausible logic, hypothesis formulation (Textual Materials)
269 Problem identification and formulation (Learning Exercises, Textual Materials)

REPORTING

007 Reporting (Learning Exercises, Textual Materials)
019 Research report writing (Learning Exercises, Textual Materials)
104 Research reports, research design (Examination)
105 Research reports, research design (Examination)
106 Report writing - Fifty forbidden words (Textual Materials)
107 Report writing - subtitles (Textual Materials)
111 Research report outline (Textual Materials)
113 Research data reporting (Textual Materials)
114 Research data presentation (Textual Materials)
130 Research reporting (Textual Materials)
134 Research bibliography - preparation (Textual Materials)
140 Abstracting (Textual Materials)
192 Frequency distribution and data displays (Learning Exercises)
261 Research reporting (Textual Materials)
288 Report writing (Textual Materials)

OBJECTIVES

007 Objectives (Learning Exercises, Textual Materials)
009 Behaviorally - oreinted instructional objectives (Learning Exercises, Textual Materials)
215 Behavioral objectives (Learning Exercises, Examination)
216 Behavioral objectives (Learning Exercises, Examination)
225 Course objectives - setting standards (Textual Materials)
230 Behavioral objectives (Textual Materials)
233 Behavioral objectives (Learning Exercises, Textual Materials)
234 Behavioral objectives (Learning Exercises, Examination)

290 Behavioral objectives of instructional systems (Learning Exercises Textual Materials)
291 Objectives analysis in the desing of instructional systems (Learning Exercises, Bibliography, Textual Materials)
303 Proposal development - objectives (Textual Materials)

RESEARCH DESIGN

C12 External validity and internal validity (Learning Exercises, Textual Materials)
023 Research Design Selection Factors (Textual Materials)
025 Research problem & hypothesis, review of research, operational definitions and research design (Textual Materials)
049 Research Design Factors (Textual Materials)
050 Research Design concepts (Learning Exercises)
058 Research Design and analysis (Bibliography)
067 Research Design & Measurement (Bibliography)
083 Characteristics of the paired comparison design and analysis (Textual Materials)
085 The Latin square design (Textual Materials)
093 The random block design (Textual Materials)
104 Research reports, research design (Examination)
105 Research reports, research design (Examination)
139 Categories of research design (Textual Materials)
150 Research designs (Textual Materials)
169 Research design characteristics (Textual Materials)
176 Research process - design for replication (Textual Materials)
205 Research design characteristics (Textual Materials)
207 Independent variables, dependent variables (Learning Exercises Textual Materials)
285 Research design - experimental and quasi-expermental designs (Examination)
286 Research planning - PERT (Examination)
294 Research design principles (Learning Exercises, Textual Materials)
295 Measurement levels and research design (Learning Exercises, Textual Materials)
307 Advanced design - concepts and principles (Discription of Curriculum Approach, Bibliography, Textual Materials)
308 Advanced design - concepts and principles (Learning Exercises, Discription of Curriculum Approach, Bibliography, Examinations, Textual Materials)
312 Research planning, design, measurement and analysis; evaluation (Textual Materials)
313 Survey research - planning and execution (Learning Exercises, Textual Materials)

EXPERIMENTAL DESIGN

011 Experimental design validity (Learning Exercises, Textual Materials)

013 Experimental design (Learning Exercises, Textual Materials)
024 Experimental design (Learning Exercises)
068 Experimental validity (Learning Exercises, Textual Materials)
109 Experimental research (Course Outline)
153 Experimental research methodology (Examination)
219 Experimental design (Examination)
241 Experimental design (Discription of Curriculum Approach)
244 Computer-aided instruction-on-line computer applications - design and control of psychological experiments (Learning Exercises, Textual Materials)

TEACHING METHODS

014 Intervening variables in learning situations
043 Programed Instruction & learning theories
128 Outline of course procedures
254 Training methods and information transfer

RESEARCH PROCESS - GENERAL

017 Indentification of variables and types of studies (Learning Exercises, Textual Materials)
052 Definitions of various types of variables (Textual Materials)
059 Overview of the research process (Textual Materials)
060 Reading assignments for Educational Research (Bibliography)
075 Concepts in the research process (Examination)
076 The research process (Examination)
079 The research process (Bibliography)
080 Selected aspects of the research process (Bibliography)
082 Educational research references for teachers (Textual Materials)
095 The components of the research process (Learning Exercises)
100 The research process (Bibliography)
101 The research process (Examination)
102 The research process (Examination)
103 The research process (Examination)
110 Research process (Textual Materials)
115 Data gathering, components of the research process (Textual Materials)
125 Research process (Course Outline)
126 Research methods in general (Bibliography)
132 The nature of "facts" (Textual Materials)
137 Types of educational research (Textual Materials)
138 Research process and its components (Textual Materials)
142 Research process in general (Examination)
143 Research process in general (Examination)
151 Research process and its components (Course Outline)
152 Research process and its components (Bibliography)
162 General nature of the research process (Diagram of the Research process, Textual Materials)

173 Plausible logic, hypothesis formulation (Textual Materials)
174 Research vocabulary - Action research (Textual Materials)
185 Research process (Examination)
195 Hypothesis testing (Textual Materials
207 Independent variables, dependent variables (Learning Exercises, Textual Materials)
250 Components of the research process (Examinations)
260 Selected books on educational research (Bibliography)
276 Research process (Textual Materials
280 Research process - component checklist (Learning Exercises)
298 Information on the what and how of federal support of research (Textual Materials)
299 Research process in general (Textual Materials)
316 Research process-general; research training (Textual Materials)
319 Research process-general (Course Outline)

RESEARCH EVALUATION

018 Research Evaluation (Learning Exercises, Textual Materials)
058 Research Design and Analysis (Bibliography)
123 Research Evaluation (Textual Materials)
256 The evaluation of educational research reports (Textual Materials)

RESEARCH TRAINING

022 Suggestions regarding the structure of research training programs (Course Outline)
112 Research practicum outline (Discription of Curriculum Approach)
159 Skills, Attitudes, & Knowledge objectives of the introductory research course (Objectives)
160 Course requirements and basic references (Course Description)
161 Course objectives for an undergraduate research training program (Objectives)
181 Researchers' expectations (Textual Materials)
183 Form for profiling student characteristics - research fellows (Student Data Instrument)
206 Video tapes for research institute at undergraduate level (Video Tapes)
222 Individual program planning (Textual Materials)
241 Experimental design - presession evaluation report (Discription of Curriculum Approach)
242 On-line computer applications - presession report (Learning Exercises, Discription of Curriculum Approach, Textual Materials)
266 Skills needed by the evaluation specialist (Research Report)
289 Orientation to instructional materials on the research and development processes (Learning Exercises, Textual Materials)

316 Research process-general; research training (Textual Materials)
317 Research Training Course (program) Description (Description of Curriculum Approaches)
318 Research Training (Description of Curriculum Approaches)
320 Research Training (Description of Curriculum Approaches)
321 Research Training - Computer applications (Description of Curriculum Approaches)
322 Research Training (Description of Curriculum Approaches)
323 Research Training (Description of Curriculum Approaches)
324 Research Training (Description of Curriculum Approaches)
325 Computer applications; research training (Course Outline)
327 Research Training; Sociological Research Methodology (Description of Curriculum Approaches)

RELATED RESEARCH

025 Research Problem & Hypothesis, review of research, operational definitions and research design (Textual Materials)
054 The Use of ERIC materials (Textual Materials)
065 Library reference useage (Learning Exercises)
108 Literature source tools (Examination)
118 Research topics (from the Encyclopedia of Educational Research) (Textual Materials)
170 General references in education and educational research (Textual Materials)
171 Library resource guide (Textual Materials)
237 Document storage and retrieval (Textual Materials)
238 Document storage and retrieval process (Learning Exercises, Textual Materials)
239 Document storage and retrieval process (Textual Materials)
269 Educational information system (Learning Exercises, Textual Materials)

SAMPLING

026 Sampling (Demonstration)
056 Sampling (Course Outline)
063 Sampling, statistics (Textual Materials)
200 Statistics & research design - estimating needed sample size (Textual Materials)
204 Statistics - Sample size for t test (Textual Materials)
300 Sampling and distributions (Demonstration, Learning Equipment)
314 Sampling (Textual Materials)

COMPUTER APPLICATIONS

028 Computer analysis of written language (Textual Materials)
029 FORTRAN computer language test (Examination)
030 Computer programming, (Bibliography)
031 Computer Programs in a Library (Textual Materials)
033 Computer Programing, math operations (Learning Exercises)
034 Matrix algbra computer programs (Learning Exercises)
035 Matrix operations, computer subroutines (Textual Materials)
036 Computer assisted instruction, medicine (Textual Materials)
037 Computer programs, statistical operations, statistical analysis, test scoring (Textual Materials)
038 1620 Test scoring program (Textual Materials)
039 Computer operations, instructions (Textual Materials)
045 Computer programing (Examination)
046 Computer programing (Examination)
187 Computer logic (Examination)
232 Data processing procedures (Textual Materials)
242 On-line computer applications (Learning Exercises, Discription of Curriculum Approach, Textual Materials)
243 Computer applications - educational data banks (Textual Materials)
244 Computer-aided instruction, on-line computer applications (Textual Materials)
245 Emphasizes simulation, programed intelligence via computers (Textual Materials)
246 Computer programing language, computer assisted instruction (Textual Materials)
247 Data analysis - general principles and rationale (Textual Materials)
257 Cluster Analysis (Textual Materials)
321 Research Training; computer applications (Description of Curriculum Approaches)
325 Computer applications; research training (Course Outline)
326 Computer Applications (Textual Materials)

COURSE EVALUATION INSTRUMENTS

051 Course Evaluation Instrument
073 Research Training Institute Evaluation Instrument (Course Evaluation Instrument)
074 Course Evaluation Instrument

RESEARCH PROPOSALS

053 Research proposals (Learning Exercises, Textual Materials)
122 Research proposal outline (Textual Materials)
129 Proposal structure recommendations (Textual Materials)

178 Research proposal - outline (Textual Materials)
219 Experimental design proposal (Examination)
259 USOE Small Grant Program and procedures related to it (Textual Materials)
286 Research planning - PERT (Examination)
297 Components of proposals (Learning Exercises, Textual Materials)
303 Proposal development - objectives (Textual Materials)

SOCIAL RESEARCH METHODOLOGY

072 Social research methodology (Course Outline)
327 Research training; Sociological research methodology (Description of Curriculum Approaches)

EVALUATION PROCESS

077 Evaluation process (Grid, Textual Materials)
226 Evaluation (Learning Exercises, Textual Materials)
266 Skills needed by the evaluation specialist (Research Report)
312 Research planning, design, measurement and analysis; evaluation (Textual Materials)

RESEARCH INTERPRETATION

210 Interpreting completed research (Learning Exercises)
211 Analyzing completed research (Learning Exercises)
212 Analysis of completed research (Learning Exercises)

OTHER (NON CLASSIFIABLE)

215 Models and paradigms in educational administration (Examination)
216 Models and paradigms in educational administration (Examination)
240 Speech Synthesizer kit. (Learning Exercises, Learning Equipment, Textual Materials)
248 Teacher education, research for and about student teaching (Textual Materials)
249 Principles of learning (Examination)
301 Successful media innovations in higher education instruction (Bibliography, Research Report)
309 The manufacturing process (Learning Exercises, Bibliography, Textual Materials)

DIFFUSION

255 Knowledge diffusion and innovation development (Textual Materials)
310 Diffusion theory (Bibliography, Textual Materials)

MATERIALS COLLECTED

#001
TITLE: Measuring Educational Outcomes: Absolute versus Relative Criter

AUTHOR: Gerlach, Vernon S., Richard E. Schutz, and Robert L. Baker
Southwest Regional Lab
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Measurement-Criterion distinctions by definition

PURPOSE: Developed to help students learn to distinguish between absolute and relative criteria.

DESCRIPTION: Mimeograph, printed two sides, booklet form, 8½ X 11, semi-programmed textual materials, 8 pages.

RESTRICTIONS TO USE: Experimental material copyrighted by SWRL

GENERAL CHARACTER: Textual Materials, Learning Exercises

#002
TITLE: A Factorial Model: Rules of Thumb for the ANOVA

AUTHOR: Baker, Robert L., and Williams, J. T.
Southwest Regional Lab
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Statistics - Analysis of variance techniques

PURPOSE: To aid the researcher "in carrying out the more complex analyses without an exact duplicate model which uses understandable notation."

DESCRIPTION: Offset, two side, booklet, 8½ x 11, 75 pages. The material is textual in nature with abundent examples and practice problems. Work space pages are liberally scattered throughout the booklet. This is an adaptation of the Millman-Glass papers presented under a similar title.

RESTRICTIONS TO USE: Experimental materials-copyrighted by SWRL

GENERAL CHARACTER: Textual Materials, Learning Exercises

#003
TITLE: Analyzing Variability

AUTHOR: Baker, Robert L., and Schutz, R. E.
Southwest Regional Lab
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Statistical Concepts, including, ANOVA, hypothesis testing, differences between means.

PURPOSE: To focus on statistical concepts considered critical in the search for functional relationships in education and the behavioral sciences.

DESCRIPTION: Offset, two sided, booklet, 8½ x 11, 51 pages. Textual material presented with problems and examples and answers to the problems. Nomographs and distribution tables are provided as part of the material.

RESTRICTIONS TO USE: Experimental materials - copyrighted by SWRL

GENERAL CHARACTER: Textual Materials, Learning Exercises

#004
TITLE: Technology & the Control of Education

AUTHOR: McLean, Leslie D.
Associate Professor & Chairman
Ontario Inst. for Studies in Education
102 Bloor St. West
Toronto 5, Ontario, Canada

TOPICAL FOCUS: Development process - A presentation of the status and role of developers of technology in education with particular emphasis on Canadian education.

DESCRIPTION: A mimeographed textual statement 13 pages in length. This document dicotomizes research and development in education and discusses the educational technologist as an emerging and guiding force.

RESTRICTIONS TO USE: Not for publication or quote without permission of the author

GENERAL CHARACTER: Textual Materials

#005
TITLE: Choosing an Appropriate Statistical Procedure

AUTHOR: Wolf, Richard M.
Southwestern Regional Lab
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Statistics - selection of procedures for analyzing a specific set of data.

PURPOSE: To help individuals learn what considerations to make and how to make them in choosing a data analysis technique. This document was designed to assist the researcher in the planning of his investigation by providing him with a strategy for choosing an appropriate statistical procedure.

DESCRIPTION: Mimeographed textual materials with specified learning activities 24 pages in length

RESTRICTIONS TO USE: Experimantal materials copyrighted by SWRL

GENERAL CHARACTER: Textual Materials, Learning Exercises for Students

#006
TITLE: Components of the Research Proposal

AUTHOR: Resta, Paule, & Baker, Robert L.
Southwestern Regional Laboratory
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Proposal development

PURPOSE: "...to identify the basic components (of proposals) and to describe the conditions that must exist for each one."

DESCRIPTION: Mimeographed textual material with specified learning activities, 43 pages.

RESTRICTIONS TO USE: Experimental materials copyrighted by SWRL

GENERAL CHARACTER: Textual Materials, Learning Exercises for Students, Programed Format (Linear)

#007

TITLE: Constructing Statements of Outcomes

AUTHOR: Gerlach, V. S. & Sullivan, H. J.
Southwest Regional Lab
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Problem Formation, Report Writing, and Objective Construction.

PURPOSE: To help the individual acquire a 5 term vocabulary which will enable him to construct objectives for almost any research study.

DESCRIPTION: Offset, two sides, booklet, 8½ x 11, 38 pages. Textual material presented in linear program format

RESTRICTIONS TO USE: Experimental materials - copyrighted by SWRL

GENERAL CHARACTER: Textual Materials, Learning Exercises

#008

TITLE: Defining Instructional Specifications

AUTHOR: Gerlach V. S., Baker, R. L., Schutz, R. E. & Sullivan, H. J.
Southwest Regional Lab
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Development, preparation of specifications for instructional packages.

PURPOSE: To define the 5 components of specification preparation and to provide learning exercises as aides.

DESCRIPTION: Offset, two sides, 8½ x 11, 32 pages. Textual material presented in linear format

RESTRICTIONS TO USE: Experimental materials - copyrighted by SWRL

GENERAL CHARACTER: Textual Materials, Learning Exercises

#6

#009
TITLE: Describing Educational Outcomes

AUTHOR: Gerlach, Vernon S.
Southwest Regional Lab
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Behaviorally-oriented instructional objectives

PURPOSE: "To enable you to distinguish objectives which are stated in behavioral terms from those which are not...and to construct behaviorally stated objectives"

DESCRIPTION: Offset, two sides, booklet, 8½ x 11, 34 pages. Textual material presented in programed format.

RESTRICTIONS TO USE: Experimental materials - copyrighted by SWRL

GENERAL CHARACTER: Textual Materials, Learning Exercises

#010
TITLE: Educational Criterion Measures

AUTHOR: Popham, W. James
Southwest Regional Lab
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Measurement

PURPOSE: "To provide you with a scheme which will aid in the consideration of criterion measures that can be used for evaluating all types of educational programs."

DESCRIPTION: Offset, two sides, booklet, 8½ x 11, 27 pages, plus answer tabulation sheet. Textual materials presented in programed format.

RESTRICTIONS TO USE: Experimental materials - copyrighted by SWRL

GENERAL CHARACTER: Textual Materials, Learning Exercises

#011

TITLE: Experimental Design: Minimizing Threats to the Validity of a Study

AUTHOR: Wilkerson, Carolyn D., Waina, Carole S., Baker, Robert L. & Schutz, Richard E.
Southwest Regional Lab
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Experimental design validity

DESCRIPTION: Offset, two sides, booklet, 8½ x 11, 56 pages. Textual material is presented in linear program format

RESTRICTIONS TO USE: Experimental materials - copyrighted by SWRL

GENERAL CHARACTER: Textual Materials, Learning Exercises

#012

TITLE: Experimental Design: Threats to the Validity of a Study

AUTHOR: Wilkerson, Carolyn D, Waina, Carole S., Baker, Robert L., & Schutz, Richard E.
Southwest Regional Lab
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Research design - External validity and internal validity

PURPOSE: To indicate 12 sources of threats to the validity of a study

DESCRIPTION: Offset, two sides, booklet, 8½ x 11, 40 pages. The presentation is entirely textual, with multiple-choice exercises at the end of each of the two sections. No answer sheet is provided, however. This is a direct adaption of the Campbell-Stanley article in Gage's Handbook of Research on Teaching.

RESTRICTIONS TO USE: Experimental material copyrighted by SWRL

GENERAL CHARACTER: Textual Materials, Learning Exercises

#013

TITLE: Experimental Design: Paradigms and Procedures

AUTHOR: Wilkerson, Carolyn D., Waina, Carole S., Baker, Robert L., & Schutz, Richard E
Southwest Regional Lab
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Experimental Design

PURPOSE: "...call attention to a variety of experimental designs... presented in a way to reduce the aversiveness associated with experimentation"

DESCRIPTION: Offset, two sided, booklet, 8½ x 11, 88 pages. The presentation is a text and table combination. Self-check questions are included in the body of the material as well as extensive exercises at the end of each section. The answers are supplied. This is a direct adapatation from the Campbell-Stanley article in Gage's Handbook of Research on Teaching.

RESTRICTIONS TO USE: Experimental materials - copyrighted by SWRL

GENERAL CHARACTER: Textual Materials, Learning Exercises

#014

TITLE: Management of Behavioral Consequences in Education

AUTHOR: Michael, Jack
Southwest Regional Lab
SWRJ
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Teaching hods, intervening variables in learning situations

PURPOSE: Develops a theoretical base for examining teacher behaviorr and their effects on student behavior.

DESCRIPTION: Offset, two sided, booklet, 8½ x 11, 65 pages. This is a straight-forward textual presentation, complete with table of contents. There are no exercises contained herein, nor are any objectives specified. The material would serve as supplemental information for a behavioral research class.

RESTRICTIONS TO USE: Experimental materials - copyrighted by SWRL - 1967

GENERAL CHARACTER: Textual Materials

#015

TITLE: Prototype Item Design (Construction of Prototype Items)

AUTHOR: Baker, Eva
Southwest Regional Lab
SWRL
1130 La Cienega Boulevard
Inglewood, California

TOPICAL FOCUS: Measurement - Specification of Behavioral Criteria

PURPOSE: To help the instructional materials developer in the construction of test items used to pinpoint needed materials development

DESCRIPTION: Offset, two sided, booklet, 8½ x 11, 11 pages. This textual material contains some self-test items, approximating a programmed format.

RESTRICTIONS TO USE: Experimental materials - copyrighted by SWRL - 1967

GENERAL CHARACTER: Textual Materials, Learning Exercises

#016

TITLE: Improved Educational Programs

AUTHOR: Popham, W. James
Southwest Regional Lab
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: A variety of terms in the development process (e.g., ends/means, dependent/independent variable, manipulable/non-manipulable variables, etc.)

PURPOSE: "to examine some considerations which should assist the educator in making defensible choices...to improve educational procedures."

DESCRIPTION. Offset, two sided, booklet, 8½ x 11, 21 pages. This is a programmed text with answers supplied. It could serve as supplementary material in a research training program.

RESTRICTIONS TO USE: Experimental materials - copyrighted by SWRL - 1967

GENERAL CHARACTER: Textual Materials, Learning Exercises

100

#017
TITLE: Research in the Schools: Part I Classifying Educational Research Studies

AUTHOR: Sullivan, Howard J.
Southwest Regional Lab
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Identification of variables and types of studies

PURPOSE: "to provide the learner with certain skills that are essential for planning experiments which yield..information about new practices."

DESCRIPTION: Offset, two sided, booklet, 8½ x 11, 20 pages. This textual presentation has self-test items scattered throughout, with answers included. Material seems appropriate for an introductory research course. This is Part I of a 2-part series.

RESTRICTIONS TO USE: Experimental Materials - copyrighted by SWRL - 1967

GENERAL CHARACTER: Textual Materials, Learning Exercises

#018
TITLE: Research in the Schools: Part II Interpreting Research Results

AUTHOR: Sullivan, Howard J.
Southwest Regional Lab
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Research evaluation

PURPOSE: "the learner... will be able to identify the given statements of conclusion that are permissible and those that are not permissible."

DESCRIPTION: Offset, two sided, booklet, 8½ x 11, 14 pages. Using as textual presentation with self-test items, the conclusions reached in various types of sudies are analyzed. Status, associational, and experimental studies are examined. Answers are provided for the items.

RESTRICTIONS TO USE: Experimental materials - copyrighted by SWRL - 1967

GENERAL CHARACTER: Textual Materials, Learning Exercises

#019
TITLE: The Research Report

AUTHOR: Resta, Paul E.
Southwest Regional Lab
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Research report writing

PURPOSE: To teach the most important aspects of report organization and format, using USOE requirements as a model

DESCRIPTION: Multilithed textual material, 8½ x 11, 54 pages. Booklet, including articles reproduced from other sources. Contains self-testing sections with answers.

RESTRICTIONS TO USE: Experimental materials - copyrighted by SWRL

GENERAL CHARACTER: Textual Materials, Learning Exercises, Programed Format

#020
TITLE: Formulating the Research Problem

AUTHOR: Resta, Paul E., and Robert L. Baker
Southwest Regional Lab
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Problem identification and formulation

DESCRIPTION: Offset, two sided, booklet, 8½ x 11, 27 pages. The material is textual with tables and self-test sections. It concentrates on the identification of possible variables in a "typical" study.

RESTRICTIONS TO USE: Experimental materials - copyrighted by SWRL 1967

GENERAL CHARACTER: Textual Materials, Learning Exercises

102

#021
TITLE: Types of Instructional Materials

AUTHOR: Gerlach, Vernon S. and Baker, Robert L.
Southwest Regional Laboratory
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Behavior control through Stimulus-Response approaches

PURPOSE: To present a classification scheme and the concepts related to it.

DESCRIPTION: Offset, two sides, booklet, 8½ x 11, 14 pages. The material is textual and contains several self-test items at the end. The authors feel that all types of instructional materials can be classified as 1) shaping a new response 2) bringing an existing response under the control of new stimuli, or 3) maintaining a previously acquired S-R relationship.

RESTRICTIONS TO USE: Experimental materials - copyrighted by SWRL - 1967

GENERAL CHARACTER: Textual Materials, Learning Exercises

#022
TITLE: Suggestions for Planning Student Programs-Research Directors Training(RDT) Program

AUTHOR: Baker, Robert L.
College of Education
Michigan State University
443 Erickson Hall
East Lansing, Michigan 48823

TOPICAL FOCUS: Suggestions regarding the structure of research training programs

PURPOSE: To provide a guide for the student and his advisors as to the courses and experiences he should have in his doctoral training program. Some rationale is provided.

DESCRIPTION: Mimeographed textual material, one side, eleven pages, 8½ x 11. Lists courses by number and title and could actually serve as a permanent check list for the student or for his folder.

GENERAL CHARACTER: Program Outline

#023

TITLE: Summary of Factors in the Selection of Designs - (Education 982. Seminar in Administering Research Programs)

AUTHOR: Craig, Robert C.
College of Education
Michigan State University
443 Erickson Hall
East Lansing, Michigan 48823

TOPICAL FOCUS: Research Design Selection Factors

PURPOSE: To assist students in the selection of generalized research designs.

DESCRIPTION: Dittoed textual material arranged in table format, three pages, single side, 8½ x 11. This is an adaptation of the Campbell-Stanley article in Gage's Handbook of Research on Teaching.

#024

TITLE: Exercises in Experimental Design - (Education 982: Seminar in Administering Research Programs)

AUTHOR: Rippey, Robert M.
College of Education
Michigan State University
443 Erickson Hall
East Lansing, Michigan 48823

TOPICAL FOCUS: Experimental Design

PURPOSE: To sensitize prospective research administrators to design and evaluation problems

DESCRIPTION: Dittoed handout, two pages, single side, 8½ x 11. This is a two part exercise to design a study for elementary school and then in the second part review the design and try instead a quasi-design.

GENERAL CHARACTER: Learning Exercises

#025

TITLE: Finding and Stating the Research Problem: A Suggested Approach with Examples from Higher Education

AUTHOR: Sproull, Natalie
Assistant Instructor
College of Education
Michigan State University
201 H Erickson Hall
East Lansing, Michigan 48823

TOPICAL FOCUS: Research problem & hypothesis, review of research, operational definitions and research design.

PURPOSE: To outline a model to aid in the development of a research problem, specifically by dealing with hypotheses.

DESCRIPTION: Mimeographed, one side, 8½ x 11, textual materials. There are 8 pages of textual material including one diagram representing the model to be studied. There are 18 examples of studies to be done on higher education, including related questions to be asked. Total, 27 pages.

GENERAL CHARACTER: Textual Materials

#026

TITLE: A Technique for Demonstration of Biased and Unbiased Sampling

AUTHOR: Uhlig, George
Department of Educational Psychology
University of Wisconsin-Milwaukee
Milwaukee, Wisconsin 53211

TOPICAL FOCUS: Sampling

PURPOSE: Provide a guideline for setting up a sampling demonstration.

DESCRIPTION: SCM Reproduction, 8½ x 11, 2 pages, textual material. This illustrates a unique approach to teaching about sampling biases. Should be effective at all class levels.

GENERAL CHARACTER: Demonstration

#027
TITLE: The Use of Maps and Exemplars in English Composition Instruction

AUTHOR: Rippey, Robert M.
Director
Center for the Coop. Study of Instruction
The University of Chicago
5835 Kimbark Avenue
Chicago, Illinois 60637

TOPICAL FOCUS: English Composition (writing) instruction

PURPOSE: To change writing behavior of high school students in their high school classes.

DESCRIPTION: Mimeographed, textual material, 8½ x 11, one side, 31 pages. Besides the detailed instruction on how to change this behavior, there is included the results of an experimental study done on the method. This is a guide and research report combined presented as a model for students to study.

GENERAL CHARACTER: Textual Materials

#028
TITLE: The analysis of Written Language about Problems and Pressures

AUTHOR: Rippey, Robert M.
Director
Center for the Coop. Study of Instruction
The University of Chicago
5835 Kimbark Avenue
Chicago, Illinois 60637

TOPICAL FOCUS: Computer analysis of written language

PURPOSE: To describe research done on natural language using computors to analyze it.

DESCRIPTION: Mimeograph, single side, textual material, 8½ x 11, 28 pages. This is a research report containing examples and a rather detailed description of how to analyze language.

GENERAL CHARACTER: Textual Materials

#029

TITLE: FORTRAN Test

AUTHOR: Robert M. Rippey
Director
Center for the Coop. Study of Instruction
The University of Chicago
5835 Kimbark Avenue
Chicago, Illinois 60637

TOPICAL FOCUS: FORTRAN computer language test

PURPOSE: To evaluate knowledge of FORTRAN as a language and applications of computers to school systems.

DESCRIPTION: Combination mineographed, and dittoed, single side, textual material with answer sheets, 8½ x 11, 15 pages. This test would have to be used in conjunction with a particular course.

GENERAL CHARACTER: Test

#030

TITLE: FORTRAN and Advanced Computer Work - Programmed Instructional Materials on Computer Programming

AUTHOR: Rippey, Robert M.
Director
Center for the Coop. Study of Instruction
The University of Chicago
5835 Kimbark Avenue
Chicago, Illinois 60637

TOPICAL FOCUS: Computer programming

PURPOSE: To furnish a bibliography

DESCRIPTION: Mimeographed, one sided, textual material, 8½ x 11, 2 pages. This is an annotated bibliography on programmed instructional materials about computer programming.

GENERAL CHARACTER: Bibliography

#031
TITLE: One Way Analysis of Variance and Others

AUTHOR: Rippey, Robert M.
Director
Center for the Coop. Study of Instruction
University of Chicago
5835 Kimbark Ave.
Chicago, Illinois

TOPICAL FOCUS: Computer Programs in a Library

PURPOSE: To provide some basic information about several programs in the ESL Library

DESCRIPTION: Ditto, one side, corner stapled, 8½ x 11, 10 pages. These are brief descriptions of the following computer programs: 1-way Analysis of Variance (ANOVA), 2-way ANOVA, 1-way ANOVA with one covariate, Multiple Discriminant Function 1, Multiple Discriminant Function 2, Most of these were written by Paul Lohnes.

GENERAL CHARACTER: Textual Materials

#032
TITLE: Introduction to Matrices and Vectors

AUTHOR: Rippey, Robert M.
Director
Center for the Coop. Study of Instruction
University of Chicago
5835 Kimbark Ave.
Chicago, Illinois

TOPICAL FOCUS: Matrix algebra

PURPOSE: To develop understanding of and skill in matrix algebra

DESCRIPTION: Mimeograph, single side, loose pages, 8½ x 11, 192 pages. This is a linear program of a fill-in-the-blank type. Matrix addition, subtraction, division, and multiplication are covered in the 15 sections. Information on one student who completed the program shows that he required 5½ hours to do it.

GENERAL CHARACTER: Textual Materials, Learning Exercises, Programed Format

#033
TITLE: Computer Programming, Exercise 1

AUTHOR: Rippey, Robert M.
Director
Center for the Coop. Study of Instruction
University of Chicago
5835 Kimbark Ave.
Chicago, Ill.

TOPICAL FOCUS: Computer Programming, math operations

PURPOSE: Provides a structured exercise in computer programming

DESCRIPTION: Mimeograph, one side, corner stapled, 8½ x 11, 4 pages. This is one exercise with several suggestions and steps for the program if one wants to refer to them.

GENERAL CHARACTER: Learning Exercises

#034
TITLE: Computer Matrix Operations

AUTHOR: Rippey, Robert M.
Director
Center for the Coop. Study of Instruction
University of Chicago
5835 Kimbark Ave.
Chicago, Ill.

TOPICAL FOCUS: Matrix algebra, Computer programs

PURPOSE: To teach computer programing for performing Matrix Operations

DESCRIPTION: Mimeographed, one side, loose pages, 8½ x 11, 49 pages. This is a self instruction linear program, which should be used in conjunction with research memorandum no. 1 from the statistical laboratory at the University of Chicago. This document is in the collection under the title,"Matrix Operations: Computer Subroutines." Both of these documents require a knowledge of FORTRAN II for maximum utilization.

GENERAL CHARACTER: Learning Exercises, Programed Format

#035
TITLE: Matrix Operations Subroutines for Statistical Computation

AUTHOR: Bock, R. Darrell & Peterson, Allan
University of Chicago
5835 Kimbark
Chicago, Illinois 60637

TOPICAL FOCUS: Matrix Operations, Computer Subroutines

PURPOSE: To provide building blocks for complex computer programs using resources at the University of Chicago

DESCRIPTION: Mimeograph, one side, corner stapled, 8½ x 11, 25 pages. Knowledge of FORTRAN is definitely required to understand these materials. The programs referred to in the memorandum are from the Matrix Subroutine Library of the University of Chicago Computation Center. This book should be used in conjunction with the materials on "Computer Matrix Operations" also in their collection.

GENERAL CHARACTER: Textual Materials

#036
TITLE: Computer Assisted Instruction

AUTHOR: Madaus, George F.
Center for the Coop. Study of Instruction
University of Chicago
5835 Kimbark Ave.
Chicago, Ill. 60637

TOPICAL FOCUS: Computer Assisted Instruction, Medicine

PURPOSE: "To discuss the concept of CAI, the hardware involved, computer language used, cost, and the uses of this tool in instruction and research.

DESCRIPTION: Ditto, one side, corner stapled, 8½ x 11, 15 pages. This is a paper presented at a meeting on cooperative research in teaching hematology, in 1965. It also supplies a 22 item bibliography associated with CAI.

GENERAL CHARACTER: Textual Materials

#037
TITLE: TSSA - Test Scorer and Statistical Analysis

AUTHOR: Wolf, Richard, & Klopfer, Leopold
Graduate School of Education
University of Chicago
5835 Kimbark Ave.
Chicago, Illinois

TOPICAL FOCUS: Computer Programs, Statistical Operations, Statistical Analysis, Test Scoring.

PURPOSE: To provide directions for using computer program TSSA and to give the salient characteristics of that program.

DESCRIPTION: Mimeographed, one side, corner stapled. 8½ x 11, 10 pages. This document provides an excellent example of information dissemination for the utilization of library computer programs. It not only indicates the control cards, the inputs, and the outputs, but it also gives a short summary of the reasons for inclusion of each item in the output. The program gives a factor analysis as well as varimax rotation.

GENERAL CHARACTER: Textual Materials

#038
TITLE: 1620 Test Scoring Program

AUTHOR: Lewy, A., & Rippey, R.
Center for the Coop. Study of Instruction
University of Chicago
5835 Kimbark Ave.
Chicago, Illinois 60637

TOPICAL FOCUS: Computer programs, test scoring programs

PURPOSE: To provide a guideline for using a library computer program

DESCRIPTION: Ditto, single side, corner stapled, 8½ x 11, two pages. This paper serves as an example of the minimum amount of information necessary to use a library program. It is inadequate without a thorough knowledge of the existing facility and the program which would have to be run.

GENERAL CHARACTER: Textual Materials

#039
TITLE: 1620 Operating Procedures

AUTHOR: Rippey, Robert M.
Director
Center for Study of Instruction
University of Chicago
5835 Kimbark
Chicago, Illinois 60637

TOPICAL FOCUS: Computer Operations, Instructions

PURPOSE: To provide operating instructions for an IBM 1620 computer

DESCRIPTION: Ditto, single side, corner stapled, 8½ x 11, 5 pages. These instructions are very explicit even to the point of including a diagram of the 1620 console face. The instructions also include comments of what is happening as you follow the various steps. This is a good example of instruction writing for a machine operator.

GENERAL CHARACTER: Textual Materials

#040
TITLE: Probabilistic Testing

AUTHOR: Rippey, Robert M.
Director
Center for the Coop. Study of Instruction
University of Chicago
5835 Kimbark
Chicago, Illinois 60637

TOPICAL FOCUS: Measurement - Test construction, probablistic testing, multiple choice type tests.

PURPOSE: To outline a method of testing which closely approximates the real world situations.

DESCRIPTION: Ditto, single side, corner stapled, 8½ x 11, 16 pages. This paper deals with test construction of the multiple choice type, and includes many examples as aides. Scoring formulae which correct for guessing and other extraneous factors are given. The paper is appropriate for use in a tests and measurement course toward the end of the first semester or the beginning of the second semester.

GENERAL CHARACTER: Textual Materials, Learning Exercises

RESTRICTIONS TO USE: Not to be reproduced without permission of the author.

#041
TITLE: Analysis of Variance

AUTHOR: Rippey, Robert M.
Director
University of Chicago
Center for the Coop. Study of Instruction
5835 Kimbark Avenue
Chicago, Illinois 60637

TOPICAL FOCUS: Statistics - Analysis of Variance

PURPOSE: To provide explicit instructions for generating example data and analyzing the variance in that data.

DESCRIPTION: Mimeograph, one side, corner stapled, 8½ x 11, 8 pages. This document is a cookbook treatment for handling analysis of variance problems. It would serve equally well as self instructional material or as a demonstration aid.

GENERAL CHARACTER: Textual Materials, Learning Exercises

#042
TITLE: Rules of Thumb for Writing the ANOVA Table

AUTHOR: Millman, Jason, & Glass, Gene V
Millman - Cornell University
Department of Education
Ithaca, New York 14850
Glass - College of Education
University of Illinois
Urbana, Illinois 61801

TOPICAL FOCUS: Statistics - Analysis of variance

PURPOSE: "The reader who masters the simple rules will hopefully come to regard complex analyses of variance as less inconvenient and be encouraged to attempt them when they are appropriate."

DESCRIPTION: Mimeographed, one side, corner stapled, 8½ x 11, 19 pages. This appears to be a retyping of the paper by Millman and Glass published in the Journal of Educational Measurement.

GENERAL CHARACTER: Textual Materials, Learning Exercises

#043
TITLE: Conceptual Model for Analyzing Instruction

AUTHOR: Ginther, John R.
Associate Professor
University of Chicago
5835 Kimbark
Chicago, Illinois 60637

TOPICAL FOCUS: Programmed Instruction and Learning Theory

PURPOSE: To provide a model for a frame of reference for discussing programming and a theoretical construct for developing reproducible classroom situations.

DESCRIPTION: Mimeographed textual material 22 pages, single side, 8½ x 11. This document is designed to provide a frame of reference for analyzing instruction.

GENERAL CHARACTER: Textual Materials

#044
TITLE: Statistics - Mid-Semester Examination Including Answer Key - Summer 1967

AUTHOR: Ghei, Som Nath
University of New Hampshire
Room 204D, Conant Hall
Durham, N. H.

TOPICAL FOCUS: Statistics, measures of central tendency

PURPOSE: To measure student accomplishment in a statistics course.

DESCRIPTION: Mimeograph, one side, corner staple, 8½ x 11, 7 pages. This exam has 40 multiple choice items including two figures from which to interpret the data. A complete key to the answers is provided.

GENERAL CHARACTER: Examination

#045
TITLE: HEW Institute Quiz 3, August 1967

AUTHOR: Austin, Gilbert R.
Director
University of New Hampshire
Bureau of Educational Research and Testing Service
Box Q
Durham, New Hampshire 03824

TOPICAL FOCUS: Computer programing

PURPOSE: To measure student learning in a HEW institute

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 4 pages.

GENERAL CHARACTER: Examination

#046
TITLE: HEW Institute Laboratory Problem 1

AUTHOR: Austin, Gilbert R.
Director
University of New Hampshire
Bureau of Ed. Res. and Testing Services
Box Q
Durham, New Hampshire 03824

TOPICAL FOCUS: Computer programing

PURPOSE: To measure student skill in writing a FORTRAN program.

DESCRIPTION: Ditto and mimeograph, one side, temporary binding, 8½ x 11, 3 pages. Laboratory material for use in a specific course in research.

GENERAL CHARACTER: Examination

#047
TITLE: Chi-Square Problem

AUTHOR: Austin, Gilbert R.
Director
University of New Hampshire
Bureau of Educational Research and Testing Services
Box Q
Durham, New Hampshire 03824

TOPICAL FOCUS: Statistics - Data Matrices, Chi-square

PURPOSE: To provide an experience in solving Chi-square problems

DESCRIPTION: Mimeograph, one side, corner stapled, 8½ x 11, 3 pages. Seven problems are presented giving the data in Matrix form and requiring the calculation of Chi-square. The answers are given for each problem.

GENERAL CHARACTER: Learning Exercises

#048
TITLE: The Testing Program

AUTHOR: Austin, Gilbert R.
Director
University of New Hampshire
Bureau of Ed. Res. and Testing Services
Box Q
Durham, New Hampshire 03824

TOPICAL FOCUS: Measurement

PURPOSE: To present information related to educational measurement

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 4 pages. An annotated outline of the stages in a testing program

GENERAL CHARACTER: Textual Materials

#049
TITLE: Factors Jeopardizing Internal and External Validity

AUTHOR: Austin, Gilbert R.
Director
University of New Hampshire
Bureau of Ed. Res. and Testing Services
Box Q
Durham, New Hampshire 03824

TOPICAL FOCUS: Research design factors

PURPOSE: To outline the Stanley-Campbell threats to internal and External validity

DESCRIPTION: Mimeographed Textual Material, arranged in list format with definitions, 1 page, single side, 8½ x 11. This information seems to be taken directly from the Hand Book of Research on Teaching, the Campbell-Stanley chapter, pages 176-176.

GENERAL CHARACTER: Textual Materials

#050
TITLE: Written Learning Experience Number 1 - HEW

AUTHOR: Austin, Gilbert R.
Director
University of New Hampshire
Bureau of Ed. Res. and Testing Services
Box Q
Durham, New Hampshire 03824

TOPICAL FOCUS: Research design concepts

PURPOSE: Provide a description of a research project for student analysis

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 2 pages. An instructional problem which was used in a specific course.

GENERAL CHARACTER: Learning Exercises

#051

TITLE: Strengths and Weaknesses of the Five Sections of the Institute

AUTHOR: Austin, Gilbert R.
Director
University of New Hampshire
Bureau of Ed. Res. and Testing Services
Box Q
Durham, New Hampsire 03824

TOPICAL FOCUS: Course evaluation instrument

PURPOSE: To provide data on student perceptions of a research training institute

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 2 pages.

GENERAL CHARACTER: Student feedback instrument

#052

TITLE: Summary Sheet - Types of Research Studies

AUTHOR: Austin, Gilbert R.
Director
University of New Hampshire
Bureau of Ed. Res. and Testing Services
Box Q
Durham, New Hampshire 03824

TOPICAL FOCUS: Definitions of Various types of variables

PURPOSE: To provide standardized definitions of concepts used in a research institute

DESCRIPTION: Mimeographed textual material arranged in list order, 2 pages, single side, 8½ x 11. The title is misleading. The document deals with definitions of the various types of variables, statements, and studies.

GENERAL CHARACTER: Textual Materials

#053
TITLE: The Ingredients of the Research Proposal AERA Presession Course 3, February 11-15 1967

AUTHOR: Baker, Robert
Director
SWRL
11300 LaCienega Boulevard
Inglewood, California 90304

TOPICAL FOCUS: Research proposals

PURPOSE: "1. Identify the basic components of a sound research proposal...; 2. Describe the conditions that must be met for each component; 3. Distinguish between exemplars and non-exemplars of proposed components based on conditions to be met; & 4. Given a problem area, construct a proposal outline including the operational specification of essential ingredients."

DESCRIPTION: Mimeographed textual material, 27 pages, single side, 8½ x 11. There is expository material here as well as exercises so that one might test his mastery of the proposal principles.

GENERAL CHARACTER: Textual Materials, Learning Exercises

#054
TITLE: Educational Research Information Center (ERIC) Materials

AUTHOR: Pickard, H. Stuart
University of New Hampshire
Box Q
Durham, New Hampshire 03824

TOPICAL FOCUS: Related Research - The use of ERIC materials

DESCRIPTION: Mimeograph, one side, 8½ x 11, one page. This document is an inter/intra-departmental memo announcing the availability of ERIC microfiche and some guides for their use.

GENERAL CHARACTER: Textual Materials

#055

TITLE: ANOVA 1: One-way Analysis of Variance

AUTHOR: Alspaugh, John
Assistant Professor of Education
University of Missouri
Columbia, Missouri 65202

TOPICAL FOCUS: Statistics - Characteristics of ANOVA

PURPOSE: To provide basic information related to application of an ANOVA program

DESCRIPTION: Xerox, one side, temporary binding, 8½ x 11, 4 pages. This document is a program that computes one-way analysis of variance with equal or unequal N, fixed or random effects model with up to 50 classifications.

GENERAL CHARACTER: Textual Materials

#056

TITLE: Survey Sampling EA 588

AUTHOR: Anderson, James G.
Research Professor of Educational Administration
New Mexico State University
Research Center, Box Y
University Park, New Mexico 88070

TOPICAL FOCUS: Sampling

PURPOSE: To provide a course outline

DESCRIPTION: Xerox, one side, corner stapled, 8½ x 11, 8 pages. A course outline and bibliography is provided. Exam type questions are provided under the heading of simple random sampling, stratified random sampling, systematic sampling, and cluster sampling. No answers are provided for the questions.

GENERAL CHARACTER: Course Outline

#057
TITLE: Multivariate statistical Analysis Math 563-564

AUTHOR: Anderson, James G.
Researcher Professor of Educational Administration
New Mexico State University
Research Center, Box Y
University Park, New Mexico 88070

TOPICAL FOCUS: Statistics - Multivariate statistical analysis

PURPOSE: To provide structured application of multivariate analysis through 15 problems

DESCRIPTION: Xerox, one side, temporary binding, 8½ x 11, 20 pages

GENERAL CHARACTER: Learning Exercises

#058
TITLE: Research Design and Analysis in the Behavioral Sciences - An annotated Bibliography

AUTHOR: Anderson, James G.
Researcher Professor of Educational Administration
New Mexico State University
Research Center, Box Y
University Park, New Mexico 88070

TOPICAL FOCUS: Research design and analysis

PURPOSE: Highlight references on various concepts in the research process

DESCRIPTION: Multilith textual material in stapled booklet form, 66 pages, both sides, 8½ x 11. Covers such areas as proposals, sampling, measurement, systems analysis, and simulation.

GENERAL CHARACTER: Annotated Bibliography

#059
TITLE: Methods of Educational Research Ed. 300 Course Outline

AUTHOR: Smith, Gerald R.
Associate Professor of Education
Syracuse University
Syracuse, New York 13214

TOPICAL FOCUS: Overview of the research process

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 6 pages. Outline of a specific introduction and orientation course in Methods of Educational Research

GENERAL CHARACTER: Course Outline

#060
TITLE: Methods of Educational Research Ed 300 Bibliography

AUTHOR: Smith, Gerald
Associate Professor of Education
Syracuse University
School of Education
Syracuse, New York 13214

TOPICAL FOCUS: Reading Assignments for Ed. Research course

DESCRIPTION: Ditto textual material arranged in list format, 3 pages, single side, 8½ x 11. This is a bibliography of roughly 35 references applied to specific topics of research such as its nature, it's problems and objectives, theory, procedural plans, research design and evaluation research. Each reference gives specific pages involved relevant to the topic.

GENERAL CHARACTER: Course Bibliography

#061
TITLE: The Null Hypotheses Model for Decision Making - Education 151

AUTHOR: Raths, James
Director
University of Maryland
Bureau of Educational Research and Field Services
College Park, Maryland 20742

TOPICAL FOCUS: Elementary Statistics

PURPOSE: "to help students acquire and use new skills, to clarify important concepts germaine to hypothesis testing, and to categorize procedures for testing hypotheses."

DESCRIPTION: Offset, two sided, loose pages, 8½ x 11, 126 pages. This is designed as a hand book for students in beginning statistics. It has abundant illustrations and covers a wide variety of topics from central tendency through regression analysis, power of the test, and confidence intervals. It contains many self-test items with the answer supplied.

RESTRICTIONS TO USE: "This material is the property of James D. Raths and is for the sole and exclusive use of the students enrolled in Education 151 at the University of Maryland. It is not to be sold, reproduced, or generally distributed."

GENERAL CHARACTER: Textual Materials, Learning Exercises

#062
TITLE: Statistical Test Selection Table

AUTHOR: Stunkard, Clayton L., & Dayton, C. Mitchell
University of Maryland
College Park, Maryland 20742

TOPICAL FOCUS: Statistics

PURPOSE: To show the appropriate statistic for a given set of data

DESCRIPTION: Mimeographed textual material arranged in a table format, one page, single side, 8½ x 11. This document is a table which can be used in statistical test selection.

RESTRICTIONS TO USE: Note to be copied or distributed without express permission of authors.

GENERAL CHARACTER: Textual Materials

#063

TITLE: Sampling and Statistical Handbook for Surveys in Education (NEA) (Preliminary edition)

AUTHOR: Robinson, Glen
Research Division of the National Educational Association
1201 Sixteenth Street Northwest
Washington, D. C.

TOPICAL FOCUS: Sampling, statistics

PURPOSE: "The book is designed as a ready reference for those concerned with the use of sampling procedures..."

DESCRIPTION: Offset, two sides, soft cover bound, 8½ x 11, 444 pages. This book is an out growth of an NEA research division project. It is a compilation from a variety of sources but it presents a uniform format. The 42 references from which it was compiled are listed near the end of the volume. This manual should be used in conjunction with Sampling and Statistical Handbook for Surveys in Education: Appendix, a book of tables also referenced in this collection.

RESTRICTIONS TO USE: "No part of this book may be used or reproduced in any manner what so ever without written permission of the NEA Research Division."

GENERAL CHARACTER: Textual Materials

#064

TITLE: Sampling and Statistics Handbook for Surveys in Education (Preliminary edition): Appendix

AUTHOR: Research Division of the National Education Association
1201 Sixteenth St. Northwest
Washington, D. C. 20036

TOPICAL FOCUS: Statistical tables

PURPOSE: Handbook of information on sampling and statistical analysis in educational surveys

DESCRIPTION: Offset, two sides, bound soft cover, 8½ x 11, 134 pages. This book is an appendix to Sampling and Statistics Handbook for Surveys in Education, listed elsewhere in the Training Materials Project

RESTRICTIONS TO USE: "No part of this book may be used or reproduced in any manner what so ever without written permission of the NEA Research Division.

GENERAL CHARACTER: Textual Materials

#065

TITLE: Techniques of Research Psychology 636 Scavenger Hunt

AUTHOR: Barker, Donald G.
Associate Professor
Department of Education & Psychology
Texas A & M University
College Station, Texas 77843

TOPICAL FOCUS: Related Research-Library reference useage

PURPOSE: To structure the use of library in obtaining specific types of information

DESCRIPTION: Thermofax, one side, 8½ x 11, one page. An exercise used to motivate students to acquaint themselves with reference resources of the library

GENERAL CHARACTER: Learning Exercises

#066

TITLE: A Program for Selecting the Correct Coefficient of Correlation

AUTHOR: William J. Gephart
Director of Research and Experimentation
University of Wisconsin-Milwaukee
now - Director Research Services
Phi Delta Kappa
8th and Union Streets
Bloomington, Indiana 47401

TOPICAL FOCUS: Coefficients of Correlation

PURPOSE: "attempts through questions and answers to lead the individual to the selection of the appropriate correlational statistic."

DESCRIPTION: Xerox, one side, corner stapled, 8½ x 11, 9 pages. This is a self-instructional program based on the answering of questions, usually yes or no, which will lead one to the selection of the most applicable coefficient of correlation for their study.

GENERAL CHARACTER: Textual Materials, Learning Exercises, Programed Format

#067
TITLE: Bibliography: Research Design and Measurement. Ed. 392, 399b.

AUTHOR: Karabinus, Robert A.
College of Education
University of Arizona
Tucson, Arizona 85721

TOPICAL FOCUS: Research Design & measurement

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 9 pages.
This document is a Research Design and Measurement Bibliography

GENERAL CHARACTER: Course Bibliography

#068
TITLE: Internal Validity Illustrations, Educational Psychology 399b

AUTHOR: Karabinus, Robert A.
University of Arizona
College of Education
Tucson, Arizona 85721

TOPICAL FOCUS: Experimental validity

PURPOSE: Present illustrations of invalidating factors in research design

DESCRIPTION: Ditto, one side, corner stapled, 8½ x 11, 3 pages.
There are five abstracts of experimental studies, with the reader being asked after each study to identify the greatest source of internal invalidity.

GENERAL CHARACTER: Textual Materials, Learning Exercises

#069
TITLE: Schema for Making Multiple Comparisons between k Groups

AUTHOR: Karabinus, Robert A.
Assistant Professor
University of Arizona
College of Education
Tucson, Arizona 85721

TOPICAL FOCUS: Statistical analyses

PURPOSE: Guide the selection of an appropriate statistic

DESCRIPTION: Ditto, one side, 8½ x 11, one page. The schema is presented as a series of questions with yes and no answers which are arranged in a tree-type chart. It will lead you to choose the appropriate formulations by Dunnett, Scheffe, Tukey, Newman-Keuls.

GENERAL CHARACTER: Textual Materials, Flow Chart

#070
TITLE: Statistical Analysis Guide for Tests of Significance

AUTHOR: Karabinus, Robert A.
College of Education
University of Arizona
Tucson, Arizona 85721

TOPICAL FOCUS: Statistics - Tests of significance

PURPOSE: Guide the selection of a statistic for a test of significance

DESCRIPTION: Ditto, one side, 8½ x 11, one page. This document is a guide or table for testing the significant aspects of statistical analysis

GENERAL CHARACTER: Textual Materials, Grid

#071
TITLE: Guide to Measures of Relationship

AUTHOR: Karabinus, Robert A.
Assistant Professor
University of Arizona
College of Education
Tucson, Arizona 85721

TOPICAL FOCUS: Statistics - Coefficients of correlation

PURPOSE: Guide the selection of a statistic for assessing relationship

DESCRIPTION: Ditto, one side, 8½ x 11, one page. This is a table plotting dependent variable against independent variable under each of the scales of interval, ordinal, or nominal measurement, and allowing one to choose the appropriate measure of realtionship to fit his data.

GENERAL CHARACTER: Textual Materials, Grid

#072
TITLE: Methodology of Social Research - Course Outline Education 294B

AUTHOR: Wilson, Alan B.
Associate Professor
University of California-Berkeley
School of Education
Berkeley, California 94720

TOPICAL FOCUS: Social Research Methodology

PURPOSE: Outline the course

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 4 pages. This document outlines the focus of attention in a methodology course in social research.

GENERAL CHARACTER: Course Outline

#073
TITLE: Evaluation of Research Training Institute

AUTHOR: Anderson, R. L.
Department of Psychology
Eastern Michigan University
Ypsilanti, Michigan 48197

TOPICAL FOCUS: Research training institute evaluation instrument

PURPOSE: To secure perceptions of students about a research training institute.

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 3 pages. An evaluation form used in a specific research training institute.

GENERAL CHARACTER: Course Evaluation Instrument

#074
TITLE: Some Questions for Final Evaluation of The Institute

AUTHOR: Anderson, R. L.
Department of Psychology
Eastern Michigan University
Ypsilanti, Michigan 48197

TOPICAL FOCUS: Course evaluation

PURPOSE: To secure student perceptions about a research training institute.

DESCRIPTION: Ditto, one, side, temporary binding, 8½ x 11, two pages. A questionaire used in conjunction with a specific research institute

GENERAL CHARACTER: Course Evaluation Instrument

#075

TITLE: Test Questions:

AUTHOR: Anderson, R. L.
Department of Psychology
Eastern Michigan University
Ypsilanti, Michigan 48197

TOPICAL FOCUS: Conepts in the research process

PURPOSE: To test student learning about hypothese, operational definition, design, and analyses

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, two pages. A short answer test that is used in conjunction with a specific course.

GENERAL CHARACTER: Course examination

#076

TITLE: Test Questions:

AUTHOR: Anderson, R. L.
Department of Psychology
Eastern Michigan University
Ypsilanti, Michigan 48197

TOPICAL FOCUS: The research process

PURPOSE: To test student learning in a research methods course

DESCRIPTION: Ditto, one side, 8½ x 11, one page. An essay test used in conjunction with a specific course.

GENERAL CHARACTER: Course Examination

#077
TITLE: Evaluation Planning

AUTHOR: Anderson, R. L.
Department of Psychology
Eastern Michigan University
Ypsilanti, Michigan 48197

TOPICAL FOCUS: Evaluation process

PURPOSE: To structure procedures in conducting an evaluation

DESCRIPTION: Ditto, one side, 8½ x 11, one page. A paradigm that can be used in evaluation planning.

GENERAL CHARACTER: Textual Materials, Grid

#078
TITLE: Some Characteristics of Correlation Coefficients

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Statistics - Coefficients of correlations

PURPOSE: Present characteristics of selected correlation coefficients

DESCRIPTION: Xerox, one side, 8½ x 11, one page. In chart form seven coefficients of correlation are presented with their appropriate characteristics. Each formula is referred to at a specific point in the given bibliography

#079

TITLE: Bibliography for Educational Research

AUTHOR: Anderson, R. L.
Department of Psychology
University of Eastern Michigan
Ypsilanti, Michigan 48197

TOPICAL FOCUS: The research process

PURPOSE: Identification of references to be used in the research course

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, three pages. This document is a bibliography for a specific course in Educational Research.

GENERAL CHARACTER: Course Bibliography

#080

TITLE: Additional Reprints and Materials

AUTHOR: Anderson, R. L.
Department of Psychology
Eastern Michigan University
Ypsilanti, Michigan 48197

TOPICAL FOCUS: Selected aspects of the research process

PURPOSE: Identification of articles

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, two pages. This document is a bibliographical listing of reprints and materials that were available at a particular university for a particular course.

GENERAL CHARACTER: Course Bibliography

132

#081

TITLE: Background Information on Statistical Tests

AUTHOR: Anderson, R. L.
Department of Psychology
Eastern Michigan University
Ypsilanti, Michigan 48197

TOPICAL FOCUS: Statistical Analysis

PURPOSE: To present information on (1) the probability of statistical testing, (2) Null Hypothesis, (3) Level of significance, (4) Region of rejection, & (5) Levels of measurement.

DESCRIPTION: Ditto, one side, temporary binding, two pages. The document identifies and briefly explains the concepts listed under PURPOSE above.

GENERAL CHARACTER: Textual Materials

#082

TITLE: An Educational Research Shelf for Teachers

AUTHOR: Engelhart, Max D.
Director
Division of Institutional Research and Evaluation
Chicago City Junior College
Chicago Public Schools
Now - Department of Education
Duke University
Durham, North Carolina 27708

TOPICAL FOCUS: Educational research references for teachers

PURPOSE: To acquaint teachers with basic references about the educational research process and information gained through that process.

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, three pages. This document expounds on the advantages and possible application of a shelf in the school library that deals with educational research.

GENERAL CHARACTER: Textual Materials

#083
TITLE: The Paired Comparison Design

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Characteristics of the paired comparison design and analysis

PURPOSE: To present information on this design category for student consumption.

DESCRIPTION: Xerox, one side, temporary binding, 8½ x 11, 3 pages. The document illustrates and briefly explains the mechanics and merits of the paired comparison design method of statistical analysis.

GENERAL CHARACTER: Textual Materials

#084
TITLE: Techniques and Procedures to use in Measurement Evaluation of School Programs Under Title I

AUTHOR: Joos, Loyal W.
Director
Systematic Studies
Oakland Schools
Pontiac, Michigan 48053

TOPICAL FOCUS: The role of measurement

PURPOSE: To acquaint students with the nature and role of measurement in education

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 4 pages. This document identifies five basic problems that must be solved in measurement procedures - identification, diagnosis, process evaluation, achievement evaluation, and program evaluation. This is then applied to a specific Title I program.

GENERAL CHARACTER: Textual Materials

#085
TITLE: The Latin Square Design

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Dpeartment of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Statistics - The Latin Square Design

PURPOSE: To help students learn the characteristics of Latin square designs.

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, six pages. Illustrates and briefly explains the Latin Square Design concept of statistical design.

GENERAL CHARACTER: Textual Materials

#086
TITLE: Notes on Collecting Data by Questionnaire

AUTHOR: Engelhart, Max D.
Department of Education
Duke University
Durham, North Carolina 27708

TOPICAL FOCUS: Measurement - Questionnaires

PURPOSE: To present some of the points to be considered in the use of questionnaires in surveys.

DESCRIPTION: Mimeograph, one, side, temporary binding, 8½ x 11, two pages. The document is a narrative listing of the pros and cons of the use and make-up of questionnaires

GENERAL CHARACTER: Textual Materials

#087

TITLE: The Defining of Educational Research Problems

AUTHOR: Engelhart, Max D.
Department of Education
Duke University
Durham, North Carolina 27708

TOPICAL FOCUS: The research problem

PURPOSE: To help students develop an understanding of the nature and characteristics of a research problem

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 2 pages. This document is a narrative description of the steps and important considerations in the defining of educational research problems - from formulation to review of other research.

GENERAL CHARACTER: Textual Materials

#088

TITLE: Notes on Analysis of Variance

AUTHOR: Engelhart, Max D.
Department of Education
Duke University
Durham, North Carolina 27708

TOPICAL FOCUS: Statistics - ANOVA procedures

PURPOSE: To present the derivation of ANOVA for student consumption

DESCRIPTION: Mimeograph, one side, tempory binding, 8½ x 11, 9 pages. This document contains prepared notes on the subject of analysis of variance. It contains table, charts, examples, and etc

GENERAL CHARACTER: Textual Materials

136

#089
TITLE: Notes on the Standard Error of a Mean and the Standard Error of a Difference

AUTHOR: Engelhart, Max D.
Department of Education
Duke University
Durham, North Carolina 27708

TOPICAL FOCUS: Statistics - Standard Error of a mean & standard error of a difference.

PURPOSE: To present the characteristics of these two concepts

DESCRIPTION: Mimeograph, one side, 8½ x 11, 4 pages. This document contains prepared notes which are designed to inform about standard error of a mean, and standard error of a difference.

GENERAL CHARACTER: Textual Materials

#090
TITLE: Elementary Descriptive Statistics

AUTHOR: Englehart, Max D.
Department of Education
Duke University
Durham, North Carolina 27708

TOPICAL FOCUS: Statistics

PURPOSE: To present information for student consumption

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 18 pages. A short course in elementary descriptive statistics

GENERAL CHARACTER: Textual Materials

#091
TITLE: Notes on Interpretation of Test Scores and Differences Between Test Scores

AUTHOR: Engelhart, Max D.
Department of Education
Duke University
Durham, North Carolina 27708

TOPICAL FOCUS: Measurement - Test interpretation

PURPOSE: To present information for student consumption.

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 17 pages. Prepared notes on interpretation of test scores and differences between test scores. Notes based on Cronbach and Gleser's "Interpretation of Reliability and Validity Coefficients."

GENERAL CHARACTER: Textual Materials

#092
TITLE: Item Analysis Data Their Meaning and Use

AUTHOR: Engelhart, Max D.
Department of Education
Duke University
Durham, North Carolina 27708

TOPICAL FOCUS: Measurement - Test development

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 15 pages. This document is a guide and instruction sheet used in conjunction with a specific task. It gives details on how this specific data analysis should be handled.

GENERAL CHARACTER: Textual Materials

138

#093

TITLE: The Random Block Design

AUTHOR: Rosemeir, Robert A.
Associate Professor
Department of Education
Northern Illinois University
DeKalb, Illinois 60115

TOPICAL FOCUS: Research design

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 6 pages. This document defines, explains, and, through example, illustrates the random block design concept.

GENERAL CHARACTER: Textual Materials

#094

TITLE: A Derivation of the Formual for the Pearson Product Moment Coefficient of Correlation

AUTHOR: Engelhart, Max D.
Department of Education
Duke University
Durham, North Carolina 27708

TOPICAL FOCUS: Statistics - correlation

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 10 pages. A derivation of the formula for the "Pearson Product Moment Coefficient of Correlation" involving calculus and a proof that the coefficient of correlation cannot exceed plus or minus one.

GENERAL CHAFACTER: Textual Materials

#095
TITLE: Seminar in Administration and Supervision - Course Assignment

AUTHOR: Bruner, Herbert B.
Professor in Charge
St. John's University
Graduate School of Education
Jamaica, New York

TOPICAL FOCUS: The components of the research process

DESCRIPTION: Ditto, one side, temporary binding 8½ x 11, 4 pages.
This document is a course outline and bibliography for a specific course.

GENERAL CHARACTER: Learning Exercises, Course Assignments, Course Bibliography

#096
TITLE: (I. Bibliography - Sources of a Research Problem.)
(II. Bibliography - Library Sources.)

AUTHOR: McLoughlin, William P.
St. John's University
Department of Administration and Supervision
Jamaica, New York

TOPICAL FOCUS: Problem Identification

PURPOSE: Provide a source of reference.

DESCRIPTION: Ditto, one side, corner stapled, 8½ x 11, 2 pages.
A list of six bibliographical references.

GENERAL CHARACTER: Bibliography

#097
TITLE: Bibliography in the Area of Statistics

AUTHOR: Mulligan, A. R.
Research Training Program
SUNY at Albany
The State Education Department
Albany, New York 12224

TOPICAL FOCUS: Statistics

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 3 pages.
A bibliography in the area of statistics.

GENERAL CHARACTER: Course Bibliography

#098
TITLE: Bibliography for Questionnaires and Opinion Sampling

AUTHOR: McLoughlin, William P.
Associate Director
SUNY at Albany
Research Training Program
The State Education Department
Albany, New York 12224

TOPICAL FOCUS: Questionnaires and opinion sampling

DESCRIPTION: Ditto, one side, 8½ x 11, 1 page. This document is best described by its title.

GENERAL CHARACTER: Bibliography

#099

TITLE: Coefficient of Concordance

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Statistical analysis - Coefficient of Concordance

DESCRIPTION: Xerox, one side, 8½ x 11, one page. An example of the use of the coefficient of concordance.

GENERAL CHARACTER: Textual Materials

#100

TITLE: Education 307 - Research Bibliography

AUTHOR: Doyle, Robert E.
St. John's University
Department of Counselor Education
Jamaica, N. Y.

TOPICAL FOCUS: The research process

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 2 pages. This document is a course bibliography for a specific course.

GENERAL CHARACTER: Course Bibliography

142

#101

TITLE: Education 301, Mid-term Examination April 3, 1965

AUTHOR: McLoughlin, William P.
Director (Assciate), Research Training Program
The State Education Department
SUNY at Albany
Albany, New York 12224

TOPICAL FOCUS: The research process

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 10 pages. A fifty question objective test given in conjunction with a specific course. Measures one's general knowledge of research.

GENERAL CHARACTER: Course Examination

#102

TITLE: Education 301 Final Examination May 25, 1963

AUTHOR: McLoughlin, William P.
Director (Associate)
Research Training Program
The State Education Department
SUNY at Albany
Albany, New York 12224

TOPICAL FOCUS: The research process

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 14 pages. A hundred question objective test given in conjunction with a specified course. Measures one's general knowledge of research.

GENERAL CHARACTER: Course examination

#103

TITLE: Education 301 D - Final Examination January 24, 1967

AUTHOR: McLoughlin, William P.
Associate Director
Research Training Program
the State Education Department
SUNY at Albany
Albany, New York 12224

TOPICAL FOCUS: The research process

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 10 pages. A fifty question objective test given in conjunction with a specific course. Measures one's general knowledge of research.

GENERAL CHARACTER: Course Examination

#104

TITLE: Education 301 D Mid-term Examination March 29, 1966

AUTHOR: McLoughlin, William P.
Associate Director
Research Training Program
The State Education Department
SUNY at Albany
Albany, New York 12224

TOPICAL FOCUS: Research reports, research design

PURPOSE: To test a student's knowledge level mid-way through a course introducing research.

DESCRIPTION: Ditto, one side, corner stapled, 8½ x 11, 6 pages. This is a multiple choice test of 26 items in length. It seems appropriate for a course perhaps entitled "Introduction to Research." There are no mathematical manipulations required.

GENERAL CHARACTER: Course Examiniation

144

#105

TITLE: Mid term Examination
Education 301 D November 6, 1965

AUTHOR: McLoughlin, William P.
Associate Director
Research Training Program
The State Educational Department
SUNY at Albany
Albany, New York 12224

TOPICAL FOCUS: Research reports, research design

PURPOSE: To test a student's knowledge level mid-way through a course introducing research

DESCRIPTION: Ditto, one side, corner stapled, 8½ x 11, ten pages. This is a multiple choice test of 50 items in length. It seems appropriate for a course perhaps entitled "Introduction to Research." There are no mathematical manipulations required

GENERAL CHARACTER: Course Examination

#106

TITLE: Fifty Forbidden Words

AUTHOR: Barzum, Jacques, & Graff, Henry F.

TOPICAL FOCUS: Report Writing - Forbidden jargon

DESCRIPTION: Ditto, one side, 8½ x 11, one page. A classified list of terms which the author implies should not be used The researcher classes are: jargon, feeble connectives, affections, journalese and textbookish, and illiteracies. (Taken from Brazum & Graff, THE MODERN RESEARCHER)

GENERAL CHARACTER: Textual Materials

#107

TITLE: A Scheme for Ranking Subtitles in a Report

AUTHOR: McLoughlin, William P.
Associate Director
Research Training Program
The State Education Department
Albany, New York 12224

TOPICAL FOCUS: Report writing - subtitles

DESCRIPTION: Ditto, one side, 8½ x 11, one page. This document offers suggestions on the mechanics of ranking subtitles in a report, quotations, and syllablication rules.

GENERAL CHARACTER: Textual Materials

#108

TITLE: Reference Sources Exam

AUTHOR: McLoughlin, William P.
Associate Director
Research Training Program
The State Education Department
Albany, New York 12224

TOPICAL FOCUS: Literature search tools

DESCRIPTION: Mimeograph, one side, 8½ x 11, one page. This document is a test used to assess one's knowledge of source and application of certain research tools.

GENERAL CHARACTER: Course examination

#109

TITLE: Experimental Research Course Outline

AUTHOR: McLoughlin, William P.
Associate Director
SUNY at Albany
Research Training Program
The State Education Department
Albany, New York 12224

TOPICAL FOCUS: Experimental research

DESCRIPTION: Ditto, one side, 8½ x 11, one page. An outline of a specific course in Experimental Research.

GENERAL CHARACTER: Course Outline

#110

TITLE: Comparison of the Steps in Various Learning Processes
Ed. 301 - Methods and Materials of Research

AUTHOR: McLoughlin, William P.
Associate Director
SUNY at Albany
Research Training Program
The State Education Department
Albany, New York 12224

TOPICAL FOCUS: Research process general

PURPOSE: To contrast the processes of reflection, teaching and research.

DESCRIPTION: Ditto, one side, 8½ x 11, one page.

GENERAL CHARACTER: Textual Materials

#111

TITLE: The Meaning of Research
Ed. 301 -- Methods and Materials of Research

AUTHOR: McLoughlin, William P.
Associate Director
SUNY at Albany
Research Training Program
The State Education Department
Albany, New York 12224

TOPICAL FOCUS: Research report outline

PURPOSE: To guide students in structuring a research report

DESCRIPTION: Ditto, one side 8½ x 11, one page. This document is a annotated outline which should be followed in developing a research study in a specific course in Methods and Materials of Research.

GENERAL CHARACTER: Textual Materials

#112

TITLE: Researcher-on-Duty (RD) Program

AUTHOR: Page, Ellis B.
Professor and Director
University of Connecticut
Bureau of Education Research
New Haven, Connecticut 06268

TOPICAL FOCUS: A practicum aspect (RD) of a research training program.

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 7 pages. An introduction to a specific Research training program approach. Lists the people involved, their training duties and work schedule.

GENERAL CHARACTER: Description of Curriculum Approaches

#113

TITLE: Check List for Illustrations

AUTHOR: Brinton, William C.
St. John's University
School of Education
Jamaica, New York

TOPICAL FOCUS: Research data reporting

DESCRIPTION: Ditto, one side, 8½ x 11, one page. A list of twenty-one questions about illustrations. It is implied that an application of appropriate answers to these questions enhances the propriety of any illustrations that might be used. (Adapted from Brinton, GRAPHIC METHODS FOR PRESENTING FACTS.)

GENERAL CHARACTER: Textual Materials

#114

TITLE: Standards for Graphic Presentation

AUTHOR: McLoughlin, William P.
Associate Director
SUNY at Albany
Research Training Program
The State Education Department
Albany, New York 12224

TOPICAL FOCUS: Research data presentation

DESCRIPTION: Ditto, one side, 8½ x 11, one page. Outlines some standards for graphic presentation.

GENERAL CHARACTER: Textual Materials

#115

TITLE: Tools of Research

AUTHOR: McLoughlin, William P.
Associate Director
SUNY at Albany
Research Training Program
The State Education Department
Albany, New York 12224

TOPICAL FOCUS: Data gathering - components of the research process

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 2 pages. This document lists and outlines the various data gathering techniques: sampling, questionnaires, interviews, appraisal instruments, and observations.

GENERAL CHARACTER: Textual Materials

#116

TITLE: Illustrations of the Statement of the Research Problem

AUTHOR: McLoughlin, William P.
Associate Director
SUNY at Albany
Research Training Program
The State Education Department
Albany, New York 12224

TOPICAL FOCUS: The research problem (Examples)

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 51 pages. This document contains 60 examples and illustrations of the statement of the research problem. It is ideal for obtaining an insight into varied formats.

GENERAL CHARACTER: Textual Materials

#117

TITLE: Common Research Problems

AUTHOR: McLoughlin, William P.
Associate Director
SUNY at Albany
Research Training Program
The State Education Department
Albany, New York 12224

TOPICAL FOCUS: Research problems in selected areas of education.

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 2 pages. This document identifies some areas of educational research and some common related problems.

GENERAL CHARACTER: Textual Materials

#118

TITLE: Major Divisions of Educational Research

AUTHOR: (None listed)

TOPICAL FOCUS: Related Research topics (from Encyclopedia of Educational Research)

PURPOSE: To provide a point of reference.

DESCRIPTION: Ditto, one side, 8½ x 11, one page. This is a listing taken directly from the Encyclopedia of Educational Research table of contents.

#119

TITLE: Outline of Content-Educational Research Problems Course

AUTHOR: McLoughlin, William P.
Associate Director
SUNY at Albany
Research Training Program
The State Education Department
Albany, New York 12224

TOPICAL FOCUS: The locus and nature of educational problems.

DESCRIPTION: Xerox, one side, 8½ x 11, one page. Best described by it's title.

GENERAL CHARACTER: Course Outline

#120

TITLE: Identifying and Stating Research Problems Ed. 301-M

AUTHOR: McLoughlin, William P.
Associate Director
SUNY at Albany
Research Training Program
The State Education Department
Albany, New York 12224

TOPICAL FOCUS: (See Title)

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 2 pages. This is a topic outline of the steps in identifing and stating research problems.

GENERAL CHARACTER: Textual Materials

152

#121

TITLE: Suggested Research Topics - Education 301

AUTHOR: McLoughlin, William P.
Associate Director
SUNY at Albany
Research Training Program
The State Education Department
Albany, New York 12224

DESCRIPTION: Ditto, one side, 8½ x 11, one page. A suggested listing of research topics to be used in conjunction with a specific course.

GENERAL CHARACTER: Textual Materials

#122

TITLE: Suggested Outline for a Proposed Research

AUTHOR: Borgeson, F. C.
New York University
School of Education
New York, New York 10003

TOPICAL FOCUS: Research proposal outline

PURPOSE: To guide student efforts in developing a research report for a class assignment.

DESCRIPTION: Mimeograph, one side, 8½ x 11, one page. A suggested outline format of a research proposal.

GENERAL CHARACTER: Textual Materials

#123

TITLE: Suggestion for Criticism of Research Presentations.

AUTHOR: McLoughlin, William P.
Associate Director
SUNY at Albany
Research Training Program
The State Education Department
Albany, New York 12224

TOPICAL FOCUS: Research evaluation

PURPOSE: To guide student analysis of completed research.

DESCRIPTION: Ditto, one sided 8½ x 11, one page. The title of the document is also a concise description of its content.

GENERAL CHARACTER: Textual Materials

#124

TITLE: Bartlett's Test for Homogeneity of Variance

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Statistical analysis

DESCRIPTION: Xerox, one side, temporary binding, 8½ x 11, 3 pages. A description using an illustrated example of Bartlett's Test for Homogeneity of variance.

GENERAL CHARACTER: Textual Materials

#125

TITLE: Education 400 R Research Methods

AUTHOR: Ahr, A. Edward
Loyola University
Room 308
1159 East Chicago Avenue
Chicago, Illinois 60600

TOPICAL FOCUS: The research process

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 2 pages. A statement of objectives for teaching a specific course in research methods.

GENERAL CHARACTER: Course Outline

#126

TITLE: Bibliography 430 R - Research Methods

AUTHOR: Mayo, Samuel T.
Associate Professor of Education
Loyola University
Room 308
1159 East Chicago Avenue
Chicago, Illinois 60600

TOPICAL FOCUS: Research methods in general

DESCRIPTION: Ditto, one side, 8½ x 11, one page. A research methods bibliography.

GENERAL CHARACTER: Course Bibliography

#127

TITLE: Analysis of Variance

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Statistical Analysis - Analysis of variance

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 3 pages.
A step by step explanation of the analysis of variance concept.

GENERAL CHARACTER: Textual Materials

#128

TITLE: Reminders Research Methods - 400 R

AUTHOR: Mayo, Samuel T.
Associate Professor of Education
Loyola University
Room 308
1159 East Chicago Avenue
Chicago, Illinois 60600

PURPOSE: Orient students about course procedures

DESCRIPTION: Ditto, one side, 8½ x 11, one page.

GENERAL CHARACTER: Description of Curriculum Approaches

156

#129

TITLE: How to Write a Project Proposal

AUTHOR: Smith, Gerald R.
Associate Professor
Syracuse University
School of Education
216 Slocum Hall
Syracuse, New York 13210

TOPICAL FOCUS: (See title)

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 4 pages. This document is prepared to be of special value to districts with no experience in soliciting financial aid through the ESEA. It simply gives instructions on submitting proposals as well as informs on possible pitfalls.

GENERAL CHARACTER: Textual Materials

#130

TITLE: Report Writing - Hints on Form and Effective Style - Research Methods

AUTHOR: Mayo, Samuel T.
Associate Professor of Education
Loyola University
Room 308
1159 East Chicago Avenue
Chicago, Illinois 60600

TOPICAL FOCUS: Research reporting

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 4 pages. In texual format this document briefly describes the mechanics of report writing. It comments on the text of the report, writing style, use of numbers, syntax, graphs, and tables.

GENERAL CHARACTER: Textual Materials

#131

TITLE: Checklist on the Worth of A Problem
Ed. 400 R - Research Methods

AUTHOR: Mayo, Samuel T.
Associate Professor Education
Loyola University
Room 308
1159 East Chicago Avenue
Chicago, Illinois 60600

TOPICAL FOCUS: Evaluating the research problem

DESCRIPTION: Ditto, one side, 8½ x 11, one page. This document is a checklist of questions that can be used in assessing the merits of the worth of a study. Questions range from personal and monetary to professional considerations.

GENERAL CHARACTER: Textual Materials

#132

TITLE: Classification of Facts
Education 400 R - Research Methods

AUTHOR: Mayo, Samuel T.
Associate Professor of Education
Loyola University
Room 308
1159 East Chicago Avenue
Chicago, Illinois 60600

TOPICAL FOCUS: The nature of "facts"

DESCRIPTION: Ditto, one side, 8½ x 11, one page. This sheet classifies facts under four headings with reference to their connection to theory and our powers of explanation or prediction.

GENERAL CHARACTER: Textual Materials

#133

TITLE: Rules for Classification of Data

AUTHOR: Mayo, William T.
Associate Professor of Education
Loyola University
Room 308
1159 East Chicago Avenue
Chicago, Illinois 60600

TOPICAL FOCUS: Measurement

DESCRIPTION: Ditto, one side, 8½ x 11, one page. A list of eight rules for classifying data.

GENERAL CHARACTER: Textual Materials

#134

TITLE: Procedures in Preparing the Bibliography

AUTHOR: Mayo, Samuel T.
Associate Professor Education
Loyola University
Room 308
1159 East Chicago Avenue
Chicago, Illinois 60600

TOPICAL FOCUS: Research bibliography

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, two pages. This document is a comprehensive explanation of the procedures involved in preparing a bibliography. The covering of the philosophical aspects as well as the mechanics of the process are brought out.

GENERAL CHARACTER: Textual Materials

#135

TITLE: Elementary Statistics Examples

AUTHOR: Mayo, Samuel T.
Associate Professor of Education
Loyola University
Room 308
1159 East Chicago Avenue
Chicago, Illinois 60600

TOPICAL FOCUS: Statistics

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, two pages.
Brief and simplified example of problems which require understanding and application of correlation concepts.

GENERAL CHARACTER: Learning Exercises

#136

TITLE: Common Statistical Devices and their Determination - Education 400-R

AUTHOR: Ahr, A. Edward
Loyola University
Room 308
1159 East Chicago Avenue
Chicago, Illinois 60600

TOPICAL FOCUS: Statistical analysis

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 4 pages.
A short review of some common statistical concepts.

GENERAL CHARACTER: Textual Materials

160

#137

TITLE: Classification of Types of Educational Research - Research Methods

AUTHOR: Monroe, Walter, & Engelhart, Max
Engelhart-Duke University
Durham, N. C. 27708

TOPICAL FOCUS: Types of educational research

DESCRIPTION: Ditto, one side, 8½ x 11, one page. This list of eight types of educational research was extra. ed from the book entitled The Scientific Study of Educational Problems, by Monroe & Engelhart.

GENERAL CHARACTER: Textual Materials

#138

TITLE: Methods in Educational Research

AUTHOR: Mayo, Samuel T.
Associate Professor of Education
Loyola University
Room 308
1159 East Chicago Avenue
Chicago, Illinois 60600

TOPICAL FOCUS: The research process and its components

PURPOSE: Guide students in reporting a research project

DESCRIPTION: Ditto, one side, 8½ x 11, one page. This document is a checklist which asks a person to give pertinent information about his research study. Implications being that answers to these question would insure some merit in the basic research design.

GENERAL CHARACTER: Textual Materials

#139

TITLE: Methods of Investigation in Educational Research

AUTHOR: Mayo, Samuel T.
Associate Professor of Education
Loyola University
Room 308
1159 East Chicago Avenue
Chicago, Illinois 60600

TOPICAL FOCUS: Categories of research design

DESCRIPTION: Ditto, one side, 8½ x 11, one page. This document is an outline of five methods of investigation in educational research: documentary analysis, indirect observation, direct observation with instrumental control, without instrumental control and composite methods.

GENERAL CHARACTER: Textual Materials

#140

TITLE: Instructions for Writing Abstracts With an Example

AUTHOR: Mayo, Samuel T.
Associate Professor of Education
Loyola University
Room 308
1159 East Chicago Avenue
Chicago, Illinois 60600

TOPICAL FOCUS: Abstracting

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 2 pages. This document is an illustration and explanation of the mechanics and cautions in writing abstracts.

GENERAL CHARACTER: Textual Materials

#141

TITLE: 3-D ANOVAR

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Statistics

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, three pages. An illustrated example of analysis of variance.

GENERAL CHARACTER: Learning Exercises

#142

TITLE: Mid-term Exam Research Methods 400-R

AUTHOR: Mayo, Samuel T.
Associate Professor Education
Loyola University
Room 308
1159 East Chicago Avenue
Chicago, Illinois 60600

TOPICAL FOCUS: Research process in general

DESCRIPTION: Ditto, one side, 8½ x 11, one page. This document is a copy of an essay test that was given in a specific research methods course, as the mid-term exam.

GENERAL CHARACTER: Course Examination

#143

TITLE: Final Exam Research Methods 400-R

AUTHOR: Mayo, Samuel T.
Associate Professor of Education
Loyola University
Room 308
1159 East Chicago Avenue
Chicago, Illinois 60600

TOPICAL FOCUS: Research process in general

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, two pages. This document is a copy of an essay test that was given as the final examination in a specific research methods course.

GENERAL CHARACTER: Course Examination

#144

TITLE: A Manual on Grouping Pupils for Effective Instruction

AUTHOR: Harris, Ben M., & McIntrye, Charles B.
Harris-School of Education
University of Texas
Austin, Texas 78712
McIntyre-Office of Instructional Resources
University of Illinois
Urbana, Illinois 61822

TOPICAL FOCUS: Measurement and analysis of data

DESCRIPTION: Offset, one side, temporary binding, 8½ x 11, 27 pages. An investigation and analysis of the extent to which various grouping criteria are effective in accomplishing the results that are usually assumed.

GENERAL CHARACTER: Learning Exercises, Description of Curriculum Approaches

164

#145

TITLE: Design and Construction of Classroom Tests EDSE 421 Instruction & Evaluation in Secondary Schools

AUTHOR: Gorow, Frank F.
Professor of Secondary Education
California State College at Long Beach
School of Education
Long Beach, California 90804

TOPICAL FOCUS: Measurement in the classroom

DESCRIPTION: Mimeograph, one side, 8½ x 11, one page. Deals with the rationale, objectives, and procedures which should be used in the design and construction of classroom test.

GENERAL CHARACTER: Course Description

#146

TITLE: Computation of Statistical Measures EDSE 421 Instruction & Evaluation in Secondary Schools

AUTHOR: Gorow, Frank F.
Professor of Secondary Education
California State College at Long Beach
School of Education
Long Beach, California 90804

TOPICAL FOCUS: Statistical analysis

DESCRIPTION: Mimeograph, one side, 8½ x 11, one page. This document is a unit outline which states the rationale, objectives, procedures, and requirements for a course in statistics.

GENERAL CHARACTER: Course Description

#147

TITLE: Evaluation in the Classroom

AUTHOR: Gorow, Frank F.
Professor of Secondary Education
California State College at Long Beach
School of Education
Long Beach, California 90804

TOPICAL FOCUS: Measuring achievement in the classroom

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 24 pages.
A brief introductory course in educational measurement and statistics.

RESTRICTIONS TO USE: Copyrighted by author 1967

GENERAL CHARACTER: Textual Materials, Learning Exercises

#148

TITLE: Test and Measurements in Guidance II (Individual Intelligence Testing)

AUTHOR: Snyder, Robert T.
Lecturer in Guidance
The Catholic University of America
School of Education
Washington, D. C. 20017

TOPICAL FOCUS: Intelligence Testing

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, three pages.
A course outline to be used with a specific course.

GENERAL CHARACTER: Course Outline

166

#149

TITLE: Final Examination Tests and Measures in Guidance I

AUTHOR: Snyder, Robert T.
Lecturer in Guidance
Catholic University of America
School of Education
Washington, D. C. 20017

TOPICAL FOCUS: Tests & measurement

DESCRIPTION: Mimeograph, one side, 8½ x 11, one page. The final examination given in this specific course in test and measurement.

GENERAL CHARACTER: Course Examination

#150

TITLE: General Overview and Analysis of McGrath's Models for Research Methods and Design

AUTHOR: McGrath, J. H.
Associate Professor
University of Utah
Department of Educational Administration
Salt Lake City, Utah 84112

TOPICAL FOCUS: Research designs

DESCRIPTION: Ditto, one side, 8½ x 11, one page. This document is best described by its title and briefly comments on the internal validity, external validity, and effectiveness of research method and design in the following classes: investigation, study, survey, and controlled experiment.

GENERAL CHARACTER: Textual Materials

#151

TITLE: Outline Ed. 900 - Educational Research

AUTHOR: Bartl, Charles
Associate Professor
University of Nevada
College of Education
Reno, Nevada 89507

TOPICAL FOCUS: The research process and its components

DESCRIPTION: Ditto, one side, 8½ x 11, one page. A copy of an outline and related time schedule for writing thesis.

GENERAL CHARACTER: Course Outline

#152

TITLE: Sources of Information for Educational Research - Ed. 900

AUTHOR: Bartl, Charles
Associate Professor of Education
University of Nevada
College of Education
Reno, Nevada 89507

TOPICAL FOCUS: The research process and its components

DESCRIPTION: Mimeograph, one side, temporary binding 8½ x 11, 6 pages. An educational research bibliography.

GENERAL CHARACTER: Course Bibliography

#153

TITLE: Midterm Examination Research 900

AUTHOR: Bartl, Charles
Associate Professor
University of Nevada
College of Education
Reno, Nevada 89507

TOPICAL FOCUS: Experimental research, methodology

DESCRIPTION: Ditto, one side, 8½ x 11, one page. This is an essay examination used mid-term in a Philosophy of Science type course at the graduate level. The ten questions require essay answers.

GENERAL CHARACTER: Course Examination

#154

TITLE: Mid term Examination Education 413-713 Introduction to Statistics

AUTHOR: Bartl, Charles
Associate Professor
University of Nevada
College of Education
Reno, Nevada 89507

TOPICAL FOCUS: Statistics

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 8 pages. A mid-term exam that was given in an introduction to statistics course.

GENERAL CHARACTER: Course Examination

#155

TITLE: Final Examination Education 413-713 - Introduction to Statistics

AUTHOR: Bartl, Charles
Associate Professor
University of Nevada
College of Education
Reno, Nevada 89507

TOPICAL FOCUS: Statistics

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 10 pages. A final-term exam that was given in an introduction to statistic course.

GENERAL CHARACTER: Course Examination

#156

TITLE: Departmental Profile (A Research Instrument) Education G 802

AUTHOR: Doi, James
Center for Study of Higher Education
University of Michigan
Ann Arbor, Michigan 48105

TOPICAL FOCUS: Higher education departmental characteristics

PURPOSE: To aid faculty and administration in program development and operation

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 22 pages. This document is an instrument which is designed to stimulate and facilitate an awareness and practice of planning and evaluation within an institution of higher learning.

GENERAL CHARACTER: Textual Materials, Institutional Research paradigm

170

#157

TITLE: Academic Staff Questionnaire

AUTHOR: Doi, James I.
University of Michigan
Office of Institutional Research
4015 Administration Bldg.
Ann Arbor, Michigan 48105

TOPICAL FOCUS: Academic staff characteristics

PURPOSE: To measure: (1) conditions of service; (2) nature of service; (3) areas of needed improvement; (4) personal characteristics

DESCRIPTION: Offset, two sides, temporary binding in booklet form, 8½ x 11, 17 pages. This document is best described by its title.

GENERAL CHARACTER: Institutional Research Instrument

#158

TITLE: Decision Making and Communication in University Organizations

AUTHOR: Doi, James I.
University of Michigan
Office of Institutional Research
4015 Administration Bldg.
Ann Arbor, Michigan 48105

TOPICAL FOCUS: Decision making & communications

PURPSOE: To measure characteristics of decision making in higher education.

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 14 pages. A questionnaire used to assess a person's decision making and communication skills.

GENERAL CHARACTER: Institutional Research Instrument

#159

TITLE: Role of A Course in Educational Research

AUTHOR: Rosenier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: The skills, attitudes, & knowledge objectives of the introductory research course

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, two pages. Best described by it's title.

GENERAL CHARACTER: Course Objectives

#160

TITLE: Research Studies and Graduate Students

AUTHOR: Clegg, A. A.
Assistant Professor
University of Massachusetts
School of Education
Amherst, Mass. 01003

TOPICAL FOCUS: The references to be used in a specific course and the expected student achievements

DESCRIPTION: Ditto, one side, 8½ x 11, one page. A short paper on a few of the reference instruments.

GENERAL CHARACTER: Course Requirements and Basic References

172

#161

TITLE: Partial Listing of Objectives for NIU Undergraduate Research Training Program

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: (See title)

DESCRIPTION: Xerox, one side, 8½ x 11, one page. This document is best described by it's title.

GENERAL CHARACTER: Course Objectives

#162

TITLE: Schematic Diagram of the Research Process

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: General nature of the research process

DESCRIPTION: Mimeograph, one side, one page. The research process is laid out in diagram form with eight levels. They range from problem situation through classification of elements in the problem to uses and applications of solutions.

GENERAL CHARACTER: Textual Materials, Diagram of the Research Process

#163

TITLE: Factor Analysis; An Introduction

AUTHOR: Kennedy, John J.
Project Director
Graduate Research Training Program
College of Education
Knoxville, Tennessee 37916

TOPICAL FOCUS: Statistics - Factor analysis

PURPOSE: "...to describe factor analysis in such a way that students without the possession of the sophistication of statistics and factor theory can realize an appreciation of the fundamental processes."

DESCRIPTION: Xerox, one side, temporary binding, 8½ x 11, 33 pages. An attempt to introduce factor analysis in a non-traditional non-esoteric tone.

GENERAL CHARACTER: Textual Materials

#164

TITLE: Multiple Regression

AUTHOR: Kramer, Clyde Young
Virginia Agricultural Experiment Station
of the Virginia Polytechnic Institute
Blacksburg, Virginia

TOPICAL FOCUS: Statistics - Multiple regression

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 33 pages. A detailed coverage of the theory and computational procedures in multiple regression.

GENERAL CHARACTER: Textual Materials

174

#165

TITLE: Multiple Regression Theory

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Statistics - Multiple Regression

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, three pages.
An expanded model of multiple regression theory.

GENERAL CHARACTER: Textual Materials

#166

TITLE: Example: Adding a Variate

AUTHOR: Rosemier, Robert A.
Associate Professor
Department of Education
Northern Illinois University
DeKalb, Illinois 60115

TOPICAL FOCUS: Statistics - regression analysis and ANOVA

DESCRIPTION: Xerox, one side, temporary binding, 8½ x 11, 3 pages.
This piece is a continutation of instruction on regression analysis.

GENERAL CHARACTER: Textual Materials

#167

TITLE: Deleting a Variate

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Statistics - regression analysis

DESCRIPTION: Xerox, one side, temporary binding, 8½ x 11, 2 pages.
A set of materials that continues instruction on regression analysis.

GENERAL CHARACTER: Textual Materials

#168

TITLE: Determination of Regression Coefficients

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Statistics - Regression coefficients

DESCRIPTION: Xerox, one side, temporary binding, 8½ x 11, 4 pages.
Illustrates the essentials in the determination of regression coefficients. Consists of copies of an unidentified article.

GENERAL CHARACTER: Textual Materials

#169

TITLE: Appendix A: Experimental Design in Educational Media Research

AUTHOR: Schutz, Richard E., Page, Ellis B., & Stanley, Julian C.

TOPICAL FOCUS: Research design

PURPOSE: To present the basic characteristics of selected research designs and the factors which affect validity

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 46 pages. This document examines the validity of 14 experimental designs against 12 common threats to valid experimentation. It is very similar to the Stanley-Campbell chapter of the Handbook of Research on Teaching.

GENERAL CHARACTER: Textual Materials

#170

TITLE: Periodicals Useful for Research in Education

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: General references in education and educational research.

DESCRIPTION: Ditto, one side, 8½ x 11, one page. A listing of periodicals useful for research in education.

GENERAL CHARACTER: Textual Materials

#171

TITLE: Some Library Guides to Educational Research

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Library resources

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 3 pages. A listing of materials useful for research in education categorized by type of materials.

GENERAL CHARACTER: Textual Materials

#172

TITLE: Test in following instructions

AUTHOR: Michigan State University
Deparment of Entrance & Applications

TOPICAL FOCUS: Measurement - Following directions

DESCRIPTION: Ditto, one side, 8½ x 11, one page. A test in following directions.

GENERAL CHARACTER: Learning Exercises

#173

TITLE: Plausible Logic in Educational Research

AUTHOR: Raths, James D.
Director
University of Maryland
Bureau of Educational Research
College Park, Maryland

TOPICAL FOCUS: Plausible logic, hypothesis formation

DESCRIPTION: Mimeograph, one side, corner stapled, 3 pages. Eight patterns of plausible logic in educational research are explicated here. Several of these were borrowed from Polyá.

GENERAL CHARACTER: Textual Materials

#174

TITLE: Action Research

AUTHOR: Rosemier, Robert A.
Associate Professor
Department of Education
Northern Illinois University
DeKalb, Illinois 60115

TOPICAL FOCUS: Research vocabulary - action research

DESCRIPTION: Ditto, one side, one page. Three words used in research are defined here, action research, cooperative action research, practitioner.

GENERAL CHARACTER: Textual Materials

#175

TITLE: Interaction

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Statistics - the concept of interaction

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 2 pages. Explains interaction in a two-way ANOVA grid by a technique called double-correction.

GENERAL CHARACTER: Textual Materials

#176

TITLE: The Values of "Replication" in Educational Research - Education 602 - Methods and Techniques of Research

AUTHOR: Bauernfeind, Robert H.
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Research process - design for replication

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 8 pages. This document is a case for replication in educational research. It points out a need for such studies as well as giving examples of significant considerations and related problems connected with such studies.

GENERAL CHARACTER: Textual Materials

#177

TITLE: Test Giver's Self-Inventory

AUTHOR: Thompson, Anton
Director of Research
Long Beach City Schools
Long Beach, California

TOPICAL FOCUS: Measurement planning

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 4 pages. Measurement of a tester's understanding of his responsibilities before, during and after administering a test.

GENERAL CHARACTER: Textual Materials

#178

TITLE: Tentative Outline of a proposed Dissertation Guide for Writing a Prospectus

AUTHOR: Partin, Clyde
University of North Carolina
Chapel Hill, North Carolina

TOPICAL FOCUS: Research proposals

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 11 pages. This package consists of three examples of a written prospective. They all have the basic essentials but differ in their general format.

GENERAL CHARACTER: Textual Materials

#179

TITLE: Analysis of Covariance

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Statistics - ANCOVA

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 3 pages.
Explains, through illustration, the concept of covariance.

GENERAL CHARACTER: Textual Materials

#180

TITLE: Cookbook Format for Analysis of Covariance

AUTHOR: Dwyer & Shrader
Educational Testing Service
Princeton, N. J.

TOPICAL FOCUS: Statistics - ANCOVA

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 9 pages.
Best described by it's title. Extracted from Dwyer and Shrader, Results of an Educational Experiment, ETS

GENERAL CHARACTER: Learning Exercises

#181

TITLE: Happy Talk for Educational Researchers

AUTHOR: Schutz, Richard E.
Director
Southwest Regional Lab
Inglewood, California 90304

TOPICAL FOCUS: Researchers' expectations

DESCRIPTION: Ditto, one side, 8½ x 11, one page. A humerous note on Educational Researchers desires.

GENERAL CHARACTER: Textual Materials

#182

TITLE: Test Evaluation Sheet

AUTHOR: Cebula,

TOPICAL FOCUS: Measurement

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 3 pages. An evaluation form used in conjunction with a specific course in test and measurement

GENERAL CHARACTER: Textual Materials

#183

TITLE: Educational Research Fellowship Personal Data

AUTHOR: Page, Ellis
Director
University of Connecticut
Bureau of Educational Research
New Haven, Connecticut 06268

TOPICAL FOCUS: Student characteristics

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 7 pages.
A profile chart used to screen applicants for educational research fellowships.

GENERAL CHARACTER: Student data instrument

#184

TITLE: Short Test of Understanding Test Scores

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Measurement

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 2 pages.
A 10 question objective test on understanding test scores.

GENERAL CHARACTER: Course Examination

184

#185

TITLE: Methods and Techniques of Educational Research - Education 441 Final Examination

AUTHOR: Paulus
University of Connecticut
New Haven, Connecticut 06268

TOPICAL FOCUS: The research process

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 3 pages. A 20 question short answer test given as final exam in a methods and techniques of education research course.

GENERAL CHARACTER: Course Examination

#186

TITLE: Scales

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Measurement scales

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 2 pages. Defines and illustrates the various scales.

GENERAL CHARACTER: Textual Materials

#187

TITLE: Computer Utilization in Advanced Educational Research - Ed. 300B - Quiz

AUTHOR: Page, Ellis
Director
Bureau of Educational Research
The University of Connecticut
New Haven, Connecticut 06268

TOPICAL FOCUS: Logic

DESCRIPTION: Ditto, one side, loose pages, two pages. This is an eight question quiz mainly dealing with formal logic and the interpretation of logic symbols.

GENERAL CHARACTER: Course Examination

#188

TITLE: Grade Equivalents

AUTHOR: Rosenier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Measurement - achievement norms

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 2 pages. An exercise on the use of equivalency scores

GENERAL CHARACTER: Learning Exercises

186

#189

TITLE: Rules of Summations

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Statistical computations

DESCRIPTION: Xerox, one side, temporary binding, 8½ x 11, 2 pages.
A listing and explanation of the rules of summation.

GENERAL CHARACTER: Textual Materials

#190

TITLE: Organizing a Frequency Distribution

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Statistics - frequency distribution

DESCRIPTION: Xerox, one side, temporary binding, 8½ x 11, 5 pages.
An illustrated copy of a fequency distribution.

GENERAL CHARACTER: Textual Materials

#191

TITLE: Percentiles and Percentile Ranks

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Statistics - computing percentiles and percentile ranks.

DESCRIPTION: Xerox, one side, temporary binding, 8½ x 11, 2 pages. Expands a method of computing percentiles and percentile ranks.

GENERAL CHARACTER: Learning Exercises

#192

TITLE: Exercise on Frequency Distribution, Histogram, and Frequency Polygon

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Statistics - frequency distribution and data displays

DESCRIPTION: Xerox, one side, 8½ x 11, one page. Document is best described by it's title.

GENERAL CHARACTER: Learning Exercises

188

#193

TITLE: Use of Normal Curve Probability Table

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Statistics - the normal curve

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 5 pages.
An explanation of the use of normal curve probability and a related exercise.

GENERAL CHARACTER: Textual Materials

#194

TITLE: Standard Scores and Transformations

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Statistics - Standard scores & transformations

DESCRIPTION: Xerox, one side, 8½ x 11, one page. A worksheet used in conjunction with this specific course.

GENERAL CHARACTER: Learning Exercises

#195

TITLE: Testing of Hypotheses

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Hypothesis testing

DESCRIPTION: Three pieces: one - ditto, one side, 8½ x 11, one page; two - mimeograph, one side, temporary binding, 8½ x 11, two pages each. A brief expanded example of hypothesis testing.

GENERAL CHARACTER: Textual Materials

#196

TITLE: National Research Training Institute

AUTHOR: Hamreus, Dale G.
Associate Director
Teaching Research
Oregon State System of Higher Education
Monmouth, Oregon 97361

TOPICAL FOCUS: Planning and developing instructional systems.

DESCRIPTION: Mimeograph, two sides, permanent binding, 8½ x 11, 235 pages. This is a manual used in a Research Training Program to provide the user with basic skills necessary to plan and produce an improved instructional system and to plan and conduct research related to instruction.

GENERAL CHARACTER: Textual Materials

#197

TITLE: National Research Training Institute Workbook

AUTHOR: Hamreus, Dale G.
Associate Director
Teaching Research
Oregon State System of Higher Education
Monmouth, Oregon 97361

TOPICAL FOCUS: Planning & developing instructional systems

DESCRIPTION: Mimeograph, two sides, permanent binding, 8½ x 11, 64 pages. This is a workbook that was designed to provide exercises that would develop the objectives of the manual (#196).

GENERAL CHARACTER: Learning Exercises

#198

TITLE: Testing Hypothesis of Means

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Statistics

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 3 pages. An illustration of testing the hypothesis of means.

GENERAL CHARACTER: Textual Materials

#199

TITLE: Standard Errors

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Statistics - Hypothesis testing and confidence intervals

DESCRIPTION: Xerox, one side, 8½ x 11, one page. An illustration of appropriate formulas for hypothesis testing.

GENERAL CHARACTER: Textual Materials

#200

TITLE: Estimating N

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Statistics & Research Design - estimating needed sample size.

DESCRIPTION: Xerox, one side, temporary binding, 8½ x 11, 3 pages. An exercise on determing sample size.

GENERAL CHARACTER: Learning Exercises

#201

TITLE: The Chi-Square Statistic

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Statistics - Chi Square

DESCRIPTION: Xerox (one page is ditto), one side, temporary binding, 8½ x 11, 11 pages. A short paper on chi-square statistics.

GENERAL CHARACTER: Textual Materials

#202

TITLE: Type I, Type II Error and Power

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Statistical Decisions & Power of the Test

DESCRIPTION: Xerox, one side, temporary binding, 8½ x 11, 5 pages. Discusses the principles of the alpha-error and beta-error concepts.

GENERAL CHARACTER: Textual Materials

#203

TITLE: Simple Linear Regression

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Statistics - Linear regression

DESCRIPTION: Ditto (one page is pencil graph), temporary binding, one side, 8½ x 11, 6 pages. An illustration of a simple linear regression.

GENERAL CHARACTER: Textual Materials

#204

TITLE: Size of Sample

AUTHOR: Rosemier, Robert A.
Associate Professor
Northern Illinois University
Department of Education
DeKalb, Illinois 60115

TOPICAL FOCUS: Statistics - sample size for t test

DESCRIPTION: Xerox, one side, temporary binding, 8½ x 11, 3 pages. An exercise on estimating the size of the sample by use of a t score.

GENERAL CHARACTER: Textual Materials

194

#205

TITLE: The Influence of Various Track Starting Positions on Accelerations

AUTHOR: Menely, Ronald C.

TOPICAL FOCUS: Research design characteristics

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 10 pages. A study conducted to examine the relative effects of four track starting positions. Research implications show error of using simple-randomized design when repeated measures are involved.

GENERAL CHARACTER: Textual Materials

#206

TITLE: Video Tapes for Educational Research Training Program

AUTHOR: Ellis, Joseph R.
Department of Education
Northern Illinois University
DeKalb, Illinois 60115

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 6 pages. A listing of 6 video tapes for educational research training programs made during an undergraduate research training program.

GENERAL CHARACTER: Tapes-Video

#207

TITLE: Independent and Dependent Variables

AUTHOR: Baron, Denis
Professor of Education
Oregon State University
Center for Self-Instruction
Corvallis, Oregon 97331

TOPICAL FOCUS: Independent variables, dependent variables

PURPOSE: "To teach you to identify and distinguish independent and dependent variables in statements of hypotheses and research reports."

DESCRIPTION: Typed copy, one side, corner stapled, 8½ x 11, 4 pages. This is a linear program twenty frames in length.

GENERAL CHARACTER: Textual Materials, Learning Exercises, Programed Format

#208

TITLE: Research Procedures - Errors Related to Hypothesis Testing

AUTHOR: Baron, Denis
Professor of Education
Oregon State University
Center for Self-Instruction
Corvallis, Oregon 97331

TOPICAL FOCUS: Statistical decisions

DESCRIPTION: Typed, one side, temporary binding, 8½ x 11, 2 pages. A programmed exercise on errors related to hypothesis testing.

GENERAL CHARACTER: Learning Exercises, Programed Format

196

#209

TITLE: Research Procedures - The Null Hypotheses: Accept or Reject?

AUTHOR: Baron, Denis
Professor of Education
Oregon State University
Center for Self-Instruction
Corvallis, Oregon 97331

TOPICAL FOCUS: Statistics - Accepting or rejecting the null hypotheiss

DESCRIPTION: Typed, one side, temporary binding, 8½ x 11, 2 pages.
An accept or reject exercise on the null hypothesis

GENERAL CHARACTER: Learning Exercises

#210

TITLE: Research Procedures-Analysis of A Research Report

AUTHOR: Baron, Denis
Professor of Education
Oregon State University
Center for Self-Instruction
Corvallis, Oregon 97331

TOPICAL FOCUS: Interpreting completed research

DESCRIPTION: Typed, one side, 8½ x 11, one page. A summary report
of a study on the "null hypothesis."

GENERAL CHARACTER: Learning exercises

#211

TITLE: Analysis of a Research Procedure

AUTHOR: Baron, Denis
Professor of Education
Oregon State University
Center for Self-Instruction
Corvallis, Oregon 97331

TOPICAL FOCUS: Analyzing completed research

DESCRIPTION: Typed, one side, temporary binding, 8½ x 11, 2 pages. This document is a brief summary of a study of which questions are asked to test one's knowledge of research procedures.

GENERAL CHARACTER: Learning Exercises

#212

TITLE: Analysis of Research (Reading Study) Form B-66-F

AUTHOR: Baron, Denis
Professor of Education
Oregon State University
Center for Self-Instruction
Corvallis, Oregon 97331

TOPICAL FOCUS: Analysis of completed research

DESCRIPTION: Typed copy, one side, corner stapled, two pages. This paper presents a brief description of a reading study and asks four questions about it, supplying the answers for those questions.

GENERAL CHARACTER: Learning Exercises

198

#213

TITLE: Models for Educational Administration

AUTHOR: McGrath, J. H.
Associate Professor
University of Utah
Department of Educational Administration
Salt Lake City, Utah 84112

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 14 pages.
A collection of paradigms used in the literature to describe Educational Administration.

GENERAL CHARACTER: Textual Materials

#214

TITLE: Models and Paradigms

AUTHOR: McGrath, J. H.
Associate Professor
Department of Educational Administration
University of Utah
Salt Lake City, Utah 84112

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 31 pages.
Best described by it's title.

GENERAL CHARACTER: Textual Materials

#215

TITLE: Behavioral Objectives Test

AUTHOR: Hamreus, Dale G.
Associate Director
Teaching Research
Oregon State System of Higher Education
Monmouth, Oregon 97361

TOPICAL FOCUS: Behavioral objectives

PURPOSE: To measure understanding developed through use of the National Research Training Instructional Manual.

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 7 pages. An objective test that should be used with National Research Training Institute Manuel - (TMP #196).

GENERAL CHARACTER: Examination

#216

TITLE: Objective Analysis Criterion Test

AUTHOR: Hamreus, Dale G.
Associate Director
Teaching Research
Oregon State System of Higher Education
Monmouth, Oregon 97361

TOPICAL FOCUS: Behavioral objectives

PURPOSE: To measure student ability to analyze behavioral objectives statements.

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 5 pages. An objective test that was used with the National Research Training Institute Manuel - (TMP #196)

GENERAL CHARACTER: Course Examination

200

#217

TITLE: Instructional System Development Test

AUTHOR: Hamreus, Dale G.
Associate Director
Teaching Research
Oregon State Systems of Higher Education
Monmouth, Oregon 97361

TOPICAL FOCUS: The development process

PURPOSE: To measure student understanding of the development process

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 12 pages.
A copy of a test used in a National Research Training Institute.

GENERAL CHARACTER: Course Examination

#218

TITLE: Test Over Measurement

AUTHOR: Hamreus, Dale G.
Associate Director
Teaching Research
Oregon State System of Higher Education
Monmouth, Oregon 97361

TOPICAL FOCUS: Measurement conepts

PURPOSE: To measure student understanding of the measurement process.

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 5 pages.
An objective test on measurement. It was designed to be used with the Nat'l. Research Training Instructional Manual.

GENERAL CHARACTER: Course Examination

#219

TITLE: Criterion Test: Experimental Design

AUTHOR: Hamreus, Dale G.
Associate Director
Teaching Research
Oregon State System of Higher Education
Monmouth, Oregon 97361

TOPICAL FOCUS: Experimental Design

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 3 pages. This document is a sample of experimental design proposal which is used to test one's understanding of criteria in design. To be used with National Research Training Instructional Manuel (TMP #196).

GENERAL CHARACTER: Course Examination

#220

TITLE: Data Analysis I - Criterion Examination

AUTHOR: Hamreus, Dale G.
Associate Director
Teaching Research
Oregon State System of Higher Education
Monmouth, Oregon 97361

TOPICAL FOCUS: Measurement

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 3pages. A test on data analysis. To be used with the National Research Training Instructional Manuel.

GENERAL CHARACTER: Course Examination

#221

TITLE: Data Analysis II Criterion Examination

AUTHOR: Hamreus, Dale G.
Associate Director
Teaching Research
Oregon State System of Higher Education
Monmouth, Oregon 97361

TOPICAL FOCUS: Statistical analysis of data

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 6 pages. A test on data analysis. To be used with the National Research Training Institute Manual (TMP #196).

GENERAL CHARACTER: Course Examination

#222

TITLE: Planning the Course of Study

AUTHOR: Page, Ellis B.
Director Research Training Program
Bureau of Educational Research
University of Connecticut
Storrs, Connecticut 06268

TOPICAL FOCUS: Individual program planning

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 7 pages. This document was a memorandum which set forth information necessary for intelligent planning of a course of study for fellows in a USOE supported research training program.

GENERAL CHARACTER: Textual Materials

#223

TITLE: Multivariate Computational Strategies for Educational Research
Educational Psychology 300 A

AUTHOR: Page, Ellis B.
Director, Research Training Program
Bureau of Educational Research
University of Connecticut
Storrs, Connecticut

TOPICAL FOCUS: Statistics - Multivariate analysis

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 15 pages.
A course outline for a course in educational research. It also contains a related annotated bibliography and selected learning exercises.

GENERAL CHARACTER: Textual Materials, Learning Exercises, Course Outline, Bibliography

#224

TITLE: Appropriate Practice

AUTHOR: Popham, W. James
Southwest Regional Laboratory
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Development process

DESCRIPTION: Offset, one side, temporary binding, 8½ x 11, 16 pages
A programmed learning exercise in developing a good product developer.

GENERAL CHARACTER: Textual Materials, Learning Exercises, Programed Format

204

#225

TITLE: Establishing Performance Standards

AUTHOR: Baker, Eva L.
Southwest Regional Laboratory
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Course objectives - setting standards

DESCRIPTION: Offset, one side, temporary binding, 8½ x 11, 16 pages.
A programmed text approach for testing the attitudes and philosophies that might be used in establishing standards of performance.

GENERAL CHARACTER: Textual Materials, Learning Exercises, Programed Format

#226

TITLE: Evaluation

AUTHOR: Baker, Eva L.
Southwest Regional Laboratory
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Evaluation

DESCRIPTION: Offset, one side, temporary binding, 8½ x 11, 18 pages.
A modified programmed approach is used to treat the subject of evaluation in the classroom.

GENERAL CHARACTER: Textual Materials, Learning Exercises, Programed Format

#227

TITLE: Guidelines for Preparing Project Module Specifications

AUTHOR: Baker, Robert L.
Southwest Regional Laboratory
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Development process

DESCRIPTION: Offset, one side, temporary binding, 8½ x 11, 5 pages. Provides guidelines for "Project Modules" which attempt to make maximall, efficient use of individuals, organizations, and resources of the region in a manner that will assure the development of a cohesive product.

GENERAL CHARACTER: Textual Materials

#228

TITLE: Make It Interesting!

AUTHOR: Popham, James W.
Southwest Regional Laboratory
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Principles to be considered in the development of instructional materials

DESCRIPTION: Offset, one side, temporary binding, 8½ x 11, 13 pages. A programmed learning exercise which deals with the pros and cons of making learning interesting.

GENERAL CHARACTER: Textual Materials, Learning Exercises, Programed Format

206

#229

TITLE: Prividing Knowledge of Results

AUTHOR: Popham, W. James
Southwest Regional Laboratory
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Prniciples to be considered in the development of instructional materials

DESCRIPTION: Offset, one side, temporary binding, 8½ x 11, 16 pages. Deals with the knowledge of resules. It relates these materials to the pros and cons in the use of confermation boxes on programmed material.

GENERAL CHARACTER: Textual Materials, Learning Exercises, Programed Format

#230

TITLE: Selecting Appropriate Educational Objectives

AUTHOR: Popham, W. James
Southwest Regional Laboratory
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Behavioral objectives

DESCRIPTION: Offset, one side, temporary binding, 8½ x 11, 17 pages. Programmed instruction on the procedure of stating instructional objectives in a more meaningful manner.

GENERAL CHARACTER: Textual Materials, Learning Exercises, Programed Format

#231

TITLE: Writing Instructional Specifications

AUTHOR: Sullivan, Howard J.
Southwest Regional Laboratory
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Principles to be considered in the design of instructional materials.

DESCRIPTION: Offset, one side, temporary binding, 8½ x 11, 14 pages. This document is a recipe for writing instructional specifications. It is designed to provide the product developer explicit guidance for producing the instructional materials.

GENERAL CHARACTER: Textual Materials

#232

TITLE: The Use of Library Computer Programs for Statistical Analysis

AUTHOR: Wolf, Richard M.
Southwest Regional Laboratory
SWRL
11300 LaCienega Boulevard
Inglewood, California

TOPICAL FOCUS: Data processing

DESCRIPTION: Offset. two sides, temporary binding in booklet form, 8½ x 11, 33 pages. This document contains a set of materials that will enable an individual to acquire the knowledge and skills necessary to use computer programs from a program library.

GENERAL CHARACTER: Textual Materials

208

#233

TITLE: A Taxonomy of Learner Behaviors

AUTHOR: Baker, Robert L., & Sullivan, Howard L.
Southwest Regional Laboratory
SWRL
11300 LaCienega
Inglewood, California

TOPICAL FOCUS: Behavioral objectives

DESCRIPTION: Offset, one side, temporary binding, 8½ x 11, 10 pages.
A taxonomy of learner behavior designed for use in constructing statements of instructional objectives for cognitive tasks.

GENERAL CHARACTER: Textual Materials

#234

TITLE: Test to Accompany Measurement in the Evaluation Process

AUTHOR: Baker, Robert L.
College of Education
Arizona State University
Tempe, Arizona 85281

TOPICAL FOCUS: Measurement process

DESCRIPTION: Offset, one side, temporary binding, 8½ x 11, 3 pages.
A test that was given in this specific course.

GENERAL CHARACTER: Examination

#235

TITLE: Test of Ability to Distinguish Between Operational and Vague Objectives

AUTHOR: Baker, Robert L.
College of Education
Arizona State University
Tempe, Arizona 85281

TOPICAL FOCUS: Behavioral objectives

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 3 pages. A test what was given in a specific course.

GENERAL CHARACTER: Examination

#236

TITLE: Nomograph for Computing Partial Correlation

AUTHOR: Lees, Ruth W., and Lord, Fredric M.
Educational Testing Service
Princeton, New Jersey 08540

TOPICAL FOCUS: Statistics - Correlational analysis

DESCRIPTION: A Nomograph for computing multiple correlation coefficients and partial correlation coefficient.

GENERAL CHARACTER: Learning Equipment

210

#237

TITLE: Indexing for ERIC, Vol. I

AUTHOR: Landridge, D. W.
School of Library and Information Services
University of Maryland
College Park, Maryland 20740

TOPICAL FOCUS: Document storage & retrieval

DESCRIPTION: Offset, two sides, temporary binding, 8½ x 11, 54 pages.
A course consisting of four lessons which cover the general principles of indexing, the specific methods of coordinate indexing, and the use of the ERIC thesaurus. A bibliography on coordinate indexing is included.

GENERAL CHARACTER: Textual Materials

#238

TITLE: Indexing for ERIC, Vol. II

AUTHOR: Landridge, D. W.
School of Library and Information Services
University of Maryland
College Park, Maryland 20740

TOPICAL FOCUS: Document storage and retrieval process

DESCRIPTION: Offset, two sides, temporary binding, 8½ x 11, 206 pages.
A course (programed) which teaches the theory and techniques of indexing and subject indexing.

GENERAL CHARACTER: Textual Materials, Learning Exercises, Programed Format

#239

TITLE: Indexing for ERIC, Vol. III

AUTHOR: Landridge, D. W.
School of Library and Information Services
University of Maryland
College Park, Maryland 20740

TOPICAL FOCUS: Document storage and retrieval process

DESCRIPTION: Offset, two sides, temporary binding, 8½ x 11, 155 pages. A demonstration and illustration of the concepts taught in Vol. I and Vol. II.

GENERAL CHARACTER: Textual Materials, Programed Format

#240

TITLE: Speech Synthesis: An Experiment in Electronic Speech Production

AUTHOR: Coker, Cecil H., Denes, Peter B., & Pinson, Elliot N.
Bell Telephone Laboratories

TOPICAL FOCUS: Electronic speech

DESCRIPTION: A kit of materials for constructing an electronic speech synthesizer plus a book describing its construction and experimental use to learn about speech phenomenon. (This is an excellent example of a well developed set of instructional materials. Unfortunately it is only tangentially related to the research process)

GENERAL CHARACTER: Textual Materials, Learning Exercises, Learning Equipment

#241

TITLE: Report of the AERA 1966 Pre-session on Experimental Design

AUTHOR: Schutz, R. E.
Professor
Arizona State University
Tempe, Arizona

TOPICAL FOCUS: Experimental design

PURPOSE: To describe the locale, the participants, the events, and the outcomes of the presession, . . . with reference to the expressed purposes and expectations of its sponsors and staff. . .

DESCRIPTION: Mimeograph, two side, booklet, 8½ x 11, 100 pages. Contains the format of the various data gathering instruments used, including questionnaires and achievement tests used. The achievement tests included areas of writing the ANOVA table, multiple comparisons, power of the F test, principles of experimental design.

GENERAL CHARACTER: Description of Curriculum Approaches

#242

TITLE: Report of the 1968 AERA Pre-session #9 On-line computer applications in educational research

AUTHOR: Ragsdale, R. G.
Ontario Institute for Studies in Education
102 Bloor St. W.
Toronto 5, Ontario, Canada

TOPICAL FOCUS: On-line computer applications

PURPOSE: The report summarizes and analyzes the activities of the pre-session, which focused on computer needs, other than data processing.

DESCRIPTION: Off-set, one side, 8½ x 11, 63 pages. Contains the evaluation forms and some analyses thereof. (The actual materials used at the pre-session are TMP document numbers 243-247, inclusive.)

GENERAL CHARACTER: Textual Materials, Learning Exercises, Description of Curriculum Approaches

#243

TITLE: Educational Data Banks

AUTHOR: Ellis, Mancel R.
Ontario Institute for Studies in Education
102 Bloor Street W.
Toronto, 5, Ontario, Canada

TOPICAL FOCUS: Computer applications-educational data banks

PURPOSE: To make the reader aware of current aspects of information, storage and retrieval.

DESCRIPTION: Xerox, one side, corner-stapled booklet, 8½ x 11, 24 pages. The material is textual with some diagrams. It discusses many currently used information, storage and retrieval systems. It takes care to distinguish between Text Reference and Text Retrieval systems.

GENERAL CHARACTER: Textual Materials

#244

TITLE: On-line assistance in the design and control of psychological experiments.

AUTHOR: Cornfield, J.
Ontario Institute for Studies in Education
102 Bloor Street West
Toronto 5, Ontario, Canada

TOPICAL FOCUS: Computer-aided instruction, on-line computer applications.

PURPOSE: To make the reader aware of the problems and current advances in computer control of activities.

DESCRIPTION: Xerox, one side, corner-stapled booklet, 8½ x 11, 28 pages. The presentation is all textual, no diagrams, with an extensive bibliography. It is designed just to increase awareness of the problems surrounding computer applications, with an emphasis on shared-time systems.

GENERAL CHARACTER: Textual Materials

#245

TITLE: Simulation and Programmed Intelligence: An Introductory Paper

AUTHOR: Tunstall, Kenneth
Ontario Institute for Studies in Education
102 Bloor Street W.
Toronto 5, Ontario, Canada

TOPICAL FOCUS: Emphasizes simultion, and deals with programmed intelligence via computers.

PURPOSE: To increase awareness of simulation, concepts and programmed intelligence concepts.

DESCRIPTION: Xerox, one side, corner stapled booklet, 8½ x 11, 13 pages. The material is textual with no diagrams. It mainly serves as a dictionary for the various terms used in literature on simulation and programmed instruction via computer.

GENERAL CHARACTER: Textual Materials

#246

TITLE: User's Guide to FOCAL

AUTHOR: Ensor, David, & Stansfield, David
Department of Computer Applications
The Ontario Institute for Studies in Education
102 Bloor Street W.
Toronto 5, Ontario, Canada

TOPICAL FOCUS: Computer programming language, computer assisted instruction.

PURPOSE: To discuss various types of CAI and to teach FOCAL as a language.

DESCRIPTION: Off-set, two side, booklet, 8½ x 11, 50 pages. The material is textual with abundant examples and discussions of the language's development. It provides an actual program written by the author.

GENERAL CHARACTER: Textual Materials

#247

TITLE: Data Analysis: Realizations and Needs

AUTHOR: Pysh, F.
Ontario Institute for Studies in Education
102 Bloor Street W.
Toronto 5, Ontario, Canada

TOPICAL FOCUS: Data Analysis - general principles and rationale.

PURPOSE: "To review the more recent contributions to data analysis in terms of hardware, sofware and "brain-ware" (conceptual advances) and to examine how (These can be) amalgamated into a more viable mix . . ."

DESCRIPTION: Xerox, one side, corner-stapled booklet, 8½ x 11, 27 pages. The material is textual with a few diagrams and an extensive bibliogrpahy. Various packaged programs for data analysis are reviewed but no conclusions seem to be reached.

GENERAL CHARACTER: Textual Materials

#248

TITLE: Improving student teaching through objectivity and Research.

AUTHOR: Veal, L. R., Pikaart, Len, & Berryman, C.
College of Education
University of Georgia
Athens, Ga.

TOPICAL FOCUS: Teacher education, research for and about student teaching

PURPOSE: To indicate problems and weaknesses of programs of student teaching, with a focus on research.

DESCRIPTION: Offset, two-side, booklet, 5 x 8, 35 pages. This booklet is a Bulletin of the College of Education, University of Kentucky, March, 1967. It contains in Chapter 3 a description of factor analysis with many appropriate diagrams.

RESTRICTIONS TO USE: Published by College of Education, University of Kentucky

GENERAL CHARACTER: Textual Materials

#249

TITLE: Final exam, 430 R, educational psychology, Fall semester, 1966-67

AUTHOR: Ahr, A. Edward
Professor-Edcuational Psychology
Loyola University
Chicago, Illinois 60600

TOPICAL FOCUS: Principles of learning

DESCRIPTION: Ditto, one side, corner stapled, 8½ x 11, 6 pages. This is a final exam with Part I being multiple choice, and Part II being essay questions.

GENERAL CHARACTER: Course Examination

#250

TITLE: Mid-term exam - Educational Psychology No. 430R, Fall, 1966.

AUTHOR: Ahr, A. Edward
Professor-Educational Psychology
Loyola University
Chicago, Illinois 60600

TOPICAL FOCUS: Components of the research process

DESCRIPTION: Ditto, one side, corner stapled, 8½ x 11, 7 pages. This is a mid-term exam with six pages devoted to multiple choice questions, and one page with essay questions.

GENERAL CHARACTER: Course Examination

#251

TITLE: Test Contruction

AUTHOR: Ahr, A. Edward
Professor-Educational Psychology
Loyola University
Chicago, Illinois 60600

TOPICAL FOCUS: The merits of various types of objective examinations.

DESCRIPTION: Ditto, one side, corner stapled, 8½ x 11, 4 pages.
This paper furnished guidelines for the merits, advantages and disadvantages of objective examinations. It also furnishes suggestions for construction of objective tests. True-false, multiple choice, matching, free response, and completion tests are discussed.

GENERAL CHARACTER: Textual Materials

#252

TITLE: A Method for Securing Classroom Data by Observing Three Dimensions in the Learning Process

AUTHOR: Leles, Sam
Associate Professor
College of Education
University of Alabama
University, Alabama 35486

TOPICAL FOCUS: Data gathering by observational methods.

PURPOSE: "To assess the overall effectiveness of an innovation in observational practice."

DESCRIPTION: Mimeo, 1 side, corner stapled, 8½ x 11, 11 pages.
Besides an analysis of the program in operation, this paper furnishes the data gathering instrument and an instructional guide for its use.

GENERAL CHARACTER: Textual Materials

#253

TITLE: A Model of Mathemagenic Behaviors as Intervening Variables in Classroom Communication.

AUTHOR: McDonald, Frederick J.
Stanford University
Stanford, California

TOPICAL FOCUS: Observation as a method of gathering data.

PURPOSE: To review the various writings of persons concerned with behavioral analysis.

DESCRIPTION: Mimeograph, one side, corner stapled booklet, 8½ x 11, 17 pages. The material is entirely textual with detailed explanations of many of the techniques employed in this method. The paper was presented at the 1968 AERA Annual Convention.

GENERAL CHARACTER: Textual Materials

#254

TITLE: Pictorial Programmed Instruction: Its Development and Utilization

AUTHOR: Preitz, Clarence H.
Professor
University of Alberta
Department of Industrial & Vocational Education
Edmonton, Alberta, Canada

TOPICAL FOCUS: Training methods and information transmission

PURPOSE: To outline a combined pictoria-verbal programmed instruction to increase information transmission.

DESCRIPTION: Xerox, single side, corner-stapled booklet, 8½ x 11, 19 pages. The copy on hand has none of the pictures referred to in the text. However the method of constructing the program is clearly explained without them. This method could find application in beginning statistics courses and beginning computer usage courses. This document illustrates the feasibility of teaching manipulative operations via programed instruction.

GENERAL CHARACTER: Textual Materials

#255

TITLE: On Diffusing and Utilizing Knowledge

AUTHOR: Wolf, William C.
Professor of Education
University of Massachusetts
School of Education
Amherst, Mass.

TOPICAL FOCUS: Knowledge Diffusion and Innovation development

PURPOSE: To relate the biographies of leaders in the techniques of knowledge diffusion to their accomplishments.

DESCRIPTION: Offset, single-side, Dissertation binder, 8½ x 11, 192 pages. This volume could be read by researchers interested in the biographies of Bennis, Bloom, Goodlad, O. K. Moore, Travers, etc. The synopsis and comparison which appears at the end is especially good. The bibliographies contained herein are very extensive.

GENERAL CHARACTER: Textual Materials

#256

TITLE: Development of an Instrument for Evaluating Educational Research Reports. CRP No. S-014.

AUTHOR: Gephart, William J.
Director Research Services
Phi Delta Kappa
8th and Union Streets
Bloomington, Indiana 47401

TOPICAL FOCUS: The evaluation of educational research reports.

DESCRIPTION: Offset, one side, loose pages, 8½ x 11, 134 pages. This document was an attempt to develop an instrument that would determine the soundness of educational research with a focus on the research design.

GENERAL CHARACTER: Textual Materials

220

#257

TITLE: Identification of Homogenous Groups of Students by Computer

AUTHOR: Johnson, M. Clemens
School of Education and Computing Center
University of Michigan
Ann arbor, Michigan 48104

TOPICAL FOCUS: Cluster analysis

DESCRIPTION: Ditto, one side, temporary binding, 8½ x 11, 8 pages. This document is a cluster analysis of individuals within a group, the analysis being conducted to identify subgroups which tend to be alike and different from one another. It could be described as an exploratory investigation of individual differences.

GENERAL CHARACTER: Textual Materials

#258

TITLE: Some Hypotheses About the Null

AUTHOR: Johnson, M. Clemens
University of Michigan
School of Education & Computing Center
University of Michigan
Ann Arbor, Michigan 48104

TOPICAL FOCUS: Null hypothesis, tests of significance

PURPOSE: To review some general theory of significance tests and speculate on difficulties which arise in their use and interpretation in educational research.

DESCRIPTION: Mimeograph, one side, corner stapled, 10 pages. This paper was presented at the AERA annual meeting in 1967. It is non-numerical in its presentation however, it does cover most of the questions about tests of significance.

GENERAL CHARACTER: Textual Materials

#259

TITLE: Small Project Research

AUTHOR: U. S. Office of Education
Washington, D. C.

TOPICAL FOCUS: USOE Small grant program and procedures related to it.

DESCRIPTION: Offset, two sides, temporary binding, 8½ x 11, 21 pages. This document is a copy of a preliminary draft of federal guidelines for small project research (those under $10,000).

GENERAL CHARACTER: Textual Materials

#260

TITLE: Selected Books on Educational Research

AUTHOR: Conference Books Inc.

DESCRIPTION: Offset, two sides, temporary stapled in booklet form, 5½ x 8½, 14 pages. A listing of selected books on Educational Research that were available at the 1967 AERA Annual meeting.

GENERAL CHARACTER: Booklist

222

#261

TITLE: Author's Guide to the Reading Research Quarterly

AUTHOR: Clymer, T., Summers, E. G., & Kelly, G.
School of Education
Indiana University
Bloomington, Indiana 47401

TOPICAL FOCUS: Reporting research

DESCRIPTION: Mimeograph, one side, temporary binding in booklet form, 8½ x 11, 44 pages. Simply a guide to the preparation of articles for the Reading Research Quarterly.

GENERAL CHARACTER: Textual Materials

#262

TITLE: Test Service Bulletin - Cross-Validation

AUTHOR: The Psychological Corporation
304 East 45th St.
New York, N. Y. 10017

TOPICAL FOCUS: Measurement

DESCRIPTION: Offset, two sides, temporary binding, 8½ x 11, 2 pages. A short paper on cross validation.

GENERAL CHARACTER: Textual Materials

#253

TITLE: Test Service Bulletin, No. 48, January 1955, Methods of Expressing Test Scores

AUTHOR: The Psychological Corporation
304 E. 45th St.
New York, N. Y. 10017

TOPICAL FOCUS: Measurement

DESCRIPTION: Offset, two sides, permanent binding, 8½ x 11, 4 pages. A bulletin which comments on the fundamental equivalence of most popular standard score systems.

GENERAL CHARACTER: Textual Materials

#264

TITLE: Test Service Notebook - The Characteristics, Use and Computation of Stanines

AUTHOR: Harcourt, Brace & World, Inc.

TOPICAL FOCUS: Measurement - data interpretation

DESCRIPTION: Offset, two sides, permanent binding, 8½ x 11, 6 pages. Deals with characteristics, use, and computation of stanines. Charts, graphs and tables are referred to throughout.

RESTRICTIONS TO USE: Copyrighted

GENERAL CHARACTER: Textual Materials

224

#265

TITLE: Test Service Bulletin, No. 86 - Using Stainies to Obtain Composite Scores Based on Test Data and Teacher's Ranks

AUTHOR: Harcourt, Brace, and World, Inc.

TOPICAL FOCUS: Measurement

DESCRIPTION: Offset, two sides, permanent binding, 8½ x 11, 4 pages. A paper on the use of stanines in obtaining composite scores based on test data and teacher ranks.

RESTRICTIONS TO USE: Copyrighted

#266

TITLE: The Evaluator Development Program

AUTHOR: Bates, D., Buser, R. L., Ellis, J., & Rice, D. Cooperative Education Research Lab., Inc.

TOPICAL FOCUS: Skills needed by the evaluation specialist

DESCRIPTION: Offset, two sides, temporary binding, 8½ x 11, 107 pages. A paper whose objective was to enhance effective evaluation processes, procedures and practices of the evaluator as it relates to a specific project.

RESTRICTIONS TO USE: Citing and other uses reserved by authors.

#267

TITLE: Statistics Can Be Fun

AUTHOR: Abbott, Wendell H.
10430 - 50th Avenue Circle
St. Petersburg, Florida

TOPICAL FOCUS: Statistics

DESCRIPTION: Offset, two sides, temporary binding in booklet form, 6 x 8½, 20 pages. An animated illustration of some basic statistical concepts.

RESTRICTIONS TO USE: Copyrighted by author

GENERAL CHARACTER: Textual Materials

#268

TITLE: Educational R&D Information System Requirements: A Task Force Report

AUTHOR: Coney, Robert, Plaskett, Vernon, Roggenbuck, Robert, & Hood, Paul
Far West Laboratory for Educatonal Research & Development
1 Garden Circle, Hotel Claremont,
Berkeley, California 94705

TOPICAL FOCUS: Educational Information systems

DESCRIPTION: Offset, two sides, temporary binding in booklet form, 8½ x 11, 59 pages. Reports findings of a study to determin and define the content and scope of an information system which could assist local school districts in locating & using the results of research & development in education. The study focuses on output, input, process, and roles in system design.

GENERAL CHARACTER: Textual Material

#269

TITLE: Identifying and Formulating Educational Problems

AUTHOR: Campbell, V. N., & Markle, D. G.
Far West Laboratory for Educational Research & Development
1 Garden Circle, Hotel Claremont
Berkeley, California 94705

TOPICAL FOCUS: Problem Identification and formulation

DESCRIPTION: Offset, two sides, temporary binding in booklet form, 8½ x 11, 87 pages. This document attempts to develop effective techniques for identifying educational needs and formulating them into well defined problems. A hierachy of categories was developed to describe these needed data, which were then classified & tabulated by category.

RESTRICTIONS TO USE: Reproduceable with express permission from the Far West Laboratory

GENERAL CHARACTER: Textual Materials, Learning Exercises

#270

TITLE: AERA 1968 Presession, Multivariate Design and Analysis in Educational Research, Objectives and Overview

AUTHOR: Ward, Joe H., Jr.
Southwest Educational Development Lab
Suite 550
Commodore Perry Hotel
Austin, Texas 78701

TOPICAL FOCUS: Statistics - Multivariate analysis

DESCRIPTION: Mimeograph, two side, temporary binding, 8½ x 11, 5 pages. This document is the overview of an AERA training session whose primary objective was to assist its participants in developing techniques of formulating research problems for computer analyses and making fullest use of multiple linear regression.

GENERAL CHARACTER: Textual Materials

#271

TITLE: Synthesizing Regression Models - An Aid to Learning Effective Problem Analysis

AUTHOR: Ward, Joe H., Jr.
Southwest Educational Development Lab.
Suite 550
Commodore Perry Hotel
Austin, Texas 78701

TOPICAL FOCUS: Statistics - multiple regression

DESCRIPTION: Mimeograph, two sides, temporary binding, 8½ x 11, 18 pages. This document deals with research workers and the problem of defining appropriate models. It comments on the general problem of teaching (and learning) techniques of model generation. It gives a specific example of an instructional approach.

GENERAL CHARACTER: Textual Materials

#272

TITLE: Topics Related to the Computational Aspects of Regression

AUTHOR: Ward, Joe H., Jr.
Southwest Educational Development Lab.
Suite 550
Commodore Perry Hotel
Austin, Texas 78701

TOPICAL FOCUS: Statistics - regression

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 3 pages. There are 14 topic statements on computational aspects of regression. Documents include examples of linear independence and dependence.

GENERAL CHARACTER: Textual Materials

228

#273

TITLE: (None listed)

AUTHOR: Ward, Joe H., Jr.
Southwest Educational Development Lab.
Suite 550
Commodore Perry Hotel
Austin, Texas 78701

TOPICAL FOCUS: Data analysis

DESCRIPTION: Offset, one side, loose pages, 8½ x 11, two pages.
A flow chart for analyzing data in a regression analysis exercise.

#274

TITLE: The Computation of the F Statistic

AUTHOR: Ward, Joe H., Jr.
Southwest Educational Development Lab.
Suite 550
Commodore Perry Hotel
Austin, Texas 78701

TOPICAL FOCUS: Statistics - Computation of F

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 4 pages.
Discusses the computation of the "F" test statistic in terms of predictive accuracy and the dimension of the vector spaces associated with the prediction systems.

GENERAL CHARACTER: Textual Materials

#275

TITLE: Problem Set 1, Generation of Vectors and Linear Combinations

AUTHOR: Ward, Joe H., Jr.
Southwest Educational Development Lab.
Suite 550
Commodore Perry Hotel
Austin, Texas 78701

TOPICAL FOCUS: Statistics - generation of vectors in multiple regression

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 4 pages. A set of problems which can be used as practice in generation of vectors and linear combinations.

GENERAL CHARACTER: Learning Exercises

#276

TITLE: Flow Chart for One Attribute Analysis

AUTHOR: Ward, Joe H., Jr.
Southwest Educational Development Lab.
Suite 550
Commodore Perry Hotel
Austin, Texas 78701

TOPICAL FOCUS: Research process

DESCRIPTION: Mimeograph, one side, 8½ x 11, one page. A flow chart for one attribute analysis.

GENERAL CHARACTER: Textual Materials

230

#277

TITLE: Assumptions Underlying the Fixed x Model

AUTHOR: Bottenberg, Robert A.
6570th Personnel Research Laboratory
Lackland AFB, Texas

TOPICAL FOCUS: Statistics - Multiple regression analysis

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 6 pages. This document describes the underlying assumptions of the fixed X model, sometimes called multiple linear regression analysis. These assumptions involve the distribution form, variability, and independence of variables in sample source.

GENERAL CHARACTER: Textual Materials

#278

TITLE: Use of Unit Vector and Other Comments on PERSUB Regression Program

AUTHOR: Bottenberg, Robert A.
6570th Personnel Research Laboratory
Lackland AFB, Texas

TOPICAL FOCUS: Statistics - Multiple regression analysis

DESCRIPTION: Xerox, one side, temporary binding, 8½ x 11, 4 pages. This document is best described by its title.

GENERAL CHARACTER: Textual Materials

#279

TITLE: Orthogonal Decomposition of a Vector

AUTHOR: Ward, Joe H., Jr.
Southwest Educational Development Lab.
Suite 550
Commodore Perry Hotel
Austin, Texas 78701

TOPICAL FOCUS: Statistics

DESCRIPTION: Offset, one side, temporary binding, 8½ x 11, 3 pages.
A step by step symbolic decomposition of a vector.

GENERAL CHARACTER: Textual Materials

#280

TITLE: Institute for Research and Evaluation

AUTHOR: Rippey, Robert, M.
Director
University of Chicago
Center for the Cooperative Study of Instruction
5835 Kimbark Avenue
Chicago, Illinois 60637

TOPICAL FOCUS: Research process - component checklist

DESCRIPTION: Mimeograph, one side, 8½ x 11, one page. This document is a copy of a chronological checklist of a research design. It lists the various stages of design and provides space to record the data completed.

GENERAL CHARACTER: Learning Exercises

232

#281

TITLE: Achievement Tests, Test A, Writing the ANOVA Table.

AUTHOR: Stanley, Julian C., Glass, Gene V, & McLean, Leslie D.
Stanley - Department of Education
The Johns Hopkins University
Baltimore, Maryland 21218
Glass - Assistant Professor
University of Illinois
Urbana, Illinois 61801
McLean - Ontario Institute for Studies in Education
102 Bloor Street W.
Toronto, 5, Ontario, Canada

TOPICAL FOCUS: Statistics - ANOVA

DESCRIPTION: SCM - Type, one side, loose page, 8½ x 11, 2 pages.
Test "A" of a series. It is on writing the ANOVA table
and was used during the first AERA presession on experimental
design.

GENERAL CHARACTER: Course examination

#282

TITLE: Text C. Multiple Comparison

AUTHOR: Stanley, Julian C., Glass, Gene V, & McLean, Leslie D.
Stanley - Department of Education
The Johns Hopkins University
Baltimore, Maryland 21218
Glass - Assistant Professor
University of Illinois
Urbana, Illinois 61801
McLean - Ontario Institute for Studies in Education
102 Bloor Street W.
Toronto, 5, Ontario, Canada

TOPICAL FOCUS: Statistics - multiple comparisons

DESCRIPTION: SMC-Type, one side, loose page, 8½ x 11, one page. Test
"c" of a series. It is on the subject of multiple comparisons
and was used during the first AERA Presession on Experimental
Design.

GENERAL CHARACTER: Course Examination

#283

TITLE: Test D, Violation of ANOVA Assumptions

AUTHOR: Stanley, Julian C., Glass, Gene V, & McLean, Leslie D.
Stanley - Department of Education
The Johns Hopkins University
Baltimore, Maryland 21218
Glass - Assistant Professor
University of Illinois
Urbana, Illinois 61801
McLean - Ontario Institute for Studies in Education
102 Bloor Street W.
Toronto, 5, Ontario, Canada

TOPICAL FOCUS: Statistics - ANOVA assumptions

DESCRIPTION: SCM-Type, one side, loose page, 8½ x 11, one page.
Best described by it's title. This test was used dring
the first AERA Presession on Experimental Design.

GENERAL CHARACTER: Course Examination

#284

TITLE: Test E (Pretest), Power of the F-test

AUTHOR: Stanley, Julian, C., Glass, Gene V, & McLean, Leslie D.
Stanley - Department of Education
The Johns Hopkins University
Baltimore, Maryland 21218
Glass - Assistant Professor
University of Illinois
Urbana, Illinois 61801
McLean - Ontario Institute for Studies in Education
102 Bloor Street W.
Toronto, 5, Ontario, Canada

TOPICAL FOCUS: Statistics - Power of the test

DESCRIPTION: SCM-Type, one side, loose page, 8½ x 11, one page.
Test "E" in a series. It is on the power of the F-test.
Used during the first AERA Presession on Experimental Design

GENERAL CHARACTER: Course Examinatio..

234

#285

TITLE: Test F, Principles of Experimental Design

AUTHOR: Stanley, Julian, C., Glass, Gene V, & McLean, Leslie D.
Stanley - Department of Education
The Johns Hopkins University
Baltimore, Maryland 21218
Glass - Assistant Professor
University of Illinois
Urbana, Illinois 61801
McLean - Ontario Institute for Studies in Education
102 Bloor Street W.
Toronto, 5, Ontario, Canada

TOPICAL FOCUS: Research Design -- Experimental and quasi-experimental designs

DESCRIPTION: SCM-Type, one side, loose page, 8½ x 11, 2 pages.
A copy of an achievement test used to test understanding of "Experimental and Quasi-Experimental Designs for Research on Teaching." Test consists of 10 objective questions. It was used during the first AERA Presession on Experimental Design.

GENERAL CHARACTER: Course Examination

#286

TITLE: Test G (Pretest), Project Planning

AUTHOR: Stanley, Julian, C., Glass, Gene V, & McLean, Leslie D.
Stanley - Department of Education
The Johns Hopkins University
Baltimore, Maryland 21218
Glass - Assistant Professor
University of Illinois
Urbana, Illinois 61801
McLean - Ontario Institute for Studies in Education
102 Bloor Street W.
Toronto, 5, Ontario, Canada

TOPICAL FOCUS: Research planning - PERT

DESCRIPTION: SCM-Type, one side, loose pages, 8½ x 11, one page.
A copy of a pretest used in the first AERA Presession on Experimental Design. Test is objective in nature.

GENERAL CHARACTER: Course Examination

#287

TITLE: Test H, Rules of Thumb for Writing the ANOVA Table

AUTHOR: Stanley, Julian, C., Glass, Gene V, & McLean, Leslie D.
Stanley - Department of Education
The Johns Hopkins University
Baltimore, Maryland 21218
Glass - Assistant Professor
University of Illinois
Urbana, Illinois 61801
McLean - Ontario Institute for Studies in Education
102 Bloor Street W.
Toronto, 5, Ontario, Canada

TOPICAL FOCUS: Statistics - ANOVA

DESCRIPTION: SCM-Type, one side, loose pages, 8½ x 11, five pages. It was used in the first AERA Presession on Experimental Design.

GENERAL CHARACTER: Course Examination

#288

TITLE: R_x for Tired Term Papers

AUTHOR: Renner, R. R., and Vogel, Phyllis
University of Florida
Gainesville, Florida

TOPICAL FOCUS: Report Writing

DESCRIPTION: Offset, two sides, 8½ x 11, two pages. This document expands the author's contention that term papers can be revitalized by examining with student the "why" and "how" of putting such a paper together.

RESTRICTIONS TO USE: Copyrighted by IMPROVING COLLEGE & UNIVERSITY TEACHING

GENERAL CHARACTER: Textual Materials

236

#289

TITLE: Orientation and Overview

AUTHOR: Edling, Jack V.
Director
Research Coordinating Unit for Vocational Education
California State Department of Education
Sacramento, California 95814

TOPICAL FOCUS: Orientation to instructional materials on the research and development processes

DESCRIPTION: Mimeograph, two sides, temporary binding, 8½ x 11, 12 pages. This document is the first section of a manual designed to teach the basic skills necessary to plan and produce and improve instructional system and plan and conduct research related to instruction.

RESTRICTIONS TO USE: Not to be reproduced. This is section I of the National Research Training Institute Manual, copyrighted by Teaching Research Division, Oregon State System of Higher Education.

GENERAL CHARACTER: Textual Materials, Learning Exercises

#290

TITLE: Specifying Behavioral Objectives

AUTHOR: Paulson, Casper F.
Assistant Research Professor
Teaching Research Division
Oregon State System of Higher Education
Monmouth, Oregon 97361

TOPICAL FOCUS: Behavioral objectives of instructional systems

DESCRIPTION: Mimeograph, two sides, temporary binding, 8½ x 11, 15 pages. This document is the second part of a training manual and deals with specifying behavioral objectives. It utilizes a textual approach that is supplemented by exercise sections which measure the student's understanding of the concepts.

RESTRICTIONS TO USE: Not to be reproduced. This is section II of the National Research Training Institute Manual, copyrighted by Teaching Research Division, Oregon State System of Higher Education.

GENERAL CHARACTER: Textual Materials, Learning Exercises

#291

TITLE: Objective Analysis and Instructional Specification

AUTHOR: Twelker, Paul A.
Assistant Research Professor
Teaching Research Division
Oregon State System of Higher Education
Monmouth, Oregon 97361

TOPICAL FOCUS: Objectives analysis in designing instructional systems

DESCRIPTION: Mimeograph, two sides, temporary binding, 8½ x 11, 32 pages. This document is the third step in the National Research Training Institute manual and deals with objective analysis and instructional specifications as it relates to the process involved in designing an instructional system.

RESTRICTIONS TO USE: Not to be reproduced. This is section III of the National Research Training Institute Manual, copyrighted by Teaching Research Division, Oregon State System of Higher Education.

GENERAL CHARACTER: Textual Materials, Learning Exercises, Bibliography

#292

TITLE: Prototype Development

AUTHOR: Hamreus, Dale G.
Associate Director
Teaching Research
Oregon State System of Higher Education
Monmouth, Oregon 97361

TOPICAL FOCUS: Developing instructional materials prototypes

DESCRIPTION: Mimeograph, two sides, temporary binding, 8½ x 11, 22 pages. This section of the manual discusses the important stages and procedures required for developing and validating an instructional system prototype.

RESTRICTIONS TO USE: Not to be reproduced. This section IV of the National Research Treining Institute Manual, copyrighted by Teaching Research Division, Oregon State System of Higher Education.

GENERAL CHARACTER: Textual Materials, Learning Exercises, Bibliography

#293

TITLE: Measurement

AUTHOR: Schalock, H. Del
Associate Research Professor
Teaching Research Division
Oregon State System of Higher Education
Monmouth, Oregon 97361

TOPICAL FOCUS: Measurement

DESCRIPTION: Mimeograph, two sides, temporary binding, 8½ x 11, 54 pages. This section of the National Research Training manual treates the place of measurement in education, presents some technical aspects of measurement, and reviews some of the specific uses to which measurement is put in education. Plus related aspects.

RESTRICTIONS TO USE: Not to be reproduced. This section V of the National Research Training Institute Manual, copyrighted by Teaching Research Division, Oregon State System of Higher Education.

GENERAL CHARACTER: Textual Materials, Learning Exercises, Bibliography

#294

TITLE: Research Design

AUTHOR: Gordon, Jack
Assistant Professor
Teaching Research Division
Oregon State System of Higher Education
Monmouth, Oregon 97361

TOPICAL FOCUS: Research design - principles

DESCRIPTION: Mimeograph, two sides, temporary binding, 8½ x 11, 15 pages. This section of the National Research Training Institute manual deals with the fundamental logic and logistics of experimental instructional research. Plus related exercises.

RESTRICTIONS TO USE: Not to be reproduced. This is section VI of the National Research Training Institute Manual, copyrighted by Teaching Research Division, Oregon State System of Higher Education.

GENERAL CHARACTER: Textual Materials, Learning Exercises

#295

TITLE: Data Analysis 1

AUTHOR: Beaird, James H.
Teaching Research Division
Oregon State System of Higher Education
Monmouth, Oregon 97361

TOPICAL FOCUS: Measurement levels and research design

DESCRIPTION: Mimeograph, two sides, temporary binding, 8½ x 11, 9 pages. This section of the National Research Training Institute Manual treats questions in determining the appropriate analysis techniques. Plus related exercises.

RESTRICTIONS TO USE: Not to be reproduced. This section VII of the National Research Training Institute Manual, copyrighted by Teaching Research Division, Oregon State System of Higher Education.

GENERAL CHARACTER: Textual Materials, Learning Exercises

#296

TITLE: Data Analysis II

AUTHOR: Beaird, James H.
Teaching Research Division
Oregon State System of Higher Education
Monmouth, Oregon 97361

TOPICAL FOCUS: Statistics

DESCRIPTION: Mimeograph, two sides, temporary binding, 8½ x 11, 10 pages. This section (#8) is an extension of the preceding section. In program form it presents an ordered set of questions which identify the appropriate analysis. Contains related exercises.

RESTRICTIONS TO USE: Not to be reproduced. This is section VIII of the National Research Training Institute Manual, copyrighted by Teaching Research Division, Oregon State System of Higher Education.

GENERAL CHARACTER: Textual Materials, Learning Exercises

240

#297

TITLE: Proposal Writing

AUTHOR: Crawford, Jack
Teaching Research Division
Oregon State System of Higher Education
Monmouth, Oregon 97361

TOPICAL FOCUS: Components of proposals

DESCRIPTION: Mimeograph, two sides, temporary binding, 8½ x 11, 39 pages. This section of the National Research Training Institute manual is a comprehensive treatment of the subject of proposal writing.

RESTRICTIONS TO USE: Not to be reproduced. This is section IX of the National Research Training Institute Manual, copyrighted by Teaching Research Division, Oregon State System of Higher Education.

GENERAL CHARACTER: Textual Materials, Learning Exercises

#298

TITLE: USOE Support

AUTHOR: Hamreus, Dale G.
Associate Director
Teaching Research Division
Oregon State System of Higher Education
Monmouth, Oregon 97361

TOPICAL FOCUS: Information to the what and how of Federal support of research

DESCRIPTION: Mimeograph, two sides, temporary binding, 8½ x 11, 27 pages. The first section of this document describes the USOE's Small Project Research Program. The second section contains appendices listing regional offices and other related agencies.

RESTRICTIONS TO USE: Not to be reproduced. This is section X of the National Research Training Institute Manual, copyrighted by Teaching Research Division, Oregon State System of Higher Education.

GENERAL CHARACTER: Textual Materials

#299

TITLE: Some Chapters on Research Methods and Design

AUTHOR: McGrath, J. H.
Associate Professor
Department of Educational Administration
University of Utah
Salt Lake City, Utah 84112

TOPICAL FOCUS: Research process in general

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 7 pages. An outline for a book on the research process.

GENERAL CHARACTER: Textual Materials

#300

TITLE: Sampling Demonstrator

AUTHOR: The Lansford Publishing Co.
2516 Lansford Ave.
San Jose, Calif. 95125

TOPICAL FOCUS: Sampling and distributions

DESCRIPTION: Off set, one side, 7 x 8½, one page. A brochure which lists instructional aids and materials which can be used in the teaching of economics and statistics.

GENERAL CHARACTER: Demonstration, Learning Equipment

242

#301

TITLE: A Procedural and Cost Analysis Study of Media in Instructional Systems Development: Part A.

AUTHOR: Barson, John
Director, Office of Institute Program Assistance and Coordination
Eustace Hall
Michigan State University
East Lansing, Michigan

TOPICAL FOCUS: Successful media innovations in Higher Education instruction

DESCRIPTION: Offset, two sides, permanent binding, 8½ x 11, 135 pages.
A report which establishes guidlines and identifies factors which contribute to successful media innovation and instructional development.

GENERAL CHARACTER: Research Report, Bibliography

#302

TITLE: Instructional Systems Development: A Demonstration and Evaluation Project

AUTHOR: Barson, John
Director, Office of Institute Program Assistance and Coordination
Eustace Hall
Michigan State University
East Lansing, Michigan

TOPICAL FOCUS: Development efforts of a consortium of universities

DESCRIPTION: Offset, two sides, permanent binding, 8½ x 11, 119 pages.
A report on facilitation of a more effective way or ways of meeting growing instructional demands.

GENERAL CHARACTER: Textual Materials, Research Report

#303

TITLE: The Objectives

AUTHOR: Guba, Egon G.
Director
National Institute for Study of Educational Change
825 East 8th St.
Bloomington, Indiana 47401

TOPICAL FOCUS: Proposal development - objectives

DESCRIPTION: Mimeograph, one side, temporary binding, 8½ x 11, 5 pages. This document delineates particular ends and aims which the proposal seeks to bring about. Taxonomies of research scales, paradigms, and narrative descriptions are used to make the point.

GENERAL CHARACTER: Textual Materials

#304

TITLE: Preconference Educational Research Training Program in Art Education

AUTHOR: Woodruff, Asahel D.
Professor of Psychology and Research
University of Utah
Salt Lake City, Utah

TOPICAL FOCUS: Development - Concepts and constructs to be considered in educational change efforts

DESCRIPTION: Offset, one side, temporary binding, 8½ x 11, 109 pages. A copy of the proposal for research and related activities and materials submitted to the USOE for financial support. Subject-Training program in Art Education.

GENERAL CHARACTER: Textual Materials

#305

TITLE: Statistics

AUTHOR: Raths, James D.
Director
University of Maryland
Bureau of Educational Research and Field Services
College Park, Maryland 20742

TOPICAL FOCUS: Statistics

DESCRIPTION: Offset, two sides, temporary binding, 8½ x 11, 52 pages. Document is an outline of a course in statistics. It includes course objectives, assignments, bibliography, tests and an introduction to the ANOVA table.

GENERAL CHARACTER: Learning Exercises, Description of Curriculum Approaches, Bibliography

#306

TITLE: Measurement

AUTHOR: Helmstadter, G. C.
Director of Testing Services
Arizona State University
Tempe, Arizona 85281

TOPICAL FOCUS: Measurement

DESCRIPTION: Offset, two sides, temporary binding, 8½ x 11, 58 pages An outline of a course in measurement. It includes course objectives, assignments, bibliography tests and samples of instructional materials.

GENERAL CHARACTER: Textual Materials, Learning Exercises, Course Objectives, Course Outline, Bibliography, Course Examination

#307

TITLE: Advanced Design

AUTHOR: Campbell, Donald T.
Professor of Psychology
Northwestern University
Evanston, Illinois 60201

TOPICAL FOCUS: Advanced design - concepts and principles

DESCRIPTION: Xerox, two sides, temporary binding 8½ x 11, 106 pages. This document is an overall plan for the teaching of a course in advanced design. Presents annotated bibliography and other references.

GENERAL CHARACTER: Textual Materials, Description of Curriculum Approaches, Bibliography

#308

TITLE: Adanced Design

AUTHOR: Millman, Jason
Associate Professor
Cornell University
Department of Education
Ithaca, New York 14850

TOPICAL FOCUS: Advanced Deisgn - principles and concepts

DESCRIPTION: Xerox, two sides, temporary binding, 8½ x 11, 104 pages. This document is a copy of the statement of objectives and instructional materials for a research seminar. Analysis on mathematical requirements of ANOVA and Methods Analysis were outlined and explained. Related bibliography also included.

GENERAL CHARACTER: Textual Material, Learning Exercises, Description of Curriculum Approaches, Course Examinations, Bibliography

246

#309

TITLE: Manufacturing Engineering-Project Development - Course No. 306

AUTHOR: (None listed)

TOPICAL FOCUS: Manufacturing process

DESCRIPTION: Off set, two sides, plastic binding, 8½ x 11. Two Booklets developed by the Manufacturing Personnel Development Service of General Electric Corp. It is a model of packaging for instructional materials. Their content may have a little relevance for educational development personnel.

RESTRICTIONS TO USE: Copyright by G. E.

GENERAL CHARACTER: Textual Material, Learning Exercises, Bibliography

#310

TITLE: The Configurational Theory of Innovation Diffusion

AUTHOR: Bhola, Harbans S.
Ohio State University
Columbus, Ohio

TOPICAL FOCUS: Diffusion theory

DESCRIPTION: Mimeo, 8½ x 11, one side, 42 pp. This paper was prepared as a working document for the Conference on Strategies for Educational Change, a USOE funded effort conducted by Ohio State University 1965.

GENERAL CHARACTER: Textual Materials, Bibliography

#311

TITLE: Q Methodology and the Testing of Theory

AUTHOR: Kerlinger, Fred N.
New York University
New York, N. Y.

TOPICAL FOCUS: Statistics - Q Methodology

DESCRIPTION: Mimeo, permanent binding, 8½ x 11, one side, 55 pages. This booklet contains an elaboration of the Q Methodology developed by Stephenson. It assists students in gaining an understanding of Q Methodology and procedures involved.

RESTRICTIONS TO USE: Permission of the author required prior to duplication.

GENERAL CHARACTER: Textual Materials

#312

TITLE: Handbook in Research and Evaluation

AUTHOR: Isaac, Stephen
Department of Education
San Diego County
San Diego, California

TOPICAL FOCUS: Research - Planning, design, measurement, and analysis; evaluation

PURPOSE: To present "...some of the best current information in the field of research and evaluation in education."

DESCRIPTION: Mimeo, looseleaf notebook, 8½ x 11, 427 pages + x. These materials were collected and assembled to be used by people who are "sometimes-researcher(s)" in education. The author asserts the need for "...a document that comprensively and briefly displays the many methods and techniques available to the researcher" and reminds him of what he must consider when he chooses any particular alternative.

RESTRICTIONS TO USE: Not to be reproduced without permission of author

GENERAL CHARACTER: Textual Materials

#313

TITLE: Survey Research in Education

AUTHOR: Anderson, James G.
Research Center
New Mexico State University
University Park, New Mexico

TOPICAL FOCUS: Survey research - planning and execution

DESCRIPTION: Offset looseleaf binding, 8½ x 11, 150 pages + 39 page appendix. These materials were collected to be used during the 1969 AERA Presession on Survey Research. The materials include some of the items used in prior session of the presession It includes textual material learning exercises and tables necessary in the work.

RESTRICTIONS TO USE: Not to be duplicated without permission of the author.

GENERAL CHARACTER: Textual Materials, Learning Exercises

#314

TITLE: Sampling: Elementary Principles

AUTHOR: McCarthy, Philip J.
New York State School of Industrial and Labor Relations
Cornell University
Ithaca, New York

TOPICAL FOCUS: Sampling

DESCRIPTION: Offset, permanent binding, 5 x 8, 32 pages

RESTRICTIONS TO USE: Copyright by N.Y. State School of Industrial & Labor Relations

GENERAL CHARACTER: Textual Materials

#315

TITLE: A Paradigm Involving Multiple Criterion Measures for the Evaluation of the Effectiveness of School Programs

AUTHOR: Metfessel, N. S. & Michael, W. B.
University of Southern California
Los Angeles, California

TOPICAL FOCUS: Evaluation

PURPOSE: To present an eight-step model of the evaluation process and to furnish a detailed listing of multiple criterion measures useful in evaluation

DESCRIPTION: Mimeo, 8½ x 14, one side, 10 pages. This paper was presented at the 1967 annual meeting of AERA.

GENERAL CHARACTER: Textual Materials

#316

TITLE: The Compleat Educational Researcher

AUTHOR: Sjogren, Douglas D.
Human Factors Research Laboratory
Colorado State University
Fort Collins, Colorado

TOPICAL FOCUS: Research Process-General; Research Training

PURPOSE: To examine the role of researchers in education and the logical extension of that role in terms of research training

DESCRIPTION: Mimeo, 8½ x 11, one side, 9 pages

RESTRICTIONS TO USE: Not to be cited without permission of author

GENERAL CHARACTER: Textual Materials

250

#317

TITLE: None listed

AUTHOR: Lane, W. R., Aeschliman, A. L. & Staskey, P. J.
State University of Iowa
Iowa City, Iowa

TOPICAL FOCUS: Course (Program) Description

PURPOSE: To describe the program at Iowa for the education of administrators of educational research and information systems.

DESCRIPTION: Three separate pieces outlining the program and stating the underlying philosophy. Varying in size and printing process used, 7 pages total.

GENERAL CHARACTER: Description of Curriculum Approaches

#318

TITLE: Interdisciplinary Program & Research Experiences for the Preparation of Educational Researchers

AUTHOR: Howe, Trevor G.
Iowa State University
Ames, Iowa 50010

TOPICAL FOCUS: Research Training

PURPOSE: To describe the program at Iowa State University

DESCRIPTION: Mimeo, 8½ x 11, 18 pages. It describes the general structure of the program and the purposes of and concepts dealt with in each of the program components

GENERAL CHARACTER: Description of Curriculum Approaches

#319

TITLE: Course Outline by Week

AUTHOR: Allender, Jerome S.
Miami University
Oxford, Ohio 45056

TOPICAL FOCUS: Research Process - General

PURPOSE: To orient students toward the content of a specific introductory research course

DESCRIPTION: Mimeo, 8½ x 11, one side, 2 pages.

GENERAL CHARACTER: Course Outline

#320

TITLE: A Review of the Mid-South Undergraduate Research Training Program

AUTHOR: Fortune, Jim C. & Thomsen, Donald
Memphis State University
Memphis, Tenn. 38111

TOPICAL FOCUS: Research Training

PURPOSE: To report on a USOE research training program

DESCRIPTION: Mimeo, 8½ x 11, temporary binding, one side, 43 pages

GENERAL CHARACTER: Description of Curriculum Approaches

252

#321

TITLE: Program for Training in Computer and Multivariate Applications to Educational Research

AUTHOR: Schoenfeldt, L. F.
American Institute for Research
Pittsburgh, Pa. 15213

TOPICAL FOCUS: Research Training, Computer applications

PURPOSE: A proposal for a research training program

DESCRIPTION: Mimeo, 8½ x 11, one side, 17 pages

GENERAL CHARACTER: Description of Curriculum Approaches

#322

TITLE: None listed

AUTHOR: Moore, J. W.
Bucknell University
Lewisburgh, Pa. 17837

TOPICAL FOCUS: Research Training

PURPOSE: Proposal for a research training program

DESCRIPTION: Mimeo, 8½ x 11, one side, 23 pages. The proposal presents a need statement justifying educational research training, a description of Bucknell's program and a proposal

GENERAL CHARACTER: Description of Curriculum Approaches

#323

TITLE: Measurement, Evaluation, and Statistical Analysis in Educational Research

AUTHOR: Bloom, B. S.
University of Chicago
5835 Kimbark Ave.
Chicago, Illinois

TOPICAL FOCUS: Research Training

PURPOSE: To describe the University of Chicago's MESA program

DESCRIPTION: Mimeo, 8½ x 11, one side, 12 pages

GENERAL CHARACTER: Description of Curriculum Approaches

#324

TITLE: Overview for an Introduction to Research Methodology: A Two Week Workshop

AUTHOR: Wiersma, William
University of Toledo
Toledo, Ohio

TOPICAL FOCUS: Research Training

PURPOSE: To report on a session held by the University of Toledo

DESCRIPTION: Mimeo, 8½ x 11, one side, 8 pages

GENERAL CHARACTER: Description of Curriculum Approaches

254

#325

TITLE: Research Computing Training

AUTHOR: Tseng, Meng-Shu
West Virginia University
Morgantown, W. Va. 26506

TOPICAL FOCUS: Computer applications; Research training

PURPOSE: To orient students to the content and procedures of a computer training course

DESCRIPTION: Mimeo, 8½ x 11, one side, 2 pages

GENERAL CHARACTER: Course Outline

#326

TITLE: None listed

AUTHOR: Tseng, Meng-Shu
West Virginia University
Morgantown, W. Va. 26506

TOPICAL FOCUS: Computer applications

PURPOSE: Present content to be learned regarding computer operations in research

DESCRIPTION: Xeroxed, 8½ x 11, one side 42 pages. Some of this material is copied from other printed matter while the remainder is typed

GENERAL CHARACTER: Textual Materials

#327

TITLE: Graduate Research Training Program in Sociology of Education

AUTHOR: (None listed)
Department of Sociology & Anthropology
Western Michigan University
Kalamazoo, Michigan 49001

TOPICAL FOCUS: Research training; Sociological Research Methodology

PURPOSE: To provide information about a specific program

DESCRIPTION: Mimeo, 8½ x 11, two sides, 48 pages

GENERAL CHARACTER: Description of Curriculum Approaches

APPENDIX B

THE EVALUATION OF EDUCATIONAL PROGRAMS

Sidney C. Eboch

and

Daniel L. Stufflebeam

A Script and Coordinate Set of Overhead Projector Tranparencies
Describing the CIPP Evaluation Model

Developed at
The Ohio State University Evaluation Center

Sponsored by
The National Institute for the Study of Educational Change
and
The United States Office of Education

January 10, 1969

SECTION I

THE EVALUATION PROCESS

(FRAME 1)

Evaluation is a word that has a long history in education and has had many meanings at many levels of popularity and acceptance over the years. During the past few years, the term evaluation has come to prominence again, especially in connection with federal legislation. It might be worthwile before beginning our discussion to recall some of the past meanings or frames of reference which we have had for the term evaluation.

Perhaps the most common meaning of the term evaluation has been in the area of tests and measurements. When people in education used the word evaluation in this sense, they usually meant the administration of achievement tests or the development of teacher-made tests and the whole series of processes relating to selecting, administering, scoring and interpreting standardized tests.

A second meaning attached to evaluation emphasizes the use of expert judgment. In the absence of some type of mathematical standard or some generally accepted social norm, we have reverted to taking the judgments of some persons deemed to be expert in the particular field, because of their past experience or specialized knolwedge in that field. In this sense evaluation has meant expert judgment.

A third meaning for the word evaluation is closely related to what we might call experimental testing. In this context, evaluation has meant the establishment of some sophisticated research procedure, usually involving relatively precise statistical techniques, with the intention of achieving an end product which "proves" or "disproves" a given fact.

Clearly each of these definitions has different strengths for particular situations within education. However, each in its way has its limitations. In the extremely varied and diffuse settings existing in education, none of the terms--nor all of them together--has seemed sufficient to adequately attack the problem of evaluating the complex situations in education.

This presentation sets forth one approach to developing a comprehensive definition of evaluation which hopefully can encompass (with greater precision than "horseback judgment") almost all of the educational situations we seek to evaluate. Therefore we begin with this broad definition of the word evaluation.

(LIFT DOOR)

Evaluation is the process of providing information for decision-making. Obviously the two key terms here are information and decision-making. We will deal with each of these in more detail. However it is important to note here that the word "process" also is a key term in the definition. For evaluation, as we are describing it, is not seen as an event which has some obvious and specific starting point and a single terminal point when everything is solved. Although we will discuss four different types of basic evaluation for which there are logical beginning and termination points, evaluation itself is viewed as continuing process. Let's look now to some further definition of our key terms "information" and "decision-making."

(FRAME 2)

The process of evaluation is viewed as an activity which involves several specific steps. However, the key relationship to be noted is that an evaluation specialist is working with someone who can be classed as a decision-maker. It is the function of the evaluation specialist to assist the decision-maker in reaching the best possible decision he can make at the moment. It becomes important therefore to realize that decisions may be of many types, although the final decision may be considered merely a "go" or "no go" choice.

There are several basic decision situations in which such a choice must be made. In analyzing the possible types of decisions, four general types are particularly relevant. These we define as planning decisions, structuring decisions, implementing decisions and recycling decisions.

Planning decisions can be classified as those related to the determination of major changes which may be needed in the educational program. One way of viewing these may be to think of them as decisions regarding what objectives are primary in the educational situation. At first glance it may seem illogical to think that evaluation should be involved at all if no objectives have been determined. In the real world, we know, that many times there are felt needs which cannot be articulated with precision. There are also those nagging little feelings that something may be wrong or that some new direction is needed and yet these feelings cannot be specified. The decision-maker is intuitively conscious of some disparity between intentions and achievements. However, he is unable to make the appropriate decision in planning any major changes which may be needed without additional information of a qualitative nature which can help him best select his basic objectives.

Structuring decisions relate to the choice of means by which the decision-maker can most effectively achieve the ends or objectives which are known to him. In the decision situation we have labeled "structuring," the decision-maker has some clear goal or objective

in mind and his problem is to determine what means, what resources, what mechanisms could or should be applied towards the achievement of the goals or purposes he has chosen. Again the decision-maker needs the best information he can obtain to make his choice of the means which are to be applied to achieve the objectives.

Implementing decisions are those which relate to carrying through the action plan which is known to the decision-maker. At this point, the decision-maker has some conception of the objectives. He has made a preliminary determination of the means by which those objectives should be achieved. The question now before the decision-maker is: What are the actual operational arrangements which would best utilize the resources allocated towards the achievement of objectives? Once again qualitative information regarding the strengths, weaknesses, resources and needs are required.

The fourth basic type of decision situation we have called recycling. In the recycling decision situation, the program or project has been in operation and has completed at least one full phase or cycle of the intended action. The choices facing the decision-maker are: (a) to continue, (b) to discontinue, or (c) to modify the program or project as it has been operating. Again, the decision-maker needs the best information avialable to know whether in fact the product (the actual achievement of the project) meets the objectives or criteria initially established for the program.

Thus with these four terms: planning, stucturing, implementing and recycling, we have a way of classifying the four major decision areas which are faced by most educators in seeking evaluation services of any type.

It is important however to realize that of all these decision situations may have originated from one of two gross frames of reference.

(LIFT DOOR.)

These two basic frames of reference we call Neo-mobilistic or Homeostatic. By frame of reference we mean that the decision-maker may have been starting from a viewpoint or a basic assumption of strikingly different types.

The decision-maker approaching his problems from a homeostatic point of view would be primarily interested in maintaining the status quo. This is not to infer that the status quo is negative or conservative. It merely is recognizing the fact that the decision-maker is relatively staisfied with the general circumstances which exist and his primary aim is to maintain this situation at its highest level of efficiency or achievement.

The decision-maker approaching his problem from the neo-mobilistic point of view is viewing the situation as desiring some significant change. He is either deliberately seeking some novel or innovative aspect in the programs or operations he wants to evaluate or he is seeking to create a situation which will be, although ambiguous, very opportunistic. From this point of view he seeks to gain new and different advantages within his operations which have not been achieved beforehand or perhaps are not even recognized at the moment.

(FRAME 3)

Having elaborated the general types of decisions as one set of key terms in evaluation, let us turn to a further definition of the "information" which is required for the decision-making situations described. The evaluation specialist who will provide the information for the decision-maker can classify the information to be accumulated as one of four types: context, input, process or product.

(LIFT DOOR A)

Context information is that data which describes with some accuracy the total setting of the educational situation, and perhaps more specifically, the program or project goals or objectives which are either unclear or unspecified.

Input information is that data which describes those resources which are available or required to achieve objectives or goals which have been specified.

Process information is that which describes the procedures or methods which might most efficiently utilize the resources which can be applied to the program or project under consideration.

Finally, product information is that data which measures the results of the program or project under consideration. This describes the actual results of the program or project about which a decision must be made.

(LIFT DOOR B)

The evaluation specialist in obtaining the information necessary for the various decision situations and in developing relevant and useful information of each and all of the four basic types described will perform four basic activities. The evaluation specialist will (a) collect information, (b) will organize the information, (c) will analyze the information and (d) will finally report the information to the decision-maker. These four activities will be described in further detail in the presentation.

It is important for the evaluation specialist to recognize the frame of reference which the decision-maker may hold.

(LIFT DOOR C)

The evaluation specialist can consider the information being sought as being of two gross types: contingency or congruency. These terms relate to those frames of reference which the decision-maker may hold. Information being developed which could be classified as congruency type information is directed toward the realities of the situation, in parallel with the intentions or expectations of the educational organization.

If the information to be collected is better classified as the contingency type, the evaluation specialist will then be directing his attention and shaping his basic activities to monitor information of varied and changing types throughout the entire study.

(FRAME 4)

At this point we can summarize and compare the terms relevant to each of the two key persons or groups involved in any evaluation situation in education. The decision-maker is concerned with four general types of decision-making situations: planning, or the determination of objectives; structuring, or the allocation of resources; implementing, or the determination of procedures; recycling, or the modification, continuation, or elimination decisions. As we have said, all of these decisions may be initiated either from a Neo-mobilistic viewpoint of planned change, or from the Homeostatic viewpoint of maintaining a desired situation at its most efficient state.

The evaluation specialist is concerned with the development of information from the four settings described: context information or the general situation to be described; input information or the analysis of alternative resources which may be required; process information or the desirable alternative procedures which may be available; or product information, the assessment of actual achievements as compared with initial goals.

Again the evaluation specialist will want to match his viewpoint or his basic assumptions to those of the decision-maker. The evaluator will be seeking his information from either (a) the viewpoint of describing alternatives which could achieve congruency between original intentions and realities or (b) from a contingency viewpoint which recognizes and describes the varied changing circumstances which may provide new values the decision-maker could select as improvements.

(FRAME 5)

What has occurred in the recognition of a need for evaluation as a process which is relatively standard for all such situations? First, there is a felt or recognized need for some type of decision. This need may be very ill-defined or it may be very precise, but

out of that need the decision-maker must clarify--either with his colleagues or with the evaluation specialist--criteria which are paramount to any solution for the decision. Beyond this, the decision-maker must again define a minimum range of acceptable alternatives. Obviously, some alternatives will not be acceptable regardless of their effectiveness.

Having described in some fashion the need and defined--at least at a minimum level--the criteria and some of the alternatives, the problem for the decision-maker is obtaining the information on which his choices can be made. It is posited that the evaluation specialist can, more objectively, more systematically, and with possibly greater expertise, collect, organize, analyze and report the needed information to the decision-maker.

As the evaluation specialist completes these functions, he presents the information as weighted alternatives from which the decision-maker can choose.

By weighted alternatives we mean that several acceptable choices will probably be available for any decision. Each of the possible alternatives will have several comparable characteristics. In turn, each alternative will not have a uniform value for any specific characteristic. Therefore, alternatives are considered weighted through the assignment of some value for each of the characteristics related to each of the specific alternatives. Thus the decision will be the selection of that alternative which provides the maximum values associated to the most essential characteristics of the alternative.

The final choice, of course, must be made not by the evaluation specialist but by the decision-maker.

(FRAME 6)

Thus we have two major activities which any evaluation activity must pursue: one, the focusing activities which must be completed with the decision-maker; secondly, the evaluation must be administered. The evaluation team may be personnel associated either with the evaluation specialist or with the educational organization or perhaps a team combing members from both groups.

In the administration of that evaluation activity the four key functions of the evaluation team are to collect, to organize, to analyze and to report the information.

(FRAME 7)

Here we see the cycle which occurs and the interrelationship between the client or agency requesting the evaluation and the evaluation specialists. The evaluation specialist and the chief representative of the client must work closely and cooperatively at the beginning in focusing the evaluation problem.

Once basic agreements have been reached in this focusing situation the evaluation team can go into action and complete the cycle of collecting, organizing, analyzing and reporting the information. With the reporting of the information to the client, the work of the evaluation specialist is in a sense completed.

The report is made available for judgment by the client or agency. That judgment activity will result in a decision. That decision will take one of two paths. Implementation of the program or that part of the program which has been evaluated or, the decision may be to join with the evaluation specialist again and focus on a new phase of the project or operation for a new and different type of evaluation activity.

Again we would emphasize the key beginning point is the focusing activity in which the client and the evaluation specialist work cooperatively. It should also be recognized that the objective of the evaluation specialist is not to make the decision, but to provide the best available information and a range of alternatives for the judgment and decision of the client or agency.

(FRAME 8)

As indicated the key beginning point is what we have defined as focusing. In focusing, the decision-maker and the evaluation specialist must cooperatively define four major areas:

1. The situation to be served.
2. The system which is to be evaluated.
3. The evaluation specifications which are feasible, desirable and acceptable to both.
4. Some definition of the decision alternatives which are acceptable and desirable.

Each of these four key elements requires a high degree of rapport and honest, open, and positive continuing dialogue. Many of the potential difficulties which can arise in the course of an evaluation activity can be eliminated or at least reduced if some clear and common understanding can be achieved during the focusing activity.

It is critical at this point that the evaluation specialist recognize the difficulties which the decision-maker may have in articulating the information desired by the evaluation specialist. It is important for the evaluation specialist to be willing to continue the discussion, to rephrase questions, and to accept the language and terminology of the client or agency being served.

(FRAME 9)

The first key understanding must be a relatively clear description of the decision situation. In attempting to define the decision situation there are seven key questions which will

help to delineate the background of the problem, the framework and the ultimate goals of the decision-maker.

The first question is the matter of the antecedents to the decision need. This question may be answered by a very generalized description of how the need or the problem or the question first arose. How, when, and under what circumstances was the client first made aware of the problem?

The second item of importance is to attempt to formulate the decision need in some question form. If the need can be stated as a question, the goal of the evaluation activity is more approachable.

With the formulation of the question what are the possible alternative solutions which the decision-maker has or recognizes? This list of known alternatives may be incomplete; some may actually be irrelevant, but it is important to identify those alternatives which would seem to be recognized and acceptable.

The third point to be determined is the ultimate confirmation authority. Many times the client or agency dealing directly with the evaluation specialist will be seeking information on which to base a decision but the decision will actually be made by some other person or group. For example, the superintendent of the school district may be initiating the evaluation activity, but the ultimate decision will be confirmed or implemented or approved by the School Board.

The fourth focusing type activity is the identification of those persons within the educational setting who have actual operational authority and responsibility. Again, the person meeting with the evaluation specialist may bear the responsibility for initiating the evaluation activity, but the actual project or program to be evaluated will be under the direction of one or more other persons who may not be present and active at the initial meetings. It should be clear what persons will be actually managing the project or program which is to be evaluated.

Next is the question of the time requirement when the decision must be made. This is not a terminal date for the evaluation activity, but it does determine when the reporting of information must be completed by the evaluation team. Some clear understanding should be achieved at this point so that sufficient lead-time will be available for the ultimate confirmation authority to read and evaluate the report and to make the judgment and final decision.

The final two questions relate to the criteria and the decision rules which will be pertinent to the alternative solutions which will be presented in the evaluation report. These two questions may indeed be difficult to draw from the representative of the agency requesting the evaluation. There obviously will be some key criteria and rules for selecting from the alternatives which are presented.

These criteria or rules may be guarded and veiled not only from the view of the public but possibly from the evaluator. The client may not wish to reveal this information in order not to prejudice or point the evaluator either directly or inadvertently to a single choice. Of necessity, the evaluator should be well grounded psychologically and skilled as an interviewer if he is to obtain sensitive information such as this. Yet he must obtain it or estimate it with sufficient accuracy that the information being reported will be relevant and have adequate scope to be of real use in choosing from the various alternatives presented.

(FRAME 10)

One method of summarizing and reviewing the problem of focusing on the situation is to organize these seven key questions in a time framework. There is some information which will bring the evaluation specialist up-to-date on the situation as best known and expressed by the client.

(LIFT DOOR A)

These three key questions relate to the antecendents of the problem, a statement of the problem in a question form, and some known alternatives which are recognized by the client. This information should be immediately available and is really background information on the total situation.

(LIFT DOOR B)

Immediate information needs include the three key questions relating to operational authority for the program or project to be evaluated and the criteria and decision rules which will be applied to the alternatives suggested by the evaluation report. This information has perhaps not been fully considered by the client and will need to be derived before the evaluation specialist can proceed with any real hope of satisfying the true needs of the client.

(LIFT DOOR C)

The terminal type questions are those which are most distant in time and relate to the dates on which the work must be completed and to the person or group who will make the final decision. Although these matters may not seem immediately pertinent, this knowledge would be useful and critical in determining other aspects of the evaluation effort.

(FRAME 11)

The next step in focusing on the situation is to define the system which is to be evaluated. The evaluation specialist will want to obtain some definition of the boundaries of the system or sub-system within the educational agency or organization seeking

evaluation assistance. Secondly, the major elements or parts of the system to be evaluated need to be identified by the decision-maker. Third, the evaluation specialist will attempt to elicit the critical characteristics recognized by the decision-maker for each element within the system. Finally, knowing the boundaries, the elements and the characteristics of the elements, a generalized model of the system to be evaluated should be developed.

(FRAME 12)

To summarize the definition of the system, we might look at the following four diagrams.

(LIFT DOOR A)

It might be expected that in a decision situation the actual system to be evaluated would be initially grossly defined. Thus the earlier questions in the focusing activity will merely sort from the total educational environment that sub-system which is to be evaluated in this particular activity.

(OPEN DOOR B)

Having identified the system, it is then necessary to identify those critical elements which comprise the system or represent the totality of the system being investigated. Many of these may be already known by the decision-maker. Some might be identified only after successful questioning by the evaluation specialist.

(OPEN DOOR C)

Once all of the known elements of the system are identified, it then becomes important to identify the characteristics of the elements and the relationship which exists between them. Here, the evaluation specialist must again take the descriptions provided by the decision-maker but pursue the questions regarding these characteristics and relationships to a depth that some relatively complete description of the existing system can be made.

(OPEN DOOR D)

Finally, as a basis for other activities and in exploring some of the possible alternatives which may eventually be considered, a representational model of the system could be developed. This might indicate those characteristics and relationships which are fixed, but it might also include other possible alternatives in the arrangement or in the operations of the actual system to be evaluated.

SECTION II

THE DESIGN OF AN EVALUATION STUDY

(FRAME 13)

At this point it becomes necessary to develop the details of the evaluation specifications. The first question of course is to determine both the authority and responsibility for the design and implementation of the evaluation study. It is possible that authority and responsibility may be separated. The authority for design and implementation is in the hands of the evaluation specialist but the responsibility for the design and implementation may be allocated to staff members of the organization requesting the study. It is also conceivable that the evaluation specialist may be requested to design the study and he assumes full authority and responsibility for that. However, the design once completed is then turned over to a local project staff for implementation. Regardless of the arrangements which are determined, it should be very clear to all parties concerned, who shall do what in terms of the design and implementation of the evaluation study.

Secondly, the resources for this design and implementation must be either committed by the client agency or provided for in some manner. It may be that some resources can only be secured outside the client agency itself. Regardless of the arrangements, it should be clear to both parties exactly what resources and how those resources will be provided for the development of the evaluation study.

Third, the decision-maker must indicate more details about the report requirements. In one of our major prior steps we indicated the need to provide a deadline date for the report and to indicate the ultimate confirmation authority. In indicating report requirements at this point, the decision-maker and the evaluation specialist must reach an agreement upon exactly what types of reports should be made to what audiences, at what time, and containing what substance or content. It is possible that although some single confirmation authority will make the decision at some future point in time, the materials developed by the evaluation study may be useful to various publics related to the client agency.

Finally, in the design of the evaluation study, it is important that both the decision-maker and the evaluation specialist define the policies, the operating guidelines and the constraints which will be operative in conducting the actual study. Since such a study almost inevitably means the intervention by some evaluation personnel into the on-going operations of the client agency, the evaluation specialist should understand clearly the policies of the institution which might directly affect such matters as the collection of data, the release of data, or the demands which may be required upon

personnel with full-time assignments. Operating guidelines would indicate those activities required in the evaluation study which would be permissible to the client agency and would be acceptable to the professional standards of the evaluation specialist. Finally it is inevitable that certain constraints upon both policies and operations of the evaluation specialist may be required because of the public nature of many of the educational agencies with which the evaluation specialist will be working. In addition, the evaluation specialist may need to specify constraints upon the client agency in the treatment of the data and reports which are to be provided and in the use of the name of the evaluation specialist in any information releases provided to the public or the organizational staff itself.

(FRAME 14)

Thus we see the focus on evaluation specifications really is aimed at developing a study which can provide the report which is needed. On one side, there is the matter of determining the authority, the resources, and the responsibility related to design and implementation. The leadership here will be primarily from the decision-maker. In the area of developing policies, guidelines and constraints, open and positive cooperative action in decision-making is required between the evaluation specialist and the client agency. These six specifications are all related to the design and implementation of the study. Design and implementation is further directed toward the report requirements which have been indicated in the focusing operation.

(FRAME 15)

Having now defined the operational arena for the evaluation study itself, it is necessary for the evaluation specialist and the decision-maker to consider the most desirable and feasible approach to the study. By this time it should be clear to the client agency that the evaluation specialist will not attempt to make the final decision. His job is to provide a range of alternatives for decision-making. By this time the decision-maker should recognize also that certain alternatives are acceptable at least for consideration. It should also be obvious to both parties that no study can encompass all the possible alternatives. From decisions made in previous steps of the focusing activity, we have certain criteria which will be critical in the selection of any alternative. Therefore the sequence of actions are (1) to identify sources of alternatives, (2) to assemble a variety of alternatives, (3) to select a feasible number which might appear appropriate for investigation, and (4) to develop an information matrix by which the criteria can be applied to each of the possible alternatives. It is from such an information matrix that the evaluation study can then proceed in the most efficient manner to explore the "best bets" or alternatives for consideration.

(FRAME 16)

To summarize, the initial objective is the development of possible alternative solutions to the problem being investigated, to assemble those alternatives an investigation should be made of many sources. One might turn to theory related to the problem being investigated or to authorities in the field who have well-developed positions on the problem. Research data or prior studies may exist related to the problem. Certain types of development activities may have been completed in the past, or be in progress at the moment, based on possible alternatives.

And so the list of possible sources goes on. From these various sources

(LIFT DOOR A)

an assemblage should be made of the suggested general alternatives derived from the various sources. The number of alternatives from each source may vary and obviously more alternatives will be available than can be attempted in any evaluation study commonly conducted within the usual educational setting.

(LIFT DOOR B)

From the assembled alternatives, the evaluation specialist and the decision-maker should agree upon those possible alternatives which would appear to be the most feasible and desirable as solutions to the problem being evaluated.

(LIFT DOOR C)

These alternatives should then be matched against the criteria developed in prior steps and a judgment based upon these criteria should be made regarding the value of each of the possible alternatives. What would be obtained then would be a composite rating of each possible alternative for each of the criteria specified in the prior focusing steps. At this point, the evaluation study may be directed to consider all of the selected alternatives along with the current operating procedures or perhaps it may be directed to implement and evaluate merely one of the alternative actions developed through this procedure.

SECTION III

THE FUNCTIONS OF THE EVALUATION TEAM

Now, we turn to the four major functions of the Evaluation Team: Collection, Organization, Analysis, and Reporting of information.

As the heart of the evaluation activity we will look at many specific factors in performing each major function.

The first task then is Information Collection.

(FRAME 17)

First, the information items which are required must be specified. These items are derived directly from the criteria by using the decision alternatives matrix which we discussed as the final step in focusing the evaluation. An example of an information item is an I.Q. score.

Second, the source of each information item should be specified. Such sources are of two kinds: information which has already been collected; and that which remains to be collected. For our I.Q. score example, we might designate a school's cumulative record file as the source of information.

Third, we must identify the sample for which data will be collected. In our example, this might be a random sample of 100 sophomores in the public schools of Waterloo, Iowa.

Fourth, an instrument, such as the Otis Intelligence Test, should be specified. Depending upon the information item one has in mind, an appropriate data collection instrument may not exist. If so, a plan should be projected for constructing the needed instrument.

The fifth step is to specify the methods for data collection. Will this be the standard administration of a full length test? If only group data is required, will random samples of test items be administered to random sub-samples of subjects so that time can be conserved? How will a clerk draw a random sample from the files? Etc. Clearly, methods of collecting information may vary widely depending upon the information required, the sources of the information, the instruments to be used, etc.

Sixth, the conditions under which information is to be collected must be specified. Will trained observers be employed? Will testing be performed in regular classrooms or a large group room? Will a clerk draw a pre-defined sample of records from a file? Will the timing of a test administration be controlled by announcement over the school's intercom? How will different test forms be randomly assigned to subjects? Etc.

Finally, a master schedule should be drawn up for the collection of information. Minimally, this schedule should interrelate sources of information, instruments, and time. In two respects, this schedule is helpful for improving the initial scheme for information collection. First, it prevents us from administering too many instruments to the same persons within a limited time span. Second, it helps us to combine similar instruments which are to be administered to the same persons and, thus achieve parsimony in our instruments. Obviously, the schedule of information collection is a valuable

device for assigning personnel and resouces to the collection process and for maintaining effective communication among the evaluation team members and between the team and those in the system who will be involved in the collection process.

(FRAME 18)

We now move to the second step in the evaluation procedure, that of information organization. The first task in organizing information is to lay the framework which will relate the collection system we have just described to the report requirements which have been prescribed earlier in the focusing operation with the decision-maker.

You will recall that we indicated that there may be several reports and several types of reports required for the final decision. While some confirmation authority will make the final decision, there are elements of information developed through the evaluation procedure which could be used in reports to other audiences, such as personnel who may operate a new or revised program or public groups who need to be informed of the achievements or the changes in the school system.

In any event, in organizing the information it is important to think through quite clearly the various information items to be collected and relate each of these to the reports which are required. In doing this job, the evaluator may become aware of information which should be collected but has not been planned. Another value in performing this job of information organization at this time is to indicate the collection of too much or too many types of information for minor types of reports which amy be required.

The second major job of information organization is to develop a storage and retrieval system for that information which is to be collected. This information storage and retrieval system is needed not merely to relate that data collected to the specific needs of the various reports which must finally be made; the coding system and the storage-retrieval system also functions as a control mechanism which enables you to place and recall information in such a way that it can be used in developing new types of data and relationships which have not been perceived in the initial planning.

Obviously, codes must be established for each source of information and each of the samples must be identified as well as the instruments and the various items in each of the instruments.

Further, one needs to plan input schedules which will insure that the information being collected is constantly monitored and tabulated, so the total project does not get behind schedule. In the various types of evaluation studies under consideration, it is possible to accumulate massive amounts of data which are not tabulated or organized during the course of the study. It is quite

easy for an evaluation team to feel adequate progress is being made merely because the information is pouring into the evaluation staff offices. This false feeling of security becomes an enormous problem as the study begins to reach its closing phases and reports must be written and the collected data has not been monitored and tabulated upon its receipt.

Finally, some policy decisions must be made regarding under what conditions data can be withdrawn from the system and at what points in time. One can think of particular types of data of a personal nature which should not be released to persons or organizations associated with the institution requesting the evaluation study. Other circumstances suggest that even members of the evaluation staff should not have unrestrained access to portions of the data without maintaining some records of where the material has been taken. These retrieval constraints are merely a control factor to assure that all of the relevant data is available when necessary and it is available only to those persons authorized to receive such data. The data may be incomplete or in an uninterpreted form which should not be made public or released without some processing by the evaluation team.

(FRAME 19)

Plans must also be made for the information analysis. You will recall one of the early elements of the focusing operation was developing a statement of the problem in question form. That problem statement or question now becomes relevant and extremely useful in planning the analysis of the information to be collected. Within even the most simple question or problem statement, there will be several key terms. The first step therefore is to identify those key terms or elements of the problem statement.

(EXPOSE #2)

Secondly, in the focusing operation certain criteria statements were made related to the general problem. It now becomes important to take each of the criteria statements and relate them to the various elements of the problem statement. Some criteria may relate to several elements of the problem, while other criteria will relate to only one of the elements in the problem. Such criteria statements related to the problem elements help us to determine which information will be most important in providing a more precise and useful report regarding the alternatives for decision-making.

(EXPOSE #3)

Next we have seen in the prior activity related to information collection that we have specified certain items which must be collected. It now becomes useful to relate each of the information items identified to the various criteria which will help us to make the appropriate decision regarding each of the problem elements. The matching of

information items to specific criteria will reveal of course where adequate and valid information is available. It may be apparent that some additional information items are required.

(EXPOSE #4)

As the next step in information analysis, it becomes important to assign personnel on the evaluation staff to monitor the collection of certain information and to concentrate their activities upon certain of the criteria required by the decision-maker. This assignment of personnel to specific parts of the study means that no elements of data or no major criteria will remain unreviewed. At the end of the study, selected personnel will be prepared to draft portions of the analysis required in the final report.

(EXPOSE #5)

Fifth in the information analysis activities, it is useful to schedule the preparation of summaries and reviews of information collected during the course of the study. In certain types of evaluation studies this interim summary and review is critical. This is especially so in the evaluation studies we have referred to as the process type. The interim summaries and review not only assure that the study is proceeding at an appropriate pace, but may also provide information useful in correcting difficulties which would arise if these reviews were not conducted. Certainly such summaries and reviews are critical in the types of studies we have considered as contingency studies or those decision-making situations we have described as Neo-mobilistic. In these particular types of evaluation the interim summaries and reviews are extremely critical in redirecting or concentrating upon elements which are constantly changing.

(EXPOSE #6)

A sixth consideration in information analysis is the development of some means to check errors as the information is being collected. This error check not only relates to such simple matters as achieving accuracy in mathematical tabulation and calculation; it also means being alert to such matters as cross-checking data received in one part of the study with data received from perhaps another source or perhaps at another time during the course of the study. One should view this matter of checking for errors not merely in the negative sense of correcting mistakes but recognize it also as a good opportunity to develop new insights on the interrelationship of information being collected which may not have been evident or planned in the original design of the study.

(EXPOSE #7)

Seventh, in the design of the study, the evaluation team should develop some type of a warning report mechanism which would systematically be circulated to those persons collecting the information. Such a warning report might indicate either time delays which are presenting difficulties, or the recurrence of failure to collect certain types of information, or slight deviations in procedures which can creep into a repetitive type of activity. Further a warning report system should keep each person on the staff aware of what is occurring in the entire operation. In a very complex study or a very diffuse operation, it is possible that persons working in one area of the evaluation study may be inadvertently creating problems for other team operations or gaining important insights into work being conducted at some other time and place by other personnel. This type of communication can help to eliminate some of the difficulties which can arise in analyzing the information at the close of the study. It may also provide opportunities to develop a new and different type of information of great value in the final report.

(FRAME 20)

Our final major operation in designing and implementing the study is the reporting of information. To a decision-maker this may seem like a simple problem of turning in a document to the person requesting the study. The success and the worth of the entire evaluation may rest on the effectiveness as well as the accuracy of the communication between the evaluation team and the client-agency.

The first task is to specify the audience or audiences to receive the report. Such specifications would include not only the number of persons involved, but the types of persons, their positions, and their relationships to the decision and its implementation. While the school board may make the final decision, there may need to be reports to such groups as the administrative staff, the general school faculty, or a group of professional employees who will implement a new activity or whose positions may be modified by the decision. The numbers and types of audiences indicated should be known in order for the evaluator to properly prepare and direct his reports.

(EXPOSE # 2)

Secondly, schedules should be prepared for the delivery of each of the required reports to the various audiences. It may be important to sequence the reports for the maximum effectiveness in achieving acceptance of any final decision made. Continuing our prior example, perhaps the first report should be made to the administrative and executive staff of the educational institution requiring the evaluation. Depending on the results of that reporting procedure, the next group may be the faculty or the program personnel directly related to the

program or operation being evaluated. From these two reports, the administration may then wish to modify the report to be made to the school board. After the report to the school board, a public meeting may require still a fourth report. The sequence of reporting as indicated here may determine not only the nature of the decision but the effectiveness of the implementation of the decision or the acceptance of the decision which eventually must be made.

(EXPOSE #3)

A third task is to specify the formats for the reports and meetings. The size of the group, the group's relationship to the report, and the actions which are anticipated or required from the group may determine the format and the nature of the reporting procedure. We tend to think of reports being printed in some single document. Printed documents usually are required. However, the format of the report could vary. Continuing our example, the report to the administrative staff may very well consist of a complete printed document supplied to the administration and an additional set of summary statements which are available to each member of the administrative staff. This summary may be reviewed at a meeting of the administrative staff with the head of the evaluation team who would present and interpret that summary. In the second situation, if we assume it is a large school district and the total faculty is to be involved in at least hearing the report, the report may be prepared in the form of photographic slides or overhead transparencies. The presentation may be made by some member of the administrative staff through an audio-visual presentation to the large group. Perhaps plans should be made to have a questionnaire prepared in advance with sufficient copies to be circulated among the faculty so that they may express their opinions or reactions to the report as it is presented at the large group meeting.

An additional type of meeting format may include the acceptance of questions from the floor and open discussion. Such a meeting format may require the presence of the evaluation specialist or team who conducted the study.

(EXPOSE #4)

Our fourth task in reporting information is to specify the means for the production and presentation of the reports. The responsibility for this production effort and the costs involved should be clarified prior to the beginning of the study. Most evaluation specialist may be prepared to provide a printed report either in mimeograph format or in some more sophisticated printing procedure. The various audio-visual formats, public meetings, and even the different levels of printing possibilities need to be considered. Some consideration may be needed to translate data which may be printed in a conventional research type figure or tabular presentation. It may need ot be modified or redesigned for presentation in photographic slide form

or as an overhead transparency. Complex diagrams, charts, and tables may be enhanced by the use of colors or specific types of graphic techniques which are more readable and understandable to the less sophisticated audience receiving one of the report formats indicated above.

(FRAME 21)

The time has now come for the evaluation study to be put into action. We must consider the actual operational administration of the study about to take place. You will recall the evaluation specialist has spent considerable time in what we have described as the focusing operation. We have just reviewed the four major functions to be performed by the evaluation study: Collection; organization; analysis; and reporting of information. The final task is to consider the total operational plan for the evaluation study.

(EXPOSE #1)

First the evaluation specialist will need to summarize the time schedule. Various decisions have been made during the focusing operation involving the four key steps, so that some specific terminal dates are known. Due dates for most activities have now been determined. These need to be placed in a time framework. Perhpas one could even consider the charting of the total activity in something similar to a PERT network.

(EXPOSE #2)

Second, some specific plan is needed for the staff and the resource requirements which have been indicated by all of the decisions made.

(EXPOSE #3)

Third, certain policy requirements have been set forth by both the decision-maker and the evaluation specialist. It is critical at this point that the head of the evaluation team specify those policy requirements in writing and communicate them to the evaluation team in such a manner that they will be met during the course of the evaluation.

(EXPOSE #4)

Fourth, it is now possible to look at the entire study being planned and to make some estimate of the possible value and potential effectiveness of the total design. This requires a highly objective and rigorous assessment of the total evaluation study. If some potential weaknesses are clear, these must either be corrected by redesign at this point or a clear understanding of these potential weaknesses must be communicated to the decision-maker.

(EXPOSE #5)

Fifth, the evaluation specialist should indicate some means for up-dating, correcting, or modifying in some fashion, the total evaluation design. Some alternative plans or procedures should be available to prevent the project which has been designed with the best intentions and available knowledge from some unforseen difficulties in its actual operation. This is merely being sensible in terms of protecting the investment of time, energy, and money which will be spent.

(EXPOSE #6)

Finally, the toughest, most critical problem of all must be faced. This is providing the budget. With the thorough type of planning which has been indicated in all the prior steps, a relatively accurate budget should be feasible. Whether in fact these funds do exist, can be provided, and will be available, must now be determined. Plans must be made for the provision of funds on an appropriate and continuing schedule for the completion of the study.

(FRAME 22)

We have finally reached the end of our presentation and it becomes important to consider all of the many specifications that we have provided in the prior steps and return again to our initial point. The purpose of proposing the generalized framework for evaluation which has been given here is to enable us to attack the multiple and varied problems of evaluation in education which have not been completely or effectively achieved through prior definitions or interpretations of the word evaluation.

The system we have described today has been called the CIPP Model. This acronym is derived from the four general types of evaluation we have discussed. These four types of evaluation have been developed and described in this fashion because they seem to cover the major generalized types of problems which we face in education.

We are constantly faced with the problem of relating the ends and the means which we have available. These are the realities of the world. At the same time, we attempt to relate our intentions and our achievements. As one considers the relationship of these realities of ends and means and our hopes of intentions and achievements, four key words which we frequently use come into focus.

When we seek to express our intentions in relationship with the ends, we speak of <u>goals</u>.

When we attempt to identify our intentions in relationship to the means which are available, we speak of <u>designing</u> some program or operation.

When we attempt to relate these same means which are available to the achievements which are our dreams, we speak of the procedures by which the means are applied.

Finally, when we attempt to associate those things which we have sought to achieve against the ends which we have predicated, we speak of outcomes. It is this cycle of goals, designs, procedures and outcomes which we replicate in virtually every type of educational activity.

In the presentation on evaluation as we have described it, we have defined a specific type of evaluation which attempts to approach each of the four separate problems mentioned. In attempting to assess goals, we have spoken of context evaluation.

(LIFT DOOR A)

In attempting to evaluate designs, we have spoken of input evaluation.

(LIFT DOOR B)

In attempting to evaluate procedures, we have spoken of process evaluation.

(LIFT DOOR C)

And in attempting to evaluate outcomes, we have spoken of product evaluation.

(LIFT DOOR D)

And in conducting each of these four types of evaluation, we have said there are six major elements to the evaluation process. First, the focusing activity which is the initial consultation between the evaluation specialist and the decision-maker. Next, the four key steps in every type of evaluation: the collection, organization, analysis, and reporting of information to the decision-maker. Finally, we have spoken of the general administration of any type of evaluation study.

The value and effectiveness of the CIPP Model can only be determined as it is applied in various contexts, on various problems, and in various situations. Hopefully, it is more practical and realistically oriented than experimental testing, and at the same time it is more systematic and productive than informal and ill-planned investigations. Perhaps it is a step forward in relating theory and practice and opening up to systematic inquiry the practical problems of better decision-making in educational situations.

EVALUATION

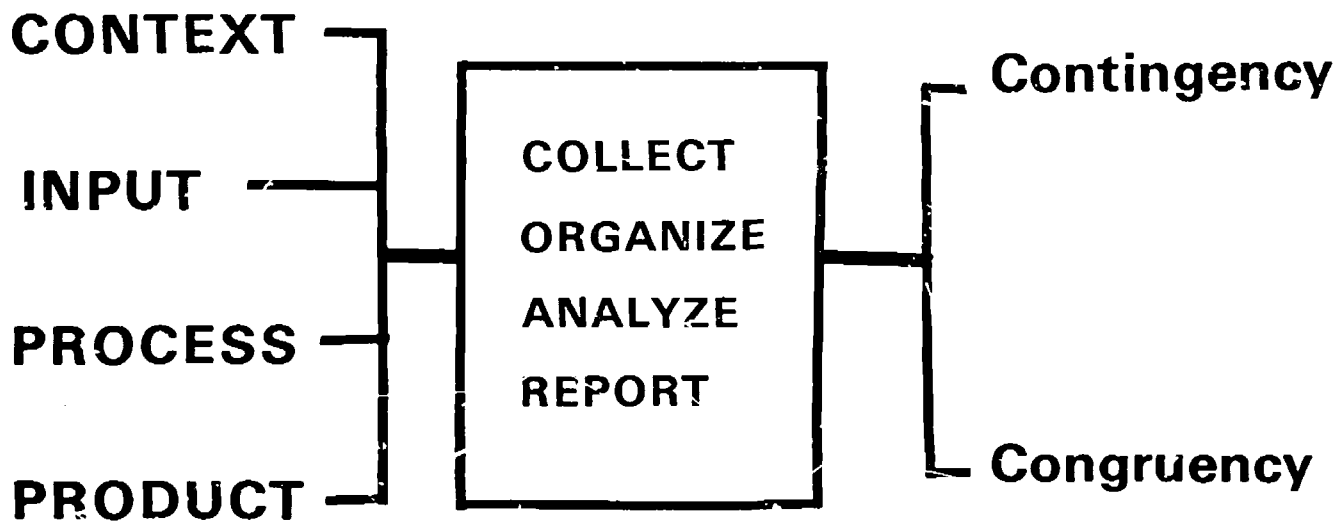
IS THE PROCESS OF

PROVIDING INFORMATION

FOR DECISION - MAKING

DECISIONS
PLANNING
STRUCTURING
IMPLEMENTING
RECYCLING
Neo-Mobilistic
Homeostatic

INFORMATION



DECISION MAKER	EVALUATION SPECIALIST
PLANNING	CONTEXT
STRUCTURING	INPUT
IMPLEMENTING	PROCESS
RECYCLING	PRODUCT
Neo-Mobilistic	Contingency
Homeostic	Congruency

NEED for a DECISION
CRITERIA
ALTERNATIVES
INFORMATION
WEIGHTED ALTERNATIVES
DECISION

FOCUS with Decision Maker

ADMINISTER with Evaluation Team

COLLECT INFORMATION

ORGANIZE INFORMATION

ANALYZE INFORMATION

REPORT INFORMATION

implement program
decide
FOCUS
collect info
organize info
analyze info
report info
judgment
CLIENT - AGENCY ACTION
EVALUATION ACTION

DECISION SITUATION

1. ANTECEDENTS TO DECISION NEED
2. QUESTION AND KNOWN ALTERNATIVES
3. ULTIMATE CONFIRMATION AUTHORITY
4. OPERATIONAL AUTHORITY AND RESPONSIBILITY
5. TIME REQUIREMENT FOR DECISION
6. CRITERIA FOR DECISION ALTERNATIVES
7. DECISION RULES FOR ALTERNATIVES

DECISION MAKER and EVALUATION SPECIALIST

cooperatively define

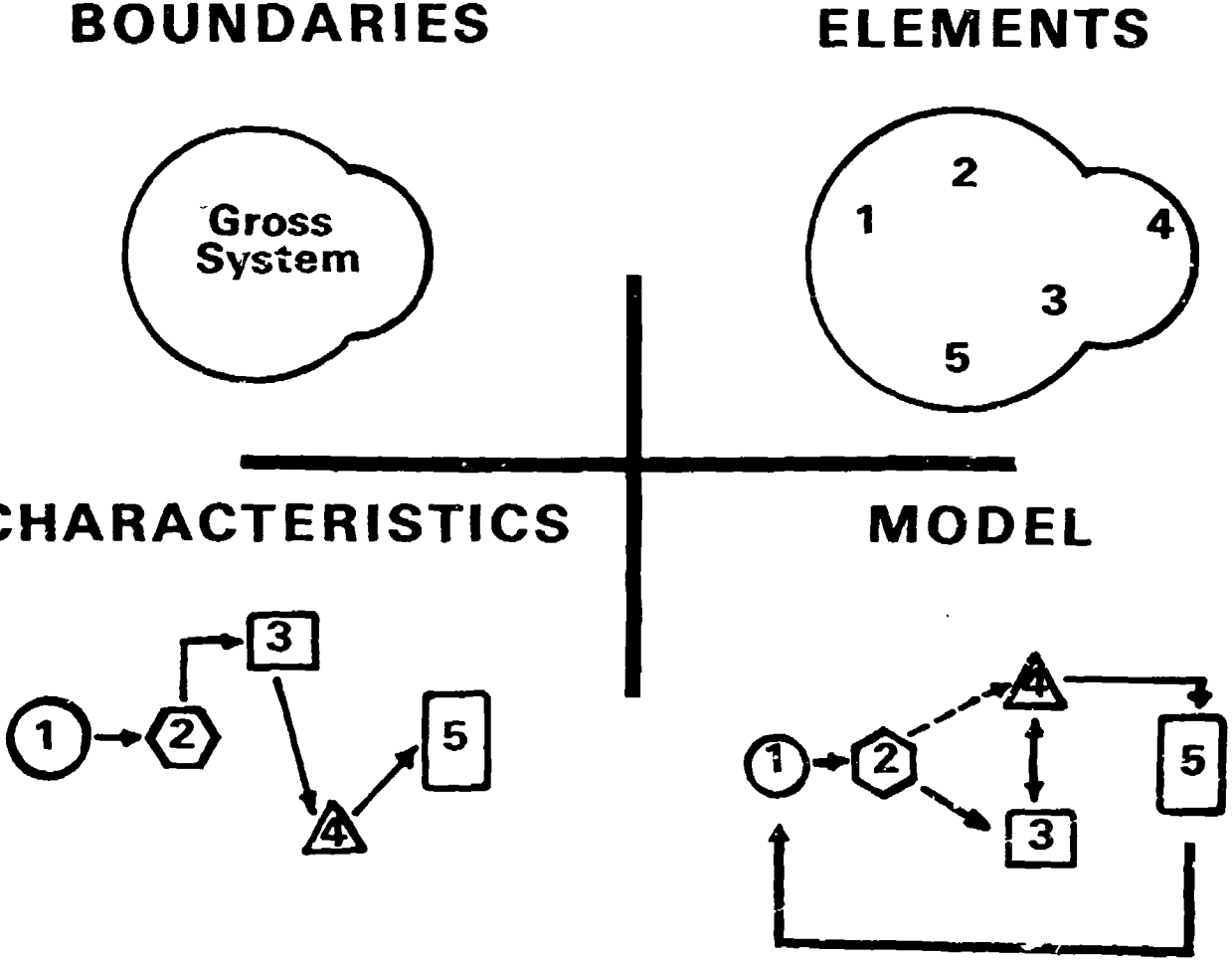
1. SITUATION TO BE SERVED
2. SYSTEM TO BE EVALUATED
3. EVALUATION SPECIFICATIONS
4. DECISION ALTERNATIVES

FOCUS ON SITUATION

TO DATE	IMMEDIATE	TERMINAL
PROBLEM ANTECEDENTS	OPERATIONAL AUTHORITY	TIME REQUIREMENTS
PROBLEM IN QUESTION FORM	CRITERIA	CONFIRMATION AUTHORITY
KNOWN ALTERNATIVES	DECISION RULES	

SYSTEM to be Evaluated

1. Define BOUNDARIES
2. Define ELEMENTS
3. Define CHARACTERISTICS of Elements
4. Develop MODEL of System


BOUNDARIES
ELEMENTS
Gross System
1
2
3
4
5
CHARACTERISTICS
MODEL
1
2
3
4
5
1
2
3
4
5

EVALUATION SPECIFICATIONS

1. AUTHORITY and RESPONSIBILITY
   for DESIGN and IMPLEMENTATION

2. RESOURCES for Design and Implementation

3. REPORT REQUIREMENTS

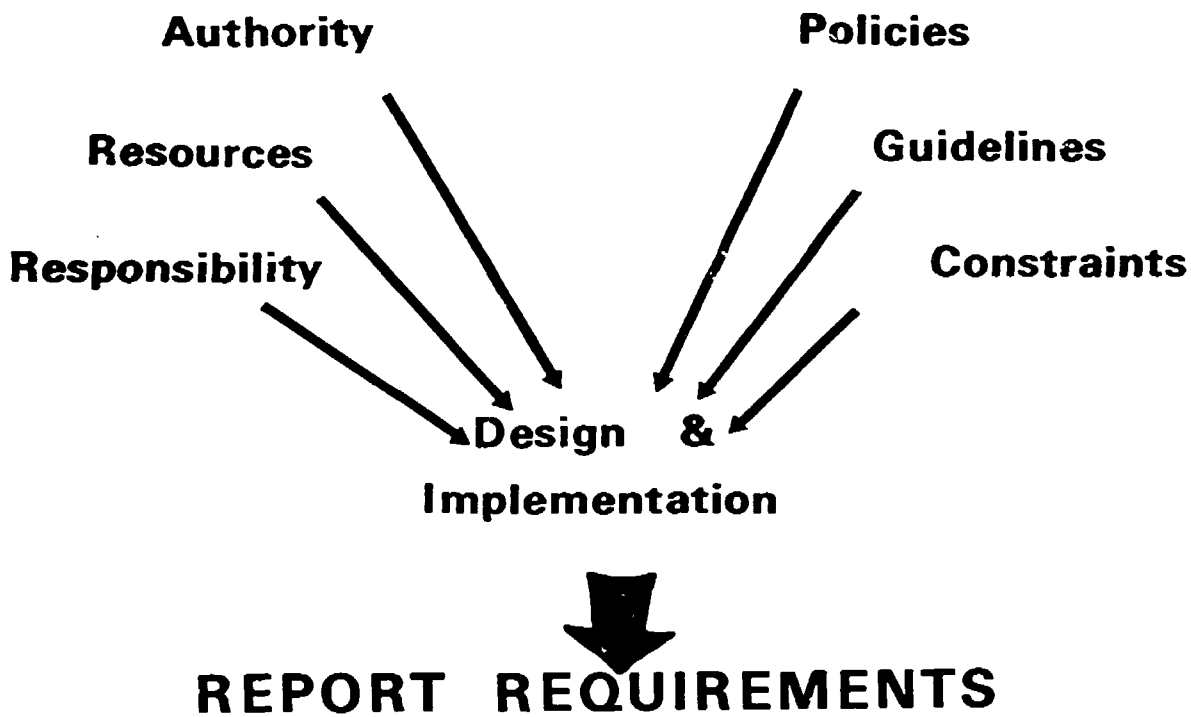
   (I.e. : Timing, Types, Substance, Audiences, etc.)

4. Define (a) POLICIES

   (b) OPERATING GUIDELINES

   (c) CONSTRAINTS

FOCUS ON EVALUATION SPECIFICATIONS



DECISION ALTERNATIVES

1. IDENTIFY SOURCES OF ALTERNATIVES
2. ASSEMBLE ALTERNATIVES
3. SELECT FEASIBLE NUMBER
4. DEVELOP INFORMATION MATRIX OF ALTERNATIVES BY CRITERIA

FOCUS ON ALTERNATIVES

SOURCES	ASSEMBLE	SELECT	DEVELOP INFO MATRIX
THEORY	● ○ ● ✪	●	
AUTHORITIES	☆ ☆ ★	☆	Criteria 1 2 3 4
RESEARCH	□ ▣	□	● + − o +
DEVELOPMENT	▶ ▲ ▲ ▼		☆ + + + o
ETC., ETC	★ ● ◇ ▣		□ − o + o

Information COLLECTION

1. INFORMATION ITEMS REQUIRED

2. SOURCES OF INFORMATION

3. SAMPLES TO BE EMPLOYED

4. INSTRUMENTS TO BE USED

5.METHODS FOR COLLECTION

6. CONDITIONS OF COLLECTION

7. SCHEDULE FOR COLLECTION

Information ORGANIZATION

1. SPECIFY AND RELATE FORMATS
   (Collection System to Report Requirements)

2. DEVELOP STORAGE - RETRIEVAL SYSTEM

   a. Codes for Sources and Samples

   b. Codes for Instruments and Items

   c. Plot Input Schedules

   d. Specify Retrieval Constraints

Information ANALYSIS

1. Separate Elements of Problem Statement
2. Match Criterion Statements to Problem Elements
3. Match Info Items Collected to Criteria
4. Assign Personnel to Monitor Info and Criteria
5. Schedule Interim Summaries and Review of Information Collected
6. Develop Analysis Error Check
7. Develop "Warning Report" System to Information Collection Personnel

REPORTING of Information

1. SPECIFY AUDIENCE(S)

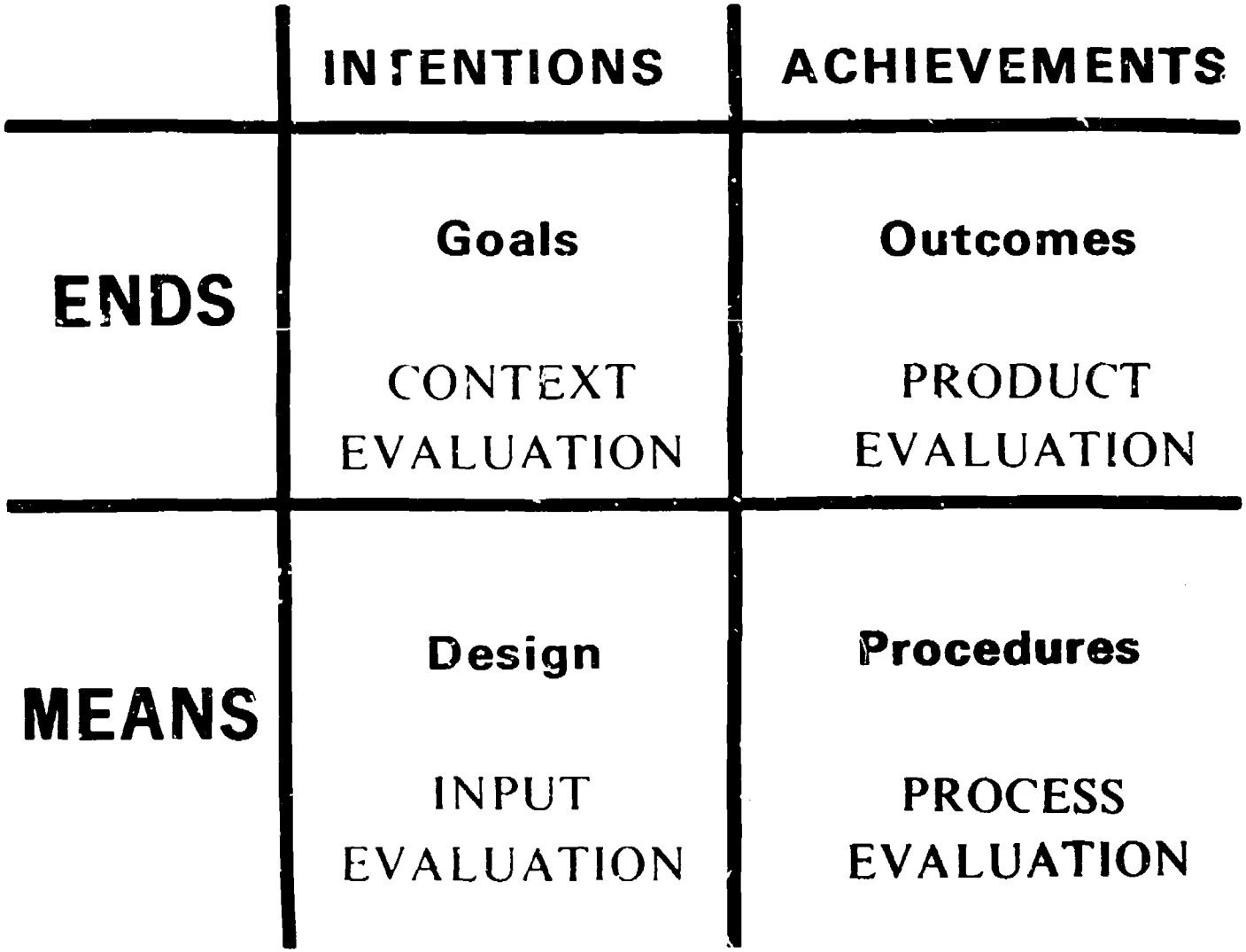
2. SPECIFY SCHEDULE(S) FOR REPORT(S)

3. SPECIFY FORMATS FOR REPORTS AND MEETINGS

4. SPECIFY MEANS FOR PRODUCTION AND PRESENTATION OF REPORTS

ADMININISTRATION

1. SUMMARIZE EVALUATION SCHEDULE
2. PLAN STAFF AND RESOURCE REQUIREMENTS
3. SPECIFY MEANS OF MEETING
   POLICY REQUIREMENTS
4. EVALUATE POTENTIAL OF
   EVALUATION DESIGN
5. SPECIFY MEANS FOR UP-DATING
   EVALUATION DESIGN
6. PROVIDE A BUDGET


INTENTIONS
ACHIEVEMENTS
ENDS
Goals
Outcomes
CONTEXT EVALUATION
PRODUCT EVALUATION
MEANS
Design
Procedures
INPUT EVALUATION
PROCESS EVALUATION

APPENDIX C

MANUAL FOR SEGMENTING THE CLASSROOM ENVIRONMENT

prepared by

Paul V. Gump
Midwest Psychological Field Station
Department of Psychology
University of Kansas

for

Training Materials for Research,
Development, and Diffusion Training Programs.
(USOE OEG 1-7-071018-4581 Guba)

Based upon research supported by U. S. Department of Health, Education, and Welfare, Office of Education, Bureau of Research, No. 5-0334.

Preface

Although education is in the business of creating appropriate learning environments, present research conceptions and methods for investigation of environments are fragmentary and primitive.

The conceptions and techniques presented in this manual are also primitive. However, there seems to be justification in description of unfinished work if this description illustrates potentialities inherent in an approach to a problem. The approach here comes from ecological psychology; the ambition is to develop reliable and fruitful methods descriptive of the behavioral environment provided by schools and classrooms.

The point of view, the underlying conception, of the approach is developed here by illustration. Unitization and coding procedures are presented in order to outline an idea and its potentialities as well as to propose a research technology. Those readers who find the idea useful, may be able to improve the methods; if so, the presentation has served its purpose.

Many people have assisted this effort; we wish especially to thank Beverly Ayers Machamkin for her efforts on the original investigation. Staff at the Midwest Psychological Field Station had provided much clerical and scholarly assistance; Dr. Roger Barker has helped the author with conceptions and methodology essential in the area of eco-behavioral science. Finally, we are grateful to the personnel of the Topeka, Kansas and Lawrence, Kansas school systems who opened their doors so that we might learn about classroom environments.

Environment Defined

This manual focuses upon classroom environment, its differentiation and its quality. Since the word environment is used in different ways, an indication of its meaning here is necessary.

The classroom is viewed as a behavior setting, a concept developed by Barker and Wright (1955) and by Barker (in press).

Excerpts from Barker's definition of a behavior setting, together with a discussion of essential terms as these apply to the classroom, follow:

> "A behavior setting consists of one or more standing patterns of behavior-and-milieu with the milieu circumjacent and synomorphic to the behavior." (Barker, in press)

...standing patterns of behavior...

These are behavioral gestalts in classrooms that are characteristic of the inhabitants' activity: teacher explains and pupils listen; teacher and pupils together stand and say the Pledge of Allegiance. These activity patterns are not characteristic of particular pupils or teachers; they are extra-individual behavior phenomena like ball games and commuting traffic; they persist even if participating pupils or teachers change.

...standing patterns of behavior-and-milieu...

The behavior patterns are linked to nonbehavioral factors. The teacher's explanation is made in a space at the front of the room, using blackboard and chalk. Pupils sit in desks positioned toward the teacher; the entire operation is supported by arrangement of space and props to facilitate effective communication and diligent study. Time constellations are a part; the teacher's explanation follows the Pledge; it lasts about eight minutes. The milieu is not the behavior setting; if the behavior stops and the milieu continues, the behavior setting ceases to exist. The behavior setting "third grade classroom" usually closes down about 4:00 p.m. Parts of the milieu may be used in the evening but usually for a new behavior setting, for example, the executive meeting of the P. T. A.

...milieu circumjacent to behavior...

The classroom, as milieu, surrounds, encloses the standard patterns of behavior which occur there; the classroom time--from 8:45 a.m. to 4:00 p.m.--encompasses the classroom behavior.

...with milieu synomorphic to the behavior...

Behaviors in the third grade classroom and their milieu have a fit; they have a similar structure, a synomorphy. Desks are designed for storage of materials and for writing; blackboards are positioned for ease of looking at and writing upon, and the room walls shut out playground noise, thereby making it possible to hear the teacher's explanations, and so on.

From the preceding, it should be clear that environment, as used here, will be behavior-milieu units; of particular interest are those ecological sub-units which form the larger classroom behavior-milieu unit. A clear example of such a sub-unit is a lesson at the reading circle which consists of a grouping of chairs, books, and patterns for reading in turn or for discussion of ideas. Teacher and pupils are said to be in in environmental unit such as a reading circle in the same sense as people may be in games, or church services, or club meetings.

Chronicle Accounts of Classroom Environments

The material to follow will outline methods by which the environment of a classroom day may be described. First, the methods apply to development of a primary record or chronicle of the day; secondly, and more importantly, methods refer to the analysis of this chronicle by identification and description of its natural parts, its environmental segments.

Although the techniques were devised and tested for relatively traditional third grade classrooms, they are presented in the belief that they have relevance to other grade levels and to more novel classroom organizations.

The classroom chronicle idea is an adaptation of specimen record methodology described by Barker and Wright (1955) and later by Wright (1967). Although the specimen record methodology originally applied to children's behavior, it has been used with adults; Hughes and her associates took specimen records of teacher behavior (1969). This approach recorded the sequence of the teacher's behavior and the input to her during a particular time span. We found in our own work that teacher behavior (and input to this teacher) occurred at such a high rate that usual notetaking could not keep up with the phenomena. An observer could handle this material better if he dictated a record of teacher behavior as it occurred. He used a portable tape recorder and a soundless microphone. This elaboration of the specimen record technique was developed by Schoggen (1964) and is part of the established literature; it will not be delineated here.

In order to appreciate the use of the adapted specimen record as a classroom chronicle, it is necessary to understand how a specimen record of the teacher's classroom day is, and is not, an account of the classroom environment for that day. How can it be that a record of one participant's behavior, the teacher's behavior, provides a record of the environment?

Knowledge of teacher behavior permits construction of classroom environment because of two conditions typical of elementary school classrooms. First, the teacher is the carrier of the program that directs the classroom behavior setting and she visibly and audibly enacts that program. She describes the nature of the activity to come ("We are going to have a spelling test"); she signals the beginnings

("Ready now, here is the first word"); she often--but not always--provides continuous input for the ongoing regime ("Here's the second word...the third...the fourth..."); she signals terminations ("That's all we will have time for today. Please pass your homework to the front"). The content of the teacher's behavior contains much of the structure for the proposed classroom program. Furthermore, and this is the second condition, the teacher's power in the classroom situation is so complete that what the teacher proposes, most usually happens. If she prescribes a test, a reading circle, a discussion on elections, these parts of the classroom environment do come into being.

The importance of the teacher as a source of environmental program can hardly be over-stated; it can, however, be misunderstood. We are not speaking here of the teacher as the environment of pupils. We are pointing to her behavior as a source of information about what kinds of environments come into existence for her and for her pupils. When we study the teacher's signals and directions for the spelling test, we are not looking for "how the teacher treats the children"; we are looking for the extent and nature of a piece of the classroom environment called spelling test--a piece inhabited equally by teacher and pupils.

The major purpose of the chronicle is provision of information about the sections of the classroom environment as these develop throughout the day. Because of the power and ubiquity of the teacher, a record of her behavior provides a great deal of information about this environment.

The nature of a chronicle and the way in which a specimen-like account of teacher behavior permits description of environment best can be communicated by illustration and comment. The following materials are from the chronicle of Mrs. Carr's classroom.

Mrs. Carr Third Grade April 7, 1965 Observer: Mr. Bond

8:45 At this time about two-thirds of the students are already in the classroom.

As they come into the classroom, T greets them, asks them to sit down.

All of them are working, probably on their arithmetic. They are very quiet and are working well. When a student has a question, he must raise his hand and T comes to him. The students are finishing their arithmetic papers, their homework from the previous evening.

As the students finish their arithmetic papers, T collects them, and they begin working on something else or they are free to go out of the room if they wish.

All of the students are in the room, except James.

9:00 The 9 o'clock bell rings.

T continues to go around the room, picking up the arithmetic papers.

9:02 T is at the desk of Susan, helping her with her arithmetic.

There are three hands raised: Karen, Rodney, Billy.

T now goes over to Teresa and helps her.

COMMENT: The single spaced material above describes the general situation of the classroom before the specimen record of the teacher begins. This account is very necessary to orient the reader to "how things were" just before the official day begins. It is noteworthy that behavior of the teacher and the pupils and condition in the classroom are much the same after the bell as before. The kind of environment existing up to this point is like a supervised study hall. Pupils are

primarily concerned with subject matter arithmetic, the teacher acts as supervisor and individual helper. Pupils are engaged in a sedentary, problem-solving activity; they are not a group in the sense of engaging in interdependent activity; they are about their similar but individual businesses.

9:03 T goes to the front of the room and says, "We are going to start now. You may hand in your arithmetic sheets later."

T says, "Let's put our books and pencils down."

T says, "Rodney," meaning for him to put his work away.

T queries, "James, are you finished?"

T goes back to James' desk to check up on his progress.

T returns to the front of the room.

T says, "Let's see how straight we can sit."

T adds, "Now we have a very nice day today."

After a pause, T informs the class, "Mr. Bond is here to be with us."

"Let's show him how nicely we can work."

COMMENT: At the beginning of these sections, we see an illustration of how the teacher changes environment for herself and her pupils. The study-hall aspect is called off: "We are going to start now...Let's put our books and pencils down." The teacher is evidently trying to bring another environment into being. She is, as we shall see, readying the pupils for the opening ritual. It is clear that the change is not automatic for all students. Rodney and James require more attention.

A truly complete chronicle would describe the extent to which pupils actually entered the new activity and environment being established by the teacher. The chronicle approximates this description by recording teacher moves which indicate the pupils who are not involved (as in the present case); further, if the majority of students are not in the teacher-proposed environ-

ment, the record may say so. Of the six classrooms observed in one study (Gump, 1967), only one provided instances of failure of teacher-proposed environmental changes to take prompt effect. These several failures were noted in the chronicle. Most often the issue of whether teacher-proposals and actual environmental changes are equivalent was of minor practical importance in the above study. However, in principle, the issue is central. The chronicle is to be a record of the various segments of the classroom environment; if teacher directives do not take effect, the proposed environmental change does not come into being. In such a case, classroom environment is not adequately represented by teacher behavior.

T, immediately returning to classroom business, says, "Now, let us stand and say the Pledge of Allegiance."

9:04 The pupils wait for T as she goes to the back of the room, closes the door, and then stays in the back of the room.

9:05 The students and T sing "America" and say their Pledge of Allegiance.

Then they sit down.

COMMENT: The introductory remarks served to prepare the class for the first major event of the official classroom day--the pledge and the song. Before the children had been working privately, now they chant and sing together; before the teacher had served as helper, now she participates with the group. These and other changes from the preschool state are clear from a teacher's record--if the record is examined by one who is familiar with the behavior mechanisms and the interaction requisites in the song and pledge.

9:06 T comes back to the front of the room.

T says, "Now, let's see what we want to do today."

"Rodney, what's the name of your story for your group?"

Rodney does not answer.

Betty answers, "'Gears and Gasoline'."

T says, "What do the pictures remind you of?"

Rodney answers that question.

T says, "See if you know other people who act the way those cars do."

T says, "In Billy's group, what is the name of your story?"

T asks, "Sharon?"

Sharon answers correctly, "'Bob Learns to Pitch.'"

T asks, "How many of you have read it?"

A number of them raise their hands.

T looks to the blackboard and says, "Now, Spelling, we should have corrected our work. We should have finished up to page 76."

"Then we'll do our worksheets."

"Then we'll start on our Weekly Reader if we have time. We won't talk about it until tomorrow but if you get time, will you start on it? It is about coin telephones..."

COMMENT: In this organization of the day, the teacher points out what work should be undertaken. The last statements, referring to spelling, worksheets and Weekly Reader are important because they describe what children will do in seat work: i.e., the periods when they work individually while the teacher is engaged with a different portion of the class.

When segments of the classroom environment operate without the teacher, a specimen record of the teacher's behavior for that time cannot show the nature of that segment. Other information sources must be employed. One major source is the teacher's behavior during an earlier time when she described what was to be done. Such is the case here; from these remarks we learn of the tasks for the seatwork to come later.

After the teacher described the current issue of the Weekly Reader, she launched into a lesson on word recognition and word meaning. The chronicle is taken up again just before a major environmental shift is enacted.

...T then asks, "All right, now, what does the prefix un mean?"

9:21 Karen answers, "It means not."

T says, "Now, when you have your worksheets today, remember that."

T then says, "All right, now, I think that we will have Billy's Reading Group come on up."

There are a number of chairs placed in a semicircle at the front of the room. It is here that the children come for their small group in reading and later in arithmetic.

T then says, "The rest of you stay in your seats and get right to work."

9:22 The students come up.

9:23 The last student, who is Rick, comes into the group. There are now eleven children present. These children are: Marlon, Billy, John, Sharon, Randy, Susan, Donis, Victor, Karen, Terry, and Rick. The remainder of the children are in seatwork.

T asks, "Will you sit on the further side of the circle?" (This is so most of them will be inside the camera angle.)

/Rodney, who is not in the reading group, has a question about which story to read./

/T answers him./

T then says to the reading group, "Now let's see if you know these words."

T writes team on the blackboard.

The students raise their hands...

COMMENT: The action just described results in one of the most extensive environmental shifts typically occurring in the elementary school classroom. Up to this point, the teacher has dealt with the class as a whole; one action arena has been provided. But, when the eleven children come to the reading circle and the remaining students (nine) stay at their seats, two distinct place-prop-activity units are established.

The nature of the reading circle environment will become clear as the teacher's behavior within it is recorded. However, the properties of the seatwork unit must be inferred from other sources. The work assigned these pupils was described earlier. The way the work was to be performed was not described. However, the usual practice is for seatwork to involve the sedentary activities of reading and writing and noninteraction with peers and with teachers. A truly complete chronicle would report how the tasks were to be carried out and the prescribed social interaction (or lack of it) for each teacher-absent segment. For cases like seatwork in traditional classrooms, the sedentary non-social aspect often may be assumed.

Another help to description of a teacher-absent environmental segment is direct observation. In classical specimen recording, the subject must be the continual focus of the observation. In chronicle recording some exception can be made in order to keep sufficient data in the record for later analysis of the teacher-absent segment.

Some helpful information for segments not led by the teacher also can be found in worksheets and in assignments written on the blackboard.

Regardless of how it is obtained, the following information for each environmental unit should be made available in the chronicle:

1. Who are the participants?
2. What is the concern, the business of the unit (arithmetic, rest, spelling test, etc.)
3. What part, if any, does the teacher play in the on-going activity?
4. What action (reading, singing, discussing, etc.) do pupils take?
5. What are the prescribed pupil-pupil action relationships?
6. Where does the action occur? What props are involved?
7. What times mark the beginning and the end of the unit?

When the teacher leads a segment, information to answer the above questions (and much additional information) will appear naturally in the specimen record of her behavior. When she is absent, other means must be employed to answer the questions.

Further illustrations of chronicle recording are offered in the Mrs. Carr and Mrs. Apple records accompanying this manual. However, some final remarks about the creation of a chronicle are in order.

The teacher's exact words sometimes come so rapidly and plentifully that complete recording is not possible. Rapid and rich verbal exchanges between pupils and teachers tax an observer to the utmost--and sometimes beyond. However, the moves, the directions, of the teacher's messages can almost always be recorded. For chronicle recording (as opposed to usual specimen recording) it is more important that the observer keep up with the action than that he catch its nuances. Specifically, good specimen record accounts include the how of actions and verbalizations (Wright, 1967); such material helps a chronicle but is not absolutely essential. For example, if we know that the teacher, at 9:03, said, "We are going to start now," this bare account is sufficient for the chronicle. Whether the teacher was matter-of-fact, brisk, or languid in this message is not required material.

The admitted incompleteness of the record of teacher behavior means that certain fine analyses are not suited to chronicle data. For example, teacher language structure or teacher expressive behavior might require methods of higher fedelity. Tape recordings from teacher microphone transmitters might be used (Herbert and Swayze, 1964) or T.V. tapes are also possible (Biddle and Adams, 1967). However, the chronicle record of teacher behavior is sufficient to reveal the number and kinds of teacher moves or teacher acts during a day.

The method of chronicle recording illustrated here is only one way to make a record of the classroom environment. The teacher's behavior became a focus for reasons already explained. However, it is theoretically possible to derive a structure of the classroom day without so much teacher behavior. As understanding of environmental units becomes firmer, investigators will know exactly what to include and what to omit from an environmental record. At present, it has proven more practical to record all of the teacher behavior than to decide during the observation what behavior facts would be necessary and what could be omitted. Furthermore, and we anticipate a later discussion, the relationships of kinds of teacher acts to kinds of environmental structures are rather easily inferred from the relatively inexpensive chronicle records.

The nature of the chronicle is highly related to the nature of the environmental sub-units which it must reveal. These pieces of the day have been labelled segments; it is the issue of segments to which we now turn.

The Nature of Segments

The general conception of a segment appears in a definition from Webster's Seventh Collegiate Edition: "Segment: One of the constituent parts into which a body entity or quantity naturally divides." A segment is recognized by its naturally-occurring cleavage lines. Applied to classrooms, a segment is not an arbitrary slice of activity--as a ten minute section of time--but a constituent part of a day.

The conception of segment as applied to classroom environments may be communicated by briefly describing five segments drawn from a chronicle of Mrs. Carr's classroom on another day. The period extends from after lunch to afternoon recess:

> Story Time 1:00-1:17. Mrs. Carr read two chapters on the young manhood of Abraham Lincoln. The children relaxed and listened. Occasionally a few teacher questions and pupil responses were exchanged but this was primarily a time to be entertained.
>
> English Recitation 1:18-1:44. All students came up front to the big semicircle of chairs. Teacher-questions and pupil-answers dominated the activity. Parts of speech and spelling rules for additions to words ending in "e" provided the content, the concern, of the discussion.
>
> Billy's Reading Group 1:44-2:07. After all pupils had left the semicircle and the English Recitation, ten returned; these belonged to Billy's Reading Group. A recitation, led by Mrs. Carr, recalled the major ideas in a story these youngsters had read. After the recitation, Mrs. Carr began a word drill. The children came, in turn, to the board to draw lines from words in one column to words with opposite meanings in another column.
>
> This reading lesson had two little lessons within it: recitation and word drill.
>
> Afternoon Seatwork 1:44-2:07. Pupils not in Billy's Reading Group remained in their regular seats and worked on various academic assignments. Mrs. Carr gave no help or direction as she was engaged with Billy's Reading Group.
>
> At this time, then, two environmental units, two segments operated simultaneously.

Recess Dismissal Routine 2:07-2:16. With all students returned to their regular seats, Mrs. Carr had milk, straws and napkins passed around; these were to be immediately available after recess. As this was going on, pupils readied themselves for recess; as each pupil row presented itself in good order, it was dismissed to recess.

With these five samples in mind, it is useful to consider what constitutes a segment. Each of the environmental sub-units could be described with regard to its elements (its static aspects), its function or concern, and its activity pattern.

Elements of a Segment

A site. The place of English Recitation and Billy's Reading Group was a semicircle of chairs at the front of the classroom. The site of Story Time was the regular classroom area.

A set of behavior objects. Activity often requires things as well as places—chairs, desks, blackboards are obvious supports to behavior; also needed are books, papers, tools like pencils, chalk, and so forth.

A group of participants. Although the entire class and the teacher are participants for many segments, this is not always the case. Billy's Reading Group included ten students and the teacher; the simultaneous Afternoon Seatwork Group was inhabited by the rest of the pupils—and no teacher.

A time span. Segments usually begin at a certain time, run continuously, and then stop. However, segments may be interrupted by other segments, by recess, or lunch hour. In principle, a segment can start one day and end another; in parctice, it is convenient to consider segments for single days only.

Concern of a Segment

The elements of site, behavior, objects, persons, and time are put together to deal with matters of interest or requirement. Often these matters, these concerns, can be adequately described by pointing to their contents: English, Arithmetic, or Art. But the basic idea of a concern is more dynamic than contents; the segment function, the "goal" to which the segment manifestly pushes, is its real concern. The concern of the first segment was pupil relaxation (with education hopefully smuggled in). The second segment was concerned with instruction in spelling. Subject matter span and concern span are usually identical; this is not without exception. A segment concerned with taking a standardized

achievement test may involve five subject matters but there is a single and continuous concern: testing of academic achievement.

When concerns clearly change, segments change. When matters in Mrs. Carr's class shifted from the recreation of a story to learning English, a new segment began. Mere changes of topic within a recitation are not conisdered changes in concern; the general direction of the segments' function must shift—and stay shifted—for a segment to change because of a concern change.

A complicating matter is that several concerns can exist simultaneously. There was, for example, a double concern in the Recess Dismissal Routine: getting milk behavior objects distributed and getting ready for and out to recess. If a segment was conceived as an activity, then this period could be said to present two segments. However, the conception of segment employed here is that of a milieu-behavior unit--a piece of the classroom ecology with its own discrete time and space such that persons are "in" one segment or another, just as they are in one behavior setting or another.

Of course, it is possible to have several segments simultaneously operating in one classroom; this was the case when Afternoon Seatwork, with its own space, personnel and props operated alongside of Billy's Reading Group.

The concept of concern may be illustrated by presentation of the code used in past research (Gump, 1967) to describe segments. See the following page.

Concern — Refers to the classes of endeavors, of concerns, most clearly represented in the segment. With what issue does behavior en masse deal?

Academic	1.	Reading	Children's reading groups; phonics and word meaning study
	2.	Arithmetic	
	3.	Language	Grammar, creative writing, handwriting
	4.	Social Studies	Geography, current events in Weekly Reader
	5.	Science	All types except incidental content in Weekly Reader
	6.	Mixed or Other Academic	Seatwork is often mixed. In case of doubt, assume mixed
Arts	7.	Ritual	Flag salute, prayer and song
	8.	Music	Listening or making or both
	9.	Art, Crafts	Any making of pictures, objects
	10.	Other Art	
Social and Recreational	11.	Sharing	Show and Tell, or just Tell
	12.	Milk and Story	Teacher reads, children drink and listen
	13.	Story	No milk
	14.	Milk	No story
	15.	"Fun" Games	Not academic
	16.	Rest	Explicit rest time, not just waiting
	17.	Other	Social, recreational activities not given above in 11 to 16
Procedural	18.	Transition-In	Return from: recess, lunch, home
	19.	Transition-Out	Go to: recess, lunch, home
	20.	Other Procedural	Milk money, etc.
	21.	Other-Other	Fits none of the given areas, e.g., teacher devotes whole segment to group's discussion of why recess went badly.

With the preceding Concern Code, the five segments of Mrs. Carr's class in the afternoon would be described as follows:

Story Time	13.	Story
English Recitation	3.	Language
Billy's Reading Group	1.	Reading
Afternoon Seatwork	6.	Mixed Academic
Recess Dismissal Routine	19.	Transition-Out

Activity Pattern of a Segment

The Elements take a particular arrangement because of a concern; the concern can be realized if action is taken. An action, if it is to be effective, must have a pattern. There are a number of ways by which the activity pattern can be described; the ways which have proven useful and reasonably reliable in previous research (Gump, 1967) have pointed to teacher leadership pattern, pupil activity, pupil grouping, pupil-pupil activity relationship and action sequencing. These aspects of the activity pattern describe what is meant by such a concept; they also can be used as a code to describe each segment of the classroom day. At this point, we present the code for activity pattern.

SEGMENT ACTIVITY PATTERN CODE

Teacher Leadership Pattern

Describes the basic, persistent pattern of the teacher's relationship to the pupil activity of the segment.

Teacher (T)

1.	Not in Segment	T not helping, not clearly and consistently attending to segment. T not key to pupil action. T usually busy in another segment.
2.	Watcher-Helper	T is with this working group; clearly watching over them or helping them. May circulate, stand at back; may even be at desk but if at desk, is at least periodically involved in segment affairs.
3.	Participator	T may sing with, salute with. Code when T is not leading but participates along with students.
4.	Action Director	T gives directions for cleanup, orders to manage activity, leads a song, acts as master of ceremonies. T is key to action, is making demands for doing, but she is not supplying the core action.
5.	Recitation Leader	T asks for reciters, comments on answers, may quiz.
6.	Instructor-Lecturer	T tells pupils how to make something, what facts are, etc. Does not use recitation format to do this but supplies continuous input to which pupils are to attend Does not ask for contributions from pupils to any degree. May answer pupil questions; may question pupils briefly to check them out but this is clearly less than half her effort.
7.	Reader	T reads to pupils.
8.	Tester	Usually T will give questions orally, but she doesn't have to do this. Could point children to a test they have on their desk. T could give test and function like a proctor. Logically this last should be coded "Watch" but to keep all testing together, T-supervised testing is coded "Tester."

SEGMENT ACTIVITY PATTERN CODE

Pupil Activity

Activity may be described on the basis of its perceptual and its accomplishment demands. In seatwork, a pupil is asked to narrow his perceptual span to his own materials; in a class discussion he attends to teacher and classmates, a wider perceptual field. These perceptual differences have been indicated in the code below as Own Materials/Attend vs. Class Events/Attend. (The word class in this context implies either total class or group acting as a class.)

On the accomplishment side, activity may require that one attend, incorporate, or think about presented stimuli but pose no task; one doesn't have to "do" anything. Listening to a story or a discussion are examples. On the other hand, some activity invites or requires task accomplishment: filling in blanks or writing a story. The distinction is represented in the code by the words Attend vs. Task.

Some tasks are more active than others; separate categories have been established for activity beyond writing or making computations. These are listed below as Draw and Make, Sing, Chant, Play Instruments, Large Muscle Activity and Readying. The attention distinction was judged less crucial for these highly active categories. However, the direction of attention consideration applies to some of the other categories: attention is on own affairs in Rest and in Draw/Make; it is more widely directed in Sing, Chant, Play Instruments.

1.	Rest	Pupils reduce both attention and accomplishment to minimum. Heads down on desks.
2.	Own Materials Attend	Pupils read stories at their desk, study the Weekly Reader.
3.	Own Materials Task	Pupils write or compute.
4.	Class Events Attend	Pupils attend to an arena much wider than own books and papers. No task. (Pupils may have a turn to recite. This is represented as a "performance" on the Action Sequencing code which follows. It is not represented as a task here.)
5.	Class Events Task	Pupils attend to wider arena and have ongoing task to accomplish. Class may finish individual worksheets by alternating writing of answers with discussion of obtained answers.
6.	Draw/Make	Pupils create products: drawings, paintings, paper objects.
7.	Sing, Chant, Play Instruments	Pupils engage in group singing, ritual chants, playing of flutophones.
8.	Large Muscle Activity	Pupils exercise, play active game, dance, pantomime.
9.	Readying	Pupils prepare selves and props for beginning or ending of phase of school (Cleanup Time).

SEGMENT ACTIVITY PATTERN CODE

Pupil Grouping

1. Total Class	The entire class is involved in segment. (Example: Song and Pledge)
2. Sectioned	Total class divided into parts; all parts have similar tasks. (Example: For science, pupils are divided among four laboratory tables.)
3. Group	Some part of the class is placed together for the segment. (Example: Reading Circle or Morning Seatwork)

Pupil-Pupil Activity Relationship

1. Interdependent	Pupils mesh their activities in order for the segment to operate. This meshing is an intrinsic quality of the segment itself, not just a "cooperative mood" of the participants. (Recitation, songs, and games are interdependent activity structures.)
2. Private	The segment works best if pupils do not interact; it is not prescribed that efforts will interlock. (Example: Morning Seatwork)
3. Neither	The segment prescribes neither interdependency nor privacy, although either may be a choice of particular participants. The cleanup period, the "getting-started-after-lunch" time are examples; also, group attention to teacher but not to each other is coded here. This parallel form is not really interdependent nor private.

SEGMENT ACTIVITY PATTERN CODE

Action Sequencing

The basic consideration refers to pacing: whether behavior is self-paced or is prodded by external stimuli. The perceptual and the action aspects of behavior are relevant. In a self-paced action, both the intake and the motoric qualities must be such as to permit the subject to behave at his own speed and readiness. Reading a book is a self-paced behavior; watching a movie is not self-paced since the perceptual or intake speed is determined by the movie, not the observer.

Thus, activity may be externally paced in that the behaver must keep perceptually abreast of a changing or developing field. Beyond this, an activity can be externally paced in that tasks must be executed on external cue. An oral test is usually externally paced in both the perceptual and the performance sense.

0.	No Pace	Rest
1.	Self Pace	Pupils follow material and execute tasks (if any) as own readiness dictates, e.g., filling out a worksheet during seatwork, silently reading a short story.
2.	Self Pace/ Towards a Turn	Pupils prepare on their own, but at the end of a cycle, they use preparation for a "turn" to leave, to answer, etc., e.g., cleaning up one's area in order to leave.
3.	External Pace/ No Performance	Pupils "take in" at the pace of the emitters, e.g., following a film strip presentation or a lecture. No other overt tasks are involved.
4.	External Pace/ Serial Performance	Pupils follow developments perceptually and occasionally contribute action or ideas, e.g., engaging in a recitation.
5.	External Pace/ Mass Performance	Pupils follow developments and contribute at the same time, e.g., singing, playing continuous action games like tag or basketball, group exercises.

The activity pattern code may be illustrated with three segments from Mrs. Carr's afternoon class:

	Story Time (1)	English Recitation (2)	Afternoon Seatwork (3)
Teacher Leadership	Reader	Recitation Leader	Not in Segment
Pupil Activity	Class Events Attend	Class Events Attend	Own Materials Task
Pupil Grouping	Total Class	Total Class	Group
Pupil-Pupil Activity Relationship	Neither	Inter-dependent	Private
Action Sequencing	External Pace No Performance	External Pace Serial Performance	Self Pace

Segmenting the Chronicle

Understanding of the segmenting process must be approached from several directions: there must be knowledge of the kinds of segment structures which can exist at any given time; and there must be awareness of the cues and criteria employed for distinguishing between segments.

The structural possibilities are more comprehensive and yet more easily communicated; a "map" of Mrs. Carr's classroom during the afternoon may be the place to start. Such a map shows one set of relationships among segments.

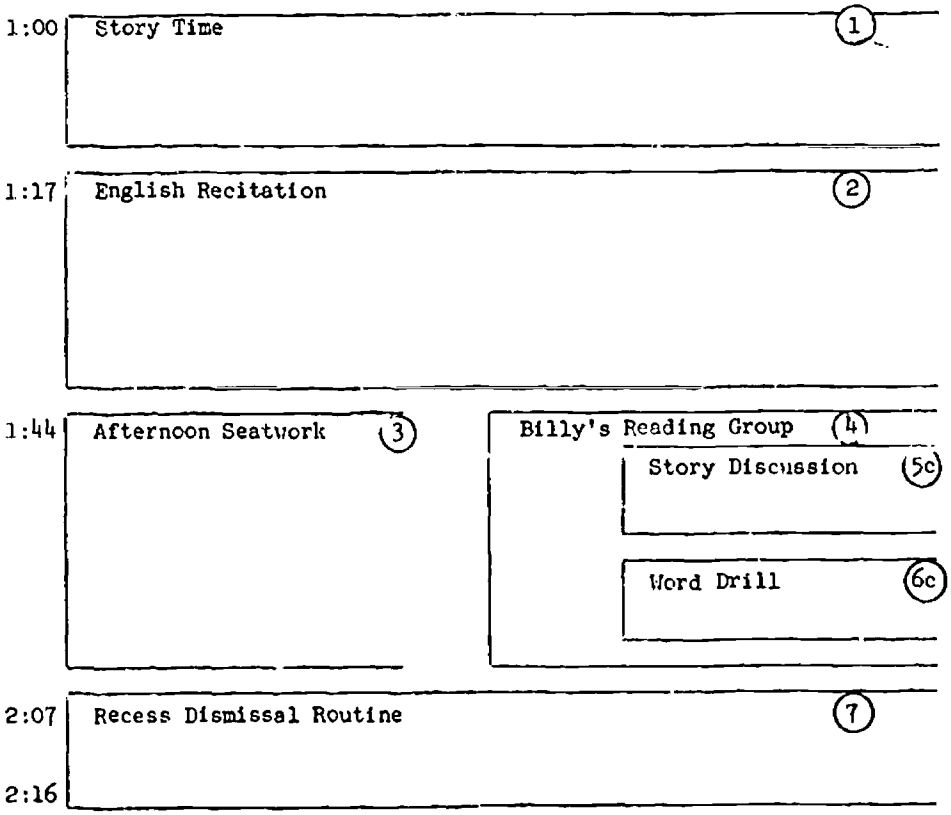


Figure 1. Map of Segments in Mrs. Carr's Classroom Pre-Recess, Afternoon

Segments (1) and (2) involving the total class are drawn across the page. This is the simplest segment structure. At 1:44, two segments operate simultaneously: Afternoon Seatwork (3) and Billy's Reading Group (4). These are parallel, major segments. Each is given one-half the width of the map. Most often, if parallel segments exist, they are limited to two, but it is possible to have three or more operating simultaneously.

Within Billy's Reading Group, there are two separate activity structures: Story Discussion (5c) and Word Drill (6c). These are labelled "c" to indicate that they are contained within the more general and inclusive segment. When there are clear differences between activity patterns and yet both patterns are part of one general concern, the patterns become contained segments. It is important to view contained segments, while in operation, as the manifestation of the containing segment. When Story Discussion exists, there is no other segment in Billy's Reading Group that is also functioning; Story Discussion is "what's happening" in Billy's Reading Group.

At 2:07, the class operates on a whole again for Recess Dismissal Routine (7).

One other possibility for segment structure exists beyond those represented in the map of Mrs. Carr's room. Segments may be intercepted by intervening segments, recess and lunch hour. If the Afternoon Seatwork were resumed after recess, the proper map representation would be as follows:

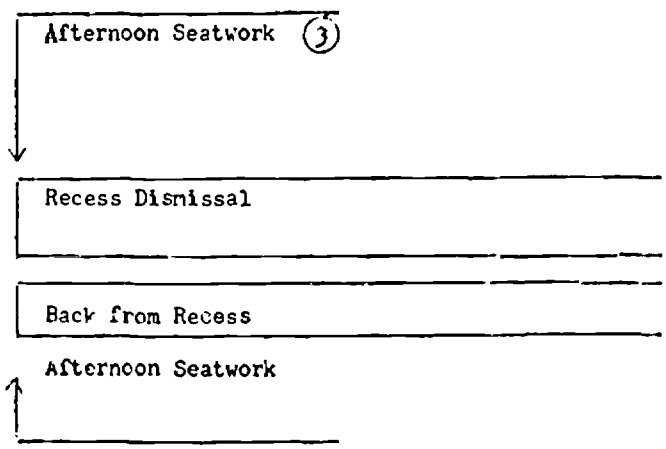


Figure 2. Mapping of Interrupted Segment

Since segments are to represent relatively enduring ecological units, only clear and prolonged breaks in the action and its supportive milieu are indicated by the interruption symbol. Thus, the segment which simply "holds" while the teacher talks briefly with the principal at the door, is not marked as interrupted. In this case, the segment's people and facilities exist in an inactive state.

Although the map of Mrs. Carr's room is useful to illustrate segment structure, the actual segmenting process may be accomplished on the chronicle typescript. Lines indicating the limits of segments, their title and numbers are placed in the wide left-hand margin of the chronicle. An illustration of this can be offered by Mrs. Carr's afternoon. On an actual chronicle, the material to follow would cover many pages; it has been excerpted here to show the pattern of segmenting.

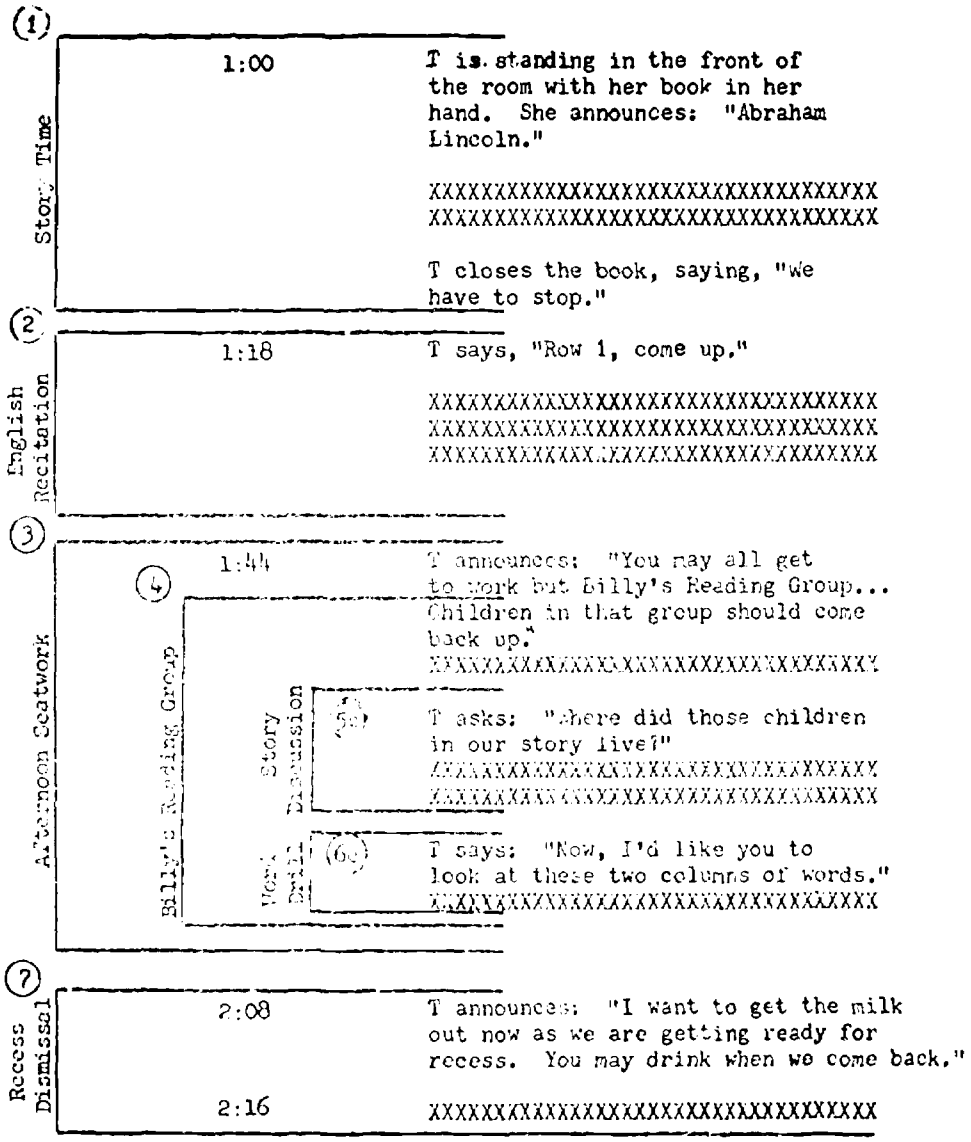


Figure 3.

Schematic Portrayal of
Segmenting on Chronicle Typescript

The left-hand margin material added to the chronicle typescript as shown in Figure 3, clearly tells the analyst where the teacher and pupils are in their classroom day. Events relating to the teacher or pupils are visually coupled to the correct segment.

The lines also indicate the structure of the day. When only one vertical line exists, the total class is in one segment; when two or more lines exist, there are parallel segments in operation--unless the lines are labelled with a "c". In such a case, the analyst knows that a contained segment is operating.

Determination of Segment Beginnings and Ends

As one watches a classroom, he becomes aware of both the stability and fluidity of events. The goal in developing segmenting has been to take advantage of the stabilities, the constancies in the classroom. Some change is occuring most of the time; segments persist over time and contain many changes within them. The general conception is that segments end when a clearly new environment is established for the pupils. The environment changes when there is a distinct and persisting change in concern and/or in activity pattern. (Changes in elements can be used as cues--not criteria--for change in segments. Passing out paper, for example, probably will be accompanied by a new concern and a new activity pattern, but this is not necessary; homework can be returned with children continuing in their art work and thus no change in segments.)

A change of concern is a change in the code that might be assigned--realizing that the concern idea basically refers to the function of the segment, not to its contents. Thus, a change from arithmetic lesson to a reading lession is a segment change; a change from stating the arithmetic assignment to stating the reading assignment is not a change in concern (one of academic assignment) and is not a segment shift.

A change in activity pattern is a change in the coding on one or more of: teacher's leadership pattern, pupil activity, pupil grouping, pupil-pupil activity relationship and action sequencing. The qualification is that the change must result in a new stability. A change that doesn't last doesn't count; for example, a teacher may ask a few questions during the period when she reads a story; this would not be considered a segment change. If, however, she stops the reading and leads a discussion of the events of the story, the discussion, as an activity pattern distinct from the reading, becomes a different segment. The beginnings and ends of many segments are easy to discriminate because the teacher wants to make her environmental changes clear to pupils. This is particularly true of major lesson shifts. Problems arise with contained segments; once the idea of segments within segments is introduced, many changes may appear to qualify. The aim is to segment only large, clear, persisting shifts; this applies to contained segments as well as major ones; the segment is contained, not so much because it is minor, but because it is connected to another segment. The Story Discussion (5c) and the Work Drill (6c) were manifestly two parts of a reading lesson.

When groups are established and run through a span of activity, the criteria of concern and/or activity pattern changes are particularly necessary for segmenting. There is one circumstance in which the codes for concern and/or activity pattern may remain the same for two sections of material and yet two segments are delineated. When one teacher-led group is dismissed and another begun, the cleavage between these sections is very clear: pupil personnel, behavior objects and lesson issues change simultaneously and extensively. Such changes, by convention, have been marked as segment changes, whether or not shifts in concern and/or activity pattern codes have occurred.

A segment may have a prelude, a core and a postlude; unitization should be done on the basis of the core; ordinarily, preludes and postludes are melded with the core, making one segment instead of three. An example of a prelude is a series of three or four teacher moves attempting to get attention and interest before launching into the lesson proper. Nor are a few final reminders at the end of a lesson considered a segment change. Only when these preludes and postludes continue for four minutes or more are they considered candidates for segments.

Prolonged introductory periods can become segments. A clear example was an art period which devoted nine minutes to teacher instruction and demonstration on how to make valentines and twenty-five minutes to pupils actually constructing valentines. The environmental qualities of the instruction period were quite different from those of the construction time. The two segments were marked contained as they shared a common concern.

A first step in segmenting a chronicle is careful reading of a long span of material, perhaps a quarter day. After this first reading, the segmenter reads again more slowly, attempting to visualize the classroom situation. He must, for example, remember that children sent to seatwork are presumed still at it pages later, unless something in the chronicle contradicts this. The segmenter also reads carefully for signs that one segment may be closing out and another is to begin. Typical cues that segments may shift are:

Teacher (or pupil) distribution or collection of materials.
Teacher request to bring materials into or out of action.
Teacher alerting signals: "Now, boys and girls, we are going..."
Teacher occupying a different or a more focal position (front and center.)
Pupils moving en masse.
Introduction of display prop and persistent use after introduction.

It must be emphasized that these are cues, not criteria, for segment change. Any one of these could occur and no change in concern or in basic activity patter result.

As the segmenter reads, he may mark, at first, all cues for change and then return later to assess which represent segment-size changes.

First Practice Segmenting of Chronicle Material

At this point, the reader might wish to attempt a segmenting task. The chronicle titled, "Mrs. Carr's Third Grade Room," is offered in two versions: without and with segmentation. Segmentation lines, in the manner shown on Figure 3 can be drawn on the left margins of the unsegmented version--or upon strips of paper placed over the margin. After this is done, the reader can turn to the segmented version and compare his segmenting with that decided upon by one research analyst acquainted with the segmenting process. After the segmenting is attempted and compared, some comments on possible problems will be offered here.

Mrs. Carr's chronicle was selected to represent a segmenting task without too many complications; the analyst judged that there were no contained segments in that first quarter day. The reader may wish now to turn to "Mrs. Carr's Third Grade Classroom: A Chronicle of One Quarter Day UNSEGMENTED."

Discussion of Segmenting of Mrs. Carr's Chronicle

The map of suggested segmenting appears at the end of the segmented Mrs. Carr's Chronicle. The material would appear reasonably straightforward but some questions about points of segmenting need to be discussed.

If the reader will refer to the Segmented copy of Mrs. Carr's Chronicle, he will note, along the left margins, the following symbols: a, b, c, etc. These mark locations which suggest issues for segmenting discussion.

Page 1 a: This selected beginning for Pledge and Song may seem premature. Certainly, the leadership of the teacher is different from this point to the top of page 2 than it is during the actual Pledge and Song. The general practice is to avoid making transitions into segments. In this particular case, the transition takes more chronicle space (not more time) than the core of the segment. An alternative segmenting would be to consider this material just after "a" as terminating the preschool seatwork. As a convention, transitions have been included in the subsequent rather than the preceding segment.

Page 2 b & c: Here are cases in which the topic or the content changes while the basic concern--making assignments in academic subjects--remains the same.

Page 3 d: The stopping of the Weekly Reader talk is particularly well marked here. Consideration should be given to segmenting a word drill lesson following this point. However, the words are from the Weekly Reader, and the teacher appears to be still previewing the seatwork material. The question and answer format which existed from the beginning still operates.

Page 5 e : Clearly another break in the procedure appears here. There is no segment marking because the previewing concern persists and the question and answer format continues. The coding on all this material from page two to the top of page seven would have the same activity pattern codings:

Teacher Leadership ----- Recitation Leader
Pupil Activity ---------- Class Events Attend
Pupil Grouping ---------- Total Class
Pupil-Pupil Relation --- Interdependent
Action Sequencing ------ External Pace/Serial Performance

Page 7 f : Successful segmentation here rests on catching the picture of separated groups. The teacher's order, "The rest of you stay in your seats and get right to work," indicates the seatwork group.

Page 9 g : Population of pupils in the teacher-led groups keeps changing during the morning and segments are drawn at each change; of course, the population of the parallel Morning Seatwork groups must also change in a complementary fashion. A question of logic arises: Why are there new segments for the teacher-led groups and not for the Seatwork groups? At one time, segmenting was done within Morning Seatwork but this was finally given up. The sameness of the structure over time is impressive; it is a little study hall which functions without clear breaks and changes--even when population shift. The same cannot be said for the teacher-led group. The convention was adopted of considering seatwork one segment.

Page 17 h to i : The reading done by the teacher here provides an undoubted change in the activity pattern. Teacher Leadership Pattern goes from Recitation Leader to Reader, and Action Sequencing changes from External Pace/Serial Performance to External Pace/No Performances. However, segment changes are not made because the segment does not stabilize on this new ground; in less than two minutes the prevailing question-answer format is re-established.

First Practice Coding of Segments

The reader may wish to use the eight segments given for Mrs. Carr's Chronicle to try out the Concern and Activity Pattern codes (reported on pages and to in this manual). The following two pages provide practice space for this attempt. After the reader has entered his codes, he may wish to compare them with those assigned by a research analyst (page of this manual).

Practice Coding Sheet for Segments in Mrs. Carr's Chronicle

	Pre-School Seatwork (1)	Pledge & Song (2)
Concern		
Teacher Leadership		
Pupil Activity		
Pupil Grouping		
Pupil-Pupil Action Relationship		
Action Sequencing		

	Instructions for Seatwork (3)	Morning Seatwork (4)
Concern	Mixed Academic	
Teacher Leadership	Recitation Leader	
Pupil Activity	Class Events Attend	
Pupil Grouping	Total Class	
Pupil-Pupil Action Relationship	Inter-dependent	
Action Sequencing	Ext. Pace Serial Perf.	

Practice Coding Sheet for Segments in Mrs. Carr's Chronicle (cont'd)

	Billy's (5) Read. Group	Rodney's (6) Arith. Group
Concern		
Teacher Leadership		
Pupil Activity		
Pupil Grouping		
Pupil-Pupil Action Relationship		
Action Sequencing		

	Small Arith. Group (7)	Recess (8) Dismissal
Concern		
Teacher Leadership		
Pupil Activity		
Pupil Grouping		
Pupil-Pupil Action Relationship		
Action Sequencing		

Suggested Segment Coding for Mrs. Carr's Chronicle

	Pre-School Seatwork (1)	Pledge & Song (2)	Instructions for Seatwork (3)	Morning Seatwork (4)
Concern	Arithmetic	Ritual	Mixed Academic	Mixed Academic
Teacher Leadership	Watcher-Helper	Partici-pator	Recitation Leader	Not in Segment
Pupil Activity	Own Materials Task	Sing, Chant...	Class Events Attend	Own Materials Task
Pupil Grouping	Total Class (i.e., all one group)	Total Class	Total Class	Group
Pupil-Pupil Action Relationship	Private	Inter-dependent	Inter-dependent	Private
Action Sequencing	Self-Pace	Ext. Pace Mass Perf.	Ext. Pace Serial Perf.	Self-Pace

	Billy's (5) Read. Group	Rodney's (6) Arith. Group	Small Arith. Group (7)	Recess (8) Dismissal
Concern	Reading	Arithmetic	Arithmetic	Transition-Out
Teacher Leadership	Recitation Leader	Recitation Leader	Recitation Leader	Action Director
Pupil Activity	Class Events Attend	Class Events Attend	Class Events Attend	Readying
Pupil Grouping	Group	Group	Group	Total
Pupil-Pupil Action Relationship	Inter-dependent	Inter-dependent	Inter-dependent	Neither Interdep. nor Private
Action Sequencing	Ext. Pace Serial Perf.	Ext. Pace Serial Perf.	Ext. Pace Serial Perf.	Self-Pace to Turn

The coding of segment qualities is still in an experimental stage. While some categories show good agreement, others do not.

For example, discrimination between teacher "Not in Segment" and other Teacher Leadership Codes is quite reliable; however, discrimination between Recitation Leader and Action Director has not been satisfactory. In certain cases, discrimination is reliable enough, but gross; distinctions among various kinds of pupil-pupil interdependency would seem possible, but this has not yet been accomplished. Another obvious fact is that the category sets are far from empirically independent. The use of the category, Recitation Leader, in the Teacher Leadership category set, means that Pupil-Pupil Action Relationship will be Interdependent; Action Sequencing will be External Pace/Serial Performance. This correlational issue is more thoroughly discussed in another source (Gump. 1967, pp. 46 - 51).

The Self-Pacing vs. External Pacing segment codes of the Activity Pattern have yielded an interesting relationship to the amount of pupil involvement: pupils were more frequently coded as involved in the segment's official activity when External Pacing, as opposed to Self Pacing, was the segment code. Other segment codes are related to pupil involvement; for example, under conditions of External Pacing pupil involvement was better if Pupil Grouping was Group rather than Total Class. Relationships between segment codings and number and kind of teacher's acts have also been demonstrated (Gump, 1967). In all, segment type designations seem quite promising for research in spite of the crudities and insufficiences of the present system.

Second Practice Segmenting of Chronicle Material

A second set of chronicles is available, titled "Mrs. Apple's Third Grade Classroom: A Chronicle of One Full Day, SEGMENTED and UNSEGMENTED." Although these records are for use in segmenting and in segment coding, they also may serve other purposes. Few records of full days of classroom activity appear to be available. This chronicle is presented in the hope that it might provide primary data upon which investigators might attempt their own forms of unitizing and/or description of units.

The Apple chronicle is not only more complete than the Carr record, it seems to be more complicated. Both contained and interrupted segments appear. The organization of the Apple classroom, as revealed by segmenting, would seem to be more differentiated, more "active." The reader may wish to take only quarter days at a time and then compare his version with the segmented one. A map of the total day's segments appears at the end of Mrs. Apple's segmented chronicle. Perhaps the reader would turn not to the unsegmented version of "Mrs. Apple's Third Grade Classroom."

Discussion of Segmenting of Mrs. Apple's Chronicle

An inspection of the map at the end of the Mrs. Apple segmented chronicle shows a highly differentiated day; one with double, even triple, parallel segments and one displaying a relatively high number of segments in sequence. A number of the segments possessed good ecological support; that is, they were built upon distinguishing qualities of activity pattern and milieu. The group practicing a play had its own room; the creative writing was supported by interesting pictures; the science lesson did not rest on mere class talk about words in a textbook, but involved small groups employing tools (prisms) and inspecting materials.

Parenthetically, one could infer that this was an active day for the teacher; analysis of the record revealed more than 1650 separate teacher-to-pupil acts. This was about 350 more than the average of six teachers' days (Gump, 1967).

Discussion of a few segmenting decisions may help illuminate the segment concept and operations for its delineation in a chronicle. The page numbers and locations are indicated on the left column below.

Page 1 a : The opening remarks, the flag salute and song and the news stories (pp. 2-6) could be considered sections of an "opening exercises" segment. The decision was made not to include under one major segment pieces which could stand alone. The ritual and the news stories "feel like" they belong together; however, their connections were not judged as required as, for example, two phases of a reading lesson.

Page 6 b : The concern here changes sharply, there is also some change in activity pattern; the teacher begins to instruct and pupils are not questioned; they, instead, question the teacher.

Page 9 c & d : The appearance of the If I Were Going segment, (6), and its disappearance, helps illustrate the segment concept as employed in this manual. The attempt has been to draw out of the classroom events, phenomena which are more milieu-based and more extra-individual than simple pupil activities. When the teacher dealt with the pupils involved in this group (page 9), they were a differentiated part of the classroom; they were linked together in an interaction system as the teacher dealt with them and their assignment. When the teacher stopped her effort, the interaction system ceased and the children merged back into Morning Seatwork. It may be that the specific nature of their activity was distinct from that of other children, but their behavior-milieu configuration was in no way separate from the larger seatwork group.

The situation might be compared to a library in which individuals looking up material on Abraham Lincoln were near others researching laser rays. The two assortments of people have no unity, no distinguishing features, as they would have if each operated with some interaction pattern and within some bounded part of the milieu. In contrast, development of a cluster of card players in one corner of the room would have interaction-and-environment distinction.

It is very important that segments display extra-individual milieu-and-behavior configurations; otherwise the behavior stream of each inhabitant can become a candidate for a segment. When this happens, the identification of segments becomes extremely difficult. Further, the usefulness of segments as portions of the environment within which people behave is lost.

Page 13 e : In connection with the point just raised, when the Looking Ahead Group (7), left the teacher, they did not merge back with Seatwork; they had their own activity pattern for the play practicing (quite distinct from the Seatwork pattern), and they had their own milieu (Teachers' Coffee Room).

Page 17 f : The children returned from their own distinct milieu and their own activity pattern to their reading work; they became, it was presumed, indistinguishable from the remainder of Morning Seatwork.

Page 24 g : The distinction between Correcting Worksheets (9c) and Word Game (10c) is not strong. The decision was that the teacher was a Recitation Leader in (9c) and an Action Director in (10c); further, pupils had a task with their own material in Correcting Worksheets and no such task in the Word Game.

Page 58 h & 72 i : The introduction of a contained segment (19c) so early in the Creative Writing Segment (18) comes about because of the shift that occurred in this segment at page 72. The following activity pattern changes occurred at that point:

Teacher Leadership	Recitation Leader to Watcher Helper
Pupil Activity	Class Events/Attend to Own Materials
Pupil-Pupil Relation	Interdependent to Private
Action Sequencing	External Pace/Serial Performance to Self Pace

The period beginning at page 72 was a new structure; the period preceding it was also distinct and was so indicated.

Page 84 j & 88 k : A contained segment was made for instructions; ordinarily the "getting started" portions of segments are not separated from that which they start. In this case, however, seven minutes were given over to instructions; this period was judged to be long enough (and distinct enough from the Test-taking which follows) to be a separate segment.

Page 128 l : The teacher had two jobs in this period: to alert the children to issues to be investigated and to specify how the investigations would proceed. Whether or not two segments (Introductions and Directions) exist depends upon whether there is clear change in activity pattern and whether each candidate for segmentation is sufficiently long. The analyst judged that the Introduction was not long enough and distinct enough from Directions to become a separate segment.

Page 132 m : The grouping arrangement here was one of the few "Total-Sectioned" that occurred. The entire class had one kind of task and activity pattern but performed in small groups.

Coding of Segments in Mrs. Apple's Chronicle

The presentation of the codes is intended to model an approach which proceeds in two major steps: (1) delineation of eco-behavioral units (segments) for a particular behavior-milieu complex, and (2) description of the obtained units along dimensions of interest. Presentation of codes employed for Mrs. Apple must be done in the spirit of displaying an approach since at the time of this writing the codes are undergoing revision.

The reader may wish to code the segments of the Mrs. Apple Chronicle before reading the codes given by the research analyst; the latter are listed in number form on the following pages. Explanations of solutions to particular problems is done by footnotes.

Codings Proposed for Segments
of Mrs. Apple Chronicle: Morning

Segment Name and Number		Concern	Teach. Lead.	Pupil Activity	Pupil Grouping	Pupil-Pupil Act. Rel.	Action Sequenc.
1 (1)	Preschool						
(2)	Pledge/Song	7	3	7	1	1	5
(3)	News Stories	4? 1?	5	4	1	1	4
(4)	Morning Work Sch.	6	7	4	1	1	3
(5)	Morning Seatwork	6	1	3	3	2	1
(6)	Intro. to If...Going	1	5	4	3	1	4
(7)	Looking Ahead	10? 1?	1	8	3	1	5?
2 (8)	New More Streets	X	X	X	X	X	X
(9c)	Correct. Worksheets	1	5	5	3	1	4
(10c)	Word Game	1	4	4	3	1	4
(11)	Recess Going	19	4	9	1	3	2
(12)	Recess Return	18	2	3	1	3	1
(13c)	Story Summary	1	4	4	3	1	4
2 (14)	If I... Going	X	X	X	X	X	X
(15c)	Reading Aloud	1	4	4	3	1	4
(16c)	Review Countries	4? 1?	5	4	3	1	4
(17)	Look Ahead Play	10? 1?	4	4	1	1	3
2 (18)	Creative Writing	X	X	X	X	X	X
(19c)	Intro. to Cr. Writ.	3	5	4	3	1	4
(20)	Going to Lunch	19	4	9	3	3	2

1. & 2. See bottom of following page.

Codings Proposed for Segments
of Mrs. Apple Chronicle: Afternoon

	Segment Name and Number	Concern	Teach. Lead.	Pupil Activity	Pupil Grouping	Pupil-Pupil Act. Rel.	Action Sequenc.
1	(21) Return from Lunch						
3	(22) Attendance Time	20	?	?	1	?	?
	(23c) Composing Period	3	2	3	1	2	1
2	(24) Arith. Test	X	X	X	X	X	X
	(25c) Instr. for Test	2	7	4	1	1	3
	(26c) Test Taking	2	8(2)	3	1	2	1
	(27) Exercises	17	4	8	1	1	5
	(28) List. Speak, Write	3	5	4	1	1	4
	(29) Going to Recess	19	4	9	1	3	2
	(30) Recess Return	18	4	9	1	3	2
	(31) Milk Time	14	4	?	1	1	4
	(32c) Read. Stories	3	4	4	1	1	4
2	(33) Science Lesson	X	X	X	X	X	X
	(34c) Intro. & Directions	5	4	4	1	1	4
	(35c) Group Work	5	2	5	2	1	1?
	(36c) Review of Work	5	5	4	1	1	4
	(37) Going Home	19	4	9	1	3	2

Footnotes:

1. In contrast to Mrs. Carr's Preschool Segment, this time in Mrs. Apple's room is diversely used: no segment code has yet been established for such mixtures. Return from Lunch represents more than the usual "getting settled"; individual projects, class housekeeping, and recreation all occur. The analyst was not confident about any code.

2. These are cases of segments whose contained segments are so extensive as to fully represent the segment. To code both the containing segment and its contained segments would result in double coding. Such cases were represented by codes for the contained segments and "X's" for the containing one.

3. An example of a stretch of events in which teacher behavior was probably not a complement of pupil activity. Coding difficult also because pupil activity quite mixed: some worked on stories, others waited and listened.

Research Uses of Segmenting Procedures

Examples of research findings employing chronicles, segment units, and segment codes are presented in a report by the author (Gump, 1967). For purposes of the present manual, it seems sufficient to indicate several contrasting directions of research possibilities.

Segment Measures as Dependent Variables

Whether classrooms show parallel or en masse segments, whether they exhibit many or few contained segments, what concerns get most segment support in the classroom—these variations are probably responsive to a number of variables. For example, teacher direction of parallel segments may require more energy and alertness than management of single, en masse segments. Other teacher variables might include their training or personality. The philosophy of the school system, the open vs. traditional nature of the school's architecture must also affect what kinds of segments and segment structures will succeed. One teacher indicated that pupil population in relation to classroom area affected her segment structure. The more pupils, she maintained, the fewer the segments for small reading and arithmetic groups. She explained that large classes made running of simultaneous segments quite difficult (less space and more interpenetration of activities).

A study of education cross-culturally might find segment measurement quite useful. Differences in outlook and resources must surely affect the number, kind and interrelationships of segments in various nations. It would seem that these microenvironments might well be studied before children, as individual subjects, become targets of cross-cultural research.

Segment Measures as Intervening Variables

Education has sometimes attempted research with variables whose relationships are unclear even when correlations are established. Examples are studies of class size in relation to scores on an achievement test. If correlations are obtained, the question remains: what mediates this concomitant variation? The information from the teacher described above indicates that increased population might reduce achievement, if reading and arithemtic group segments are lost. Small groups are more easily geared to an appropriate difficulty level and they yield better involvement than total classes. If increased size does not lose subgroups, then achievement losses should not be so severe.

Other cases in which ecological units provided links between distant variables have appeared. In a study of large and small schools (Barker & Gump, 1964) it was found that increasing school size increased population per behavior setting; this, in turn, reduced opportunity for central involvement in these settings. The result was decreased sense of responsibility for, and interest in, school affairs.

Segment Measures as Independent Variables

Segments are microunits of the environment; if it is assumed that environments coerce behavior, the segment also must be coercive. Ample demonstration that both teacher and pupil behavior is determined by the segment occupied is offered in the report cited (Gump, 1967). Relationships also exist between segment structure and inhabitant behavior. The behavior of the teacher during transitions between segments appears to be different from behavior during segments. At these times, the teacher must pull individuals out of one structure and get them into another. Her counter-deviancy behavior peaks at transitions; here she urges, blocks and criticizes more than at nontransition times.

Pupil involvement in ongoing official activity is related to segment variables such as: group vs. total class, external vs. self-pacing, and segment beginnings or re-starts vs. segment continuations (Gump, 1967).

Segment qualities affect significant aspects of pupil and teacher behavior. An implication is: if these behaviors are to be changed, segment qualities will need to be changed.

Segment Measures as Contextual Variables

Clearly, if segments offer independent variables for some research designs, they become contextual variables for others. For example, relationships between teacher behaviors and pupil behaviors may obtain in one kind of segment and not in another. The variable of teacher "with-it-ness" (demonstrated alertness to what happens in the classroom) was tested against pupil deviancy. Correlations were in the expected negative direction in seatwork segments but not in class recitation segments (Kounin, Friesen, & Norton, 1966).

In general, we may expect that particulars of motivational and learning variables will be more or less effective dependent upon segment context.

References

Barker, R. G. The environment of human behavior: concepts and methods of ecological psychology. Stanford, Calif.: Stanford University Press, 1968, in press.

Barker, R. G., & Gump, P. V. Big school, small school. Stanford, Calif.: Stanford University Press, 1964.

Barker, R. G., & Wright, H. F. Midwest and its children. New York: Harper & Row, 1955.

Biddle, B. J., & Adams, R. S. An analysis of classroom activities. U. S. Office of Education, Department of Health, Education, and Welfare, Contract No. 3-20-002. Final report, mimeo, 1967.

Gump, P. V. The classroom behavior setting: its nature and relation to student behavior. U. S. Office of Education Cooperative Research Branch, Project No. 5-0334. Final report, mimeo, 1967.

Herbert, J, & Swayze, J. Wireless observation. New York: Bureau of Publication, Teachers College, Columbia University. 1964.

Hughes, Marie M., & Associates. Assessment of the quality of teaching in elementary schools. Unpublished report, Cooperative Research Project No. 353, Office of Education, U. S. Department of Health, Education, and Welfare. 1959.

Kounin, J. S., Friesen, W. V., & Norton, A. Evangeline. Managing emotionally disturbed children in regular classrooms. J. of Educ. Psych., LVII, 1966, 1-13.

Schoggen, P. Mechanical aids for making specimen records of behavior. Child Develpm., XXXV, September 1964, 985-988.

Wright, H. F. Recording and analyzing child behavior. New York: Harper & Row, 1967.

Mrs. Carr's Third Grade Classroom
A Chronicle of One Quarter Day

(Unsegmented)

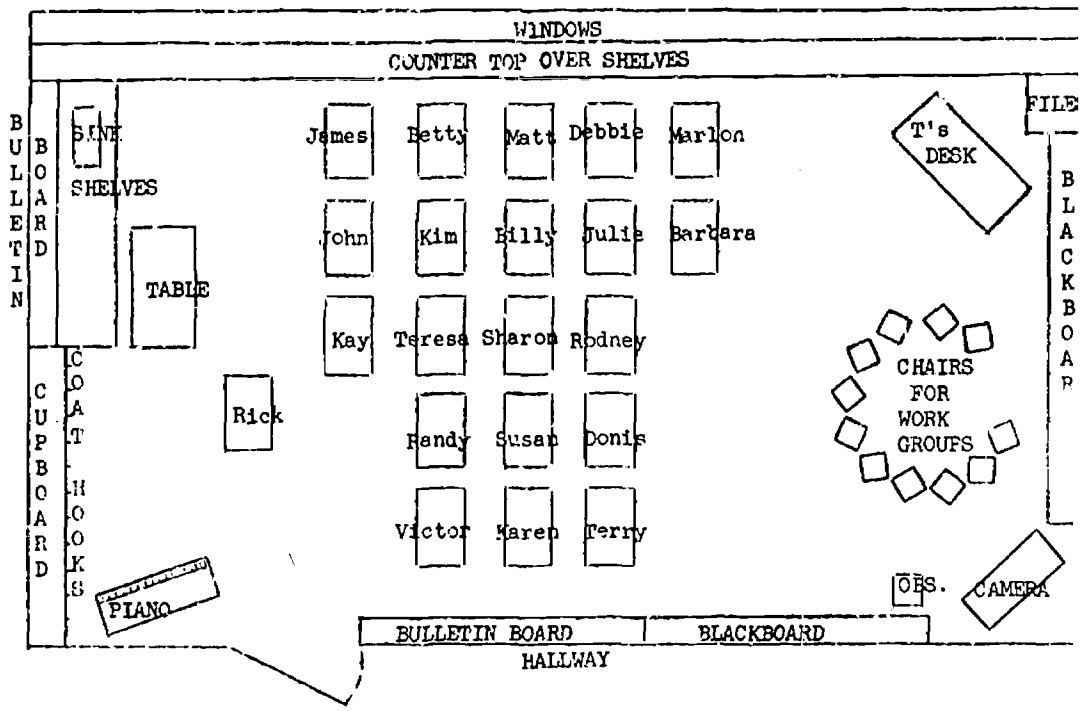
prepared by

Paul V. Gump
Midwest Psychological Field Station
Department of Psychology
University of Kansas

for

Training Materials for Research,
Development, and Diffusion Training Programs.
(USOE OEG 1-7-071018-4581 Guba)

Based upon research supported by U. S. Department of Health, Education, and Welfare, Office of Education, Bureau of Research, No. 5-0334



Mrs. Carr's Third Grade Room

Mrs. Carr's class is a part of Eaton Hills Elementary School. The one-story building is fifteen years old and has a "human size" appearance: 330 pupils in 14 classrooms. The neighborhood houses are mainly of an inexpensive frame construction; the dominant population is upper lower class although a number of teachers and business people also live in the area.

The classroom itself is attractive: light, roomy, uncluttered. Desks are moveable; a large drawing hangs down the front of each. Various posters and pupil drawings appear in the room but not in profusion; each exhibit has its own generous space. The room's atmosphere is pleasant and simple.

Mrs. Carr · April 7, 1965 Observer: Mr. Bond

8:45 At this time about two-thirds of the students are already in the classroom.

As they come into the classroom, T greets them, asks them to sit down.

All of them are working, probably on their arithmetic. They are very quiet and are working well. When a student has a question, he must raise his hand and T comes to him. The students are finishing their arithmetic papers, their homework from the previous evening.

As the students finish their arithmetic papers, T collects them, and they begin working on something else or they are free to go out of the room if they wish.

All of the students are in the room, except James.

9:00 The 9 o'clock bell rings.

T continues to go around the room, picking up the arithmetic papers.

9:02 T is at the desk of Susan, helping her with her arithmetic.

There are three hands raised: Karen, Rodney, Billy.

T now goes over to Teresa and helps her.

9:03 T goes to the front of the room and says, "We are going to start now. You may hand in your arithmetic sheets later."

T says, "Let's put our books and pencils down."

T says, "Rodney," meaning for him to put his work away.

T queries, "James, are you finished?"

T goes back to James' desk to check up on his progress.

T returns to the front of the room.

T says, "Let's see how straight we can sit."

T adds, Now we have a very nice day today."

After a pause, T informs the class, 'Mr. Bond is here to be with us."

"Let's show him how nicely we can work."

Mrs. Carr Mr. Bond

T, immediately returning to classroom business, says, "Now, let us stand and say the Pledge of Allegiance."

9:04 They wait for T as she goes to the back of the room, closes the door, and then stays in the back of the room.

9:05 The students and T sing America and say their Pledge of Allegiance.

Then they sit down.

9:06 T comes back to the front of the room.

T says, "Now, let's see what we want to do today."

"Rodney, what's the name of your story for your group?"

Rodney does not answer.

Betty answers, "Gears and Gasoline."[1]

T says, "What do the pictures remind you of?"

Rodney answers that question.

T says, "See if you know other people who act the way those cars do."

T says, "In Billy's group, what is the name of your story?"

T asks, "Sharon?"

Sharon answers correctly, "Bob Learns to Pitch."[2]

T asks, "How many of you have read it?"

A number of them raise their hands.

T looks to the blackboard and says, "Now, Spelling, we should have corrected our work. We should have fixed up to page 76."

"Then we'll do our worksheets."

"Then we'll start on our Weekly Reader if we have time. We won't talk about it until tomorrow but if you get time, will you start on it? It is about coin telephones."

---

[1]From Russell and Wulfung, Friends Far and Near. Ginn & Co.

[2]Russell, Wulfung, and Ousley, Finding New Neighbors. Ginn & Co.

Mrs. Carr Mr. Bond

T asks, "What are coin telephones?"

T asks, "Rick?"

Rick answers.

T comments further about coin telephones and how different they were; that is, the older ones, the first ones.

T turns the page of the Weekly Reader to the inside which is about a new way of washing windows of tall buildings in cities.

9:09 T is still telling them about the Weekly Reader.

9:10 Rodney raised his hand for a few seconds, but T did not recognize him.

T went on talking about the Weekly Reader, so he put his hand down.

9:11 T takes the Weekly Reader over to the side of the room and puts it down.

T, returning to the front blackboard, says, "Here are some words from the Weekly Reader. See if you know what they are."

T asks, "Kim, what is the first word?"

Then T asks, "Victor, what is the second word?"

Victor has trouble answering.

T says, "Julie, can you help him?"

T points to the third word.

Many hands are raised.

T asks, "Teresa?"

T points to the fourth word.

T asks, "What is this word, Kay?"

T says, "Would this word be possessive or a contraction, John?"

John does not say anything.

So T asks, "Barbara?"

Barbara answers correctly.

Mrs. Carr Mr. Bond

T points to the next word.

T asks, "Matt, what is this word?"

Matt pronounces the word.

T points to the next word.

T asks, "James?"

T points to the next word.

T asks, "Kim, can you pronounce this word?"

T then asks, "Kim, what does the word mean?"

T points to the next word.

There are many hands raised.

T asks, "What is this word, Donis?"

T points to the next word.

T asks, "Marlon, can you pronounce it?"

Marlon sits there but does not say anything.

Finally, T asks, "Victor, can you pronounce it?"

Teresa has a statement to make.

T says, "Yes, Teresa?"

T continues to point to a further list of words on the board.

T calls on Teresa, Karen and Terry.

The third word is skid.

T asks, "Betty, what does skid mean?"

Betty explains it.

Then T asks, "Rodney, would you explain it further."

Rodney does so.

Then John comments further about that word.

T points to the next word and says, "This is an easy word. Every hand should be up."

Mrs. Carr Mr. Bond

T asks, "Sharon, do you know?"

T points to the next word.

T says, "Rick, what is this word?"

T says, "No, that's not right."

T asks, "Barbara?"

Barbara answers.

Then T says, "And what needs a battery?"

T asks, "Karen, do you know?"

Karen answers incorrectly.

T then asks, "Susan?"

Susan doesn't say anything at first. Finally, Susan answers correctly.

T points to the next word.

Several hands are up.

9:16 Julie has just returned to her seat. She went to the back of the room to get a kleenex.

T now finishes the words on the board and says, "Now, let's look at these sentences on the board."

"Read the first sentence for me, Teresa."

Teresa reads this sentence.

T says, "What word in there has an ending on it?"

There are several hands raised.

T asks, "Susan, what is the word?"

Susan answers.

T says, "All right, now we are going to have something like this on our worksheets so this will help you know how to do it."

T then asks, "What is the root word?"

T asks, "Randy, do you know?"

Randy answers correctly.

Mrs. Carr Mr. Bond

Then T asks, "Randy, would you spell it?"

But Randy spells it incorrectly.

There are several hands raised.

9:18 T makes several comments.

T asks, "Randy, try again."

This time Randy answers correctly.

T asks, "How does your reading book tell you to add the ending, and how does your spelling book tell you to add the ending?"

Karen answers the first question.

Billy answers the second question.

T points to the second sentence.

T asks, "Terry, read this sentence."

T then asks the same questions in this sentence—the reading book ending and the spelling book ending.

T asks, "Marlon, what is the root word before the ending?"

Marlon answers correctly.

T asks, "Donis, read the third sentence."

T then asks, "What word has a prefix?"

T asks, "Karen?"

Karen answers correctly.

Then T asks, "What is a prefix and what does it mean?"

T asks, "Betty, read the next sentence."

T asks, "Which word has the prefix?"

Betty answers.

The word is unused.

T asks, "Matt, can you state the sentence differently, not using the prefix, 'un'?"

Matt answers correctly.

T then asks, "Rodney, read the last sentence. What is the word with the prefix? What does it mean? Read the sentence without using the prefix."

T then asks, "All right, now, what does 'un' mean?"

Karen answers correctly.

T says, "Now, when you have your worksheets today, remember that."

T then says, "All right, now, I think that we will have Billy's Reading Group come on up."

There are a number of chairs placed in a semicircle, at the front of the room. It is here that the children come for their small group work in reading and later in arithmetic.

T then says, "The rest of you stay in your seats and get right to work."

9:22 The students come up.

9:23 The last student, who is Rick, comes into the group. There are now eleven children present. These children are: Marlon, Billy, John, Sharon, Randy, Susan, Donis, Victor, Karen, Terry, and Rick.

T asks, "Will you sit on the further side of the circle?" (This is so most of them will be inside the camera angle.)

[Rodney, who is not in the reading group, has a question about which story to read.]

[T answers him.]

T then says to the reading group, "Now let's see if you know these words."

T writes team on the blackboard.

The students raise their hands.

T asks, "Randy, what kind of a team is in the story?"

T asks, "Victor, do you know?"

Victor answers correctly.

Saying, "Watch me write," T puts another word on the board.

The word is pitch.

Mrs. Carr Mr. Bond

T asks, "Terry, what is this word?"

Terry answers.

Then T says, "What if I put an 'er' on it," which she does.

Donis answers the question.

9:25 T writes another word on the board—plate.

T asks, "Rick, read this word."

Rick reads the word.

Then T asks, "What does the word mean?"

T asks, "Sharon?"

Sharon does not know.

There are several of the students jumping up and down in their seats excitedly, raising their hands.

Finally, T asks, "Rick, you tell us."

And then Billy comes up to the blackboard and draws a picture of home plate on the blackboard.

T then asks, "Billy, what's it for?"

And Billy finally answers the question correctly.

T writes another word on the boackboard—read.

Many hands are raised.

T asks, "Marlon, what is this word?"

> The words which they are going over are words in their story that they will read later today.
>
> This word read can be pronounced as reed or red.

T asks them several questions on how you could tell when to use which pronunciation.

Several of the students reply--Susan, Karen, and Donis.

T then writes another word on the blackboard--batter.

And then she writes--thrown.

Mrs. Carr Mr. Bond

T now writes--foul.

T asks, "Donis, will you pronounce this word?"

T then writes the word--strike.

T says, "I'm sure you know this one."

All of the hands are raised.

T asks, "Donis?"

Donis has difficulty in pronouncing it.

T helps her with the long i in strike.

Donis finally pronounces the word correctly.

9:29 T then asks, "Donis, I want you to pronounce all the words as I point to them."

Donis does this.

As Donis finishes, Rick raises his hand.

T says, "Rick?"

And Rick makes a statement about last summer and their baseball team.

T says, "All right now, we'll talk about this more when we come up for our story."

T says, "When you return to your seats, you must return quietly."

9:30 T then says, "All right, you may return to your seats."

The children return to their seats quietly.

T erases the words on the blackboard.

9:31 All of the children have now returned to their seats.

T then picks up her arithmetic book and says, "Rodney's Arithmetic Group, get your arithmetic books ready."

T then turns around and writes several arithmetic problems on the blackboard.

9:32 T motions for them to come up.

9:33 All of the students are in the front circle for arithmetic.

Mrs. Carr Mr. Bond

This arithmetic group includes all but six of the students in the classroom. These six (Terry, Karen, Donis, Susan, Rick, and Marlon) stay at their desks and work independently. The arithmetic group sits in the semicircled chairs at the front of the room.

T says, "Please put your books underneath your chairs."

T asks, "Kim, come up and work the first problem on the blackboard."

9:34 Kim works the problem and returns to her chair.

T then says, "Could you work one with four digits? What would one with four digits be called, Betty?"

Betty answers.

T then asks, "Sharon, will you come up and work this problem with four digits in it."

T then says, "Okay, now let's look at this problem."

"Will you work it for us, Barbara?"

9:36 T says, "Watch while Barbara works this problem."

9:37 Barbara finishes and returns to her chair.

T then says, "All right, let's make that into a four-digit number," which she does and writes it on the blackboard.

T then says, "Would that be just as easy to work?"

They nod their heads - yes.

T says, "Rodney, come up and work this problem."

Rodney does so.

9:38 T asks them several questions about the previous four-digit problems.

T writes another problem on the blackboard.

T asks, "James, subtract the ones."

"Julie, subtract the tens."

T then asks, "Victor, how would you rename the next part of the problem?"

Victor answers correctly.

T then says, "All right, let's work this problem. Rename it for me, this one."

T points to a problem on the blackboard and asks, "Barbara, work this problem for me."

T says, "Do it in numerals and in words."

As Barbara answers, T writes her answer on the blackboard for her.

T asks, "John, rename the next one."

Again, as he gives his answer, T writes this answer on the blackboard.

T then says, "All right, now, let's subtract the ones, Debby?"

Debby answers.

T asks, "Matt, subtract the tens."

Matt does this.

Then T says, "Now the hundreds. What do we have to do, Sharon?"

Sharon answers that they must rename them.

T asks, "What must we rename them?"

Sharon answers correctly.

T then asks, "Matt, subtract the hundreds."

T asks, "Betty, subtract the thousands."

T then says, "All right, now let's put this in numerals, Barbara?'

T says, "All right, now what is this--1000 plus 800 plus 10 plus 3?"

T asks, "Barbara?"

Barbara answers correctly, "1,813."

T then says, "Let's let someone put it on a graph."

They all raise their hands excitedly.

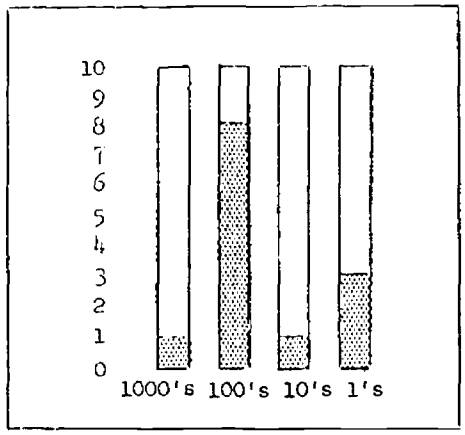
T turns to the blackboard and writes the graph on the blackboard.

T says, "Teresa, you come up and fill in the graph."

Mrs. Carr Mr. Bond

9:43 Teresa does so.

The graph appeared as follows:



9:44 Teresa finishes and returns to her chair.

T then says, "Now, let's look at our books on page 207 at the bottom of the page."

"How many rows are there, James?"

9:45 James answers correctly.

T says, "Now those are what I would like for you to work. Now let's see if we can get all of those correct."

"Do you have the place, John?"

John finds the place just as T asks him.

Julie raises her hand.

T says, "Yes, Julie?"

Julie asks a question.

T says, "I don't think we'll have time today."

T turns to the board and writes 15 tens.

T says, "How would you rename this?"

Julie answers, "One hundred and five tens."

T then writes 15 ones on the board.

T asks, "How would you rename this?"

John answers, "Ten and five ones."

Now T writes 15 hundreds on the blackboard.

T asks, "Betty, how would you rename this?"

Betty answers, "One thousand and five hundreds."

T writes 21 hundreds on the board.

T asks, "Debbie, how would you rename this?"

Debbie answers correctly.

T now writes 35 ones on the board.

T asks, "Billy, how would you rename this?"

Billy answers correctly.

T writes 46 tens on the board.

T asks, "Kim, how would you rename this?"

Kim answers correctly.

T then writes 32 hundreds on the board.

T asks, "Victor, how would you rename this?"

Victor does so.

T then says, "All right, now," and she sits down.

"Now, I would like for you to look on page 206."

T says, "Yes, Randy?"

Randy says a few words.

9:48 T says, "All right now, page 206."

"Now let's go right around the circle, starting with Victor. Each one of you read one problem and give the correct answer to it."

Victor works a problem.

Randy works the next problem.

Then Kay works a problem.

Mrs. Carr Mr. Bond

Teresa works a problem. Teresa has a lot of difficulty and spends about a minute trying to figure out how to read this. She finally does.

Sharon works the next problem.

> The six students, who are not in the arithmetic circle, are still at their desks. They are extremely quiet and are working well.

Rodney works the next problem.

T assists him several times.

John works a problem.

Kim works the next problem.

T helps her, as Kim has difficulty working this problem.

T then says, "All right, now let's turn over to the next page."

"Billy, do the first one in the oral."

Kim points out that the problems under oral have the answers.

So, T says, "Oh! I didn't notice that. All right."

"Take the first problem under 1 A, Billy."

Billy has trouble answering correctly.

T goes on, says, "Let Billy think about it."

T then says, "Julie, you work 1 B."

T says, "Barbara, you work the next problem."

T then says, "James."

9:54 T says, "Eddie, you work the next problem."

T says, "Matt, the next one."

T says, "Betty, you work the next problem"

T then comes back to Barbara and asks, "Do you have yours yet?"

Barbara is still having difficulty.

Mrs. Carr Mr. Bond

T helps her by asking some questions.

Barbara finally gets the answer correct.

Then T comes back to Kim and says, "Have you got yours figured out yet?"

Kim answers correctly, very quietly.

Then John raises his hand and asks a question.

Rodney, then, has a question.

T says, "Yes, Rodney?"

T doesn't quite understand, so she comes over to Rodney and looks at his book.

Rodney wants to know if they can read something from page 206.

T says, "Oh all right. All right, Rodney, you can read the first one."

Rodney does this.

T asks, "Victor, read the second one."

T then says, "Julie, read the last one."

T says, "All right now, is there any question on the assignment?"

T thinks there is none.

T says, Let's see how many of you can get all of them correct and see if you can get your names up here on the board," and T points to the front blackboard where there are five names.

9:57 T dismisses this Arithmetic group, who leave the chairs and return to their seats.

A small part of the events are unrecorded because

O must change the tape.

9:58 The second arithmetic group has come up and are now sitting in the semi-circle of chairs.

Mrs. Carr

Mr. Bond

This group consists of the six children. (Terry, Karen, Donis, Susan, Rick and Marlon), who were previously at their desks. The children in the first group are now quietly working at their desks.

T having asked them to put their books down on the floor, has asked them several questions about a problem.

T now asks them another question.

T asks, "All of you put your hands up."

9:59 Marlon answers the question.

Then T says, "And what do we do in addition, Terry?"

Terry answers the question correctly.

Then T writes the answer on the blackboard.

T says, "What if the problem would say: How many more do I need? What would you do?"

Four hands are raised.

T asks, "Susan?"

Susan answers correctly, "Subtract."

T writes this word on the blackboard.

T then says, "If it said how many are left or how many are gone, what would your answer be?"

T then repeats the problem, which is, "If it said how many are left or how many are gone, how would you work it?"

Donis is the only one who does not have her hand up.

T says, "Donis, how would you do it?"

Donis finally answers the question correctly.

10:01 T then asks another question.

Susan waves her hands.

But T asks, "Karen?"

Mrs. Carr Mr. Bond

All of the questions that T is asking now pertain to the previous question which she asked Donis; namely, how many more or how many less.

T again asks the same question, with which they are having difficulty.

And T says, "All right, let's put our hands up."

Apparently she wants all of them to think about it and to raise their hands when they have the right answer. Then she will call on them.

10:03 T finally says, "Karen?"

10:04 T says, "All right, let's look in our books on page 194. Now we talked about the material in the box on this page. I'll read this paragraph right below it."

T reads this paragraph.

10:05 T finishes reading this paragraph.

Donis raises her hand, and wants to ask a question.

T says, "Donis?"

Then T says, in response to her question, "All right."

T says, reprovingly, "Marlon, you should be looking at your book."

T, then, continues reading.

T finishes reading.

T says, "Karen, will you read the first problem?"

10:06 T then asks, "How would you work it?"

There are five hands up.

T asks, "Susan?"

Susan answers correctly.

Rick sits looking at his book, but does not appear to be paying any attention to what's going on. He very seldom raises his hand

Mrs. Carr Mr. Bond

T now comes over to a desk and gets a yardstick and a piece of string.

> The problem is how much longer is a 36 inch yardstick than a piece of string that is 25 inches.

T demonstrates this problem to the children.

T says, "What could you use to get a sensible answer, (i.e., a reasonable estimate?) What number could you change to make it easy to subtract? Could you change either one of those numbers to make it easy?"

No one raises his hand.

T says, "Think what number could you change to make it real easy?"

Rick raises his hand.

T says, "Rick?"

Rick does not answer correctly.

T then says, "Marlon?"

10:08 Kim has had her hand raised.

T says, "Kim?"

Finally, Rick gets the correct answer.

Then T says, "What would be a sensible answer, Terry?"

Terry answers incorrectly twice.

T says, "All right now, Terry, you aren't paying attention. I want you to pay attention, better than you have."

T says for the third time, "All right, now what would be a sensible answer?"

Marlon finally answers the question.

T then says, "All right, what would be the real answer?"

There are several hands up.

T asks, "Susan?"

Mrs. Carr Mr. Bond

Susan comes up to the blackboard. She writes the problem on the board, works it and then writes down the answer.

10:10 Susan returns to her chair.

T says, "All right, did we guess a pretty good sensible answer for this?"

They nod their heads and say, "Yes."

T says, "All right, now let's look at the second problem."

T asks, "Donis, would you read this problem?"

Donis finishes reading.

And T says, "All right, now what could you do to those numbers to make it easier to subtract in your head?"

10:11 Susan answers.

But T says, "No, I don't think that would be necessary."

T then asks, "Terry?"

Terry answers correctly, but he has difficulty answering the question completely.

So T asks, "Donis?"

Donis does not answer correctly.

T reads the question again.

T asks, "Karen, what would you do?"

Karen answers correctly.

Then T returns to Terry and asks, "Now what would your answer be?"

He answers something.

But T says, "Terry, you're not even listening. Now pay attention."

T then asks, "Susan, how would you answer?"

Susan does not answer completely.

So T asks, "Karen?"

Karen answers correctly.

Mrs. Carr Mr. Bond

T then says, "All right, now what's one dollar minus forty cents, or 100 minus 40?"

Karen raises her hand and says, "60."

T says, "Okay, now what would be a good guess?"

Marlon answers.

T then says, "All right, now let's write the real statement."

There are several hands raised excitedly.

T says, "Donis, come up to the blackboard and write the real statement."

10:15 Donis finishes and returns to her chair.

T says, "Karen, now you come up and finish working the problem.'

T says, "All right, now let's see if she works this correctly.

The students are watching Karen work the problem on the blackboard.

10:16 While Karen is working, Terry and Rick carry on a brief conversation.

10:17 Karen finishes the problem and sits down.

T then asks Donis a question about the problem.

T asks Terry a question.

T then says, "All right then, did we make a pretty good guess?"

They nod their heads-yes.

T then says, "All right, now let's look at problem number 8."

"Marlon, read it to us."

Marlon starts to read the problem.

Then T says, "Wait just a minute now."

Apparently not all of them are ready.

Mrs. Carr Mr. Bond

10:18 Marlon finishes reading the problem.

T asks a question about it.

There are several hands raised.

Terry answers.

Then T says, "All right, now what would be a sensible answer?"

Terry and Karen raise their hands.

T asks, "Terry?"

Terry does not answer correctly.

So T says, "Donis, do you know?"

Donis answers a different question.

T says, "Now, I don't want that. I don't want the answer. I want something else."

Donis answers again, and this time, correctly.

10:19 T gets up from her chair and goes back to the blackboard and asks, "Donis, what would your statement be?"

Donis answers.

T says, "That's right," and writes it on the blackboard.

T then says, "Susan, what is your estimate?"

T asks, "Marlon, come up to the blackboard. First write the arithmetic statement."

Marlon does so.

T says, "Now, work the problem."

Marlon works the problem.

T says, "All right, now what is the real answer, Susan?"

Susan answers correctly.

Then Marlon erases the blackboard and sits down.

Mrs. Carr Mr. Bond

10:21 T says, "All right now, we won't have time to do any more here.

T says, "All right, I want you to work page 207."

T says, "Now, is there any question about the assignment?"

They shake their heads no.

T says, "All right now, work them carefully. If you have time, you may work the others."

10:22 T dismisses them.

Most of the children are back in their seats, with the exception of Marlon.

T is standing at the front of the room watching the students.

T goes over to Barbara's desk and they talk briefly.

It is now about time for recess.
Before they are dismissed to go
out, the children visit the restroom.
T dismisses them for this by rows.

T is waiting for all of them to get ready.

10:23 T dismisses Row 2 to go to the restroom.

The other students sit quietly, with hands folded on their desks.

T dismisses Row 5.

Row 3 is dismissed.

Row 4 is dimissed.

T looks over at Karen, in Row 1, who is looking expectantly.

T explains, "Terry, (also in Row 1) is keeping you."

10:24 T then dismisses Row 1.

Rick, who has not gone out of the room, comes up to T and asks her several questions.

T reaches over, gently turns him around, and says, "Rick, go back to your seat."

Rick does so.

Mrs. Carr Mr. Bond

10:25 The students begin coming back into the room.

T goes over to the side of the room and opens some windows.

When Randy comes back into the room, he goes over to T and talks to her for a few moments.

10:26 T comes to the front of the room, in front of her desk, and stands there watching the students who have come back into the room.

Victor asks if they can take the balls outside.

T replies, "If it's not too muddy."

Billy raises his hand, asks a question.

James has his hand raised while Billy is talking.

Billy is making a comment about something.

T says, "Yes, James?"

T then says, "Eddie?"

John has his hand raised.

T says, "All right, let's face the front."

The students will be dismissed to line up at the door.

10:27 T says, "Row 3."

Then T says, "Row 2."

T says, "Row 5, line up."

T says, "Row 4."

T is at the back of the room, getting her coat on.

Most of the students are lined up, except for Row 1, and James, who is at the front of the room writing something on the blackboard.

10:28 T dismisses Row 1.

T says, "We will take a ball out, and if it is not too wet, then we will play with it."

T says, "Billy and Marlon, get into line."

Mrs. Carr Mr. Bond

10:29 The students start to go out of the room.

Then two girls come back into the room--Julie and Betty--get their sweaters, then go out.

End of observation.

Mrs. Carr's Third Grade Classroom
A Chronicle of One Quarter Day

(Segmented)

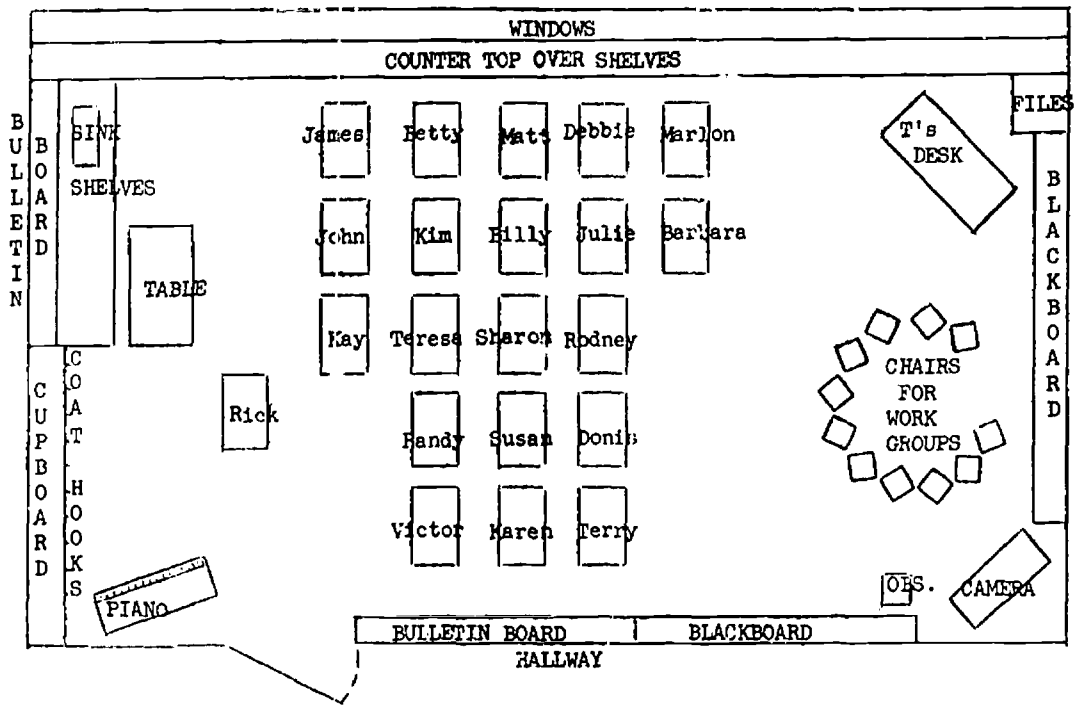
prepared by

Paul V. Gump
Midwest Psychological Field Station
Department of Psychology
University of Kansas

for

Training Materials for Research,
Development, and Diffusion Training Programs.
(USOE OEG 1-7-071018-4581 Guba)

Based upon research supported by U. S. Department of Health, Education, and Welfare, Office of Education, Bureau of Research, No. 5-0334.



Mrs. Carr's Third Grade Room

Mrs. Carr's class is a part of Eaton Hills Elementary School. The one-story building is fifteen years old and has a "human size" appearance: 330 pupils in 14 classrooms. The neighborhood houses are mainly of an inexpensive frame construction; the dominant population is upper lower class although a number of teachers and business people also live in the area.

The classroom itself is attractive: light, roomy, uncluttered. Desks are moveable; a large drawing hangs down the front of each. Various posters and pupil drawings appear in the room but not in profusion; each exhibit has its own generous space. The room's atmosphere is pleasant and simple.

Mrs. Carr April 7, 1965 Observer: Mr. Bond

Preschool Seatwork

8:45 At this time about two-thirds of the students are already in the classroom.

As they come into the classroom, T greets them, asks them to sit down.

(1)

All of them are working, probably on their arithmetic. They are very quiet and are working well. When a student has a question, he must raise his hand and T comes to him. The students are finishing their arithmetic papers, their homework from the previous evening.

As the students finish their arithmetic papers, T collects them, and they begin working on something else or they are free to go out of the room if they wish.

All of the students are in the room, except James.

9:00 The 9 o'clock bell rings.

T continues to go around the room, picking up the arithmetic papers.

9:02 T is at the desk of Susan, helping her with her arithmetic.

There are three hands raised: Karen, Rodney, Billy.

T now goes over to Teresa and helps her.

(2)

Pledge and Song

9:03 a T goes to the front of the room and says, "We are going to start now. You may hand in your arithmetic sheets later."

T says, "Let's put our books and pencils down."

T says, "Rodney," meaning for him to put his work away.

T queries, "James, are you finished?"

T goes back to James' desk to check up on his progress.

T returns to the front of the room.

T says, "Let's see how straight we can sit."

T adds, "Now we have a very nice day today."

After a pause, T informs the class, "Mr. Bond is here to be with us."

"Let's show him how nicely we can work."

Mrs. Carr

Mr. Bond

(2) Pledge and Song

T, immediately returning to classroom business, says, "Now, let us stand and say the Pledge of Allegiance."

9:04 They wait for T as she goes to the back of the room, closes the door, and then stays in the back of the room.

9:05 The students and T sing America and say their Pledge of Allegiance.

Then they sit down.

(3) Instructions for Seatwork

9:06 T comes back to the front of the room.

T says, "Now, let's see what we want to do today."

"Rodney, what's the name of your story for your group?"

Rodney does not answer.

Betty answers, "Gears and Gasoline."[1]

T says, "What do the pictures remind you of?"

Rodney answers that question.

T says, "See if you know other people who act the way those cars do."

T says, "In Billy's group, what is the name of your story?"

T asks, "Sharon?"

Sharon answers correctly, "Bob Learns to Pitch."[2]

T asks, "How many of you have read it?"

A number of them raise their hands.

b

T looks to the blackboard and says, "Now, Spelling . . should have corrected our work. We should have fixed up to page 76."

"Then we'll do our worksheets."

c

"Then we'll start on our Weekly Reader if we have time. We won't talk about it until tomorrow but if you get time, will you start on it? It is about coin telephones."

---

[1]From Russell and Wulfung, Friends Far and Near. Ginn & Co.

[2]Russell, Wulfung, and Ousley, Finding New Neighbors. Ginn & Co.

Mrs. Carr

Mr. Bond

Instructions for Seatwork

(3)

T asks, "What are coin telephones?"

T asks, "Rick?"

Rick answers.

T comments further about coin telephones and how different they were; that is, the older ones, the first ones.

T turns the page of the Weekly Reader to the inside which is about a new way of washing windows of tall buildings in cities.

9:09 T is still telling them about the Weekly Reader.

9:10 Rodney raised his hand for a few seconds, but T did not recognize him.

T went on talking about the Weekly Reader, so he put his hand down.

9:11 T takes the Weekly Reader over to the side of the room and puts it down.

d

T, returning to the front blackboard, says, "Here are some words from the Weekly Reader. See if you know what they are."

T asks, "Kim, what is the first word?"

Then T asks, "Victor, what is the second word?"

Victor has trouble answering.

T says, "Julie, can you help him?"

T points to the third word.

Many hands are raised.

T asks, "Teresa?"

T points to the fourth word.

T asks, "What is this word, Kay?"

T says, "Would this word be possessive or a contraction, John?"

John does not say anything.

So T asks, "Barbara?"

Barbara answers correctly.

Mrs. Carr

Mr. Bond

(3)

T points to the next word.

T asks, "Matt, what is this word?"

Matt pronounces the word.

T points to the next word.

T asks, "James?"

T points to the next word.

T asks, "Kim, can you pronounce this word?"

T then asks, "Kim, what does the word mean?"

T points to the next word

There are many hands raised.

T asks, "What is this word, Donis?"

T points to the next word.

T asks, "Marlon, can you pronounce it?"

Marlon sits there but does not say anything.

Finally, T asks, "Victor, can you pronounce it?"

Teresa has a statement to make.

T says, "Yes, Teresa?"

T continues to point to a further list of words on the board.

T calls on Teresa, Karen and Terry.

The third word is skid.

T asks, "Betty, what does skid mean?"

Betty explains it.

Then T asks, "Rodney, would you explain it further."

Rodney does so.

Then John comments further about that word.

T points to the next word and says, "This is an easy word. Every hand should be up."

Instructions for Seatwork

Mrs. Carr

Mr. Bond

Instructions for Seatwork

(3)

T asks, "Sharon, do you know?"

T points to the next word.

T says, "Rick, what is this word?"

T says, "No, that's not right."

T asks, "Barbara?"

Barbara answers.

Then T says, "And what needs a battery?"

T asks, "Karen, do you know?"

Karen answers incorrectly.

T then asks, "Susan?"

Susan doesn't say anything at first. Finally, Susan answers correctly.

T points to the next word.

Several hands are up.

9:16 Julie has just returned to her seat. She went to the back of the room to get a kleenex.

e

T now finishes the words on the board and says, "Now, let's look at these sentences on the board."

"Read the first sentence for me, Teresa."

Teresa reads this sentence.

T says, "What word in there has an ending on it?"

There are several hands raised.

T asks, "Susan, what is the word?"

Susan answers.

T says, "All right, now we are going to have something like this on our worksheets so this will help you know how to do it."

T then asks, "What is the root word?"

T asks, "Randy, do you know?"

Randy answers correctly.

Mrs. Carr — Mr. Bond

Then T asks, "Randy, would you spell it?"

But Randy spells it incorrectly.

There are several hands raised.

9:18 T makes several comments.

T asks, "Randy, try again."

This time Randy answers correctly.

T asks, "How does your reading book tell you to add the ending, and how does your spelling book tell you to add the ending?"

Karen answers the first question.

Billy answers the second question.

T points to the second sentence.

T asks, "Terry, read this sentence."

T then asks the same questions in this sentence—the reading book ending and the spelling book ending.

T asks, "Marlon, what is the root word before the ending?"

Marlon answers correctly.

T asks, "Donis, read the third sentence."

T then asks, "What word has a prefix?"

T asks, "Karen?"

Karen answers correctly.

Then T asks, "What is a prefix and what does it mean?"

T asks, "Betty, read the next sentence."

T asks, "Which word has the prefix?"

Betty answers.

The word is unused.

T asks, "Matt, can you state the sentence differently, not using the prefix, 'un'?"

Matt answers correctly.

Instructions for Seatwork

Mrs. Carr

Mr. Bond

Morning Seatwork

③ Instructions for Seatwork

T then asks, "Rodney, read the last sentence. What is the word with the prefix? What does it mean? Read the sentence without using the prefix."

T then asks, "All right, now, what does 'un' mean?"

Karen answers correctly.

T says, "Now, when you have your worksheets today, remember that."

④

⑤ Billy's Reading Group

f

T then says, "All right, now, I think that we will have Billy's Reading Group come on up."

There are a number of chairs placed in a semicircle, at the front of the room. It is here that the children come for their small group work in reading and later in arithmetic.

T then says, "The rest of you stay in your seats and get right to work."

9:22 The students come up.

9:23 The last student, who is Rick, comes into the group. There are now eleven children present. These children are: Marlon, Billy, John, Sharon, Randy, Susan, Donis, Victor, Karen, Terry, and Rick.

T asks, "Will you sit on the further side of the circle?" (This is so most of them will be inside the camera angle.)

/Rodney, who is not in the reading group, has a question about which story to read./

/T answers him./

T then says to the reading group, "Now let's see if you know these words."

T writes team on the blackboard.

The students raise their hands.

T asks, "Randy, what kind of a team is in the story?"

T asks, "Victor, do you know?"

Victor answers correctly.

Saying, "Watch me write," T puts another word on the board.

The word is pitch.

Mrs. Carr

Mr. Bond

(4) (5)

Morning Seatwork

Billy's Reading Group

T asks, "Terry, what is this word?"

Terry answers.

Then T says, "What if I put an 'er' on it," which she does.

Donis answers the question.

9:25 T writes another word on the board—plate.

T asks, "Rick, read this word."

Rick reads the word.

Then T asks, "What does the word mean?"

T asks, "Sharon?"

Sharon does not know.

There are several of the students jumping up and down in their seats excitedly, raising their hands.

Finally, T asks, "Rick, you tell us."

And then Billy comes up to the blackboard and draws a picture of home plate on the blackboard.

T then asks, "Billy, what's it for?"

And Billy finally answers the question correctly.

T writes another word on the boackboard—read.

Many hands are raised.

T asks, "Marlon, what is this word?"

The words which they are going over are words in their story that they will read later today.

This word read can be pronounced as reed or red.

T asks them several questions on how you could tell when to use which pronunciation.

Several of the students reply—Susan, Karen, and Donis.

T then writes another word on the blackboard--batter.

And then she writes--thrown.

Mrs. Carr | Mr. Bond

Morning Seatwork (4) | Billy's Reading Group (5) | Rodney's Arithmetic Group (6)

T now writes--foul.

T asks, "Donis, will you pronounce this word?"

T then writes the word--strike.

T says, "I'm sure you know this one."

All of the hands are raised.

T asks, "Donis?"

Donis has difficulty in pronouncing it.

T helps her with the long i in strike.

Donis finally pronounces the word correctly.

9:29 T then asks, "Donis, I want you to pronounce all the words as I point to them."

Donis does this.

As Donis finishes, Rick raises his hand.

T says, "Rick?"

And Rick makes a statement about last summer and their baseball team.

T says, "All right now, we'll talk about this more when we come up for our story."

T says, "When you return to your seats, you must return quietly."

9:30 T then says, "All right, you may return to your seats."

The children return to their seats quietly.

T erases the words on the blackboard.

9:31 All of the children have now returned to their seats.

T then picks up her arithmetic book and says, "Rodney's Arithmetic Group, get your arithmetic books ready."

T then turns around and writes several arithmetic problems on the blackboard.

9:32 T motions for them to come up.

9:33 All of the students are in the front circle for arithmetic.

Mrs. Carr ④ ⑥ Mr. Bond

Morning Seatwork

Rodney's Arithmetic Group

This arithmetic group includes all but six of the students in the classroom. These six (Terry, Karen, Donis, Susan, Rick, and Marlon) stay at their desks and work independently. The arithmetic group sits in the semicircled chairs at the front of the room.

T says, "Please put your books underneath your chairs."

T asks, "Kim, come up and work the first problem on the blackboard."

9:34 Kim works the problem and returns to her chair.

T then says, "Could you work one with four digits? What would one with four digits be called, Betty?"

Betty answers.

T then asks, "Sharon, will you come up and work this problem with four digits in it."

T then says, "Okay, now let's look at this problem."

"Will you work it for us, Barbara?"

9:36 T says, "Watch while Barbara works this problem."

9:37 Barbara finishes and returns to her chair.

T then says, "All right, let's make that into a four-digit number," which she does and writes it on the blackboard.

T then says, "Would that be just as easy to work?"

They nod their heads - yes.

T says, "Rodney, come up and work this problem."

Rodney does so.

9:38 T asks them several questions about the previous four-digit problems.

T writes another problem on the blackboard.

T asks, "James, subtract the ones."

"Julie, subtract the tens."

T then asks, "Victor, how would you rename the next part of the problem?"

Victor answers correctly.

Mrs. Carr

Mr. Bond

Morning Seatwork

Rodney's Arithmetic Group

T then says, "All right, let's work this problem. Rename it for me, this one."

T points to a problem on the blackboard and asks, "Barbara, work this problem for me."

T says, "Do it in numerals and in words."

As Barbara answers, T writes her answer on the blackboard for her.

T asks, "John, rename the next one."

Again, as he gives his answer, T writes this answer on the blackboard.

T then says, "All right, now, let's subtract the ones, Debby?"

Debby answers.

T asks, "Matt, subtract the tens."

Matt does this.

Then T says, "Now the hundreds. What do we have to do, Sharon?"

Sharon answers that they must rename them.

T asks, "What must we rename them?"

Sharon answers correctly.

T then asks, "Matt, subtract the hundreds."

T asks, "Betty, subtract the thousands."

T then says, "All right, now let's put this in numerals, Barbara?"

T says, "All right, now what is this--1000 plus 800 plus 10 plus 3?"

T asks, "Barbara?"

Barbara answers correctly, "1,813."

T then says, "Let's let someone put it on a graph."

They all raise their hands excitedly.

T turns to the blackboard and writes the graph on the blackboard.

T says, "Teresa, you come up and fill in the graph."

Mrs. Carr

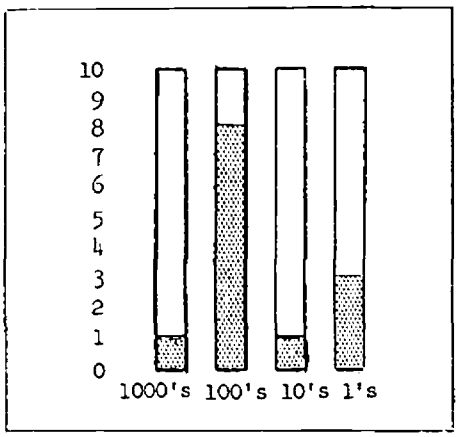
Mr. Bond

Morning Seatwork

Rodney's Arithmetic Group

9:43 Teresa does so.

The graph appeared as follows:



9:44 Teresa finishes and returns to her chair.

T then says, "Now, let's look at our books on page 207 at the bottom of the page."

"How many rows are there, James?"

9:45 James answers correctly.

T says, "Now those are what I would like for you to work. Now let's see if we can get all of those correct."

"Do you have the place, John?"

John finds the place just as T asks him.

Julie raises her hand.

T says, "Yes, Julie?"

Julie asks a question.

T says, "I don't think we'll have time today."

T turns to the board and writes 15 tens.

T says, "How would you rename this?"

Julie answers, "One hundred and five tens."

T then writes 15 ones on the board.

Mrs. Carr

Mr. Bond

4 6

Morning Seatwork

Rodney's Arithmetic Group

T asks, "How would you rename this?"

John answers, "Ten and five ones."

Now T writes 15 hundreds on the blackboard.

T asks, "Betty, how would you rename this?"

Betty answers, "One thousand and five hundreds."

T writes 21 hundreds on the board.

T asks, "Debbie, how would you rename this?"

Debbie answers correctly.

T now writes 35 ones on the board.

T asks, "Billy, how would you rename this?"

Billy answers correctly.

T writes 46 tens on the board.

T asks, "Kim, how would you rename this?"

Kim answers correctly.

T then writes 32 hundreds on the board.

T asks, "Victor, how would you rename this?"

Victor does so.

T then says, "All right, now," and she sits down.

"Now, I would like for you to look on page 206."

T says, "Yes, Randy?"

Randy says a few words.

9:48 T says, "All right now, page 206."

"Now let's go right around the circle, starting with Victor. Each one of you read one problem and give the correct answer to it."

Victor works a problem.

Randy works the next problem.

Then Kay works a problem.

Mrs. Carr

Mr. Bond

Morning Seatwork

Rodney's Arithmetic Group

Teresa works a problem. Teresa has a lot of difficulty and spends about a minute trying to figure out how to rea this. She finally does.

Sharon works the next problem.

> The six students, who are not in the arithmetic circle, are still at their desks. They are extremely quiet and are working well.

Rodney works the next problem.

T assists him several times.

John works a problem.

Kim works the next problem.

T helps her, as Kim has difficulty working this problem.

T then says, "All right, now let's turn over to the next page."

"Billy, do the first one in the oral."

Kim points out that the problems under oral have the answers.

So, T says, "Oh! I didn't notice that. All right."

"Take the first problem under 1 A, Billy."

Billy has trouble answering correctly.

T goes on, says, "Let Billy think about it."

T then says, "Julie, you work 1 B."

T says, "Barbara, you work the next problem."

T then says, "James."

9:54 T says, "Eddie, you work the next problem."

T says, "Matt, the next one."

T says, "Betty, you work the next problem"

T then comes back to Barbara and asks, "Do you have yours yet?"

Barbara is still having difficulty.

Mrs. Carr

Mr. Bond

Morning Seatwork

④

Rodney's Arithmetic Group

⑥

T helps her by asking some questions.

Barbara finally gets the answer correct.

Then T comes back to Kim and says, "Have you got yours figured out yet?"

Kim answers correctly, very quietly.

Then John raises his hand and asks a question.

Rodney, then, has a question.

T says, "Yes, Rodney?"

T doesn't quite understand, so she comes over to Rodney and looks at his book.

Rodney wants to know if they can read something from page 206.

T says, "Oh all right. All right, Rodney, you can read the first one."

Rodney does this.

T asks, "Victor, read the second one."

T then says, "Julie, read the last one."

T says, "All right now, is there any question on the assignment?"

T thinks there is none.

T says, Let's see how many of you can get all of them correct and see if you can get your names up here on the board," and T points to the front blackboard where there are five names.

9:57 T dismisses this Arithmetic group, who leave the chairs and return to their seats.

A small part of the events are unrecorded because

O must change the tape.

---

⑦

9:58 The second arithmetic group has come up and are now sitting in the semi-circle of chairs.

Mrs. Carr

Mr. Bond

4

7

Morning Seatwork

Small Arithmetic Group

This group consists of the six children (Terry, Karen, Donis, Susan, Rick and Marlon), who were previously at their desks. The children in the first group are now quietly working at their desks.

T having asked them to put their books down on the floor, has asked them several questions about a problem.

T now asks them another question.

T asks, "All of you put your hands up."

9:59 Marlon answers the question.

Then T says, "And what do we do in addition, Terry?"

Terry answers the question correctly.

Then T writes the answer on the blackboard.

T says, "What if the problem would say: How many more do I need? What would you do?"

Four hands are raised.

T asks, "Susan?"

Susan answers correctly, "Subtract."

T writes this word on the blackboard.

T then says, "If it said how many are left or how many are gone, what would your answer be?"

T then repeats the problem, which is, "If it said how many are left or how many are gone, how would you work it?"

Donis is the only one who does not have her hand up.

T says, "Donis, how would you do it?"

Donis finally answers the question correctly.

10:01 T then asks another question.

Susan waves her hands.

But T asks, "Karen?"

Mrs. Carr

Mr. Bond

Morning Seatwork

Small Arithmetic Group

All of the questions that T is asking now pertain to the previous question which she asked Donis; namely, how many more or how many less.

T again asks the same question, with which they are having difficulty.

And T says, "All right, let's put our hands up."

Apparently she wants all of them to think about it and to raise their hands when they have the right answer. Then she will call on them.

10:03 T finally says, "Karen?"

h

10:04 T says, "All right, let's look in our books on page 194. Now we talked about the material in the box on this page. I'll read this paragraph right below it."

T reads this paragraph.

10:05 T finishes reading this paragraph.

Donis raises her hand, and wants to ask a question.

T says, "Donis?"

Then T says, in response to her question, "All right."

T says, reprovingly, "Marlon, you should be looking at your book."

T, then, continues reading.

T finishes reading.

i

T says, "Karen, will you read the first problem?"

10:06 T then asks, "How would you work it?"

There are five hands up.

T asks, "Susan?"

Susan answers correctly.

Rick sits looking at his book, but does not appear to be paying any attention to what's going on. He very seldom raises his hand.

Mrs. Carr

Mr. Bond

Morning Seatwork

Small Arithmetic Group

T now comes over to a desk and gets a yardstick and a piece of string.

> The problem is how much longer is a 36 inch yardstick than a piece of string that is 25 inches.

T demonstrates this problem to the children.

T says, "What could you use to get a sensible answer, (i.e., a reasonable estimate?) What number could you change to make it easy to subtract? Could you change either one of those numbers to make it easy?"

No one raises his hand.

T says, "Think what number could you change to make it real easy?"

Rick raises his hand.

T says, "Rick?"

Rick does not answer correctly.

T then says, "Marlon?"

10:08 Kim has had her hand raised.

T says, "Kim?"

Finally, Rick gets the correct answer.

Then T says, "What would be a sensible answer, Terry?"

Terry answers incorrectly twice.

T says, "All right now, Terry, you aren't paying attention. I want you to pay attention, better than you have."

T says for the third time, "All right, now what would be a sensible answer?"

Marlon finally answers the question.

T then says, "All right, what would be the real answer?"

There are several hands up.

T asks, "Susan?"

Mrs. Carr

Mr. Bond

Morning Seatwork (4)

Small Arithmetic Group (7)

Susan comes up to the blackboard. She writes the problem on the board, works it and then writes down the answer.

10:10 Susan returns to her chair.

T says, "All right, did we guess a pretty good sensible answer for this?"

They nod their heads and say, "Yes."

T says, "All right, now let's look at the second problem."

T asks, "Donis, would you read this problem?"

Donis finishes reading.

And T says, "All right, now what could you do to those numbers to make it easier to subtract in your head?"

10:11 Susan answers.

But T says, "No, I don't think that would be necessary."

T then asks, "Terry?"

Terry answers correctly, but he has difficulty answering the question completely.

So T asks, "Donis?"

Donis does not answer correctly.

T reads the question again.

T asks, "Karen, what would you do?"

Karen answers correctly.

Then T returns to Terry and asks, "Now what would your answer be?"

He answers something.

But T says, "Terry, you're not even listening. Now pay attention."

T then asks, "Susan, how would you answer?"

Susan does not answer completely.

So T asks, "Karen?"

Karen answers correctly.

Mrs. Carr

Mr. Bond

Morning Seatwork

Small Arithmetic Group

T then says, "All right, now what's one dollar minus forty cents, or 100 minus 40?"

Karen raises her hand and says, "60."

T says, "Okay, now what would be a good guess?"

Marlon answers.

T then says, "All right, now let's write the real statement."

There are several hands raised excitedly.

T says, "Donis, come up to the blackboard and write the real statement."

10:15 Donis finishes and returns to her chair.

T says, "Karen, now you come up and finish working the problem."

T says, "All right, now let's see if she works this correctly.

The students are watching Karen work the problem on the blackboard.

10:16 While Karen is working, Terry and Rick carry on a brief conversation.

10:17 Karen finishes the problem and sits down.

T then asks Donis a question about the problem.

T asks Terry a question.

T then says, "All right then, did we make a pretty good guess?"

They nod their heads-yes.

T then says, "All right, now let's look at problem number 8."

"Marlon, read it to us."

Marlon starts to read the problem.

Then T says, "Wait just a minute now."

Apparently not all of them are ready.

Mrs. Carr

Mr. Bond

Morning Seatwork

Small Arithmetic Group

10:18 Marlon finishes reading the problem.

T asks a question about it.

There are several hands raised.

Terry answers.

Then T says, "All right, now what would be a sensible answer?"

Terry and Karen raise their hands.

T asks, "Terry?"

Terry does not answer correctly.

So T says, "Donis, do you know?"

Donis answers a different question.

T says, "Now, I don't want that. I don't want the answer. I want something else."

Donis answers again, and this time, correctly.

10:19 T gets up from her chair and goes back to the blackboard and asks, "Donis, what would your statement be?"

Donis answers.

T says, "That's right," and writes it on the blackboard.

T then says, "Susan, what is your estimate?"

T asks, "Marlon, come up to the blackboard. First write the arithmetic statement."

Marlon does so.

T says, "Now, work the problem."

Marlon works the problem.

T says, "All right, now what is the real answer, Susan?"

Susan answers correctly.

Then Marlon erases the blackboard and sits down.

Mrs. Carr

Mr. Bond

Morning Sentwork

(4)

(7) Small Arithmetic Group

10:21 T says, "All right now, we won't have time to do any more here."

T says, "All right, I want you to work page 207."

T says, "Now, is there any question about the assignment?"

They shake their heads-no.

T says, "All right now, work them carefully. If you have time, you may work the others."

10:22 T dismisses them.

Most of the children are back in their seats, with the exception of Marlon.

(8) Room Dismissal Routine

T is standing at the front of the room watching the students.

T goes over to Barbara's desk and they talk briefly.

It is now about time for recess.
Before they are dismissed to go
out, the children visit the restroom.
T dismisses them for this by rows.

T is waiting for all of them to get ready.

10:23 T dismisses Row 2 to go to the restroom.

The other students sit quietly, with hands folded on their desks.

T dismisses Row 5.

Row 3 is dismissed.

Row 4 is dimissed.

T looks over at Karen, in Row 1, who is looking expectantly.

T explains, "Terry, (also in Row 1) is keeping you."

10:24 T then dismisses Row 1.

Rick, who has not gone out of the room, comes up to T and asks her several questions.

T reaches over, gently turns him around, and says, "Rick, go back to your seat."

Rick does so.

Mrs. Carr

Mr. Bond

Room Dismissal Routine

⑧

10:25 The students begin coming back into the room.

T goes over to the side of the room and opens some windows.

When Randy comes back into the room, he goes over to T and talks to her for a few moments.

10:26 T comes to the front of the room, in front of her desk, and stands there watching the students who have come back into the room.

Victor asks if they can take the balls outside.

T replies, "If it's not too muddy."

Billy raises his hand, asks a question.

James has his hand raised while Billy is talking.

Billy is making a comment about something.

T says, "Yes, James?"

T then says, "Eddie?"

John has his hand raised.

T says, "All right, let's face the front."

The students will be dismissed to line up at the door.

10:27 T says, "Row 3."

Then T says, "Row 2."

T says, "Row 5, line up."

T says, "Row 4."

T is at the back of the room, getting her coat on.

Most of the students are lined up, except for Row 1, and James, who is at the front of the room writing something on the blackboard.

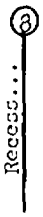
10:28 T dismisses Row 1.

T says, "We will take a ball out, and if it is not too wet, then we will play with it."

T says, "Billy and Marlon, get into line."

Mrs. Carı

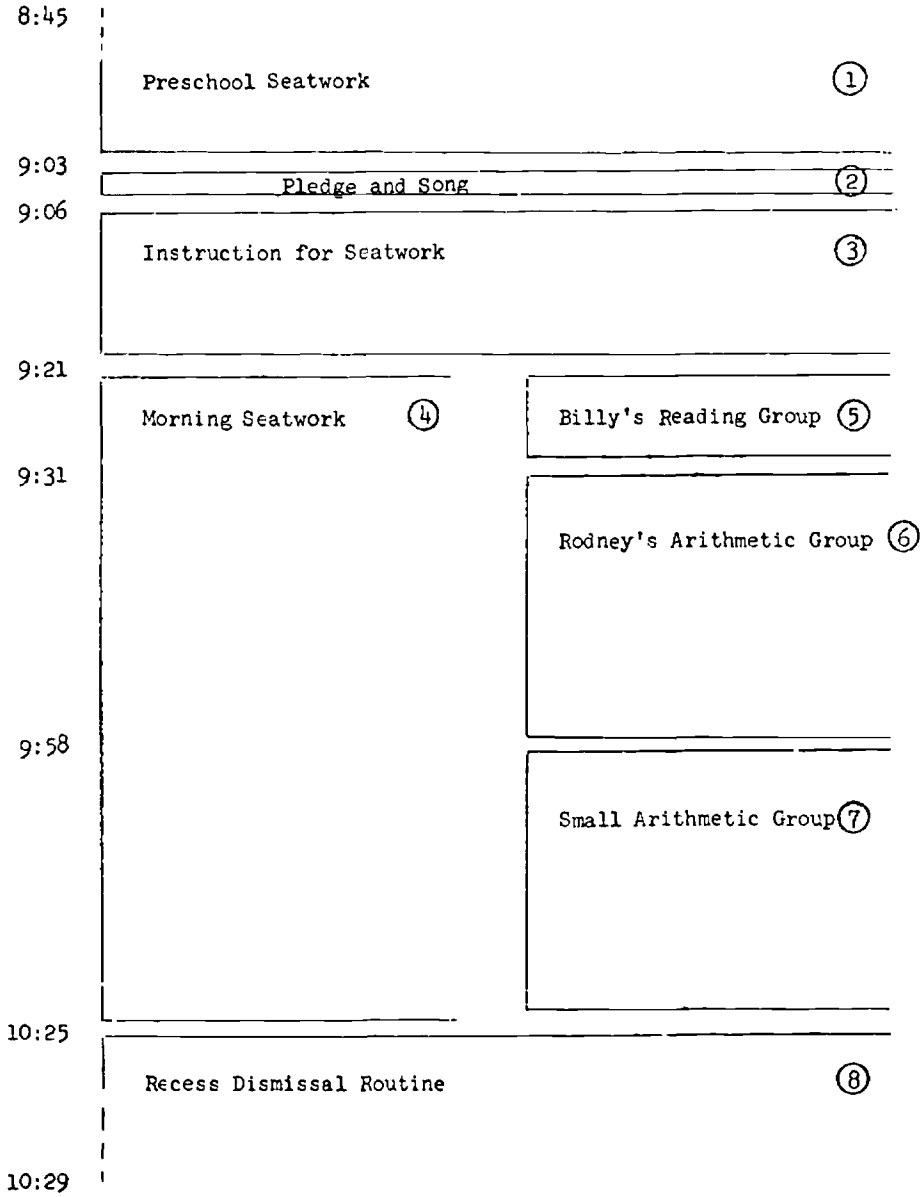
Mr. Bond



10:29 The students start to go out of the room.

Then two girls come back into the room--Julie and Betty--get their sweaters, then go out.

End of observation.



Organization of Mrs. Carr's Third Grade Classroom from:

8:45 a.m. to 10:29 a.m.

Mrs. Apple's Third Grade Classroom
A Chronicle of One Full Day

(Unsegmented)

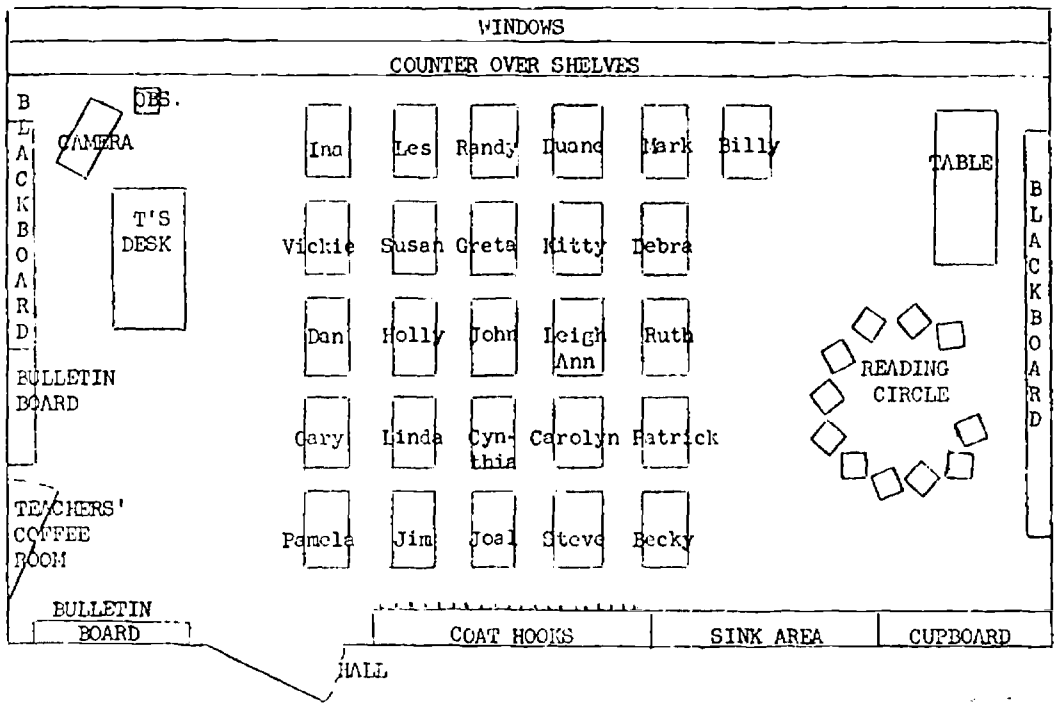
prepared by

Paul V. Gump
Midwest Psychological Field Station
Department of Psychology
University of Kansas

for

Training Materials for Research,
Development, and Diffusion Training Programs.
(USOE OEG 1-7-071018-4581 Guba)

Based upon research supported by U. S. Department of Health, Education, and Welfare, Office of Education, Bureau of Research, No. 5-0334.



Mrs. Apple's Third Grade Room

Mrs. Apple's class is located in the Sunnyside Elementary School. The building is one-story, modern and attractive; approximately 400 pupils are enrolled. The neighborhood homes are set in fine lawns and cost between fifteen and thirty thousand dollars. If the town (population 40,000) were larger, this pleasant section would be suburbia.

Mrs. Apple's classroom has an open, airy quality. The twenty-six students use moveable desks and chairs. Special places and groupings are frequently established. On the day of the following chronicle, pupil art work with the May motif (umbrellas, flower baskets) brightened up one wall.

A special feature of the room is the adjacent "teachers' coffee room," a small area apart, which can be used by special project groups.

Mrs. Apple is small, young and nice-looking; she teaches with enthusiasm.

Mrs. Apple May 26, 1965 Observer: Mr. Bond

8:40 A group of four or five children come into the room.

T says, "You may go into the Teachers' Coffee Room to work on your play." (The Teachers' Coffee Room is adjacent to the classroom.)

T starts placing a set of three mimeographed sheets on about eleven of the desks.

As T is doing this, students are coming into the room.

Many of the students are sitting at their desks; reading or working quietly; others are talking quietly.

Two boys are helping Mrs. Apple at the back of the room.

The principal, Mr. Smith, comes in and helps T hang a map above the blackboard at the back of the room.

8:58 Mr. Smith leaves the room.

T discovers that she has put the wrong map in the back of the room, so she gets the other map from the front of the room and takes it back and hangs it up.

The students are very quiet.

9:00 T opens the door to the Teachers' Coffee Room and says, "Please come in now, as the final bell has just rung."

These students come in and sit down at their desks.

T walks over and closes the door.

T asks, "Linda, will you put your paper over at the side of the room?"

T, now standing in the center front of the room where all may see her, says brightly, "Good morning!"

The children respond, "Good morning."

T says, "Would you please put your work aside and I'd like your attention right up here, please."

Mrs. Apple Mr. Bond

T says, "Randy."

This is a request for Randy to put away his work.

Randy continues to work.

Again, T says, "Randy" and finally, he puts it away.

9:02 T says, "It's a nice morning. Did you have a nice evening?"

The students answer, in unison, "Yes."

T says, "Yes. Well, I did,too."

T asks, "Billy, put your pencil down."

T then says, "Let's have our Pledge of Allegiance, please."

Ruth gets up to lead the students.

9:03 The children rise and say the Pledge of Allegiance.

With T playing the piano at the back of the room, they sing America.

Ruth and the children sit down.

T, returning to front center, asks, "Dan, do you have any news to share with us?"

The children can bring news articles to school and then read them to the class.

Dan shakes his head and smiles.

T says, "Holly?"

Holly shakes her head and smiles.

T then says, "John?"

John shakes his head and smiles.

T says, "Yes, Leigh Ann?"

9:04 Leigh Ann says, "I have some news to share."

Leigh Ann comes to the front of the room and begins reading a news story about a rain storm in Topeka.

Mrs. Apple Mr. Bond

Leigh Ann asks for help in pronouncing two different words.

T gives her this help.

9:06 Leigh Ann finishes reading this news story.

T says, "Boys and girls, how many of you heard that bad wind storm last night?"

Some of the children raise their hands.

Some of them say spontaneously, "I didn't hear a thing!"

Debra has her hand raised.

T says, "Did you hear the winds, Debbie?"

Debra replies.

T says, "Well, I got up and looked out the window when the wind began."

Then T says, "From the article, Leigh Ann, we see that we didn't have as much rain as we thought, but we did have a lot of wind. We only had .06 of an inch."

"In other words, it would be this kind of fraction that we have talked about."

T turns and writes .06 on the blackboard.

T asks, "Would .1 be larger or smaller?"

Several hands are raised.

T asks, "Kitty?"

Kitty answers correctly.

T says. "That's right. Now that wasn't very much rain but it was still recorded."

Steve raises his hand.

T says, "Steve?"

Steve has a comment to make about the rain storm.

Billy raises his hand.

T says, "Yes, Billy?"

Billy says, "I was awake at 12 o'clock last night and I heard the storm and I saw it."

T says, "My goodness! Were you awake that late last night?"

Billy says, "Yes."

T replies, "Maybe you'd better go to sleep a little sooner and get more sleep."

Vickie comes to the T's desk and reminds T that the attendance slip has not been filled out.

T, then, makes out the attendance slip and says, "Pamela and Cynthia are absent."

9:09 As T is filling out the attendance slip, she motions for Ruth to come to the front of the room.

Ruth has a news story to share.

Vickie leaves the room to take the attendance slip to the office.

Leigh Ann now returns to her seat and sits down.

The first news article that Ruth has is a recipe.

When she finishes, T says, "Did that sound good to you, Ruthie?"

Ruth says, "Uh huh."

T says, "I think maybe I'll fix that when I get home for lunch today."

Billy is waving his hand in the air.

T says, "Yes, Billy?"

Billy makes a comment about this recipe and also about what he eats.

T says, "Well, maybe you would like to try this tonight."

T now says, "Let's see if we can tell about our article, not just read it. If we want to make it interesting for the class, we have to tell about it, not just read it."

Mrs. Apple Mr. Bond

9:11 Vickie returns to the room after having taken the attendance slip to the office.

Ruth has another news article plus a picture about Queen Elizabeth.

T goes to the back of the room and pulls a map down.

T says, "Ruthie, can you show us where England is on the map?"

Ruth walks to the back of the room; looks at the map.

There are several hands raised and some "oh ohs."

Ruth can't seem to find England, so T says, "John, why don't you help her?"

John has had his hand raised.

John goes to the back of the room and finds Germany, where, according to the news story, the Queen had been visiting.

John returns to his seat.

T asks, "Carolyn, come up and find England on the map."

Carolyn can't seem to find it.

Kitty has her hand raised.

T says, "Kitty, can you find England?"

Kitty also comes to the back of the room.

Both Carolyn and Kitty look at the map. Ruth is also still at the back of the room.

T says, "Will it be near Germany?"

Dan has his hand raised.

T says, "Danny?"

Danny says, "Yes."

T says, "Can you find it for us, Danny?"

Danny comes to the back of the room and immediately points to England on the map.

Danny returns to his seat.

T says, "Good. See, Girls, it's right here," showing the two girls the location of England.

9:13 Carolyn and Kitty return to their seats.

T returns to the front of the room.

Steve has his hand raised.

T says, "Steve?"

Steve makes a comment about the country of England.

Ruth has come back to the front of the room and has another news article about a school teacher in Brownsville who taught school for 42 years and is retiring this year.

T says, "My goodness! That's a long time."

"What grades did she teach, Ruthie?"

Ruth says, "The third grade."

Steve has his hand raised.

T says, "Yes, Steve?"

Steve has a comment to make about Lou Merrill, the significance of which is not clear.

Billy has his hand raised.

T says, "Billy?"

Billy says, "I think that this has not been a very good year."

T says, "Oh, I don't know. This has been a pretty good year."

Ruth starts putting her news article on the bulletin board, which is between the two classroom doors at the front side of the room.

T begins to go over the outline of the day which she has put on the blackboard at the front of the room.

Mrs. Apple Mr. Bond

9:15 T says, "Now, I want good posture."

"New More Streets and Roads,[1] you have your assignments from yesterday."

The students are divided into three reading level groups. Each group uses a different reading book; the title of the book becomes the name of the reading group. The children remain at their seats as T goes over the assignments for the day.

"In your workbook, page 65, be ready to tell your stories."

Les raises his hand.

T says, "Yes, Les?"

Les asks a question.

T says, "That's fine."

T says, "And who will tell stories this morning? Randy, Mark and Les. Good," as these students raise their hands.

Susan raises her hand.

Susan says, "It's Becky, Les and Randy who are to tell stories."

T says, "That's right. Mark, you can do it tomorrow. Okay?"

Mark says, "Uh huh."

T points to the blackboard and says, "In the Looking Ahead[2] reading group, the questions for the quiz are over the last unit of reading. We'll have a quiz in the group."

Greta raises her hand.

---

[1]W. S. Gray, A. S. Artley, M. H. Arbuthnot. The New More Streets and Roads, Scott, Foresman and Co., New York, 1953.

[2]P. McKee, M. L. Harrison, A. McCowen, E. Lehr. Looking Ahead, Houghton Mifflin Co., New York, 1950.

T says, "Greta?"

Greta says, "I did it already."

T says, "Well, I misplaced the questions, so will you do them again, please?"

Greta says, "Uh huh."

9:17 Ruth finishes putting her news items on the bulletin board and returns to her seat.

T says, "In the reading group, If I Were Going,[1] we will review our worksheets. We'll have some group discussion. I'll go over the directions in just a little while."

Randy raises his hand.

Randy asks, "Are we going to have gym this morning?"

T says, "Yes. We'll have gym at 10 o'clock as always."

T turns to the blackboard and starts to say something, and then says, "Whoops. I'm not through yet."

T looks at the class until they are all attentive.

T says, "Now, if you've finished the work on the blackboard, what can you do.?"

Billy has his hand up.

T says, "Billy?"

Billy says, "We can work on our play."

There are several hands up.

T says, "Randy?"

Randy says, "We have spelling."

T says, "That's right. We have our spelling lesson to study."

T then writes this suggestion on the blackboard as well as the suggestion about working on the play.

---

[1]M. O'Donnell. If I Were Going. Roe Peterson, 1957.

Mrs. Apple Mr. Bond

Debra has her hand raised.

T says, "Debbie?"

Debra says, "Could we start on our arithmetic?"

T says, "No."

"We'll have our arithmetic test this afternoon and the reason we can't start it now is that it's a final test so we'll take it altogether. But now, some things are giving you trouble so you could study on your problem areas in arithmetic."

T writes extra arithmetic on the blackboard.

T says, "Now you want to study for your test this afternoon."

Then T writes long division and multiplication on the blackboard.

T says, "We should really emphasize long division and multiplication because that's going to be what our test is on mostly."

Les raises his hand.

T says, "Yes, Les?"

Les says, "Can we do the test this morning and then this afternoon both?"

T smiles and says, "No. Just this afternoon."

T says, "Now. Is there anyone who thinks that he doesn't have enough to do? Can you keep busy?"

And the children all nod their heads - yes.

T says, "All right, now you show me and let's get to work real fast."

9:20 T says, "All right, may I talk with If I Were Going."

Ordinarily a reading group would go to the table at the back of the room. In this case, however, T wants to get them started on the three mimeographed pages that she had put on their desks at the beginning of the day. These eleven children, (Kitty, John, Holly, Dan, Pat, Carolyn, Linda, Gary, Steve, Joal and Jim), remain at their desks while T discusses these sheets.

T walks over to the side of the room and stands watching the students.

Most of the students have taken out work and are beginning to work, settling down very quickly and quietly.

T continues to stand at the side of the room, smiling and watching them.

Some of the students are getting up to sharpen their pencils, get materials or to get a drink of water.

9:21 T says, "Page 1. If I Were Going."

T says, "There are two or three pages; now they aren't as hard as they look. It just took this many pages for all this material."

"John, would you read the instructions for the first page?"

John does so.

The first mimeographed page begins with a number of words which the children are to syllabize.

T says, "All right. Now I want you to use all of the rules that we've studied about syllables."

"If you are in doubt, who can be your friend to help you?"

Patrick has his hand raised.

T says, "Pat?"

Patrick answers, "The dictionary."

Mrs. Apple Mr. Bond

T says, "That's right. The dictionary is right up here."

T says, "Now. Can we say the rules that we have learned about syllables? Real quickly?"

Patrick raises his hand.

T says, "Pat?"

Patrick answers.

There is an extension of this answer by Holly.

T says, "Carolyn, can you give us another rule?"

Carolyn answers correctly.

Then T says, "Who can give me another rule?"

Carolyn raises her hand.

T says, "Carolyn?"

Carolyn gives another rule correctly.

9:23 Dan raises his hand and says, "I don't have any sheets."

T says, "I'm sorry, Danny, I didn't mean to leave you out."

T comes to the side of the room, gets Danny one of the sheets and hands it to him.

T asks, "Carolyn, will you read the next set of instructions?"

Carolyn does so.

> These instructions have to do with six more words that are to be divided into syllables.

Now T reads the instructions at the bottom of the page.

T says, "Now, you remember how we tried to tell the main idea of a story in one sentence? Well, that's what this is."

> The students are given four main story ideas. They are to write down the page and paragraph number that belongs with each idea.

Mrs. Apple Mr. Bond

T says, "Now, I've given you the page numbers where to look in your book."

Kitty raises her hand.

T says, "Kitty?"

Kitty asks a question about this material.

T says, "No. You look only on these pages right here."

Holly raises her hand.

T says, "Holly?"

Holly asks a question.

T says, "That's right. That's right."

"Now, any other questions?"

T continues, "All right. Now the last two pages. Now on this page, I left the page and paragraph out and I want you to write a whole sentence for the answer. I want a whole thought."

> The children are to answer questions about story content and then write the page and paragraph number in which the answer is given.

T says, "Yes, Carolyn?"

Carolyn asks, "What story is this on?"

T says, "Oh, I'm sorry. It's over the last unit that we study today. It's on the story The Adventures of Ali."

T says, "Now, are there any questions?"

"If you have any questions, you raise your hands and I'll come and help you."

"Now do a good job. I know that you'll do a good job if you concentrate real hard."

T leaves this group of students on their own.

Mrs. Apple Mr. Bond

9:27 T comes to the side of the room by the windows, puts a paper down and walks to the back of the room.

T says, "Now. Looking Ahead Group, you may have time to prepare for your play. May I talk with you just a moment?"

Billy comes over to T at the back of the room.

T talks with Billy briefly.

T says, "Debbie, would you gather up your group; and you may have about ten minutes to prepare."

These students get up from their seats and start to the front of the room.

> These seven children are: Billy, Ina, Debra, Greta, Vickie, Ruth and Leigh Ann. They will practice their play in the Teachers' Coffee Room.

T says, "Okay. Just a minute. Now you folks remember that we want to do it in our own words. You show the story in your own words. We're not going to use the books at all."

These seven students go into the Teachers' Coffee Room which adjoins the classroom.

There are two boys at the back of the room. One of them is helping T arrange the table and the chairs.

The students who are left in the room are very quiet and are studying very well.

T is still at the back of the room. She is arranging a table. She pulls the table and it makes a noise.

T says, to the students, "Excuse me."

Becky gets up from her seat and comes over to T.

Becky asks T a question about the material that she, Becky, is working on.

T answers her question.

Becky then returns to her desk.

T says, "Would you like to open the door, door helper, please?"

Mrs. Apple Mr. Bond

9:30 The door helper is Joal, who gets up, opens the door and then returns to her seat.

T comes to the middle of the room, stands and talks with Linda for a few moments, showing her something in her reading book.

T walks to the back of the room again, then over to the window side of the room, raises the shades and opens more of the windows.

T says, "New More Streets and Roads," referring to the reading group, "are you ready for worksheet correction?"

Randy says, "No. I'm not ready."

T says, "I'll give you a few more minutes, then."

9:32 T comes over to Susan's desk and talks with her for a few moments.

T then goes over to the side of the room and gets a drink.

T says, "Pat, would you come to my desk for a few moments, please?"

T moves over to her desk, with Pat following.

T says, "Take these cards and write down on them the names of the different characters in the story that you are now reading."

T gives him a marking pencil and some large cards.

Patrick returns to his desk.

T walks over to the door leading into the Teachers' Coffee Room, says something to the students in there and comes back to her desk.

9:34 Susan returns to her desk after going to Becky's desk and talking with her quietly for a few moments.

T now walks over to Holly's desk, looks at the work that Holly is doing; says nothing but nods her head, affirming her work.

There is some noise in the Teachers' Coffee Room so T goes over, opens the door and enters the room.

Mrs. Apple Mr. Bond

T smiled at the students in the Teachers' Coffee Room as she entered.

9:35 Now she walks back out and says, "All right, now, New More Streets and Roads, let's meet together because it's about time for us."

The New More Streets and Roads reading group will gather around a table at the back of the room. There are six children in this group: Mark, Duane, Randy, Les, Becky and Susan.

Besides this group, some children work at their seats and others are in the Teachers' Coffee Room.

T walks over to Randy's desk.

Randy is apparently not finished.

But T says, "That's all right."

Some of the students have already come to the back of the room to the table.

9:36 All of the students are seated around the table with the exception of Susan.

T gets up, gets some more books and gives them to Susan.

T comes over and sits back down.

Susan distributes these books.

When she is finished with this task, Susan also sits down.

9:37 T says, "Lay your books aside."

"We'll check our workbooks first."

"Let's start with page 61. I know that there are a couple here that are a little bit hard."

T says, "Les, it's on page 61."

"Everyone with us now?"

"Duane, sit up right, nice and tall so I can see you."

Mrs. Apple Mr. Bond

T continues, "Now, let's read a paragraph and the you tell me which ending you chose to be correct."

T says, "Les, please," and smiles at him.

Les was looking on
the next page trying to
complete his work.

T then says, "Susan, would you like to read first?"

Susan reads.

T says, "All right, is this correct? Does everyone agree?"

The students say "Uh huh."

T says, "All right, fine!"

"Number 2, Becky."

Becky reads.

T says, "That's right. Does everyone agree?"

Jim had previously left the room,
reason unknown. He comes back into
the room and returns to his desk
to continue working.

.....

A small portion of the events
go unrecorded as O changes
tapes

.....

The story that this group is working
with has to do with the life of a
cowboy. The worksheet that they are
working on has a number of unfinished
paragraphs, each followed by two
sentences. The children are to
read a paragraph and finish it with
the correct sentence.

9:41 Duane and Randy both make comments about the round-up.

T says, "That's right," and smiles.

T says, "Yes, Mark?"

Mark makes a comment.

Mrs. Apple Mr. Bond

T says, "All right, fine! Now you know that it's yours if it's marked just like we put our names on our own materials."

T says, "Now. We'd better go on."

T asks, "Duane, read the next one."

Duane starts reading but has difficulty with pronouncing some of the words.

The other students raise their hands.

T helps Duane out.

Duane continues to read.

T says, to Jim who is doing seatwork, "Jim, would you knock on the door of the Teachers' Coffee Room?"

This is a signal to the group working on the play, that it is time to come back out.

Jim gets up from his desk, knocks on the door and returns to his seat.

T says, to the reading group, "All right, go on."

T then says, "Excuse me just a minute."

T gets up, goes over to the Teachers' Coffee Room and says, "It's time to come out now."

The children then come out and return to their desks.

T says to them, "Now you folks be real quiet and get right busy on your reading work. Please."

9:43 T returns to the table and sits down.

T says, "Now, Becky, you chose what answer?"

The New More Streets and Roads reading group had sat quietly and waited, while T was gone.

Mrs. Apple Mr. Bond

Several of the children at the table start talking.

T says, "Wait just a minute, now. You wait until I finish talking."

T finishes her comment about posts.

T says, "Now which one of the two do you think would be right and why?"

Several hands are raised.

T says, "Randy?"

Randy gives his answer.

But T says, "I'm sorry, but you'll have to proofread a little bit better than that, won't you?" indicating that Randy had not written out his answer correctly.

9:44 T says, "Now. Would you like to check in your reader to see if you can find the place that will tell us whether you have the correct answer or not?"

The students say, "Okay."

They get out their readers.

T says, "Les, what's the matter?"

Les says nothing.

Les finally opens his book.

Randy has found the place in the book and has the correct answer.

T says, "Now. Who's a good detective?"

Randy waves his hand excitedly in the air.

Then Mark, stands, and waves his hand in the air.

T says, "Tell me what page it's on, Randy?"

Randy says, "238."

He stands and begins to read and proves the correctness of his answer.

Mrs. Apple Mr. Bond

9:45 Randy finishes reading.

T says, "All right, now let me think about this question just a minute."

T continues, "Does this tell me how he practiced, do you think?"

Randy says, "No."

Randy sits down.

T says, "You didn't read me the part about how he practiced."

Susan raises her hand and says, "It's on page 236."

T says, "All right, let's see if Susan's found the place."

They all turn to page 236.

Susan begins to read.

T says, interrupting, "I'm sorry. I can't seem to find the place that you're reading from. Would you tell me?"

Susan says, "It's the fourth paragraph."

T says, "All right."

Susan begins to read again.

Susan finishes reading.

T says, "All right."

"Now. What are they talking about here, Randy?"

Randy answers, but only partially.

T says, "Well why?"

Mark starts to raise his hand, then answers spontaneously and gives the correct answer.

T says, "All right, fine! That's right."

T says, "All right."

T repeats the correct answer.

Mrs. Apple Mr. Bond

T then says, "All right, now if that's not the answer that you had, let's please mark it wrong."

T says, "Now. May your books down, please."

T says, "Randy, I don't think that that's very good for you-- to be so close to your paper. Would you sit up correctly, please."

Randy sits up.

T then says, "Mark, you're next."

Mark starts to read.

T interrupts and says, "Wait, just a minute, please, Mark."

T looks at the group and says, "All right. Everybody's eyes on his paper, please."

T says, "All right, Mark."

Mark finishes reading the paragraph and the answer.

T says, "All right. That's right. He practiced patiently."

9:48 T says, "All right, let's go on to the next one. Susan."

As Susan reads the paragraph, T looks up and visually checks up on the students who are working at the desks.

> This group of students is studying very diligently with the exception of Billy, who has come up to Ina's desk.

Susan finishes reading.

T says, "Becky, you're next."

Becky reads the next paragraph.

T says, "All right. Does everyone agree?"

They nod their heads - yes.

T then says, "Naturally, it's kind of dirty out there in the pen. Lots of dust and not much grass. When they stamp on the ground, the dust flies and the cowboys get kind of dusty. How many of you would like to be a cowboy?"

Mrs. Apple Mr. Bond

Les raises his hand.

T says, "Oh! Just one of you? Well tell me why you wouldn't like to be cowboys?"

Randy says, spontaneously, "You have to work too hard."

Mark gives his reason why he wouldn't.

Randy says, "My brother would like to be a cowboy."

T interrupts, saying, "Just a minute."

T looks over at Billy who is at the side of the room by the windows, getting a paper.

T says, "What is that?"

Billy says, "Some arithmetic."

T gets up and walks over and says, "I'm sorry, but that's our final test for this afternoon."

9:50 T then says, "All right, you come over with me and I'll get you some extra arithmetic to do."

T does so.

T returns to the reading group at the table and says, "Pardon me. I'm sorry I had to interrupt our reading group."

T says, "All right. now let's go on, please. Les?"

Les reads the next line and answers it correctly.

T says, "Fine. That's right."

T continues, "The next one, Randy."

Randy reads the next line and answers it correctly.

T says, "All right. Does everyone agree?"

The children say, "Yes."

T says, "Would you have liked going to the round-up?"

They all nod their heads - yes.

Some of the group start to talk.

T holds her finger up to her lips for them to be quiet.

T says, "Les?"

Les has a comment about one of his previous experiences at helping brand a cow.

T says, "Good. That's fine."

T then says, "Randy?"

Randy has a comment to make about one of his experiences.

T says, "All right. Now that's right. Isn't this what you learned in your story today? Very good."

T says, "All right, now, let's go on. Duane?"

Duane reads the next question.

Duane finishes reading.

T says, "Isn't that nice? Did you notice how Duane read without any errors?"

Duane smiles.

T says, "All right."

"Let's try the next one. Mark?"

While Mark is reading, T says to Les, "I beg your pardon, Les."

> This is a comment designed to get Les to settle down and pay attention.

Mark continues to read.

T says, "No. That's not the correct answer. Randy, what would be the right answer?"

Randy, who had his hand raised, reads the correct answer.

T says, "That's right. Okay, Susan?"

Susan reads the next one.

A boy has come in the door that leads from the hallway.

Jim gets up from his desk and goes over and talks to him.

T does not see any of this.

Susan finishes reading.

9:54 T says, "Do you think it would take a lot of work to be a good roper?"

T starts to say something else, then says, "I beg your pardon. I was talking."

This comment was directed at Randy who is restless and not listening.

T continues, "Yes, it would take a lot of hard work to become a good roper and a good cowboy."

T then says, "All right. How many questions were there on the worksheets?"

Mark answers.

T says, "All right, now tell me how many you got correct."

While T was saying this, Jim came back to the back of the room, stood for a few minutes, then returned to the door. Now he comes back to the back of the room again.

9:55 Jim stands at the side of T.

T says, "Now. Let's close our workbooks, so that we can start on our words, please."

Jim hands T the note that the boy gave him at the door.

T reads the note.

T writes something on the note.

Mrs. Apple Mr. Bond

While she is writing, T says, "Sit down in your chairs, please." This comment was directed to the students in the reading group.

> T now hands the note to Jim which he takes to the boy at the door.

T says, firmly but with a smile, "Now. Les, put your pencil down, please, and listen."

Les was still trying to finish some work in his workbook.

T makes a comment.

All the students are paying attention, except Les.

T says, "What's the matter, Les? Would you please just lay your workbook down and get ready, please."

They have all picked up their books and turned to the proper page.

9:57 T gets up and puts the initials of the names of each student on the blackboard.

Susan gets up and stands by the blackboard directly under these initials. She will keep track of how many words each student can pronounce correctly.

T asks, "Mark, will you begin?"

> At the back of their reading books, there is a list of vocabulary words. Each student will continue to pronounce words until he makes a mistake. Then the next pupil will start pronouncing. The object of the game is to see who can pronounce the most words.

Mark begins reading the series of words.

Randy raises his hands, interrupts and says, "Mark didn't pronounce that word just right."

T says, "Well, aren't you being awfully critical?"

"The object of this game is to see if we know all of the words."

Mrs. Apple Mr. Bond

Billy, who should be at his seatwork, is over at the sink, "cleaning up" the area.

T, noticing that Billy is not at his desk says, "Billy, I appreciate your help but I wish that you would do your work first."

He dries his hands, returns to his desk.

T says, "All right, Mark, you may go on."

Mark continues to pronounce words.

Becky raises her hand.

Becky says, "Did he say that right?"

T says, "Yes, he did. He didn't mispronounce that. He pronounced it correctly."

Mark continues to read the words.

T says, "Whoops."

So the students raise their hands.

T says, "All right, count up and see how many words you pronounced."

Mark counts the words.

Mark says, to Susan, "42."

Susan writes 42 on the blackboard.

T says, "Duane, you're next."

Duane starts pronouncing words.

T, turning around, says, "Steve and John, you have been doing too much talking and not enough working."

Steve and John return to their desks and begin reading.

Duane gets stuck on a word.

Mrs. Apple Mr. Bond

T says, "All right. We'll have to stop there, then, if you can't get that word."

"All right. My goodness! That's good, Duane, you pronounced a lot of words."

10:01 T says, "We'll continue after recess, after we're back."

T says, "We're going outside today and I'm also going to take Mrs. Brown's class outside because she's hurt her leg badly and can't go out, so both of our classes will go out together."

"Now, would you go back to your seats and sit down, please."

10:02 The students in the reading group begin going back.

All the students except Susan, have started back to their seats.

T returns to her desk at the front of the room.

T says, "Boys and girls, take your seats please."

Susan returns to her desk.

T says, "Now these people who are working on the play will have to do so that it doesn't disturb anyone around. Now you sit at your desks."

"Now, while you were together, (in the Teachers' Coffee Room), you were supposed to decide on what each person was to do. You're not supposed to be talking now."

T leans over to Ina's desk, looks at her paper and says, "That's fine."

T moves over to the side of the room.

There are four boys at the back of the room getting several balls out of the closet.

10:04 T says, "I think I just made a statement back there. Did you hear me?"

T is making this comment for the benefit of two students who are talking at the back of the room.

T says, "Rows 5 and 4, would you pass quietly, please."

Mrs. Apple Mr. Bond

T dismisses the class for recess by rows, as each becomes ready. The children may go to the restroom first, after which they return to the classroom and line up by the door. Then all will go outside to play.

These two rows go out of the room.

T says, "You boys who are getting the balls, will you come back to your seat, right away."

The boys do this.

10:05 T says, "Row 3 may pass quietly."

T says, "I can't call your row unless you're quiet."

T says, "Row 2."

Some of the students are over at the side of the room by the door. Some of them have gone out of the room to the restroom.

T walks over to the side of the room, gets a paper, and puts it on her desk.

T looks at a paper that Ruth brings to her.

T says, "That's fine," and puts this paper on her desk.

T walks back over to the side of the room by the door and says, "Class, recess begins now. It's up to you."

"Now, Row 1 may pass quietly, please."

Debra and Linda are still at their desks.

10:06 Debra gets up and goes over to line up by the door.

Then Linda does the same.

All of the students are lined up at the door.

T says, "Kitty, go to Mrs. Brown's room and tell them that we're ready."

The students are standing very quietly.

Mrs. Apple Mr. Bond

T says, "Keep the balls still, please. Don't bounce them."

Mark leaves the line, goes over to his desk to get the ball he had there, and then returns to the line.

10:07 They continue to wait quietly for Mrs. Brown's class.

T says, "Debra, may I see you after we get outside?"

Debra nods her head - yes.

T says, "John and Gary, sit down, please."

They have been juggling with the balls which they have been holding.

T says, "I know that we have to wait a few moments, but we need everyone's help. Did you give us your very best help? Just remember that everyone must do his best part. You two boys follow up the back of the line."

They start to go out of the room.

10:09 They are all out of the room.

End of observation.

Mrs. Apple Observer: Mrs. Noble

Recess is over.

The children begin coming in.

10:29 T comes in and says, "Children, get right to work because you have a lot to do."

T says, "Bill, stop playing with that ball and give it to Pat so that he can put it away."

Pat is the ball caretaker for the day.

T helps Holly with a question on her worksheet.

The New More Streets and Roads reading group has gone back to their table.

T says, "Now I want to see everyone working!"

T goes back to the cupboards, extricates Randy, who has been fooling about, and closes the door.

T says, "Bill, please get back to work."

Bill had been dallying by the sink.

10:31 T says, "Vickie, will you please return to your seat."

T goes over to the reading circle table and sits down.

The New More Streets and Roads reading group will continue with their word pronunciation game that they started before recess.

Randy begins reading words.

The children gave out a gasp at one word and hands went up.

T says, "I need hands only. No words."

T says, "Duane?"

But Duane is mistaken in saying that Randy made a mistake.

10:32 Randy goes on reading.

He makes a mistake on the word women.

T says, "We always have trouble on that, don't we?"

Mrs. Apple Mrs. Noble

T then says, "Les, sit up straight."

"What does plural mean, Les?"

Les does not know.

T continues, "Women is plural. Do you know what that means? Can any of you remember?"

T goes on, "Does women mean more than one or just one?"

T says, "Susan?"

Susan says, "One."

The children say, "Oh!"

T asks, "Susan, use the word in a sentence."

"Now, children, just wait a minute."

T repeats, "Susan, use it in a sentence."

Susan does not do this.

T says, "Becky, you give us a sentence using women."

Becky says, "There are many women in the world."

T says, "All right. Is that singular or plural? Is that one or more than one?"

T says, "Susan?"

Susan answers correctly.

T says, "All right, plural means more than one."

T says, "All right, we'll have to stop now."

"Randy, do you want to count your score?"

"Is that more than you had last time or not?"

Randy says, "More."

T says, "Oh. More. Good!"

T says, "All right, Les. We'll begin with what?"

Les says, "Direction."

Mrs. Apple Mrs. Noble

10:34 Les begins reading from the list of words.

> Billy and Vickie have gotten up from their desks to get a drink of water.
>
> T says, "Billy and Vickie, sit down."
>
> Vickie sits down but Billy takes a drink before he goes back to his desk.
>
> T continues, "No, Billy. We've already had a break this morning."
>
> "You ought not to interrupt the reading group this way."

T then says, "I'm sorry, Les, for this interruption."

Les makes a mistake in pronunciation.

Hands go up and gasps are heard.

T says, "Just a hand, not a voice. Let's be courteous."

T says, "Les, what kind of a mistake did you make?"

Les says, "It should be broke instead of broken."

T then says, "Susan, write 25 under Les's name."

Susan does so.

Susan is continuing in her role of scorekeeper.

Becky starts to pronounce words.

T says, "Becky, point to the word."

T then says, to the rest of the group, "Are you with us?"

Becky goes on reading the words.

T says, "I heard an error there. Did you catch it, Mark?"

Mark says, "Yeah, it should have been spilled," in regard to Becky's pronunciation of it.

Mrs. Apple Mrs. Noble

T says, "No."

"That's correct, but it was the word before it."

The word that T is referring to is slid.

Randy raises his hand.

T says, "Randy?"

Randy answers correctly.

T says, repeating after Randy, "Slid is correct."

Randy goes on talking.

T says, "Just a minute, Randy."

But Randy continues with another criticism of the way that Becky pronounced the word slid.

T says, "Becky, pronounce it again."

Becky does so correctly.

T says, "Now, Randy, don't be so picky."

10:37 T says, "All right, Susan, now you start."

T continues, "Now, Susan, nice and loud."

Les has his hand up and has had it up for a long time.

T says, "Wait just a minute, Susan."

T says, "Yes, Les?"

Les makes a criticism.

T says, "Susan, say it over again."

Susan makes a mistake.

T says, "That's right, it's something else."

T says, "Let's close our books now."

"We only have time for one round today."

Mrs. Apple Mrs. Noble

T says, "Let's see if we are improved."

T says, "Did you improve, Mark?"

Mark says, "Yeah."

T says, "Yes, you did."

"You did,too,didn't you, Duane?"

T then says, "Oh, no, you had such a large score last time, didn't you?"

T goes on, "Randy did better this time."

Les gives his accounting.

Susan gets anxious to tell.

T says, "Just a minute, Susan."

T then says, "Becky, how did you do?"

Becky gives her score.

T says, "Well, we have improved, haven't we?"

T continues, "How did you come out this time, Susan? Not as well, did you?"

Susan gives her score.

T then says, "Susan, you may erase the board now."

Susan does so.

T says, "Now we are going to have our stories today. We're really taking a long time for our reading group today, but we have a lot of work to do."

> The students are to choose a story in their reading book which they will tell about to the group. They are not supposed to read it, but tell it.

T says, "Now, who is going to read our story today?"

Hands go up.

T asks, "What were the directions the other day?"

Mrs. Apple Mrs. Noble

T says, "Randy, can you tell us?"

Randy says what he thinks the directions are.

T says, "No, we didn't say to read the story. Were you here when we discussed the directions?"

Les has his hand up.

T says, "Les?"

Les says, "We were to read the story and then tell the group about it."

T says, "Mark, would you like to tell us your story and let's close the book. This will be a story hour and let's listen with our ears and give attention."

Mark says, "Am I reading?" (Meaning, "Is it my turn?")

T says, sharply, "What do you mean, are you reading?"

Mark backs down and says "Oh, yeah."

Becky has her hand up.

Becky says, "I think that it's my turn."

T asks, "Mark, is Becky first?"

It turns out that she is.

T says, "Becky, come around the table and stand by the blackboard, so that we can see you better."

Becky does so.

10:41 Becky begins to tell her story.

The name of Becky's story is The Knee-High Man.[1] The gist of her story is:
A knee-high man wished to be big.
He asks for advice from a horse
and from a cow on how to grow big.
But their methods don't work for
him. Finally, he asks the advice of
an owl who points out to the man
that he has no need to get bigger
so the little man stays knee-high.

---

[1]W. S. Gray, A. S. Artley, M. H. Arbuthnot. The New More Streets and Roads, Scott, Foresman and Co., New York, 1953.

T says to Greta, who is sitting at her desk, "Greta, you should be working at your desk, not talking."

Becky does not finish her story satisfactorily; her audience is left unclear about some of the points of the story.

T, prompting Becky, says, "All right, that's what makes the cow grow nice and large, isn't it? Did this help this little knee-high man?"

Becky shakes her head - no.

T goes on, "So he had to be satisfied with being small, didn't he?"

T then says, "Now who has it next? Randy, were you going to give your story?"

Randy nods his head - yes.

Randy says, "Shall I stand up?"

T says, "Yes."

T says, "Yes, your book should not be open."

Randy stands up and begins his story.

The name of Randy's story is The North Wind.[1] The gist of his story is: The North Wind and the Sun have an argument about who is the strongest. They decide to resolve the issue by seeing which one can make a traveler take off his cloak. The North Wind huffs and puffs, but cannot blow it off. The Sun, by making it very hot, succeeds in getting the man to take off his cloak, and is the winner of the contest.

T interrupts and says, "Randy, you're not standing very straight."

---

[1]Ibid.

Mrs. Apple Mrs. Noble

Randy corrects his posture and continues with his story.

> Meanwhile, the children are working at their desks; everybody is quiet and working pretty well at a conglomeration of activities. O sees maybe 7 worksheets, some library books, some reading books and also some art.

Randy has another story. He goes back to his book to check upon the name of it. While doing so, he continues to talk.

T says, "Randy, don't talk while you're walking."

T pulls him back over to his original standing position.

Randy, however, goes back over to his chair by the table, to check his book again.

T waits, smiles and says, "All right."

10:44 Randy returns to where he was standing and begins his story.

> The name of Randy's second story is The Three Giants.[1] The gist of this story is: Long ago there lived a wicked Queen who had a beautiful daughter. The Queen promises to marry her daughter off to the man who can answer three very difficult questions. Many try and fail. One prince, on his way to try, meets three giants; one with long arms and legs, one with super sight and one with super hearing. With their help, the prince is able to answer all three of the questions and he and the princess live happily ever after.

Randy forgets part of the story, and he says, "I can't remember," so he goes back to look in his book.

T says, "That's all right, just tell us what you remember."

---

[1]Ibid.

Mrs. Apple Mrs. Noble

Randy says, "Well, I can't remember."

Randy shuffles through his book.

T says, "Becky, we're supposed to keep our books closed."

T continues, "We're listening to Randy. He's going to tell us about it."

Randy, in a tone of discovery, says, "Oh, yeah."

Randy returns to his standing position and goes on with his story.

There is a short pause.

Randy again forgets a particular portion of the story, and he says, "I can't remember," and goes back to his book.

T says, "Don't go back to your book. Just tell us what you remember."

T says, "What would be a good way to end this story, Randy?"

Randy says, "I don't know," and again turns to his book for the official ending sentence.

T says "That's all right, honey, you did fine. Do you want to skim over just a minute and think of a good ending?"

T says, "I think he did a nice job telling about it; it sounds like a good story, doesn't it? How many of you would like to read The Three Giants?"

Three hands go up.

T says, "Quickly, honey. Let's hurry, Randy. We have a lot more to do."

Randy is looking at his story in the book.

10:48 T says, "Randy, could you close your book now and just quickly tell us an ending sentence."

Randy still wants to find out what the Queen's three questions were to the prince.

Randy finds two of them, and wants to tell the group.

T says, "All right, Randy."

T says, "Mark, you're not paying attention."

Randy is going on with an extensive summary of this story.

T glances at the clock and continues smiling at him.

10:49 Randy finishes his recital.

T says, "Well, fine."

T then says, "Boys and girls, in telling our story, this helps us to think back on the details, doesn't it? But do we have to think of every single thing (detail) when we tell it back to the group? We should just tell the general idea of the story."

Randy says, "But these things were important to my story!"

T says, "Yes, I know they were."

Randy makes a comment.

T says, "You did. Now you were ahead of us, weren't you?"

T says, "All right, you boys and girls may take your seats. That's all we have time for this morning."

The six children in the New More Streets and Roads reading group return to their desks. The next group that will meet with T is the If I Were Going reading group. The children in this group are Kitty, John, Holly, Dan, Patrick, Carolyn, Linda, Gary, Steve, Joal and Jim.

T says, "If I Were Going group, would you stand by your desks, please."

10:51 Some of the children in the class begin standing by their desks.

T says, "Pat, will you arrange the chairs for me?"

Patrick will arrange chairs into a semi-circle at the back of the room and to the side of the table.

Patrick does so.

Mrs. Apple Mrs. Noble

T deals with Debra.

This phrase, deals with, is used when O is not near enough to hear the content of the interaction between T and the student.

T reprimands Billy.

The phrase, reprimands, is used when the content is not clear.

Linda has a complaint.

T settles it with her.

T walks to the back of the room.

T says, "Steve, Joal and Jim, come on back now."

10:52 T reprimands Les.

T then says, "All right, the rest of you come on back here now."

T says, "John, we are going to have a discussion together; we'll check the worksheet in the morning."

John reluctantly leaves his desk and comes back to the reading circle.

T says, "Danny, pick up your chair to move it; don't pull it."

T says, "Jim, push over and make a place for people to sit."

T says, "John, think about each other" as Dan tries to squeeze his chair in.

John moves over.

T says, "Randy and Becky, get in your seats. We're working at our seats this morning."

T asks, "Are there any questions about the story this morning?"

Kitty raises her hand.

T says, "Well, Kitty, you bring your paper to my desk later on and I will help you."

10:54 T says, "All right, we're going to have a little review now."

"I would like to hear you read for just a moment. If we could finish our last part of the book, now that Mr. Sanders and his wife are coming back from their trip."

T continues, "They have visited lots of countries in this book, haven't they? They are going to arrive home today."

"I'd like to have you read out loud this part."

T questions, "Where are they coming back to?"

T says, "Steve?"

Steve answers correctly.

T says, "I would like to hear you read out loud today. It's been two or three days since we have. Page 330."

T repeats, "Joal, page 330."

T looks pointedly over at Mark, who is not paying close attention to his seatwork.

T then says, "Jim, wait a moment until you have everybody's attention."

T says, "Watch your audience."

10:55 Jim begins to read.

T taps her pencil, meaning that whispering among those doing seatwork must stop.

T says, "Jim, let's wait until John has found the page."

T says, "Are you with us, John?"

After a long pause, John shakes his head - no.

T says, "Dan, will you help him?"

T says, "Now, John, you must keep up."

Mrs. Apple Mrs. Noble

T then says, "All right, Jim, go on reading."

T says, "All right, Pat." (meaning for Patrick to start reading).

Patrick begins to read.

T helps Patrick out as he reads.

T says, "Kitty, can you help Pat?"

T taps her pencil to reprimand Billy.

Patrick continues to read.

10:53 Patrick finishes reading.

T asks, "What does it mean, in spite of?"

Kitty raises her hand.

T then asks, "Kitty?"

Kitty answers correctly.

Gary is the next student to read.

T says, "Billy, you are making too much noise when you roll that paper."

Gary continues to read.

T says, "All right, Gary, you have to read nice and loud so Mrs. Apple can hear every word."

Gary continues reading a little louder.

T says to the children at their desks, "All right, I shouldn't hear a bit of talking, please."

T continues, "Linda, would you like to go on?"

Linda begins to read.

T says, 'Thank you, Linda," as she finishes.

T says, "I'm not making our readings very long because I'd like to hear everyone read today."

T says, "All right, Kitty. Nice and loud."

Mrs. Apple Mrs. Noble

11:01 Kitty begins to read.

T taps her pencil to stop some whispering that is going on among the children at the desks.

T says, "All right, good," as Kitty finishes reading.

T then says, "Danny, will you start."

Danny begins to read, after a short pause.

Meanwhile, at their desks, Randy and Les are working together with their English workbooks, as are Ruth and Greta.

A couple of children are still working with their art.

Two other students are practicing spelling by themselves.

Danny is still reading.

11:03 T says, "Joal, can you help Danny out?"

Danny is having trouble with some of the words.

T says, "Danny, try and read a little louder so that we can hear you."

Dan has trouble with the word caravan.

Steve has his hand raised.

T says, "Steve?"

Steve says, "Caravan."

Dan continues to read, without repeating the word.

T says, "Wait a minute, Dan, you left out caravan."

Dan goes back and repeats caravan.

11:04 T says to some of the children at their desks, "That's all for the play. We'll have to go with what we have. The scissors are too disturbing."

Mrs. Apple Mrs. Noble

This remark is principally aimed at Billy and Ina. Billy looks unhappy.

T then says, "All right, John, your turn."

T motions to Becky to be quiet.

John continues reading.

Billy has written a note to Debra regarding the props for the play; however, he can't pass it to her without attracting the attention of T.

T says, "What does it mean - stolen a march?"

Patrick raises his hand.

T says, "Pat?"

Patrick answers incorrectly.

Jim raises his hand.

T says, "Yes, Jim?"

Jim does not have the right answer.

T says, "Kitty?"

Kitty also answers incorrectly.

T then says, "Jim?"

Jim does answer correctly.

T says, "All right, Joal, your turn."

11:05 Joal begins to read.

T says, "Becky, would you please close the door?"

Billy is still trying to get Debra's attention by throwing spit balls at her. Finally Debra catches on, and Billy shows her the note.

T sees a part of this action, and taps her finger on the table.

Mrs. Apple Mrs. Noble

However, Billy and Debra still communicate, mostly verbally.

11:07 Joal is still reading.

Debra gets up from her desk to go over to talk to Billy, then changes her mind and returns to her seat.

T notices all of this action.

T says, "All right, let's go on. Stephen."

Steve begins to read.

T says, "No, Steve, that's not right."

As Steve is reading, T taps him on the shoulder and whispers, "Speak up, we can't hear you."

Steve reads a little bit louder.

Steve finishes reading.

T says, "All right, I'm sorry we didn't have a chance to hear every person."

"Holly, did you have a question?"

Holly's hand had been up, but she shakes her head - no.

T says, "That must have been a very interesting poster that Mr. Sanders was looking at in the railroad station.

This is in reference to their story that had to do with the return of Mr. Sanders from a trip and how a poster in the railroad station got him interested in making another trip.

T says, "Did you enjoy this book?"

"Did you learn a lot about different countries? We learned about them in geography, didn't we? How many of you think we learned something new about some countries that you didn't know before?"

Hands go up in the reading group.

T looks at Steve and says, "You didn't learn a thing new in that book?"

Apparently, Steve did not raise his hand.

Steve grins.

T says, "I don't think you're being very honest, are you?"

Jim says, "He's kidding."

T says, "Well, I want to find out..."

Patrick interrupts and says something to Jim.

T says, "Excuse me!" T directs this comment to Patrick and Jim.

T continues talking.

John interrupts with a comment.

T says, "If you want to say something, would you raise your hand?"

T says, "Now children, I have written names of the different countries that Mr. and Mrs. Sanders visited, and I would like to have you pick one of these out of the pile and tell what you learned from the book about this country and add anything else you might know about the country that wasn't in the book. You know, customs and industries."

T has written down the names of the different countries on slips of paper which are about one foot by two and a half inches.

T says, "All right, who is going to be the first one to draw?"

T says, "Pat's going to be brave. All right."

Patrick draws a slip of paper.

T says, "You stand up here in front of the map and read the name."

Previously, T has drawn down the map on the wall that is behind the reading circle.

Mrs. Apple

Mrs. Noble

Patrick has gotten Brittany.

Patrick grimaces.

T says, "All right, Brittany. Can you find Brittany on the map first? Can you find your country?"

Patrick stands there and looks at the map and finally he says, "No."

T says, "Carolyn, can you help him?"

Carolyn points to Lapland.

T says, "Kitty, what is the name of the country that Carolyn pointed at?"

Kitty says, "Lapland."

T then says, "Joal, can you find Brittany?"

Joal points to Great Britain, which is accepted as a correct answer.

T says, "Close your books."

Patrick, continuing his recitation, says, "Well, their industry is fishing and baking and most of the people sleep in something like cupboard boxes."

T says, "I didn't understand that. Cupboard boxes?"

Patrick says, "Yeah."

T says, "Do you remember anything else about the country? What else?"

Patrick says, "Well, they have a Feast Day."

T says, "Well, tell us about the Feast Day."

Patrick says, "Well, everyone is there, and they go out fishing until their boat is filled and then they come back in and artists are there, and they paint pictures of people."

T reprimands Steve.

T says, "All right, it's quite an exciting day for them, isn't it?"

T says, "Your books should be on your lap quietly," reprimanding any of those who have their books open.

Mrs. Apple

Mrs. Noble

T asks, "Can anyone remember anything more?"

Joal says, "Also in Brittany they eat snails with sauce."

T says, "Oh yes," and smiles. "That was the country, wasn't it?"

T says, "Yes, Steve?"

Steve makes a comment.

T says, "Why don't you open your book and look at the map, and we'll be sure that we can find Brittany. Who can find it?"

"What page is it on?"

Joal says, "Page 146."

T says, "Page 146. All right."

T says, "I don't think that's the best one, is it? Pat?"

Patrick goes up to the big map again.

John is anxious; he knows where it is.

Patrick sits down.

T says, "All right, John, you come up."

John stands and points to a part of France, which is where Brittany really is.

John sits down.

T asks, "How did they travel between Brittany and England?"

T asks, "What part of which country is Brittany in?"

T says, "John?"

John says, "It is a part of France."

11:14 T says, "You're right; yes, you're right," looking at a better map in their book. "Then they traveled down to Spain, didn't they?"

T says, "They would go to England by what transportation, Jim?"

Jim had his hand up.

Jim says, "Boat."

T says, "Can you add any other things to that story, any other customs you can remember in Brittany?"

T says, "Linda?"

Linda says, "They cook over an open fire."

T says, "Is that the way everybody does in Brittany? Do they all cook their food over an open fire?"

Linda pauses.

T says, "Is that what you meant, Linda? Does everyone cook that way? And they have no stoves?"

Linda says, "Well, they cook in a fireplace."

T says, "That's right."

Kitty raises her hand.

T says, "Kitty?"

Kitty has a comment to make.

T says, "All right, let's try another country since our time is going on."

T says, "Who is going to be the next brave one?"

Jim raises his hand.

T says, "Oh, you can see through them, can't you."

Evidently the names of the countries show through on the back sides of the slips of paper.

T covers the backs of these slips of paper with her hands.

Jim has drawn Africa.

T says, "Can you find Africa on the map?"

This causes quite a commotion; the children think that's very funny because Africa is right in the center of this map, very large and prominent.

Mrs. Apple Mrs. Noble

11:16 Jim says, "They ride camels out on the desert. They have camel sellers."

T says, "Tell us what a camel seller is."

Jim says, "It's a person who sells camels."

T says, "That's a good way to describe it, isn't it?"

T continues, "Tell us how they go about it in the story."

John's hand goes up.

T says, "Would you like to tell us that, John?"

John says, "Well, sometimes they walk around with their camels or camel, yelling to get attention so people might buy them."

T says, "Is that the only way?"

John goes on, "Or they might go into the market place and just stand by the camel."

T asks, "What are some of the good things about camels that they look for when they buy camels? Can you tell us that, Jim?"

Jim says, "In one of our stories, Ali's mother told Ali that he should look for the camel that had all of his teeth."

T says, "All right, good."

"Can you tell us more about Africa?"

Jim says, "They have sun; they have houses and tents, and the climate is usually real hot."

T says, "Would you tell us that again?"

Jim does so.

11:18 "Can you add any more to that, Pat?"

Patrick says, "Well, I didn't learn it in the book, but they also eat dates and rolls."

T says, "Steve, how about you?"

Steve says, "Well, they eat sweet meats."

T says, "Joel?"

Joal adds a comment.

T then says, "What else can you add, Pat?"

T looks up and says, "You are doing too much talking." (This is directed toward the children at their desks. They had been quiet for a long time, though.)

T then says, "Billy, sit down. I don't want to see you out of your seat again."

T goes on, "Billy, get that arithmetic sheet out and get busy before I look back there again, please."

Billy returns a crayon to Debra by tossing it over to her.

Patrick continues by telling what bandits or robbers do.

11:19 T says, "What was special about the white camel?"

T says, "Holly, do you know?"

Holly had not raised her hand.

There is a long pause; Holly can't answer.

T then says, "How about you, Dan?"

Dan had not raised his hand.

Dan also can't answer.

Patrick and Jim, both anxious to answer, are engaging in a mild form of horseplay with their hands.

T lets this go on.

Steve attempts to enter into this horseplay.

At this point, T shooshes them.

T then says, "Kitty, do you know what is special about the white camel?"

Mrs. Apple Mrs. Noble

Kitty says, "The Africans think they are good luck charms; and if you have a white camel, you are supposed to have good luck."

T says, "Yes, a white camel means good luck."

T then says, "Let's do one more country. Let's have a girl this time."

T says, "Carolyn, you pick a slip."

Carolyn comes and picks one.

11:21 Carolyn draws England.

A small portion of the events go unrecorded as O changes tapes.

Various children have been saying which countries they would like to visit.

11:27 Patrick tells which country he would like to visit.

T says, "Tell me about the beds in Brittany that are different. What is different about them?"

T says, "What is it, Pat? No, let somebody else tell about it because you mentioned it first."

T says, "Dan?"

Danny says, "Well, they had a sort of...really looks like cupboard things where there were two..."

T interrupts to reprimand Mark, who is supposed to be busy with seatwork but is not.

Danny goes on explaining how the beds have doors that close.

T says, "Linda?"

Linda says, "I would like to go to Spain."

T says, "What is it that you liked about Spain especially?"

T reprimands Patrick with a snap of her fingers.

Mrs. Apple Mrs. Noble

Linda had no special reason.

T then says, "Yes, John?"

John says, "I want to go to Africa so that I can go to the Congo."

He seems to expect a reaction, but gets none.

T says, "I'm sorry but we won't have any more time to talk any longer."

"You did well today."

T continues, "We'll have more discussion tomorrow."

T reprimands Dan and John.

T continues, "You're to review the rest out of your books. We'll check the worksheets tomorrow. If you will just leave them on your desks, so we won't have to stack them."

T says, "If you can get to your seats, we'll see if we can't have our little play. Go to your desks and get to your seats right now."

T deals with Jim.

T deals with John.

T hurries Patrick along.

T says, "Quiet."

T deals with Carolyn.

T reprimands Jim.

T says, "Will you sit down, please, right away. Everyone listen. Everyone. Stop. Freeze, right where you are."

Everybody freezes and everything is silent.

11:30 T says, "Everyone clear his desk now as soon as I say thaw. Be ready. Turn your chair just so you can see back here. We'll try to have our little play. I need your help, and I'm only going to give you a couple of minutes to get ready. You may thaw."

The noise starts up again.

T says, "I don't want to hear you."

People are getting ready to watch the play by turning to face the back of the room. Most of the children are sitting on top of their desks.

T says to Steve and Patrick, "Separate desks." They were sitting on the top of the same one.

Ina shows T what she has made.

T compliments her, says, "Well, for goodness sakes, you made that this morning!"

T deals with Leigh Ann.

11:31 T says, "Quickly. In just about a minute, we are going to start."

T says, "Danny, separate desks," as Danny is sitting on John's desk."

T says, "Do you want me to move the table? Ina, do you need the table?"

T says,"Everyone, stop. Stop moving furniture and just sit down."

Ina says, "Well we do. We do need the table."

T says, "Gary, help her move the table."

Gary and Ina turn the table around.

T returns to the front of the room and says, "All right, get into your places. Debbie, are you ready? What do you need?"

Debra disappears into the Teachers' Coffee Room without answering.

T says, "Billy, do it right or you're going to sit down," meaning they won't do it at all.

11:33 Mr. Smith, the principal, comes into the room.

Mr. Smith works with some papers that he received from T.

He whispers to her about something.

T answers out loud.

Mrs. Apple Mrs. Noble

Mr. Smith says, "All right, thank you" and leaves the room.

Meanwhile Debra has returned to the classroom.

Ruth says, "This is a play about a man who goes to town, and we've been practicing it and we're going to put it on for you."

> This play is called Manwick Goes to Town and is a story in their reading book, Looking Ahead.[1] The gist of the play is: A country bumpkin, Manwick, persuades his mother to let him go to town (which he has never seen) to sell some butter. Manwick mistakes a large rock for Friend Town (his mother told him the town was big so he'd know it when he got there), Manwick convinces himself that Town (the rock) wants to buy his butter so he pours it over the rock. Then he decides that he'll have to collect his money on the morrow. The next day, the rock (Town), of course, doesn't pay him for the butter, so Manwick gets angry, strikes the rock, upturns it and finds gold. Now he thinks that Friend Town (the rock) has been deliberately sitting on his money all the time. Mother explains what must have happened (bad men hid the money under a rock), tells him more exactly what a town is and sends him off to sell some meat. Manwick "sells" the meat to some dogs. The dogs don't pay, so Manwick goes to the palace to report his loss to the King. In order to see the King, Manwick must first promise each of two footmen, half of what he gets from the King. Manwick's story makes the princess laugh, which was the condition a man had to fulfill in order to win her hand. Manwick, however, refuses the princess; instead,

---

[1] W.K. Durr, D. Lehr, P. McKee, M.L. Emerson, A. McCowen. Looking Ahead. Houghton Mifflin, 1966

There has been a jump in the play, but it gets them to the point where Manwick goes to see the King.

T hands O a note which says that this play is all made up from the reading of the story.

T says, "Let's keep the play moving."

Ina (the King) says, "Well, since you were so stupid, I don't think that you should have a prize or anything."

Then there is a pause and laughter.

T says, "Time is running out, so let's keep things moving."

Ina (the King) wants to give him the princess as a wife, but Billy (Manwick) says that he doesn't want that; he wants to be hit with a stick, 100 times.

. interrupts, "Billy, would you repeat that?"

Billy does so.

Ina (the King), begins giving spanks to Greta (the footman).

T says, "Now, let's not be silly."

11:44 They finish the play.

There is much clapping.

T hushes them.

T says, "Boys and girls, you at the play just stay there for a minute until we get back into our seats."

T reprimands John.

Debra says, "We're not finished."

T laughs and says, "I'm sorry, I thought it was over."

There is great laughter by the students.

T says, "I'm sorry. If you were not, go ahead and finish."

So people reassume their places.

T says, "Excuse me, Ruthie."

Mrs. Apple Mrs. Noble

T then says, to the rest of the class, "Sit right where you were quickly."

Ruth announces the cast.

Bill was Manwick.

Debra was the mother.

Ina was the King.

Greta was the second footman.

Leigh Ann was the princess.

Vickie was the dog.

T reprimands John.

T says, "Let's turn around and get into our seats."

T reprimands John again.

T deals with Gary.

T then says, "That was a nice job," referring to the play.

T says, "Leigh Ann, fold up your robe so that you can take it home."

T says, "Mark, will you help me rearrange this table?"

11:46 The room is quiet and ordered.

T says, "Ina, put the things back on the table so they won't be in your way."

T then says, "And may I have you face this way, please."

T is standing at the front of the room by her desk waiting for more complete attention.

T says, "John, all right, would you put your head down."

John does so immediately.

This seems to be a technique to calm John down.

T takes some magazine pages from her desk.

Mrs. Apple Mrs. Noble

The picture shows a poodle dog jumping up to take a drink out of a drinking fountain, which his master has turned on.

The children get a big kick out of this.

T says, "Yes, Pat?"

Patrick says, "I even have a title for it. It's Hogging All the Water."

T says, "I can't hear you. Say it again."

Pat does so.

T says, "I still can't hear you."

Pat repeats it once more, this time a little louder.

T says, "Jim, what does this picture mean to you?"

Jim gives his comments.

Leigh Ann says, "I've got another title for the picture, Something Funny Happening."

T reprimands Mark.

T then says, "Debbie, how about you?"

Debra makes her interpretation.

The children enjoy her comments.

Les says, "I have a title for the picture, Wet Face."

T laughs and says, "All right."

T looks toward the back of the room and all is silent.

11:50 T says, "I said it very nicely, but I do need your help. Sit up and give your attention this way, please."

O believes this comment was directed at Billy.

T says, "Oh, let's see, here's one you'll like. It may call to mind some stories you might write about this picture."

T holds up a picture.

Mrs. Apple Mrs. Noble

The picture shows a dog and a monkey investigating each other.

T says, "You know you have heard make-believe stories about animals. Do you think you might be able to write a make-believe story about this picture?"

T says, "Vickie?"

Vickie has trouble getting started on a story.

T helps Vickie get started on an idea.

Vickie finally finishes her story plot.

T says, "Yes, Billy?"

Billy says, "I can't tell what that white stuff is that is coming down."

The "white stuff" is a part of the dog, a brown and white basset.

T says, "Oh, you can't see it very well. Let me move down and show it to you."

T shows the picture around, moving down between the first two rows by the window.

T says, "All right, John, you can put your head up."

T asks, "Do you know why I told you to put your head down?"

John nods his head-yes.

T says, "Will you not do that any more?"

John grins and shakes his head-no.

T then asks, "What kind of a dog is this in the picture?"

The children immediately know that it is a basset hound.

T holds up another picture.

T says, "Do you think of a story or an idea that might go with this picture?"

The picture shows an owl.

Mrs. Apple | Mrs. Noble

11:52 T says, "How about some of you using your imaginations? Get them to work."

T says, "Yes, Jim?"

Jim says, "Well, I've got a title for it."

Then Leigh Ann gives a title.

T reprimands Billy.

T says, "Randy?"

Randy gives his story title.

T says, "Billy?"

Billy gives a story title.

T then says, "Debbie?"

Debra responds with a title.

T reprimands Duane.

11:53 T says, "Well, let's do one more quickly here."

T says, "Oh, for the boys especially."

All the children say, "Oh, boy."

T holds up a picture.

T says, "This might cause lots of different plots for stories."

> This is a picture of a baseball game, s[illegible]ng a player running and slid[illegible] into a base.

T says, "Billy?"

Billy wants to contribute another idea for the owl picture. He thinks his idea is pretty funny. So do some of the other children.

T then returns to the baseball picture.

T says, "John?"

John says, "My title is Tie Goes to the Runner, No, He's Out."

Mrs. Apple Mrs. Noble

T says, "Jim?"

Jim says, "I've got a title."

Jim then shouts out, "You're Safe!"

T says, "Only now, how would you show that on paper? You showed it in your voice, but not how you would show it on paper."

T says, "Carolyn?"

Carolyn says, "Writing it all in capital letters."

T says, "Ruth?"

Ruth says, "In great big letters."

T says, "Well, that's what she meant," meaning Carolyn.

T says, "Raise your hand; no voices."

T says, "Joal?"

Joal says, "Exclamation marks."

T says, "Vickie?"

Vickie tells about her brother catching a baby bird.

11:55 T says, "Boys and girls, I'll tell you what I want you to do. When we come back at noon, I want you for the first half hour to pick one of the five pictures on the board; and I want you to use your imagination and write a story. It does not have to be make believe; it can be anything that comes to your mind. A plot that you can develop from one of the stories. How many know what they want to write right now?"

Over two-thirds of the hands in the class go up.

T says, "Excuse me, excuse me," to get their attention as a babble of voices burst forth.

T says, "You may pick any one. When you come in at noon, get out your paper and begin on your story."

"Now what are we going to remember about good story writing? First of all, get our ideas and our plot down on paper. Then go back and proofread and look for what things in your writing?"

Mrs. Apple Mrs. Noble

T says, "Randy?"

Randy says, "Margins and indents."

T says, "Good margins. Good margins on both sides."

There are voices.

T says, "I'm sorry, Greta, I didn't hear what Randy said."

Randy adds, "Punctuation."

T quickly erases the board and writes on the board, margins.

T also writes on the blackboard, punctuation.

T says, "You mentioned something else."

Randy says, "Indent."

T says, "Indenting," and writes that on the board.

Gary raises his hand.

T then says, "Gary?"

Gary says, "I have something to say about one of the pictures."

T says, "Could we take it in just a little bit? Let's finish this now."

T says, "Billy?"

Billy says, "Capitalization."

T says, "That's right," and writes that down on the board.

T then says, "Ruth?"

Ruth says, "Paragraph form."

T says, "Just over all these are good paragraph form; all these things are good paragraph form, aren't they? Indenting, margins."

T says, "Well there are some other things we didn't mention."

T says, "Vickie?"

Vickie gives such a quiet answer that O can't hear her.

Kitty raises her hand.

T says, "Kitty?"

Kitty says, "Keep to the subject."

T says, "Keep to the subject. Keep to the subject. That's a good one."

T writes keep to the subject on the blackboard.

T says, "And then in one paragraph we should have all the sentences that tell about one thing, shouldn't we? And when we change the idea or subject, we change or put a separate paragraph, don't we? So keep to the subject," she says, finishing writing this on the board.

T says, "And use several paragraphs for ideas. Well, we'll talk a little bit more as we read our stories. Perhaps we can in the first half hour get some of the stories finished so that we can read them during milk time. Would you like that?"

The children seem enthusiastic over this suggestion.

T says, "Greta, are you sleeping?"

Apparently she looks a little sleepy.

Greta answers, "No."

Debra asks, "Can we write something that really happened?

T says, "You can branch off any way you like to."

11:58 A bell rings at this time.

T says, "I'm sorry, I would like to hear everything you have to say, but we haven't time now. All right now. Good posture and let's straighten up your desks."

T opens the hall door.

T says, "Susan, erase everything on the blackboard but the rules for good story writing."

Susan comes up to the board and starts erasing.

Billy comes and stands by T.

T says, "I would like to see your hand; I did know that you were asking me, but I haven't got time to answer you right now."

Mrs. Apple Mrs. Noble

T says "Get your sweaters and coats, those of you who have brought them."

T says, "Row 5, line up by the door."

T then says, "All right, row 4."

The children begin to line up.

T says, "Take home the things that you brought," referring to the children in the play who brought props from home.

11:59 T says, "All right, row 3."

T says, "Get your sweaters and coats, please. The bell has rung."

T says, "I can't call row 1, yet. Les, I'm waiting for you to get ready."

Les was talking to Ina.

T says, "Row 2."

T deals with Gary by the door.

Becky has helped erase the board. All three now leave the blackboard area.

T deals with Jim at the door.

T says, "All right, row 1."

T says, "Billy, hold onto the paper crown that you've got."

T then says, "Just a minute. A nice line."

T waits for the boys to straighten up.

Greta and Ina are looking at the pictures on the board.

Vickie finishes writing the date on the board.

One of the girls has very carefully erased the list of story writing reminders that T wanted left on the blackboard.

T now leaves her position by the door and steps into the room.

T says, "Billy, go back and put your chair in nicely."

Mrs. Apple Mrs. Noble

Billy does so, and returns to the line.

T says, "These people, Vickie and Susan," tapping the desk, "put your chair in."

These two children come out of the line and put their chairs back.

Vickie and Susan return to the line.

T says, "All right, straighten up now. We're waiting, Leigh Ann."

Susan raises her hand.

T says, "Susan, you'll have to wait."

T says, "All right, have a nice lunch."

12:01 The line of children moves out of the room.

End of the morning observation.

Mrs. Apple Mrs. Noble

The children have gone home for lunch. The afternoon observation begins with about five or six children in the room when the first bell rings at 12:50.

O will begin recording events when T calls the class to order.

T says, "It's five till now; let's take our seats."

12:53 T says, "John, stop that and sit down."

T reprimands Billy.

T says, "I asked you to take your seats. Did you hear me? Why didn't you do it then? Please."

John, sitting at his desk, is laughing.

T, coming over to John, says, "John, let's settle down."

T deals with Carolyn.

Several of the children are up out of their seats and are looking at the pictures that T has put up on the blackboard at the front of the room.

T says, "Gary, sit down."

T then says, "Billy, now that's all. Sit down!"

Billy had gone up to look at the map.

T finishes dealing with Carolyn.

12:54 T deals briefly with John.

T deals with Debra, also very briefly.

T says, "You boys, Randy, Les, Mark, Jim, sit down."

These boys were looking at pictures on the board.

The room has a busy sound. One girl is reading a library book, two others have taken out paper upon which to write.

T says, "Gary, I need your help."

T is indicating to Gary that he should sit down.

T walks over to the table in the back of the room. She puts some tin foil and other objects down on the table. These will be used for a science lesson.

Linda raised her hand.

T deals with Linda.

Vickie comes over and stands by T.

T deals with Vickie.

Holly comes up to T.

T deals with Holly.

T then goes into the Teachers' Coffee Room.

In a few seconds, T returns to the classroom.

T says, "Jimmy, sit down."

T asks, "Dan, are you my special helper?"

Dan says, "Yes."

T says, "I have a job for my special helper."

T and Dan go over to the counter by the windows.

Students are still talking together; some have begun to write their assigned stories.

T deals with a question from Joal.

T goes on showing Dan how to collate some mimeographed pages and how to staple them together.

T says, "Ina, clean off your desk."

T then says, "Duane, you help Dan and staple the pages as he gets them ready."

12:57 T leaves them, saying, "I want 26 of them."

Mrs. Apple Mrs. Noble

T stops at Les's desk and says, "You know, I never did understand the meaning of your title."

Les has written down his title for the baseball picture. He has called it Ticklebee.

Les explains his title to T.

T deals briefly with Randy.

T returns to the table at the back of the room with more science materials.

More of the children are getting out paper on which to write their stories.

T reprimands John.

12:58 T says, "I like the way you are getting to work, Bill; that's what I like to see."

T continues to lay out the science materials.

Susan borrows some paper from Holly.

Patrick is sharpening his pencil. Steve is holding his hands cupped underneath the sharpener to catch the shavings as Becky and Joal are emptying the container for the pencil sharpener.

T comes over to Randy's desk and says, "Let's move your desk back a little because Ina is too crowded."

T then says to Ina, "I want you to turn around and keep your face pointed that way."

Outside, a bell sounds.

1:00 T says, "That's the last bell, folks."

Immediately things quiet down.

Everybody is in his seat, except for Dan, Duane and Mark.

Mark has joined Dan and Duane and is helping collate and staple the pages.

Mrs. Apple Mrs. Noble

T says, "Good afternoon, boys and girls."

All of the children say, "Good afternoon."

T takes attendance and says, "Would you please "

T stops taking attendance and says, "Eyes this way, please."

These last two remarks are directed at Billy, who is not listening.

Billy keeps on writing his story.

T says, "Eyes this way, please!"

Billy stops writing and looks up.

T says, "You have your pencil and paper ready. Good posture. Clear your desks so you will have good writing space."

T sits down at her desk and continues taking attendance.

It is very quiet in the room. Several of the children are writing on their stories; others are sitting there with paper ready.

T says, "Gary, did you stop by Cindy's at all?"

T, looking at John, says, "I hear a voice."

Gary says, "Oh, I forgot to stop there."

T repeats, "You forgot. Okay."

T says, "And who else is absent?"

Vickie, who has come up to T's desk, says, "Pam."

T says loudly, "Cindy and Pam are absent."

The children's general appearance of surprise at T's loud statement indicated that this must have been to inform O.

Mrs. Apple Mrs. Noble

1:01 T is still taking attendance.

T passes the attendance slip to Vickie.

Vickie leaves the room.

Jim comes up and rummages in the pencil box on T's desk.

T says, "What are you looking for?"

Jim says, "An eraser."

T says, "Well, why don't you ask me about it?"

There is a short pause.

Jim makes a conciliatory statement.

Jim receives his eraser and returns to his seat.

Vickie returns to the classroom.

T says to the boys doing the collating and stapling, "Boys, you may stop now, and we'll finish that after awhile. When you finish that last group that Mark has, then you may sit down."

Jim returns the eraser to T's desk.

T says to Jim, "Why don't you keep that on your desk, you might want to erase some more."

Jim keeps the eraser and returns to his seat.

1:02 T says, "Would you put your pencils down, please?"

A few pencils can be heard to click.

Duane sits down, having finished his stapling task. Mark and Dan have already sat down.

T waits until all pencils are down and all attention is her way.

T says, "Now, we are going to have this be our last creative writing for this year, our last story that we write, so let's make it a real good one to put in your folder for your mothers and daddies to read. Think

of the things that we talked about this morning; good margins, capitalization, punctuation, and most of all let's try to develop a good plot for each one of the stories."

A male teacher brings an encyclopedia into the room.

T says, "Can I help you?"

After a ten-second conference, he leaves the room.

T says, "Well, boys and girls, now we have all of our encyclopedias back. We have been worrying about that, haven't we?"

Some of the children do look relieved at the recovery of the book.

T goes on, "Anyway, let's worry about handwriting and all of these things. After you read the story, let's proofread these stories. Proofread as if you were the editor of the newspaper."

T then says, "If you feel you need some changes that need to be made, do it before you hand it in, so that I won't need to make so many marks on your paper. Do the best you can on spelling. Use your dictionary; let's not get bogged down with one word all during the whole writing time. Make an attempt at it and then put a little line under it and later on you can go back and look it up in the dictionary. Get your thoughts down first."

T says, "All right, how many know what they are going to write about now?"

Many hands go up.

T says, "Good; all right, let's begin."

T goes on, "There can be a half-an-hour or twenty-five minutes of real good writing time."

Patrick raises his hand.

T walks over and deals with Patrick.

John raises his hand.

T rolls up the map that was in the back of the room.

T then comes over to John's desk.

T says, "John, I don't think you have had a good pencil all this year. You've either had a stub or that thing."

John has one of those very long and very fat pencils.

T goes on, "You know it is real important to your handwriting. That's awfully long to write nicely."

T says, as she examines the pencils in John's desk, "What about this green one? Is it long, too?"

T continues, "Well, you think about that next year and always have a real thin pencil because that one is really too fat for hands; that's for a smaller child."

1:05 T interrupts to deal briefly with Holly.

T then says, "Well, John, let's use the best one you have, but you tell Mother tonight that let's be sure to watch those pencils."

T has a word with Leigh Ann.

.....

The recording of events is interrupted as O changes tapes.

.....

1:10 T comes over to Billy's desk and looks over his shoulder.

T laughs as she leans over to look at his paper.

Several of the children turn to look in that direction.

It might be interesting to note that every child that O can see is writing in cursive, without any instructions from T on this point.

The phone in the hall rings loudly, disturbing no one.

Vickie goes over to use the dictionary.

T tiptoes through the room and closes the hall doorway.

Holly and Debra raise their hands.

T comes over and deals briefly with Holly.

T then stops by John's desk to see what he has done.

Becky is sharpening a pencil.

T says, "Uh oh, Becky."

Becky looks.

T says, "You will have to take care of that before or after school."

Becky says, "I did, but it broke."

T says, "All right."

It is not clear as to what broke and needs to be fixed.

Ruth raises her hand.

T goes over to her desk and deals with her.

Debra still has her hand raised.

T sees that Randy has also raised his hand.

T says, "Randy, turn around."

T deals with Debra.

1:12 T comes over to Randy's desk.

Randy says, "How do you spell this word?"

T says, "Susan, this is no time to visit."

Susan had stopped to talk to Holly.

T continues helping Randy to spell.

Mrs. Apple Mrs. Noble

T says, to the class as a whole, "Don't get bogged down with spelling. Get your thoughts down. Draw a line under the word, then go back and go look them up; you can spend the whole half hour looking up a word if we don't have our thoughts on paper. Getyour thoughts on paper first."

T turns back to Randy and says, "Just draw a little line under it. That's right, and then you can look it up. Draw a line under it."

T leaves Randy.

John tosses the eraser that he borrowed from Greta back to her; it bounces across the room. They grin and grimace at each other, then Greta goes and gets it.

Becky says something to Patrick.

Patrick responds.

T says, "What's the matter, Becky?"

Becky says, "I ran out of paper, and I needed another piece."

T says, "Well, I'll go get some in the office. You tell Mother tonight that you need a little bit more to get through the next two days."

Duane raises his hand.

Duane needs help in spelling a word.

1:16 T gives Duane this help.

Carolyn raises her hand.

T says, "I'll be right there."

T begins collating the arithmetic papers, the job that she had originally assigned to Danny.

Steve goes and gets a dictionary and returns with it to his desk.

Ina goes over to get a dictionary and returns with it to her desk.

Mrs. Apple Mrs. Noble

Susan comes over to ask T a question.

1:17 T deals with Susan.

Susan returns to her desk.

Mark raises his hand.

T finishes collating the papers.

T starts to go back to her desk, looks over Ina's shoulder, then continues to her desk and puts down the collated papers.

1:18 T goes over to Carolyn and answers her question.

Mark still has his hand up.

The room is pretty quiet; the children are working, once in a while communicating in whispers.

Billy gets out of his seat and goes and gets a drink.

T finishes dealing with Carolyn.

Susan is up out of her seat, talking to Holly; they whisper about their stories.

T says, in a whisper, "Billy, sit down."

T comes over to deal with Mark.

Vickie has her hand raised.

T walks away and deals with Vickie.

Diane comes up to the board to look at one of the pictures.

T finishes with Vickie.

T says, "If you were not able to see the picture, you are welcome to walk up here, one at a time, and look at your picture again, if you couldn't see it well when I held it up. One at a time."

Lee is immediately out of his seat to go look at his picture.

Mrs. Apple Mrs. Noble

T says, "What can I do for you, John? Can I help you?"

John had gotten out of his seat to talk to Patrick.

John says, "Nothing."

T says, "Then you don't need to be up, do you?"

T closes some of the venetian blinds.

Susan gets up to look at the pictures.

Holly gets up to look at the pictures.

T says, to the class, "Remember, good posture."

Ruth's hand goes up.

T deals briefly with Ruth.

Everyone is now back in his seat.

1:21 John raises his hand.

T goes over to John.

T deals with John.

Jcal gets out of her seat and goes to look at one of the pictures.

Susan gets up and goes over to talk to Holly.

T finishes with John.

T says, "Susan, sit down."

Vickie says, "Can I sharpen my pencil?"

T says, "Yes, Vickie."

Ina gets up and goes over to look at her picture.

T is dealing with Holly.

T says, "Don't waste time walking around."

Mrs. Apple Mrs. Noble

.....

O interrupts the recording of events to ask Mrs. Apple to open the venetian blinds; more light is needed for the camera.

.....

T deals with Ina.

1:22 The room is lighter now.

The room has become more shuffly.

T says, "Excuse me, I hear some talking."

Susan gets up out of her seat and starts over to T.

T is dealing with Billy.

T indicates to Susan to keep on coming.

Leigh Ann goes back and gets a reading book from the shelves.

T helps Susan spell a word.

Billy gets out of his seat and goes over to look at the science demonstration; he fingers some of the objects.

T watches Billy.

Then Billy wanders across the room to the pencil sharpener.

T continues to help Susan spell her word.

Patrick is up at the board, looking at a picture.

Holly gets up to throw something away.

Billy, having sharpened his pencil, comes up to look at the pictures.

T says, "One at a time. Come right back to your desk, please."

Billy wanders off.

Mrs. Apple | Mrs. Noble

1:24 T finishes dealing with Susan.

T deals with Debra.

Leigh Ann takes her reading book back to the shelves.

Steve returns to his desk.

Becky gets up from her desk, holding a piece of paper.

Susan says something to John.

T says, "Susan, let's stop talking."

Becky is going over to the wastebasket with her piece of paper.

T says, "Stay in your seats; we'll pass the wastebaskets later."

Becky returns to her seat, still holding her piece of paper.

T continues to deal with Debra.

Dan gets up to look at a picture.

John also gets up to look at a picture.

T finishes with Debra.

1:25 T says, "One at a time."

Dan and John continue looking at the pictures.

T repeats, "One at a time, please!"

Dan returns to his desk.

T comes across the room and, looking over Patrick's shoulder, kind of snorts.

The children in the immediate vicinity look over to see what is going on.

T comes over to Steve's desk and says, "You must proofread your paper. Every word that you're not sure of, look it up."

Mrs. Apple Mrs. Noble

1:26 T comes over to John, who had his hand raised.

T finishes with John.

T returns and deals with Steve again.

T is reading Steve's paper.

Vickie is standing by the blackboard with her hand up.

Debra wanders over to T.

T leaves Steve's desk and starts for the front of the classroom.

Debra follows T.

T becomes aware of her and turns around and deals with her between Gary's and Linda's desks.

T notices Vickie and says, "Just a minute."

T continues dealing with Debra.

T finishes with Debra.

T deals with Vickie and says, "They can be whatever you imagine them to be."

Susan comes up and says, "Those are apples."

Ruth has her hand up.

T goes back and deals with Ruth.

Mark's hand is up.

T goes over and deals with Mark.

1:28 T finishes with Mark.

T says, "Debra, let's remember good posture."

T goes over and looks at Becky's paper.

T reads the paper and says, "Is that your title?"

Becky points to Patrick.

T says, "Well, I want this to be Becky's story, not Pat's story."

T then says to the class, "Boys and girls, after you are through, some of you are now, proofread your paper and look for the things we talked about. You be the grader; and also if you have conversation, be sure that you have used quotation marks and those things we talked about--the capitals and the commas."

T says, "Danny, how are you going to get done if you are looking back there? Turn around in your seat, put your feet under your desk; that's where they go."

Debra comes up and shows T her finished product.

It seems that Debra, Steve and Becky are about the only ones finished with their papers.

1:30 T finishes with Debra.

T comes over to look at Gary's paper and laughs at what is written there.

Debra's hand is up.

T deals with Debra again.

Susan and Holly are talking.

T reprimands Duane and Randy who are whispering.

A loud voice in the hall can be heard to say, "Boys, keep quiet, please."

This causes a bit of a stir in the classroom, and T quiets the children.

Susan goes up to the board to look at the pictures.

T reads Leigh Ann's story. T laughs as she reads, which pleases Leigh Ann.

Becky is up at Gary's desk, talking to him.

Jim is waiting to talk to T.

Billy is also waiting to talk to T.

Susan returns to her desk, having finished looking at the pictures.

Mrs. Apple Mrs. Noble

John goes up to look and immediately returns to his desk.

T now deals with Duane at his desk.

Jim and Bill are still waiting.

T finishes with Duane.

T reads Jim's story and says, "All right, you have a lot of proofreading to do, don't you?"

Then T turns to Billy, starts to read his story, and says, "You have a lot of proofreading to do, too, don't you?"

Then T says, "Oh, goodness, come up here. I'm going to have to sit down."

T whispers to herself, "I'm tired."

T sits down at her desk and continues to read Bill's story.

T reprimands Duane.

Vickie gets up to get a drink of water.

Randy also gets up to get a drink of water.

T says, "There will be no drinks unless it is very important, then I understand."

1:34 T then says, "All right, Billy, you go back and proofread now."

Kitty comes up to T's desk and shows her the finished story.

T reads Kitty's story.

Billy has given Vickie his story to read.

T reprimands Billy by saying, "Don't share your story now; we will share stories later on."

T says, "All right, Kitty, you go on back to your desk now."

T then says, "I'll read all of the stories when they are handed in."

Mrs. Apple Mrs. Noble

T announces, "Boys and girls, it is time for you to put your stories aside now."

T says to the children who are at her desk--Holly, Ruth and John, "Sit down, please. I'll talk to you in a minute."

T says to the whole class, "Lay your story aside."

"When you finish your arithmetic test, you can pick it up again if there is time then. We'll put it down on the list in the morning as something to finish, and later put it in the folder for Mother and Daddy to read. After you have proofread and Mrs. Apple has seen it, we'll put it in our folder."

T says, "Thank you, Jim. Will you sit down now, please?"

Jim is up near the pictures, looking at them.

Jim asks, "Are the t and v in television capitalized?"

T says, "I think it usually is."

Jim sits down at his desk.

T, addressing the entire class, says, "All right, now would you clear your desk except for your folder. I guess you want to leave your dictionary on there unless it is in your way; then put it down beside your desk, and we'll pass out the arithmetic final test."

1:36 T picks the tests up from her desk and stands waiting at the front of the room.

T says something to Randy.

T says, "I would like to say to you, Bill, and everyone who has been back there, that those things on the table are for science. We've had things back there lots of times for science, so you should know how to act. Would you please not pick up those things now. Is that agreed?"

T then says, "Take one test, please. This is our final arithmetic test."

T stands at the front of a row, counts out enough papers for that row and then hands the tests to the first person in that row. Each child keeps a test and hands the rest to the student in back of him.

Les is holding his story in his hand.

T says, "Is that all right with you, Les? Would you put it aside then, please, and get ready for our arithmetic test?"

Les does so.

T says, "This includes the work that we have done all year, and you'll have to do some good thinking on it. You may not get it all finished; it has several pages, but I have written large, and it took several pages to put the work on. If we aren't finished, I'm going to collect at a certain time and we'll hand them back out in the morning and finish them; I don't want you to take any of this kind of work home."

T says, "I want to know what you know. We won't share any answers; it's not what you and your neighbor know together, it's just what you know from this year."

"I'd like to have a real good job done on this, your very best job. Do not hurry and take your time."

Patrick has his hand up.

T says, "Yes, Pat?"

Patrick asks, "If there is any division, do we use long division?"

T says, "Yes."

T adds, "In multiplication, you may use the short process that we used yesterday. You do not need to show all of the partial products."

Jim comes up to T with an extra test.

There is a question as to whether Steve has one or not.

Mrs. Apple Mrs. Noble

T starts to reprimand Jim, but it turns out that Steve does have a test paper.

T continues to pass out test papers, row by row.

Leigh Ann brings up an extra test.

T says, "There, I thought I had enough," as she counts up enough test papers for the last row.

1:38 T says, "Class, just look at the front page and that's all."

T says, "Put your name on the right hand side."

T says, "Look just at the first page, please, Gary."

T says, "Now, as far as directions are concerned, each part has its own directions that you should be able to read and understand after all of our discussions this year. I don't think I need to read the directions for each part, do I? If you have a question, raise your hand and I will answer it.'

T says, "I'll say it again, on division, I want to see all of the steps. Everyone understand that?"

The children all say, "Yes."

1:40 Bill has his hand up.

T says, "Bill?"

Bill says, "Did you say that this was for this year or for the whole book? When I looked at it, it looked like for the whole book."

T explains, "It would be the same thing, Billy, the whole year and the whole book."

Bill grins and nods.

T says, "It is over everything we have done this year."

Steve has his hand up.

T says, "Steve?"

Mrs. Apple Mrs. Noble

Steve asks, "On Test 4, on that division, should we show our long division when we do those problems?"

T says, "No."

T continues, "What are the directions?"

Steve reads, "Replace each box with a numeral."

There are nine problems having to do with multiplication and long division. For example:
2) $4 \times \square = 32$
3) $8 \div 2 = \square$

T says, "I can't see any other questions that you might have."

"Oh, yes. Would you look at the third page, please, at the top."

"There is no sign for the problems at the top of the page. The sign should be subtraction," using Vickie's test to look at.

T says, "Would you put a subtraction sign on each of those three problems?"

T writes three subtraction signs on the blackboard.

T goes down each row, checking to see if the children have written in the subtraction signs.

T says, as she goes about the room, checking, "Uh huh, uh huh, good. That's right."

A jet flies over very low and startles some of the children.

T says, "We've been studying about sounds traveling fast, haven't we?"

T says, "Yes, Pat?"

Patrick says, "I didn't like that plane very much. It didn't make a sonic boom," and he grins.

Mrs. Apple Mrs. Noble

T says, "All right, would you think that we could have seen the plane before we heard it if we had been outside?"

Many of the children say, "Yes."

T says, "Raise your hand."

John says, "No, you couldn't see it."

Greta says, "I think you could see it."

T says, "What did we find out yesterday in our experiment?"

John says, "We could see it before we heard it. You couldn't hear it because it was flying too high."

T says, "You didn't hear it?"

John says, "I heard it, yes, but you couldn't see it. Probably because of the sunlight in the clouds."

T says, "That's a good comment, too, because that might obstruct our view, wouldn't it?"

Patrick has his hand up.

T says, "Pat?"

Patrick says, "I think that light does travel faster than sound, because if it was up so high, you couldn't hear but you could still see it."

T says, "All right. All right."

T says, "I was looking here on your third page. All right, everybody's attention back on your third page, please."

T is still checking on the subtraction signs.

1:43 T says, "All right, you may begin."

T says, "When you have finished, you may work on your story. Just leave your test on your desk; if you don't get finished, you may finish in the morning."

T deals briefly with Linda.

Mrs. Apple | Mrs. Noble

T comes over to deal with Jim.

T then deals with Joal.

T checks with Steve.

T deals with Becky.

T says, "Class, on the third page there is a question. One number is not clearly printed; it is the middle problem on page three at the top. Point to it."

T looks all around the room to see that the people are pointing to it.

T says, "Bill, point to it, please. Are you? Thank you."

T says, "It should read 5,026 take away 4,378. That should be a seven; seventy-eight."

1:44 T says, "All right, you may begin."

T says, "We would like to have it absolutely quiet. Do not get up and disturb anyone; let's have it absolutely quiet. Stay in your seat."

Holly raises her hand.

T comes over and deals with Holly.

T goes over and opens the hallway door.

Holly goes to the back of the room to look at the Arithmetic Vocabulary chart that is hanging on the blackboard.

T says, "Danny. Good posture."

The children don't look as though they are working; they look more thoughtful.

T says, "I know you will have to turn in your chair to find the word if you are not sure of the spelling; that's all right. Be real quiet."

T is referring to the Arithmetic Vocabulary chart that is on the back blackboard.

T comes over and deals with Carolyn.

Mrs. Apple Mrs. Noble

Some of the children are getting up and going to the back of the room to look at the chart: Jim, Holly, Susan, Duane, Debra and Mark.

T says, "One at a time."

They all go back to their seats except Susan.

T says, "Go on and then when you get your turn, you can go back there."

John has raised his hand.

Kitty has also raised her hand.

T comes over and deals with John.

Susan returns to her seat.

Mark gets up and goes over to the chart.

The children are sort of drawn irresistably to the chart.

Vickie, Mark, Susan, Holly and Jim are there.

T says, "One at a time, one at a time. How are we going to see the chart unless we are there one at a time?"

Mark, Vickie, Jim and Holly return to their desks.

Susan finishes looking and then returns to her desk.

Jim comes back up to the chart.

Then Holly goes over to the chart.

T says a word to Debra.

Ruth has her hand up.

T deals with Ruth.

Still Susan, Mark, Holly, Jim and Vickie are back at the chart.

T says, "One at a time."

As soon as she says this, they move back a little.

T says, "Use your judgement. Let's not all pile up back there."

1:47 T comes over to deal with Duane.

T finishes with Duane.

T says, "We may not visit with our neighbor at all."

It is not clear to O if T is talking to Gary or to Linda.

Les gets up for a drink of water.

Vickie, Jim and Mark are still back there using the chart.

Les is standing by the water fountain, looking at the chart.

Susan gets up and goes back to look at the chart.

T deals briefly with Carolyn.

Ruth has her hand raised.

T deals with Ruth.

1:48 T finishes with Ruth.

T deals with Debra.

T finishes with Debra.

Jim has a question that T answers.

Then T says, "Step aside, please. Do not stand right in front of the chart. We should already know how to spell these words. We shouldn't have to look. We have worked with them for a long time now."

Randy makes a comment.

T indicates that he should be quiet.

Susan starts to go back again to the chart.

T says, "That's too many back there, Susan. Can't you see that, honey?"

Susan sits down again.

Mrs. Apple Mrs. Noble

T finishes dealing with Holly.

T says to the group at the chart, "Step aside. Just look at your own paper. Step aside so that we can all see. Wait your turn."

T deals with Vickie.

Debra, Mark, Vickie and Les are now back at the chart.

Billy gets another drink of water.

T reprimands Billy.

T moves Jim's desk over a bit more to the wall.

T wanders around the room looking at the children.

Billy is at the science table again, looking at the exhibits.

Billy notices T watching him.

T smiles at Billy.

Billy sits down at his desk.

T again says to the group back at the chart, "Step aside now. Let's not bunch up there so we can see, too. Cover your work when you are finished."

Debra has her hand raised.

T deals with Debra.

1:51 T finishes with Debra.

T says, "Mark, you're not to work your test problems back there."

Mark returns to his desk.

T goes over to Becky and says, loudly, "It takes some real good thinking. Not every one of them is going to be real easy; we'll have to do some good thinking."

Mrs. Apple | Mrs. Noble

T finishes dealing with Becky.

T wanders up between the rows.

T says, "Think about your work carefully, Becky, and see what they mean."

T stops to deal with Holly for a moment.

Les has his hand raised.

Randy raises his hand.

T goes over to Randy and says, "Think out what the problem is and try and put down what you think is correct."

T urges, "Randy, let's keep in mind what we've said about good posture."

1:52 T goes over to deal with Holly.

T then deals with Patrick, very briefly.

Les's hand is up.

T has Becky turn her desk so that Becky is facing the sink at an angle, and is turned away from the class.

T comes to the front of the room.

T says, "Randy, let's get your shoe tied and then let's get this test done."

Randy had been occupied with the tying of his shoe.

T says to the whole class, "You may use scratch paper if you need to; you may use this paper over to the side if you like."

T continues, "Gary is using scratch paper for some of the answers that are in equation form."

T comes over to answer Les's question.

T says, "Les, now, be careful. Think what the question asks and then put in what you think is correct. Think it out; it takes some good thinking."

Mrs. Apple Mrs. Noble

1:54 T says, "Ina, I am either going to have to put a zero on the paper or you are going to have to stop writing. What has Mrs. Apple said about that?"

Apparently Ina is writing with an ink pen, which is not allowed.

T continues, "Don't look like you don't know what we are talking about. What is it?"

This conversation catches the attention of several of the children.

T goes on, "Ina, you are going to have to do the whole paper over again."

T says, "Now, don't feel badly about that because I have told you before that you will have to do these all over again. Now, I'm trying to be nice to you, not mean."

T asks, "Ina, will you be able to copy quickly on a new test?"

Ina is red-faced and defeated.

Becky has her hand raised. Also, her desk is now turned more in the direction of the class.

T collates another copy of the test for Ina.

T says, "I'm sorry about it, aren't you?"

T, in an effort to comfort Ina, says, "It wasn't working very well, was it?"

T pats Ina on the head.

T gives Ina a new copy of the test.

Ruth has her hand up.

T comes over and deals with Ruth.

Becky raises her hand and says, "I've got two front sheets on my test."

T says, "Well, come with me and we'll fix it up."

T and Becky go over to the shelves.

T says, "The boys put the tests together and they missed a page."

T puts her back to the shelves and stands looking out into the room as she pulls the staple out of the paper.

1:58 Becky says, "Thank you."

On her way back to her desk, Becky stops and shows Bill her renovated test.

John comes up to talk with T.

T nods her head at him and says, "Raise your hand first."

John returns to his desk and immediately raises his hand.

T comes right over to John's desk and deals with him.

1:59 T pats Dan on the head and says, "You'd better get back to work."

Dan had been daydreaming.

.....

The recording of events is interrupted as O changes tapes.

.....

During the tape change, the following events occurred.

T reprimands Kitty and Greta because Kitty was going to help Greta with a problem.

T indicated to them and the entire class that this was not appropriate behavior for a test. T also indicated that even if they were talking about something else, T would think that the discussion was about the test.

T returns to her desk and sits down.

Mrs. Apple

Mrs. Noble

T says, "Doesn't that look ever so much nicer in pencil, Ina?"

T sits at her desk and looks at a magazine.

T gets up and wanders around the room, looking over the shoulder of some of the children.

The room is very quiet.

Holly's hand goes up.

T goes over to Holly's desk.

Holly says, "My test isn't stapled anymore."

T says, "Well, you come over to my desk."

T and Holly come over to T's desk.

T staples Holly's test.

2:04 Holly says, "Thank you" and returns to her desk.

T sits down at her desk.

Susan gets up and comes over to T's desk; Susan also restaples her test.

T asks, "Did yours come apart, too?"

Susan says, "Uh huh."

Susan returns to her desk.

T gets out a series of announcements--a Quarterly Report--and begins making corrections on them, inserting them within this Quarterly Report as she works.

The room is quiet; the children are working pretty hard on this test.

T gets up and walks around the room, holding the Quarterly Reports in her hand.

T returns to her desk.

Carolyn's hand is up.

Mrs. Apple Mrs. Noble

T says, "Carolyn?"

Carolyn comes up to T's desk.

T deals with Carolyn.

T dismisses Carolyn.

2:07 Becky comes up to T's desk.

Becky laughs and says, "My test is all out of order."

T says, "I think they tried to hurry too much. Oh well, you just have an extra sheet here."

T numbers the pages for Becky so that she won't get confused.

T says, "That's what happened."

2:08 Becky returns to her seat.

Billy comes up to T's desk.

T says, "Billy, I can't help you with the problem, but you can use the scratch paper to work on."

Billy stands there, kind of swaying.

Billy then goes back to his seat.

Jim then comes up to T.

T deals with Jim.

Susan comes up to T's desk while T is still busy with Jim.

Vickie gets up out of her seat and goes back and says something to Billy.

Billy wants her to stay and talk to him, but Vickie refuses.

T then says, "No whispering, please; I'll think it's about the test, and I'll have to give a zero, won't I?"

Vickie starts to get a drink of water.

T says, "Vickie, honey, is it an emergency?"

Mrs. Apple Mrs. Noble

T says, "We're going to get a little break in a little bit."

T says, "Jim, this has been studied in the last chapter. You do the best you can."

T dismisses Jim and he returns to his seat.

2:10 T deals with Susan who has been waiting by T's desk.

T says, "Yes, Ina?"

T leans over her desk to look at what Ina is pointing at and deals with Ina regarding her paper.

Billy gets up to get a drink of water.

T says, "Let's not have any more drinks until break time."

Billy says something to Becky.

Billy makes funny noises with his mouth.

T says, "Is it an emergency, Bill?"

Billy says, "My mouth is dry."

T pauses, looks at him, smiles and says, "Well, you use your judgement; do you think you need to make that noise now?"

Billy goes back to his desk and sits down.

Ina is sitting there, just looking at T.

T says, "Ina, I'm sure you will know how to work that problem if you just give it some thought."

2:12 No one is finished yet.

T remains at her desk, going through the Quarterly Reports again.

John gets his arithmetic book out and puts it on top of his dictionary.

T notices this immediately, shakes her head and says, "John, put your arithmetic book away."

John does so.

Mrs. Apple Mrs. Noble

T says, "Ina, you just go on."

Ina needs encouragement to continue working on the arithmetic test.

Kitty comes up to T's desk.

T deals with Kitty.

Bill is out of his seat and is back at the shelves.

Bill makes the same silly noise with his mouth.

T immediately looks at Billy and kind of smiles at him, as she continues to deal with Kitty.

Billy, as if "caught in the act," gets right back into his seat with a very red face.

T says, "Now, Billy, you'd better get busy."

2:13 T gets up and goes to the back of the room and sits down at the demonstration table. She takes with her the Quarterly Reports.

T takes this action so that she can keep an eye on Bill.

Becky comes over to T with a question.

T answers Becky's question.

Becky returns to her seat.

John goes back over to T.

Becky gets out of her seat to throw away some paper.

T continues to deal with John.

The rest of the room is quiet.

Bill is working very sporadically.

Becky returns to her seat.

John returns to his seat.

Mrs. Apple Mrs. Noble

T says, "John, you look your work over again."

John has apparently finished his test, and this suggestion seems to leave him depressed.

Ruth is talking to Leigh Ann.

T asks, "Ruth, what do you need?"

Ruth says, "I'm getting some paper from Leigh Ann."

Carolyn comes up to T.

T deals with Carolyn.

T then says, to the whole class, "Turn around, do your own work."

T, apparently deciding that some break is needed, says, "Let's all stand for just a moment. Put your pencil down. Stand up and stretch for just a moment."

John is still glum and watery-eyed.

T says, "Come on. Way up tall to the ceiling. Take this minute and stretch."

T stretches--her hands up high over her head.

Leigh Ann and John don't stand up.

T urges, "And touch your toes. Everyone."

T bends over and touches her toes.

Leigh Ann gets up.

John, and now Danny and Gary are still sitting.

T says, "Come on, boys, get up."

T says, "Get up and exercise a minute; it's very good for you. Please. Touch your toes a little bit."

The children are going up and down.

T goes on, "Get the crinkles out. We're going to get the crinkles out."

Mrs. Apple Mrs. Noble

Some of the children giggle.

T says, "Now, let's hang over like a rag doll."

T bends over in a very relaxed fashion.

So the children, they all hang over.

John still hasn't gotten up, nor has Gary.

T says, "And arms out to the side. Make circles with your hands."

T makes wide circles with her arms.

2:17 T says, "Gary and John, I would like for you to join us, please."

Randy also sits down now.

Gary and John get up.

T says, "Randy, you too."

Randy says, "I have already got up and sat down."

T says, "Okay."

T says, "Big circles."

The children make big circles with their arms.

T says, "And hop on one foot."

T hops on one foot.

All the children hop on one foot.

T says, "Hop on the other foot. Now touch your toes."

T says, "All right, let's make a circle with your head all the way around. Loosen up those muscles. Back around the other way."

T goes through the actions herself.

2:18 T says, "All right, now sit down."

"Let's get back to work."

The children do so. Some of them look happy, others just relieved to be able to get back to work. They look like they are concentrating pretty intensely.

John continues to look unhappy.

T returns to her desk and sits down.

Patrick comes to T's desk.

T deals with Patrick.

Billy comes over to T.

Billy comes closer as though to see Patrick's paper.

Patrick returns to his seat.

T deals with Billy.

John comes back to T's desk.

T says, reprovingly, to John, "Excuse me."

John returns to his seat.

Randy is lingering around T's desk.

2:19 T finishes with Billy.

Billy returns to his desk.

T begins to deal with Randy.

T finishes with Randy.

Randy goes back to his seat.

John returns to T's desk.

T deals briefly with John.

T says to John, "Just leave it that way and then when we go over the test, we'll learn how to do it, won't we?"

John goes back to his desk, again looking very depressed and unhappy.

500

Mrs. Apple Mrs. Noble

Vickie comes over to T's desk.

T deals with Vickie.

2:20 T finishes with Vickie.

Vickie returns to her desk.

John gets up to put his test in the regular arithmetic box.

T says, "No, John, keep it on your desk."

Ruth raises her hand.

T goes back to Ruth's desk and deals with her there.

T finishes with Ruth.

T moves to the front of the room.

T stops at Danny's desk and says, "Did you have your hand up?"

Danny shakes his head - no.

T says, "Oh, I'm sorry, I thought you did."

T returns to her desk, puts a rubber band around the pages of the Quarterly Reports and places them on top of other papers on her desk.

T says, "Ina, you'd better keep right busy."

Sighs are beginning to be heard around the room. The children are working pretty intensely on the test.

Jim gets out of his seat and asks a question while he is two desks away from T.

T says, "Mark, you shouldn't talk to Bill. I'll think you are talking about the test."

Mark's face is red.

2:22 T answers Jim's question.

Jim returns to his desk.

Jim raises his hand.

Mrs. Apple Mrs. Noble

T goes over to Jim's desk and deals with him.

T returns to the front of the room.

Jim gets up and goes over to Leigh Ann to borrow a piece of paper.

T watches this interaction and then sort of relaxes as she sees that it is only about a piece of paper.

T walks over to Danny and says, "You made good use of that scratch paper."

Danny blushes a little bit.

T returns to her desk, takes out her copy of the Listen, Speak and Write book,[1] and leaves it on top of her desk.

T then wanders around the room.

T stops at Joal's desk and looks over her shoulder.

Joal has finished her story and T picks it up.

T goes to the back of the room, stopping to say something to Patrick.

T begins to read Joal's story.

Linda gets up to throw something in the wastebasket and then returns to her seat.

T brings Joal's story back to her.

Joal has apparently finished her arithmetic test and is reading a library book.

2:25 At this time, maybe four students have finished their arithmetic tests: John, Joal and maybe Steve and Gary.

T moves over to Ina's desk and says, "That's it, Ina."

---

[1] M. Monroe, R.G. Nicols, W. Caballgreete, H.M. Robinson. Listen, Speak and Write. Scott Foresman & Co. 1963

Mrs. Apple Mrs. Noble

Then T goes over to Susan's desk and makes a brief comment to her.

T continues to walk around the room.

Kitty gets up and puts her test into the arithmetic box.

T says, "Keep them at your desk."

Kitty apparently doesn't think that this is meant for her.

Billy repeats T's statement to Kitty as she passes him on the way back to her desk.

Kitty returns and retrieves her test and then goes back to her seat.

T is over at Becky's desk, checking her test.

T is just more or less just looking over shoulders now.

T says to Jim, "Let me see how you are doing."

Jim doesn't look too pleased about it.

2:27 T comes back to her desk.

Kitty is over at the shelves, selecting an extra-curricular book.

T says, "All right, class, let's put down our pencils; we've worked long enough on this."

Randy says, "Oh, let's finish it."

T, stopping objections, says, "No. Let's put your pencils down."

"We'll finish them in the morning. We've worked long enough on them."

T says, "Danny, why don't you pick them up for us since you are the special helper, please."

Vickie raises her hand.

Danny gets right up and begins to collect the tests.

Mrs. Apple Mrs. Noble

T says, "How did you feel about the test? Did you feel that it covered well what we have studied this year? A little bit of everything in here? What things did you find hard? I noticed that some of you still found the division hard, didn't you?"

Some of the children say no and some say yes.

T says, "Somehow it seems like this week we just caught on. We worked hard and we always do, and it seems like we just caught on, didn't we?"

T goes on, "I know Mark felt that way when he worked his test, didn't you, Mark?"

T then says, "Let's stop now."

"Just pick up the papers as you go, Danny."

T goes over and picks up Randy's test.

Randy had been reluctant to relinquish it.

2:29 Jim is out of his seat.

T says, "Jim, go and sit down."

People are getting up all over the place.

T reprimands Jim.

John comes up to T.

T says, "John, I will answer your question if you will raise your hand."

John raises his hand on his way back to his desk.

T stands in the center front of the room and waits for the attention of the class.

T then says, "All right, let's do our Listen, Speak and Write.[1] We didn't do our Listen, Speak and Write this morning, so let's do it now, it's time for this."

---

[1]Ibid.

John looks thoroughly frustrated.

Leigh Ann raises her hand.

T says, "Yes, Leigh Ann?"

Leigh Ann says, "We didn't do any English this morning."

T says, "We wrote on paper, didn't we? Isn't that English? Where did we learn about paragraph form, and indenting, and margins? Where did we study about that, Leigh Ann?"

Leigh Ann grins and says, "Yes, I guess that was English."

T says, "I called that English. I guess we could just call it creative writing."

Jim's hand is raised.

T says, "Jim, you come on over."

Jim does so.

T deals with Jim.

T finishes with Jim, and he returns to his desk.

T says to the class, "Will you please turn to page 66."

T repeats, "Turn to page 66."

T waits for people to find page 66.

Danny is still collecting test papers.

T smiles at Danny as he passes by her.

T says, "Let's lay our books down flat on your desks so I can see your faces better. It's hard to hear what you say sometimes; let's put our books flat on our desks, please."

T is telling the students to lay their Listen, Speak and Write books down on the desks, but to leave them open and face up so that the students can still read them.

Mrs. Apple Mrs. Noble

2:32 T repeats, "Lay your books down, please."

T then says, "What did we call the words last week--we talked about words that were names for places and for people and things--what did we call those words, do you remember?"

Carolyn raises her hand and says, "Nouns."

T says, as she writes the word nouns on the blackboard, "Who can say some nouns that are words for me?"

T says, "Kitty?"

Kitty says, "Grocery store."

Debra raises her hand and says, "She, he, him, Mother, Father."

T says, "Now, just a minute. Mother, Father would be names for people, wouldn't they? We're going to just talk about those words that are on page 66."

T says, "Susan?"

Susan says, "Family."

T says, "You see all these words on the top of page 66 that can be used as nouns."

"For instance, I want you to listen to the story."

"Put on your thinking caps and listen for just a moment."

T goes on, "See if you can see anything unusual or any way that we might change the story and make it just a little bit better or easier to listen to."

T stands and waits to get the attention of the students.

Danny is fussing around in his desk.

T waits for Danny.

Finally, Danny notices this.

Mrs. Apple | Mrs. Noble

T says to Danny, "Lay your book flat on the desk and turn your page open."

T begins to read a paragraph from the teachers manual in which the noun Tommy is used over and over again when it would be simpler to use a pronoun.

T then says, "Do you see anything unusual about that story?"

Hands go up.

T says, "Les?"

Les says, "They say Tommy all of the time."

T says, "Yes, they do."

T then says, "Kitty?"

Kitty says, "The neighbor children were talked about more than they had to be."

2:35 T says, "There are some words that we can use in place of the name and not always say Tommy. There are some other words such as the word that Kitty mentioned, such as they, that could be used in place of it. You were using it in place of what word?"

Kitty says, "Neighborhood children?"

T says, "All right, and they stood for the neighborhood children. Let me read the first sentence and then let's see what other words we can put in place of the name."

T reads: "Tommy went into the house to get a ball and bat."

T then says, "Let's read the next one."

T reads: "Tommy took the ball and bat from the closet and took the ball outside."

T then asks, "What might we use in place of that?"

Randy's hand is kind of halfway up.

T says, "Randy?"

There is a pause.

Mrs. Apple Mrs. Noble

T says, "Do you think we need to use Tommy again or what might we use?"

Randy finally says, "He."

T says, "He is a good word that we might use."

Kitty raises her hand and says, "We could use them."

T writes he and them on the blackboard.

T says, "Now the sentence reads like this: 'He took them from the closet and took the ball outside.'"

T reads the next sentence: "Tommy invited the neighbor children to play ball with Tommy."

T then says, "What can be done to change that sentence to avoid using Tommy again?"

T says, "Jimmy?"

T changes and says, "Gary?"

Gary says, "I was just stretching."

T says, "Okay, then. Jimmy?"

Jimmy says, "Him."

T writes him on the blackboard.

T reads the next sentence.

They replace the nouns neighbor children with they and Tommy with him.

T then says, "All right, all of these words can be used in place of nouns."

"Is Tommy a noun, boys and girls."

The children say, "Yes."

T says, "It's the name of the person, isn't it? These words which we have just mentioned are called pronouns."

T writes pronouns on the blackboard.

Mrs. Apple

Mrs. Noble

T says, "Let's say that together."

The children say, in unison, "Pronouns."

T says, "Because they are used for," and she underlines pro, "nouns," and she underlines nouns.

T continues, "If we would just try to talk without using he, she, and it, and without all of the words that we use in place of nouns, our talking would certainly sound funny, wouldn't it? Because we would always have to use the proper names."

T says, "The word pro stands for for, boys and girls, so this word pro means for nouns."

2:37 T says, "Let's read the story on page 66 and see how many pronouns you can find."

T says, "Greta, would you read the list of pronouns?"

Greta reads: "We, you, she, them, they, he, me, him, I, her."

T says, "All right, good."

T says, "Do you see the story there on the yellow part of the page? Point to it on page 66, please."

The children point to the right story.

T says, "Billy, will you read the first sentence?"

Billy had not raised his hand.

Billy reads: "'Aunt Sarah was married last Saturday,' Jean said to Nancy."

T says, "All right, Bill, let's stop there. Are there any pronouns there?"

Bill nods and says, "Aunt Sarah is the name of a person."

T says, "Would that be the name of a pronoun; would that be like we have been talking about here?"

Bill shakes his head - no.

Mrs. Apple Mrs. Noble

T says, "What would Aunt Sarah be, class?"

Everybody says, "Noun."

T says, "It is the name of a person, isn't it?"

T says, "Do you see that, Billy? The pronoun is used in place of it. Do you see what they are talking about?"

T then says, "Billy, read the next sentence and see if you see any pronouns."

Billy reads: "She had me for the flower girl."

Billy watches the hands go up.

T asks, "Billy, do you see any pronouns there?"

Billy says, "Me."

T says, "Good, me is one."

T says, "Vickie, are there any more pronouns?"

Vickie says, "Flower girl."

T says, "Would that be a pronoun, boys and girls?"

Many of the children say, "No."

T says, "Some say no. Boys and girls, what would it be?"

T says, "Ruth?"

Ruth says, "It's a noun."

T says, "Pronouns are listed at the top of the page. So what noun is the word she being used for in this sentence?"

T goes on, "'She had me for the flower girl in the wedding.' Who are they talking about?"

Joal has her hand raised.

T says, "Joal?"

Joal says, "Aunt Sarah."

T says, "They are using it for Aunt Sarah, aren't they?"

T then says, "She had me. Who is, ah, or for what word is that standing?"

Patrick has his hand up.

T says, "Pat?"

Patrick says, "Jean."

T says, "Jean. All right."

"Let's go on to the next sentence. Are there any pronouns in that?"

Debra has her hand up.

T says, "Would you read it for us, Debra?"

Debra reads: "Mother made a beautiful blue dress for me to wear."

2:40 T walks over to the hallway door, reaches out and closes the door. Then T returns to the front of the room.

T says, "Are there any pronouns in that sentence?"

Debra says, "Me."

T says, "That's right."

T says, "Linda, would you read the next sentence?"

Linda reads: "Have you ever been to a wedding?"

T asks, "Are there any pronouns?"

Linda says, "You."

T says, "For what noun is that standing; who is you?"

T asks, "Linda?"

Linda says, "Nancy."

T says, "All right, she is talking to Nancy, isn't she?"

T says, "Let's go to the next one."

T says, "John, would you begin for us?"

John reads: "'Oh, yes! I love weddings,' said Nancy."

T asks, "Any pronouns?"

John looks at the sentence and makes a face of concentration.

Hands are up.

T says, "Good detectives, here."

T waits for John.

T says, "Oh, they all want to help you so much, John. Can you find it?"

John shakes his head - no.

Ina has her hand up.

T says, "Ina?"

Ina says, "I."

The students laugh.

T says, "And for whom is I standing? Whose place is it taking?"

Ina says, "Nancy."

T says, "Otherwise, she would have to say: 'Oh, yes! Nancy loves weddings, said Nancy.' So it is the pronoun I in place of Nancy's name."

2:42 T says, "Read the next sentence for us, Gary."

Gary reads: "At one wedding, Bobby and I threw rice at the bride and groom as they left the church."

T says, "I didn't hear very well. Could you hear, Bill?"

Billy says, "No."

T says, "Read it one more time."

Mrs. Apple Mrs. Noble

Gary reads again: "At one wedding, Bobby and I threw rice at the bride and groom as they left the church."

T says, "Now, that was real fine. Are there any pronouns in that sentence?"

T says to Duane who is tying his shoe, "Duane, honey, we need your help, too."

Duane says, "I'm tying my shoe."

T says, "Get your shoe on."

Gary has paused a long while before answering, "I is one."

T asks, "What noun is it taking the place of?"

Gary says, "Nancy."

T says, "Do you see any others?"

Ina raises her hand.

T says, "Ina?"

Ina says, "They."

T says, "The bride and groom. All right. Very good."

T goes on, "What do we call the words that take the place of nouns?"

Everyone says, "Pronouns."

T says, "Who can tell me the names of some pronouns?"

T says, "Patrick?"

He answers.

T says, "Another one, Randy."

He offers one.

T says, "Another one, Greta."

She answers.

T says, "And another one, Susan."

Susan answers.

Mrs. Apple

Mrs. Noble

T points to Holly, then to Jim, to Dan, Vickie, Ina, Bill, Kitty, Debra, and Susan. In rapid succession, each child names a pronoun as he or she is called upon.

T then says, "All right, who can tell me now in your own words what a pronoun is?"

T puts her Listen, Speak, and Write[1] book away.

2:44 T says, "What kind of words are they; tell me what they do. Who can tell me in his own words?"

At least a third of the hands are up.

T says, "Greta?"

Greta says, "They take the place of nouns."

T asks, "And what do nouns do, Steve?"

Steve says, "Well, they are the name of something."

T says, "Are they the name of something or are they the word for the name of things, persons or animals?"

The content of the response to T's question is not clear.

T then says, "You are doing just real good."

T says, "Put your books away now quietly and we'll take our break."

The children put their books away.

During this break, the children will first be dismissed to go to the restroom. They will return to the classroom and line up by the door. When all are ready, the children with their playground equipment, will proceed outside.

Holly asks, "Can I stay in and finish my story?"

---

[1]Ibid.

Mrs. Apple Mrs. Noble

T says, "If you would like to. Yes."

T says, reprovingly, "I beg your pardon!"

"We are going to take our break. Come back to your seats."

Randy, Gary, John and Jim have gone running back to the playground equipment closet.

T says, "Who are our playground boys?"

Randy raises his hand and leaps out of his seat.

T says, "I did not say to get up!"

Randy sits down and says, "Gary is the one."

Gary says, "Not me. It's Carolyn."

Randy is out of his seat again.

T says, in no uncertain terms, "Sit down!"

T says, "Now, your playground helper..."

T stops, snaps her fingers and says, "Gary, sit down!"

T says, "Your playground helper wouldn't raise his hand. Those people; I'm warning those people who take out the equipment; bring it back. I've said this from the first of the year, haven't I?"

T goes on, "We're taking our break, first. We will then come back and line up; you can get your equipment then. There is no point in taking [illegible] into the restroom and taking it out again."

Billy says, "What if we're not going to the restroom."

Billy gets no answer.

2:46 T says, "All right, let's have Row 5 and Row 1 pass quietly for their break."

T dismisses the children to go to the restroom by rows.

T says, "There is no one who has to be back in that corner."

Jim, Les and Billy are back there.

Jim, Duane, Joel and Becky line up by the door.

T asks, "Why are you back there, Gary? Do you want him to bring something special for you?"

Gary nods his head - yes.

T asks, "Are you a playground helper, Gary?"

Gary shakes his head - no.

T says, "All right."

T says, "Your recess begins now."

There is a big, whispered discussion in the back of the room involving Gary, Patrick, Jim, John, Carolyn and Randy.

T says to these children, "If you want to talk all afternoon, that's all right. We won't have time for recess because it's time to go now."

Children are hurrying around.

T says, "Better put something on your papers here, folks."

T then says to the group that is carrying on the whispered discussion in the back, "All right, that's all the talking. Get out of there."

T continues, "Randy, we have to go. Do you have all the equipment? That's fine."

T says urgingly, "Carolyn, are you going to take a break?"

Carolyn moves along a little faster.

2:47 T says to a child who complains he can't find certain equipment, "Well, it's a good thing because you can't take it out, can you?"

Gary has gotten a ball.

T says, "Row 3 and Row 2, you may pass quietly now."

Mrs. Apple Mrs. Noble

Kitty motions for Susan to come.

T says, "All right, Row 4."

Duane has a ball.

T says, "Duane, are you a playground helper? Who carries the balls out? No one ever but the playground helper."

Duane looks noncommittal.

The children are lining up at the doorway, waiting for children who have gone to the restroom.

T has her finger up to her mouth indicating quiet.

T asks, "Gary, do you need something?"

Gary says, concerned, "I can't find that little ball that I had. I think Les has it."

T says, "You share and work it out outside."

Linda is working on something, maybe her reading assignment.

T leaves the room, steps across the hallway, opens the boys restroom door and says, "Hurry up, boys."

T returns to the classroom.

Leigh Ann has been looking for something on T's desk.

T asks, "Can't you find it, Leigh Ann?"

Leigh Ann shakes her head.

T comes over to help Leigh Ann.

T says to the children lined up by the door, "Is it too much to ask you to stand in line without talking while we get ready to go?"

T gets her whistle out of her desk drawer, which is apparently what Leigh Ann had been looking for.

T moves back to the doorway.

Mrs. Apple Mrs. Noble

T says, "Linda, did you want to go outside and get some exercise?"

Linda straightens up her papers and then goes over to the line at the door.

T says, "We have just two or three girls who we are waiting for."

T smiles at Joal, taps her on the shoulder and says, "Go tell them we are ready to go."

Joal leaves the room and hurries down the hall.

It is very quiet in the room; the children wait to go out.

T reprimands some of the boys in a very quiet voice.

T says, "Are you coming, Bill?"

Billy shakes his head - no.

T asks, "Why not?"

Billy says, "I don't have anything to do outside."

T says, "With all of the playground equipment and with all of the games we have. What do you mean you don't have anything to do?"

John offers a comment.

T reproves John, "I'm sorry. Is your name Bill?"

T goes on, "Billy, what do you mean?"

Billy says, "I just don't have anything to do."

T says, "I just don't understand."

T points to John and says, "Raise your hand."

John does so and says, "He wanted a ball, but all of them were taken."

Mrs. Apple Mrs. Noble

T says, "Well, now for goodness sakes, if we have three balls or four balls or whatever in our room, that's a lot of equipment; we can't have one for every single person. So what are we going to have to do? What have we done all year?"

Linda raises her hand.

T says, "Linda?"

Linda says, pious.ly, "Share."

T says, "We're going to have to learn to share, and we'll have to work in something that all of us can take part in."

John says, "We're sharing," pointing to Jim.

Jim says, "Billy wanted another ball, but Gary had already taken it. So I could tell Billy that he and I and John could kick the ball back and forth."

2:51 T says, "Well, you come on and join us, Billy."

Joal and the rest of the girls return from the restroom.

T signals them to go out of the room.

Billy doesn't look very happy about going.

They go out very quietly; John is still not happy, Gary does not leave.

The observation ends with Gary still in the room.

Mrs. Apple Observer: Dr. Gunn

3:07 Recess is over.

The children return to the classroom.

T urges, "Now take your seats. Sit down and rest."

T goes on, "You can finish the stories that you're working on while you're resting."

T goes over, closes the door and says, "We can have the door open later."

3:08 T says, "Maybe we can read some stories in class."

T takes her purse out of the desk and gets out her cosmetics, mirror and a comb. She proceeds to comb her hair, powder her nose, etc.

.....

The recording of events is interrupted as O fixes the tape recorder.

During this time the milk has been distributed.

.....

T says to Patrick, "All right, you pass out napkins and straws."

T says, "Kitty, go back and sit down. We'll hear it from your seat."

Kitty had come up to T and asked if she could read her story.

The children begin having their milk.

Les raises his hand and asks, "Could we make a picture of our story?"

T goes over to Les's desk.

Les repeats, "Could we make a picture of our story?"

T looks down, sees that he has used a pen and says, "We don't use pen on our stories. If you want to make a picture, you get another piece of paper.

Mrs. Apple Dr. Gunn

3:12 T says, "We have a science lesson to do this afternoon so I'd appreciate your very best cooperation."

"We'll finish the story while we are drinking our milk. Maybe tomorrow we'll have time to hear those stories."

T continues, "Who would like to volunteer for our prayer?"

Jim raises his hand.

The children stand.

The prayer is led by Jim.

The children finish the prayer and sit down.

The children continue drinking their milk.

Steve comes over to T and asks, "What kind of tape is used to put things up on the blackboard?"

T says, "Well, that's masking tape."

T shows some masking tape to Steve.

T pulls her chair away from her desk, sits down and says in a friendly voice, "Be good listeners, now, and we'll listen to the stories."

> The five pictures are on the blackboard. They show: 1) a pupil balancing objects while, unknown to him, a teacher looks on disapprovingly, 2) a dog stretching for a drink from a fountain, 3) a dog and a monkey looking each other over, 4) a wise owl, 5) a runner sliding into base in a baseball game. The child will come up and point to the picture that he has chosen and then the child will read the story that he has written to illustrate his picture. The rest of the students are to listen and evaluate.

T says, "Jim, will you start, please."

Mrs. Apple Dr. Gunn

Jim comes to the front of the room.

T says, "What picture did you choose?"

Jim points to the picture of the baseball player making a sliding run into a base.

Jim begins to read his story.

Jim continues to read his story about an argument during a baseball game and about the foolishness of some people in this game.

Jimmy finishes his story.

T laughs a bit as Jim finishes.

Jim starts to return to his seat.

T reaches out her hand and says, "Jim, would you leave your story with me?"

Jim hands it to her and returns to his seat.

T says, "Boys and girls, did you hear any good descriptive words in there?"

Kitty offers a word that's descriptive.

Randy volunteers a descriptive word.

T says, "Holly?"

Holly offers a descriptive word.

Les raises his hand and makes a contribution.

His word is not descriptive.

3:15 T says, "Jim's story is expressive because he has nice dialogue."

T says, "Yes, Vickie?"

Vickie volunteers another way in which Jim's story was expressive.

T holds up Jim's paper and says, "Now, if you were to edit this, how about your margins?"

Mrs. Apple Dr. Gunn

Jim finally says, "I'd indent them a little bit."

The milk drinking is mostly finished.

T says, "Who's next?"

3:16 T says, "All right. Carolyn."

T asks, "Which picture did you choose?"

Carolyn points to the picture of the owl.

Carolyn starts to read her story.

T says, "Just a minute, Carolyn, we can't hear you. I want you to start over. The windows are open and it's hard to hear."

Carolyn starts over; reads her story.

Carolyn has a little trouble reading her story.

Carolyn finishes her story.

T gives a little laugh as Carolyn finishes.

Billy raises his hand.

T says, "Bill?"

Billy says, "Can I read next?"

T says, "Just a minute, Bill, we're not through talking about Carolyn's yet."

T holds out her hand and accepts the paper from Carolyn.

T says, "You've got pretty nice margins there, pretty good handwriting."

T goes on, "Class, see how she remembered to indent at the beginning of the paragraph?"

T continues, "Carolyn used good margins and has a nice looking paper."

T writes something on a piece of paper.

Then T says, "Bill?"

Bill sits up quickly.

T says, "Wait a minute, Bill. We want to have you read like a third grader and we don't want you to act silly. We do want to hear your story. Think you can do that?"

Bill says, "Yes."

Bill marches up to the front of the room, points to the picture he chose and begins to read.

3:19 Billy starts to giggle as he is reading his story.

T says, "Bill, if you giggle like that all through the story, we can't enjoy it."

Bill is acting real silly and infantile. He is almost collapsing with the giggles. He gets some minor encouragement from the rest of the students.

T says, "Well, maybe you better go back to your seat."

So Bill, giggling all the way, reels back to his desk and barely sits down.

T says, "Maybe you can come back later, or do you think you can do it now?"

Billy gets up and comes to the front of the room.

Billy begins to read again.

Billy again dissolves into a fit of giggles.

Billy is being encouraged by John a little bit.

T says, "Bill, sit down. We may come back to you later."

Billy returns to his seat.

T then says, "Patrick, you come up."

Patrick comes to the front of the room and points to his picture; it is the teacher-pupil picture.

3:21 As Patrick reads his story, he gets laughs from the students. This is because he has included Mrs. Apple in his story; in fact, he has made her a butt of some unfortunate incident.

As T is about to say something, John interrupts to make a comment.

Mrs. Apple Dr. Gunn

T says, "John, you have something to say?"

John subsides, indicating he's sorry for the interruption.

T says, "All right, then, I'll finish."

T goes on to say, "It's all right to put names of people in this classroom into your stories. Also if your margins are the same on both sides, the paper would look better."

Kitty makes a contribution.

T then says, "Who chose a different picture?"

Kitty raises her hand, pulls out of her chair and comes to the front of the room.

Kitty points to the picture of the dog jumping up to drink out of a water fountain.

Kitty begins to read her story.

Kitty finishes reading.

Kitty returns to her seat, taking her story with her.

T holds out her hand and says, "You want to leave that with me?"

Kitty brings the paper back and then returns to her seat.

T says, "Kitty did a nice job with her story, nice margins and everything."

3:24 T says, "Well, Greta, did you choose a different picture?"

Greta says, "Yes."

T says, "Let's hear yours."

Greta comes up to the front and points to the picture of a teacher looking disapprovingly at a boy who is balancing a bunch of apples and rulers in some kind of construction.

Greta begins to read.

Greta's story is about this misbehaving boy and how the teacher gets very mad and is red all over.

The story continues with this teacher again being the butt of this boy's misbehavior.

Mrs. Apple Dr. Gunn

The children are laughing and clapping a bit when they hear about the teacher's discomfiture. The spirit of the laughter is friendly, however.

Greta is still reading when someone hollers out, "Yay, yay, yay."

T says, "Just a minute. Let her finish."

Greta finishes her story.

T says, "Greta, I think you meant to say hall instead of hallway."

T goes on, "You used good descriptive words. For instance, like red all over."

T continues, "You used good margins and your handwriting was nice."

3:27 T finishes with a few more approving comments.

T says, "That's all the time we have. We'll do it tomorrow morning. We'll finish. I'll write that down so we'll be sure and do it."

T says, "It's time to start on our science. Let's take out our science books."

T continues, "Now, the rest of you take out your science books, please."

T then says, "Dan, will you collect the rest of our creative writing stories?"

Dan begins to collect the stories.

T picks up her lesson plan book and says, "We're not probably going to get done. We're a whole step behind."

T walks to the middle of the front of the room.

T looks back over to Billy and says, "Do you think tomorrow we could hear the rest of your story?"

Billy says, "Huh?"

T repeats, "Do you think tomorrow we could hear the rest of your story?"

Billy says, "Yeah, I guess I can stop laughing so much."

Mrs. Apple Dr. Gunn

3:29 T says, "We need our science book. Just leave it lay on your desk."

T says, "Leave the science book on your desk but don't open it. We're not going to read in it yet."

Then T turns to the blackboard and writes down the word light.

Then she turns back to the class, walking in between the first and second seats, and says, "What did we learn yesterday about light?"

T says, "Who would like to start?"

Gary gives an answer about what they learned about light.

T says, "What else do you know about light?"

T says, "Linda?"

Linda gives an answer.

T says, "Kitty?"

Kitty gives an answer but it has already been given.

T says, "Yes, Vickie?"

Vickie says, "Well, it's lighter in the daytime than it is at night."

T asks, "Where do we get our light?"

T says, "Mark?"

Mark says, "From the sun."

T says, "What else do we know about light?"

T says, "Pat?"

Patrick says something about man-made light.

T says, "Ruth?"

Ruth says, "Light reflects."

Kitty raises her hand.

T says, "Kitty?"

Kitty says, "That's right. It does. It reflects on the moon."

Mrs. Apple Dr. Gunn

T next says, "Debra?"

Debra makes a contribution.

In the meantime, Dan, who has finished collecting papers, brings them up and puts them on T's desk. Dan returns to his seat.

T says, "John?"

John says something about light.

Patrick says, "When I go swimming, the light under water makes a lot of beams."

T says, "Yes, that's right."

T says, "Yes, Jim?"

Jim has a comment to make.

T then says, "Dan?"

Dan says, "I put a spoon behind a glass and when I looked through the glass at the spoon, the spoon looked bigger."

T says, "So what could you make of that? What does the water do?"

Dan says, "It magnifies."

T pauses now.

T moves back away from the desks, returns to a position that is again in the front of the classroom.

T says, "We'll now talk about lights in modern day. See if we can learn two or three new things about light. You may learn some new things that you could try on, some things that you could experiment with."

T says, "We'll have our little groups to divide up like we did before."

The students will be divided up into four groups. Each group will have the same materials to work with, but each group will work with them independently.

Mrs. Apple Dr. Gunn

T holds up a worksheet that they are going to use.

The worksheet has five questions followed by discussion and conclusions. After the students perform the experiment, then they are to answer each of the questions.

T says, as she holds these worksheets up, "I want each one of you to answer each one of these questions. They're not very difficult, it won't take very long. I want one person in the group to do the reading of the questions, then each of you answer the questions on the worksheet."

T walks to the back of the room to the demonstration table.

T says, "Now, we have these things. Do you know what they are?"

T holds a prism up in the air.

T says, "Now, we only have one so what will that mean we have to do?"

The students say, "We have to pass it on when we are done with it."

T says, hurriedly, "Our time is running short so we'll have to work rapidly."

T says, "All right, I want these people," and she points to six people, "to gather around Linda's desk - with a pencil."

T points to Ina, Vickie, Dan, Gary and Jim to gather around Linda's desk. These students pick up their chairs and move to Linda's desk.

T walks over to Linda's desk and puts down a batch of the worksheets.

3:34 T says to the children at Linda's desk, "No talking until you've had all the directions. Is that clear? Okay?"

Mrs. Apple Dr. Gunn

T counts out six more people. These are to gather at Randy's desk.

These students are Randy, Greta, Les, Susan, John and Holly. These students move their chairs to Randy's desk.

As T finishes counting, she looks at the first group where there has been some slight talking and T says, earnestly, "I thought I made myself clear?"

This is a warning that there should be no talking.

T puts down a bunch of the worksheets on Randy's desk. The gathering around Randy's desk is causing some confusion.

John bangs his chair.

T says, "John. Put your chair down, John."

T moves closer and illustrates, saying, "Now, John, you can move your chair like this and it won't make so much noise."

T repeats to the group at Linda's desk, "Now, no talking until you've heard the directions."

T now begins to count out the third group.

The students in this group are Kitty, Billy, Mark, Duane, Debra and Ruth. These students move their chairs to Kitty's desk.

T says, as she finishes counting out the third group, "No talking."

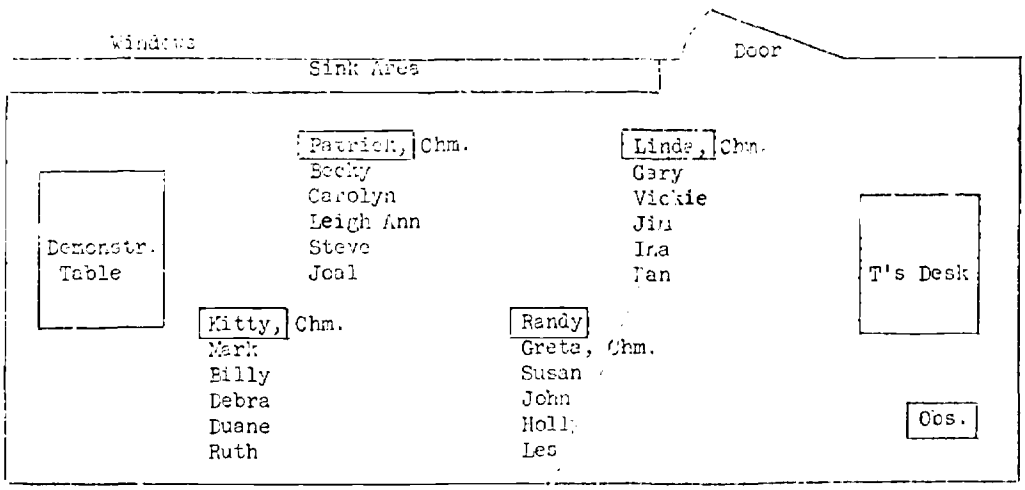
The children that remain become the fourth group.

These children are Patrick, Becky, Carolyn, Steve, Joel, and Leigh Ann. These students move their chairs to Patrick's desk.

530

Mrs. Apple Dr. Gunn

The following map shows the position and composition of each of the four groups.



T gives the third and fourth groups their worksheets.

T says, to the third group (Kitty's), "No talking."

T comes to the front of the room.

3:36 T says, "May I have your attention. I want your eyes on me."

T snaps her fingers and says, "Listen."

T is smiling, nice but T is definite.

T stands there for a few moments and waits until she gets their attention.

T says, "Would you, Linda, be the chairman of your group?"

Then T says, "Would you be the chairman here, Greta?"

T says, "And you, Kitty, be the chairman there."

T says, "Patrick, you be the chairman of your group."

T then gives the directions for this activity. The chairman reads the question, the children perform the experiment and each child writes down his answer on his own worksheet.

For example, question no. 1 reads: "Hold a glass in front of your eyes. Can you see through it?_____."

3:37 T says, "Ten minutes is all the time that we have. We can get done in ten minutes, but some of us can't be acting silly."

T goes on, "Remember, we have to pass the prism along to the other groups."

T continues, "And don't do anything with that last question, the question about discussion and conclusion."

T goes to the back of the room to the demonstration table.

3:38 T says, "Kitty, you come and get your tray of science materials, now."

The materials include a prism, a piece of frosted glass, a clear glass cup, a piece of tin foil and a mirror.

Kitty does so and returns to her group.

T says, "Patrick, you come now and get your materials."

Patrick comes and gets his materials, then he returns to his group.

T then says, "Greta, you come now."

3:39 T says, "Now you all must remain seated in your chairs. You cannot walk around the room."

Greta drops her tray of materials on the floor.

T says, "Now, children, what does this mean? What must we do?"

Linda says, "We must be very quiet."

T says, "That's right. You must whisper."

T raises her hand and says, "If I do this, that means you're too loud.

3:40 T says, "Linda, you come now and get your materials."

T says, "Linda, did you get a mirror? Who didn't get a mirror?"

T comes to her desk at the front of the room and gets a mirror out of her purse.

T takes this to Linda's desk and gives her the mirror.

T walks to the back of the room, carrying with her the worksheet that the students are working on.

The four groups are now busily at work.

T now stands by Linda's group and is showing the children how they can get started with the glass objects that they have.

T now goes over to Randy's group and says, "Now, children, each of you should have a chance to work with each of the things."

T walks back to Kitty's group and shows the children which object they are to use.

3:42 T says to the group as a whole, "Children, where it says clear glass, use the clear glass cup. I just couldn't get that many glasses in my bag this morning."

T says, "Don't worry about spelling. Just write down the best you can."

T walks over to Jim, who is in Linda's group.

T says to Jim, who is looking at the prism, "See what you can see with the prism, then write it down and pass the prism on."

Jim looks for a while and then passes it on.

3:43 T is wandering about the room seeing where she might step in to be of some help.

The children are happily fingering the various props.

It appears to O that the children are more interested in play with the objects than in learning about light.

Mrs. Apple Dr. Gunn

3:44 T wanders over to Linda's group by the door and says, "Dan, hold the prism up to the sunlight and then write down what you see."

Ina, in that same group, is now holding the prism.

T says, "Ina, hold it up to the sunlight. Tell us what you see and then pass it on. It's got to get all the way around the room."

T holds her hand up in a warning fashion to the whole group, hoping that this will quiet the room a little bit.

T is at the back of the room.

T returns to Linda's group by the door and takes the prism.

T brings the prism over to Patrick's group by the sink.

3:46 T leaves this group and wanders by Kitty's group at the back of the room by the demonstration table.

T talks with the children in Randy's group about what you can see with frosted glass and what you can't see.

The children in this group are having some difficulty understanding the separate sections in question four.

> Question four reads: "Hold the different things on your table up to the light. Which things can you see through? Which allow light to pass through? Which allow no light to pass through?" The idea here is to get the difference between opaqueness, transparency and translucence.

T raises her hand and asks for more quiet by signal and by shushing.

T says to Becky who is in Patrick's group by the sink, "Okay, pass it on. Pass it on, honey. Haven't got much time."

3:48 T snaps her fingers and says, "Mark."

> T is indicating to Mark that he is being too noisy.

John is clowning around.

By now, most of the children are pretty much industriously engaged in their work.

3:49 T chastises John by saying to him, quietly and soberly, "That doesn't go."

T says again, to the whole group, "Sh-h. Hold it down. Hold it down."

T goes over to Linda's group, by the door, and says, "Just write down whatever it is that you see."

T then goes over to Kitty's group, at the back, and tries to settle them down a little bit.

Apparently, Billy is using somebody's pencil when he should be using his own.

3:50 T says, "Billy, don't do that."

T then takes the prism away from Kitty.

Kitty doesn't want to let go, but T tugs and is insistent.

T is holding the prism in her hand but Billy grabs it away from T.

T says, "Billy, you must hold the prism to the sunlight."

Billy pays no attention whatsoever to her.

T snaps her finger and says to him in a loud, definite voice, "Will you listen to Mrs. Apple?"

Then T softens her voice and says, "Turn it to the sunlight."

O can certainly empathize with T; Billy is acting like a selfish, dominating infant.

T anxiously turns around and looks at the clock.

Apparently T wants to get that prism all the way around the class if she can before she has to call this lesson off.

Mrs. Apple Dr. Gunn

T takes the prism over to Randy's group, by T's desk.

T says, to this group, "Hold it away from your eye and look."

3:52 T leans over Randy's shoulder and says, "What do you see? What do you see, honey?"

.....

The recording of events is interrupted as O changes tapes.

.....

During the interval of changing tapes, a rain has come up outside.

T is saying, "Now, will you do something for me? Just leave the materials right on the desk and we can do this tomorrow but we have to start to get ready to go home."

3:54 Several children are beginning to move their chairs back to their regular places.

Not all of Randy's group has been able to look through the prism.

Les is using the prism; "hogging it" so that the students around him, who want to use it, are unable to do so.

T sees this and says, "Les."

Les gives it up without much trouble to Holly.

As Les hands it over, T says, "That's right. Give her a chance."

3:55 The school bell rings.

T says to Ina, "We need your help, honey."

T is indicating that Ina should put her materials away.

There is a big stir in the class now as children are moving chairs, putting away materials, etc.

Cleaning up involves putting the props back on the demonstration table where they were just before this lesson started.

Carolyn comes to T with a big book.

T says, "Not right now, honey."

But Carolyn insists, apparently really needing T's attention.

T says, "Well, put the book on the shelves."

T says, "Boys and girls, now come on. Sit down. I want to talk to you a few minutes before you leave."

T comes over to John and Holly, who are looking through the prism and says, "Isn't that pretty?"

T reaches out and takes the prism and says, "We do need to leave school on time so let's put it back on the table."

3:56 T is still urging students back to their seats. This is kind of hard to do because there are lots of interesting props around.

T says, again, "And remain in your seats, please."

T has all but about two in their seats.

T erases the word light from the blackboard.

T stands with her hands folded and waits in the middle front of the room.

T starts to talk about the worksheet.

T says, "Excuse me."

T goes on, "I'm really not the one who should say excuse me, do you think? I'm not the one who is interrupting people, am I?"

T says this directly to Billy.

Billy says, wide-eyed and innocent, "No."

T settles Billy down.

T says, "Now about your papers. You turn these papers in when you leave."

T continues, "Can you tell me something you found out about this when you did it?"

T says, "Carolyn, how about this first question."

> The first question reads: "Hold a glass in front of your eyes. Can you see through it?"

Carolyn gives her answer.

T says, "Pat, the second question."

> The second question reads: "Put a piece of paper in the glass. Now can you see through it?"

Patrick gives his answer.

T says, "Kitty, the third question."

> The third question reads: "Hold a mirror in front of your eyes. Can you see through it? Can you see what is behind you?"

Kitty gives her answer.

T says, "Jim, the fourth question."

> The fourth question reads: "Hold the different things on your table up to the light. Which things can you see through? Which allow light to pass through? Which allow no light to pass through?"

Jim gives his answer.

T asks about the mirror, for example.

T says, "Les?"

Les makes his comment.

3:58 T, dealing with the mirror, asks, "Why is it that you could see behind you with a mirror?"

Many students raise their hands.

T says, "Greta?"

Greta tells about who she saw.

T says, "No, I don't want to know who you saw, but why you saw them."

Debra gives the correct answer.

T says, "Does anyone know the word that we use when we can see through something?"

T says, "John?"

John says, "Transparent."

T says, "Is there anything else that you saw that you could see through?"

Ina raises her hand.

T nods permission for Ina to answer.

Ina says, "You could see through the wax paper."

Apparently, T is trying to get the students to say that they can't see through the wax paper. They can only see light through it.

Jim makes this difficult by saying, "I can see through the wax paper."

T says, "Okay, but let's go get the paper and see."

T goes back to the demonstration table and brings back a piece of wax paper.

It's quite clear that one
can see through the wax paper.

T has a few exchanges with pupils.

T finishes up by saying, "I'll have somebody look up the word transparent, and then see if the definition given for transparent will describe accurately what one has with the wax paper."

Mrs. Apple Dr. Gunn

T puts the piece of wax paper down on her desk and faces the class once more.

T says, "Now, would you put these papers inside your folder? It's time to go, please."

T goes over to the hallway door and says, "I want to see my decorations committee a little bit after school."

Billy asks, "Can I look up the word transparent?"

T says, "You certainly may. We'll put your name on the board."

T opens the hallway door and signals to the children that they can line up now for dismissal.

They line up.

4:01 The children begin leaving the room.

T stands in the doorway, talking to some of the children.

T comes back into the room.

School may be considered officially over.

A woman, wearing shorts, comes in the room to collect her rubber plant.

The woman says to T, "Seems to do better here than it does at home."

The woman leaves, carrying her rubber plant.

4:03 T is talking to the small group of children in the decorations committee about plans for tomorrow.

These decorations involve costumes. This activity will not be recorded.

There is one other child besides members of this committee in the room.

This child, Dan, is going on sweeping the floor with a dust pan and a brush.

Billy comes to the door of the classroom, along with John.

Billy does something that T severely disapproves of.

Mrs. Apple Dr. Gunn

T shouts out, "Billy, you come here."

T goes immediately to the door, leaves the room and apparently is going to either punish or correct Billy's behavior.

4:04 End of observation.

Mrs. Apple's Third Grade Classroom
A Chronicle of One Full Day

(Segmented)

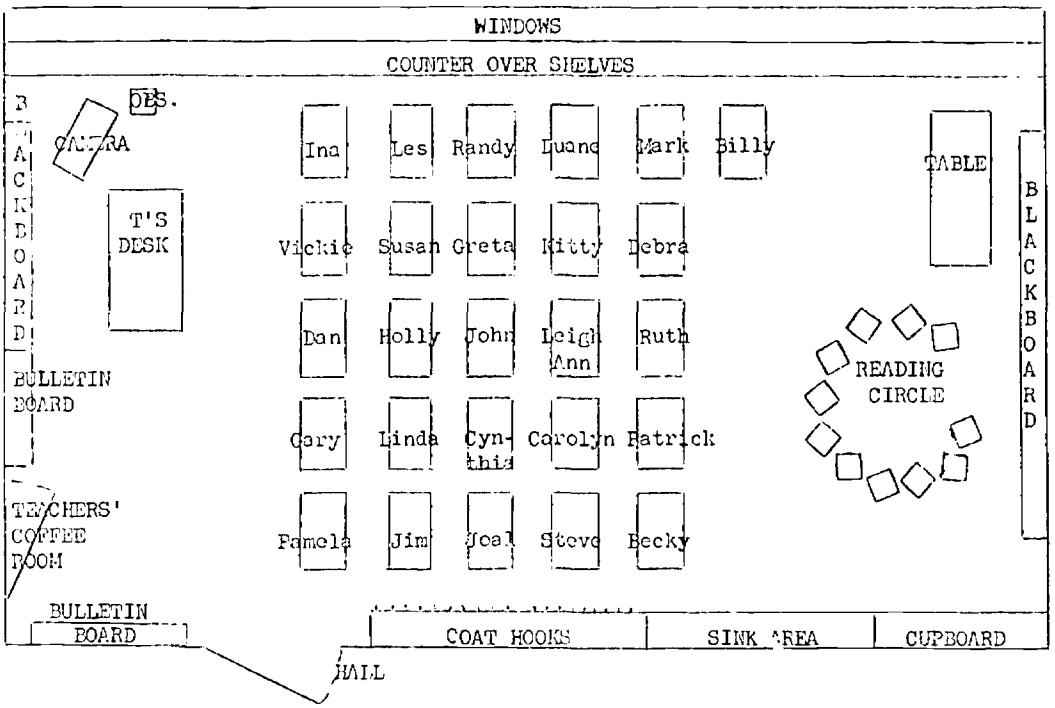
prepared by

Paul V. Gump
Midwest Psychological Field Station
Department of Psychology
University of Kansas

for

Training Materials for Research,
Development, and Diffusion Training Programs.
(USOE OEG 1-7-071018-4581 Cuba)

Based upon research supported by U. S. Department of Health, Education, and Welfare, Office of Education, Bureau of Research, No. 5-0334.



Mrs. Apple's Third Grade Room

Mrs. Apple's class is located in the Sunnyside Elementary School. The building is one-story, modern and attractive; approximately 400 pupils are enrolled. The neighborhood homes are set in fine lawns and cost between fifteen and thirty thousand dollars. If the town (population 40,000) were larger, this pleasant section would be suburbia.

Mrs. Apple's classroom has an open, airy quality. The twenty-six students use moveable desks and chairs. Special places and groupings are frequently established. On the day of the following chronicle, pupil art work with the May motif (umbrellas, flower baskets) brightened up one wall.

A special feature of the room is the adjacent "teachers' coffee room," a small area apart, which can be used by special project groups.

Mrs. Apple is small, young and nice-looking; she teaches with enthusiasm.

Mrs. Apple May 26, 1965 Observer: Mr. Bond

Preschool Activities

(1)

8:40 A group of four or five children come into the room.

T says, "You may go into the Teachers' Coffee Room to work on your play." (The Teachers' Coffee Room is adjacent to the classroom.)

T starts placing a set of three mimeographed sheets on about eleven of the desks.

As T is doing this, students are coming into the room.

Many of the students are sitting at their desks; reading or working quietly; others are talking quietly.

Two boys are helping Mrs. Apple at the back of the room.

The principal, Mr. Smith, comes in and helps T hang a map above the blackboard at the back of the room.

8:58 Mr. Smith leaves the room.

T discovers that she has put the wrong map in the back of the room, so she gets the other map from the front of the room and takes it back and hangs it up.

The students are very quiet.

9:00 T opens the door to the Teachers' Coffee Room and says, "Please come in now, as the final bell has just rung."

These students come in and sit down at their desks.

T walks over and closes the door.

T asks, "Linda, will you put your paper over at the side of the room?"

(2)

Opening...

a T, now standing in the center front of the room where all may see her, says brightly, "Good morning!"

The children respond, "Good morning."

T says, "Would you please put your work aside and I'd like your attention right up here, please."

Mrs. Apple

Mr. Bond

Opening with Pledge and Song

T says, "Randy."

This is a request for Randy to put away his work.

Randy continues to work.

Again, T says, "Randy" and finally, he puts it away.

9:02 T says, "It's a nice morning. Did you have a nice evening?"

The students answer, in unison, "Yes."

T says, "Yes. Well, I did,too."

T asks, "Billy, put your pencil down."

T then says, "Let's have our Pledge of Allegience, please."

Ruth gets up to lead the students.

9:03 The children rise and say the Pledge of Allegiance.

With T playing the piano at the back of the room, they sing America.

Ruth and the children sit down.

(3)

News Stories

T, returning to front center, asks, "Dan, do you have any news to share with us?"

The children can bring news articles to school and then read them to the class.

Dan shakes his head and smiles.

T says, "Holly?"

Holly shakes her head and smiles.

T then says, "John?"

John shakes his head and smiles.

T says, "Yes, Leigh Ann?"

9:04 Leigh Ann says, "I have some news to share."

Leigh Ann comes to the front of the room and begins reading a news story about a rain storm in Topeka.

Mrs. Apple Mr. Bond

Leigh Ann asks for help in pronouncing two different words.

T gives her this help.

9:06 Leigh Ann finishes reading this news story.

T says, "Boys and girls, how many of you heard that bad wind storm last night?"

Some of the children raise their hands.

Some of them say spontaneously, "I didn't hear a thing!"

Debra has her hand raised.

T says, "Did you hear the winds, Debbie?"

Debra replies.

T says, "Well, I got up and looked out the window when the wind began."

Then T says, "From the article, Leigh Ann, we see that we didn't have as much rain as we thought, but we did have a lot of wind. We only had .06 of an inch."

"In other words, it would be this kind of fraction that we have talked about."

T turns and writes .06 on the blackboard.

T asks, "Would .1 be larger or smaller?"

Several hands are raised.

T asks, "Kitty?"

Kitty answers correctly.

T says. "That's right. Now that wasn't very much rain but it was still recorded."

Steve raises his hand.

T says, "Steve?"

Steve has a comment to make about the rain storm.

Billy raises his hand.

T says, "Yes, Billy?"

News Stories

Mrs. Apple Mr. Bond

③

Billy says, "I was awake at 12 o'clock last night and I heard the storm and I saw it."

T says, "My goodness! Were you awake that late last night?"

Billy says, "Yes."

T replies, "Maybe you'd better go to sleep a little sooner and get more sleep."

Vickie comes to the T's desk and reminds T that the attendance slip has not been filled out.

T, then, makes out the attendance slip and says, "Pamela and Cynthia are absent."

9:0) As T is filling out the attendance slip, she motions for Ruth to come to the front of the room.

Ruth has a news story to share.

Vickie leaves the room to take the attendance slip to the office.

Leigh Ann now returns to her seat and sits down.

The first news article that Ruth has is a recipe.

When she finishes, T says, "Did that sound good to you, Ruthie?"

Ruth says, "Uh huh."

T says, "I think maybe I'll fix that when I get home for lunch today."

Billy is waving his hand in the air.

T says, "Yes, Billy?"

Billy makes a comment about this recipe and also about what he eats.

T says, "Well, maybe you would like to try this tonight."

T now says, "Let's see if we can tell about our article, not just read it. If we want to make it interesting for the class, we have to tell about it, not just read it."

News Stories

Mrs. Apple Mr. Bond

③

News Stories

9:11 Vickie returns to the room after having taken the attendance slip to the office.

Ruth has another news article plus a picture about Queen Elizabeth.

T goes to the back of the room and pulls a map down.

T says, "Ruthie, can you show us where England is on the map?"

Ruth walks to the back of the room; looks at the map.

There are several hands raised and some "oh ohs."

Ruth can't seem to find England, so T says, "John, why don't you help her?"

John has had his hand raised.

John goes to the back of the room and finds Germany, where, according to the news story, the Queen had been visiting.

John returns to his seat.

T asks, "Carolyn, come up and find England on the map."

Carolyn can't seem to find it.

Kitty has her hand raised.

T says, "Kitty, can you find England?"

Kitty also comes to the back of the room.

Both Carolyn and Kitty look at the map. Ruth is also still at the back of the room.

T says, "Will it be near Germany?"

Dan has his hand raised.

T says, "Danny?"

Danny says, "Yes."

T says, "Can you find it for us, Danny?"

Danny comes to the back of the room and immediately points to England on the map.

Danny returns to his seat.

Mrs. Apple Mr. Bond

③

T says, "Good. See, Girls, it's right here," showing the two girls the location of England.

9:13 Carolyn and Kitty return to their seats.

T returns to the front of the room.

Steve has his hand raised.

T says, "Steve?"

Steve makes a comment about the country of England.

Ruth has come back to the front of the room and has another news article about a school teacher in Brownsville who taught school for 42 years and is retiring this year.

T says, "My goodness! That's a long time."

"What grades did she teach, Ruthie?"

Ruth says, "The third grade."

Steve has his hand raised.

T says, "Yes, Steve?"

Steve has a comment to make about Lou Merrill, the significance of which is not clear.

Billy has his hand raised.

T says, "Billy?"

Billy says, "I think that this has not been a very good year."

T says, "Oh, I don't know. This has been a pretty good year."

Ruth starts putting her news article on the bulletin board, which is between the two classroom doors at the front side of the room.

④

b T begins to go over the outline of the day which she has put on the blackboard at the front of the room.

News Stories

(4) Mrs. Apple Mr. Bond

Morning Work Schedule

9:15 T says, "Now, I want good posture."

"New More Streets and Roads,[1] you have your assignments from yesterday."

The students are divided into three reading level groups. Each group uses a different reading book; the title of the book becomes the name of the reading group. The children remain at their seats as T goes over the assignments for the day.

"In your workbook, page 65, be ready to tell your stories."

Les raises his hand.

T says, "Yes, Les?"

Les asks a question.

T says, "That's fine."

T says, "And who will tell stories this morning? Randy, Mark and Les. Good," as these students raise their hands.

Susan raises her hand.

Susan says, "It's Becky, Les and Randy who are to tell stories."

T says, "That's right. Mark, you can do it tomorrow. Okay?"

Mark says, "Uh huh."

T points to the blackboard and says, "In the Looking Ahead[2] reading group, the questions for the quiz are over the last unit of reading. We'll have a quiz in the group."

Greta raises her hand.

---

[1]W. S. Gray, A. S. Artley, M. H. Arbuthnot. The New More Streets and Roads, Scott, Foresman and Co., New York, 1953.

[2]P. McKee, M. L. Harrison, A. McCowen, E. Lehr. Looking Ahead, Houghton Mifflin Co., New York, 1950.

Mrs. Apple ④ Mr. Bond

Morning Work Schedule

T says, "Greta?"

Greta says, "I did it already."

T says, "Well, I misplaced the questions, so will you do them again, please?"

Greta says, "Uh huh."

9:17 Ruth finishes putting her news items on the bulletin board and returns to her seat.

T says, "In the reading group, If I Were Going,[1] we will review our worksheets. We'll have some group discussion. I'll go over the directions in just a little while."

Randy raises his hand.

Randy asks, "Are we going to have gym this morning?"

T says, "Yes. We'll have gym at 10 o'clock as always."

T turns to the blackboard and starts to say something, and then says, "Whoops. I'm not through yet."

T looks at the class until they are all attentive.

T says, "Now, if you've finished the work on the blackboard, what can you do.?"

Billy has his hand up.

T says, "Billy?"

Billy says, "We can work on our play."

There are several hands up.

T says, "Randy?"

Randy says, "We have spelling."

T says, "That's right. We have our spelling lesson to study."

T then writes this suggestion on the blackboard as well as the suggestion about working on the play.

---

[1]M. O'Donnell. If I Were Going. Roe Peterson, 1957.

Mrs. Apple

Mr. Bond

Morning Work Schedule

Debra has her hand raised.

T says, "Debbie?"

Debra says, "Could we start on our arithmetic?"

T says, "No."

"We'll have our arithmetic test this afternoon and the reason we can't start it now is that it's a final test so we'll take it altogether. But now, some things are giving you trouble so you could study on your problem areas in arithmetic."

T writes extra arithmetic on the blackboard.

T says, "Now you want to study for your test this afternoon."

Then T writes long division and multiplication on the blackboard.

T says, "We should really emphasize long division and multiplication because that's going to be what our test is on mostly."

Les raises his hand.

T says, "Yes, Les?"

Les says, "Can we do the test this morning and then this afternoon both?"

T smiles and says, "No. Just this afternoon."

T says, "Now. Is there anyone who thinks that he doesn't have enough to do? Can you keep busy?"

And the children all nod their heads - yes.

T says, "All right, now you show me and let's get to work real fast."

9:20 c T says, "All right, may I talk with If I Were Going."

Mrs. Apple

Mr. Bond

(5) (6)

Morning Seatwork

Instructions for If I Were Going Group

Ordinarily a reading group would go to the table at the back of the room. In this case, however, T wants to get them started on the three mimeographed pages that she had put on their desks at the beginning of the day. These eleven children, (Kitty, John, Holly, Dan, Pat, Carolyn, Linda, Gary, Steve, Joal and Jim), remain at their desks while T discusses these sheets.

T walks over to the side of the room and stands watching the students.

Most of the students have taken out work and are beginning to work, settling down very quickly and quietly.

T continues to stand at the side of the room, smiling and watching them.

Some of the students are getting up to sharpen their pencils, get materials or to get a drink of water.

9:21 T says, "Page 1. If I Were Going."

T says, "There are two or three pages; now they aren't as hard as they look. It just took this many pages for all this material."

"John, would you read the instructions for the first page?"

John does so.

The first mimeographed page begins with a number of words which the children are to syllabize.

T says, "All right. Now I want you to use all of the rules that we've studied about syllables."

"If you are in doubt, who can be your friend to help you?"

Patrick has his hand raised.

T says, "Pat?"

Patrick answers, "The dictionary."

Mrs. Apple

Mr. Bond

(5) Morning Seatwork

(6) Instructions for If I Were Going Group

T says, "That's right. The dictionary is right up here."

T says, "Now. Can we say the rules that we have learned about syllables? Real quickly?"

Patrick raises his hand.

T says, "Pat?"

Patrick answers.

There is an extension of this answer by Holly.

T says, "Carolyn, can you give us another rule?"

Carolyn answers correctly.

Then T says, "Who can give me another rule?"

Carolyn raises her hand.

T says, "Carolyn?"

Carolyn gives another rule correctly.

9:23 Dan raises his hand and says, "I don't have any sheets."

T says, "I'm sorry, Danny, I didn't mean to leave you out."

T comes to the side of the room, gets Danny one of the sheets and hands it to him.

T asks, "Carolyn, will you read the next set of instructions?"

Carolyn does so.

> These instructions have to do with six more words that are to be divided into syllables.

Now T reads the instructions at the bottom of the page.

T says, "Now, you remember how we tried to tell the main idea of a story in one sentence? Well, that's what this is."

> The students are given four main story ideas. They are to write down the page and paragraph number that belongs with each idea.

Mrs. Apple

Mr. Bond

(5) (6)

Morning Seatwork

Instructions for If I Were Going Group

T says, "Now, I've given you the page numbers where to look in your book."

Kitty raises her hand.

T says, "Kitty?"

Kitty asks a question about this material.

T says, "No. You look only on these pages right here."

Holly raises her hand.

T says, "Holly?"

Holly asks a question.

T says, "That's right. That's right."

"Now, any other questions?"

T continues, "All right. Now the last two pages. Now on this page, I left the page and paragraph out and I want you to write a whole sentence for the answer. I want a whole thought."

> The children are to answer questions about story content and then write the page and paragraph number in which the answer is given.

T says, "Yes, Carolyn?"

Carolyn asks, "What story is this on?"

T says, "Oh, I'm sorry. It's over the last unit that we study today. It's on the story The Adventures of Ali."

T says, "Now, are there any questions?"

"If you have any questions, you raise your hands and I'll come and help you."

"Now do a good job. I know that you'll do a good job if you concentrate real hard."

T leaves this group of students on their own.

Mrs. Apple

Mr. Bond

Morning Seatwork

Looking Ahead Reading Group Practice Play

(5) (6)

9:27 T comes to the side of the room by the windows, puts a paper down and walks to the back of the room.

d (7)

T says, "Now. Looking Ahead Group, you may have time to prepare for your play. May I talk with you just a moment?"

Billy comes over to T at the back of the room.

T talks with Billy briefly.

T says, "Debbie, would you gather up your group; and you may have about ten minutes to prepare."

These students get up from their seats and start to the front of the room.

These seven children are: Billy, Ina, Debra, Greta, Vickie, Ruth and Leigh Ann. They will practice their play in the Teachers' Coffee Room.

T says, "Okay. Just a minute. Now you folks remember that we want to do it in our own words. You show the story in your own words. We're not going to use the books at all."

e These seven students go into the Teachers' Coffee Room which adjoins the classroom.

There are two boys at the back of the room. One of them is helping T arrange the table and the chairs.

The students who are left in the room are very quiet and are studying very well.

T is still at the back of the room. She is arranging a table. She pulls the table and it makes a noise.

T says, to the students, "Excuse me."

Becky gets up from her seat and comes over to T.

Becky asks T a question about the material that she, Becky, is working on.

T answers her question.

Becky then returns to her desk.

T says, "Would you like to open the door, door helper, please?"

Mrs. Apple

Mr. Bond

(5) (7)

Morning Seatwork

Looking Ahead Reading Group Practice Play

9:30 The door helper is Joal, who gets up, opens the door and then returns to her seat.

T comes to the middle of the room, stands and talks with Linda for a few moments, showing her something in her reading book.

T walks to the back of the room again, then over to the window side of the room, raises the shades and opens more of the windows.

T says, "New More Streets and Roads," referring to the reading group, "are you ready for worksheet correction?"

Randy says, "No. I'm not ready."

T says, "I'll give you a few more minutes, then."

9:32 T comes over to Susan's desk and talks with her for a few moments.

T then goes over to the side of the room and gets a drink.

T says, "Pat, would you come to my desk for a few moments, please?"

T moves over to her desk, with Pat following.

T says, "Take these cards and write down on them the names of the different characters in the story that you are now reading."

T gives him a marking pencil and some large cards.

Patrick returns to his desk.

T walks over to the door leading into the Teachers' Coffee Room, says something to the students in there and comes back to her desk.

9:34 Susan returns to her desk after going to Becky's desk and talking with her quietly for a few moments.

T now walks over to Holly's desk, looks at the work that Holly is doing; says nothing but nods her head, affirming her work.

There is some noise in the Teachers' Coffee Room so T goes over, opens the door and enters the room.

Mrs. Apple

Mr. Bond

Morning Seatwork (5)

Looking Ahead Reading Group Practice Play (7)

New More Streets and Roads Reading Group (8)

T smiled at the students in the Teachers' Coffee Room as she entered.

9:35 Now she walks back out and says, "All right, now, New More Streets and Roads, let's meet together because it's about time for us."

The New More Streets and Roads reading group will gather around a table at the back of the room. There are six children in this group: Mark, Duane, Randy, Les, Becky and Susan.

Besides this group, some children work at their seats and others are in the Teachers' Coffee Room.

T walks over to Randy's desk.

Randy is apparently not finished.

But T says, "That's all right."

Some of the students have already come to the back of the room to the table.

9:36 All of the students are seated around the table with the exception of Susan.

T gets up, gets some more books and gives them to Susan.

T comes over and sits back down.

Susan distributes these books.

When she is finished with this task, Susan also sits down.

Correcting Workbooks (9c)

9:37 T says, "Lay your books aside."

"We'll check our workbooks first."

"Let's start with page 61. I know that there are a couple here that are a little bit hard."

T says, "Les, it's on page 61."

"Everyone with us now?"

"Duane, sit up right, nice and tall so I can see you."

Mrs. Apple

Mr. Bond

(5) (1) (8) (93)

Morning Seatwork

Looking Ahead Reading Group Practice Play

New More Streets and Roads Reading Group

Correcting Worksheets

T continues, "Now, let's read a paragraph and the you tell me which ending you chose to be correct."

T says, "Les, please," and smiles at him.

Les was looking on the next page trying to complete his work.

T then says, "Susan, would you like to read first?"

Susan reads.

T says, "All right, is this correct? Does everyone agree?"

The students say "Uh huh."

T says, "All right, fine!"

"Number 2, Becky."

Becky reads.

T says, "That's right. Does everyone agree?"

Jim had previously left the room, reason unknown. He comes back into the room and returns to his desk to continue working.

.....

A small portion of the events go unrecorded as O changes tapes

.....

The story that this group is working with has to do with the life of a cowboy. The worksheet that they are working on has a number of unfinished paragraphs, each followed by two sentences. The children are to read a paragraph and finish it with the correct sentence.

9:41 Duane and Randy both make comments about the round-up.

T says, "That's right," and smiles.

T says, "Yes, Mark?"

Mark makes a comment.

Mr. Bond

Mrs. Apple

(5) Morning Seatwork

(7) Looking Ahead Reading Group Practice Play

(8) New More Streets and Roads Reading Group

(9c) Correcting Worksheets

T says, "All right, fine! Now you know that it's yours if it's marked just like we put our names on our own materials."

T says, "Now. We'd better go on."

T asks, "Duane, read the next one."

Duane starts reading but has difficulty with pronouncing some of the words.

The other students raise their hands.

T helps Duane out.

Duane continues to read.

T says, to Jim who is doing seatwork, "Jim, would you knock on the door of the Teachers' Coffee Room?"

This is a signal to the group working on the play, that it is time to come back out.

Jim gets up from his desk, knocks on the door and returns to his seat.

T says, to the reading group, "All right, go on."

T then says, "Excuse me just a minute."

T gets up, goes over to the Teachers' Coffee Room and says, "It's time to come out now."

The children then come out and return to their desks.

T says to them, "Now you folks be real quiet and get right busy on your reading work. Please."

f

9:43 T returns to the table and sits down.

T says, "Now, Becky, you chose what answer?"

The New More Streets and Roads reading group had sat quietly and waited, while T was gone.

Mrs. Apple

Mr. Bond

(5) (8) (24)

Several of the children at the table start talking.

T says, "Wait just a minute, now. You wait until I finish talking."

T finishes her comment about posts.

T says, "Now which one of the two do you think would be right and why?"

Several hands are raised.

T says, "Randy?"

Randy gives his answer.

But T says, "I'm sorry, but you'll have to proofread a little bit better than that, won't you?" indicating that Randy had not written out his answer correctly.

9:44 T says, "Now. Would you like to check in your reader to see if you can find the place that will tell us whether you have the correct answer or not?"

The students say, "Okay."

They get out their readers.

T says, "Les, what's the matter?"

Les says nothing.

Les finally opens his book.

Randy has found the place in the book and has the correct answer.

T says, "Now. Who's a good detective?"

Randy waves his hand excitedly in the air.

Then Mark, stands, and waves his hand in the air.

T says, "Tell me what page it's on, Randy?"

Randy says, "238."

He stands and begins to read and proves the correctness of his answer.

Morning Seatwork

New More Streets and Roads Reading Group

Correcting Worksheets

Mrs. Apple

Mr. Bond

(5) (8) (9c)

Morning Seatwork

New More Streets and Roads Reading Group

Correcting Worksheets

9:45 Randy finishes reading.

T says, "All right, now let me think about this question just a minute."

T continues, "Does this tell me how he practiced, do you think?"

Randy says, "No."

Randy sits down.

T says, "You didn't read me the part about how he practiced."

Susan raises her hand and says, "It's on page 236."

T says, "All right, let's see if Susan's found the place."

They all turn to page 236.

Susan begins to read.

T says, interrupting, "I'm sorry. I can't seem to find the place that you're reading from. Would you tell me?"

Susan says, "It's the fourth paragraph."

T says, "All right."

Susan begins to read again.

Susan finishes reading.

T says, "All right."

"Now. What are they talking about here, Randy?"

Randy answers, but only partially.

T says, "Well why?"

Mark starts to raise his hand, then answers spontaneously and gives the correct answer.

T says, "All right, fine! That's right."

T says, "All right."

T repeats the correct answer.

Mrs. Apple

Mr. Bond

(5) Morning Seatwork

(3) New More Streets and Roads Reading Group

(9c) Correcting Worksheets

T then says, "All right, now if that's not the answer that you had, let's please mark it wrong."

T says, "Now, lay your books down, please."

T says, "Randy, I don't think that that's very good for you--to be so close to your paper. Would you sit up correctly, please."

Randy sits up.

T then says, "Mark, you're next."

Mark starts to read.

T interrupts and says, "Wait, just a minute, please, Mark."

T looks at the group and says, "All right. Everybody's eyes on his paper, please."

T says, "All right, Mark."

Mark finishes reading the paragraph and the answer.

T says, "All right. That's right. He practiced patiently."

9:48 T says, "All right, let's go on to the next one. Susan."

As Susan reads the paragraph, T looks up and visually checks up on the students who are working at the desks.

This group of students is studying very diligently with the exception of Billy, who has come up to Ina's desk.

Susan finishes reading.

T says, "Becky, you're next."

Becky reads the next paragraph.

T says, "All right. Does everyone agree?"

They nod their heads - yes.

T then says, "Naturally, it's kind of dirty out there in the pen. Lots of dust and not much grass. When they stamp on the ground, the dust flies and the cowboys get kind of dusty. How many of you would like to be a cowboy?"

Mrs. Apple

Mr. Bond

(5) (3) (9c)

Les raises his hand.

T says, "Oh! Just one of you? Well tell me why you wouldn't like to be cowboys?"

Randy says, spontaneously, "You have to work too hard."

Mark gives his reason why he wouldn't.

Randy says, "My brother would like to be a cowboy."

T interrupts, saying, "Just a minute."

T looks over at Billy who is at the side of the room by the windows, getting a paper.

T says, "What is that?"

Billy says, "Some arithmetic."

T gets up and walks over and says, "I'm sorry, but that's our final test for this afternoon."

T then says, "All right, you come over with me and I'll get you some extra arithmetic to do."

T does so.

T returns to the reading group at the table and says, "Pardon me. I'm sorry I had to interrupt our reading group."

T says, "All right, now let's go on, please. Les?"

Les reads the next line and answers it correctly.

T says, "Fine. That's right."

T continues, "The next one, Randy."

Randy reads the next line and answers it correctly.

T says, "All right. Does everyone agree?"

The children say, "Yes."

T says, "Would you have liked going to the round-up?"

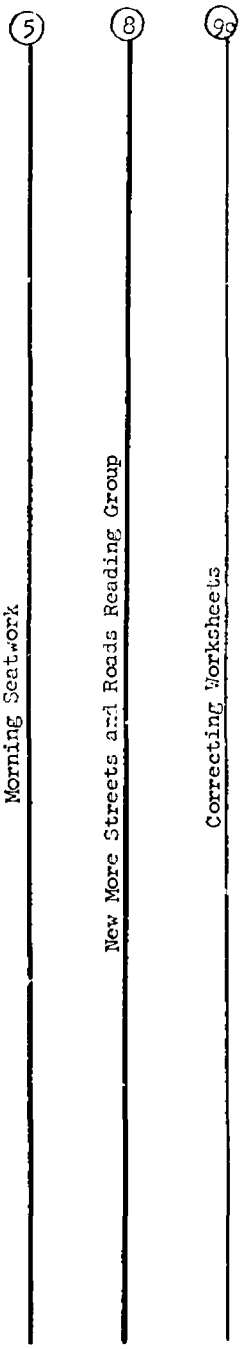
Morning Seatwork

New More Streets and Roads Reading Group

9:50 Correcting Worksheets

Mrs. Apple

Mr. Bond



They all nod their heads - yes.

Some of the group start to talk.

T holds her finger up to her lips for them to be quiet.

T says, "Les?"

Les has a comment about one of his previous experiences at helping brand a cow.

T says, "Good. That's fine."

T then says, "Randy?"

Randy has a comment to make about one of his experiences.

T says, "All right. Now that's right. Isn't this what you learned in your story today? Very good."

T says, "All right, now, let's go on. Duane?"

Duane reads the next question.

Duane finishes reading.

T says, "Isn't that nice? Did you notice how Duane read without any errors?"

Duane smiles.

T says, "All right."

"Let's try the next one. Mark?"

While Mark is reading, T says to Les, "I beg your pardon, Les."

This is a comment designed to get Les to settle down and pay attention.

Mark continues to read.

T says, "No. That's not the correct answer. Randy, what would be the right answer?"

Randy, who had his hand raised, reads the correct answer.

T says, "That's right. Okay, Susan?"

Mrs. Apple

Mr. Bond

(5) Morning Seatwork

(8) New More Streets and Roads Reading Group

(9c) Correcting Worksheets

Susan reads the next one.

A boy has come in the door that leads from the hallway.

Jim gets up from his desk and goes over and talks to him.

T does not see any of this.

Susan finishes reading.

9:54 T says, "Do you think it would take a lot of work to be a good roper?"

T starts to say something else, then says, "I beg your pardon. I was talking."

This comment was directed at Randy who is restless and not listening.

T continues, "Yes, it would take a lot of hard work to become a good roper and a good cowboy."

T then says, "All right. How many questions were there on the worksheets?"

Mark answers.

T says, "All right, now tell me how many you got correct."

While T was saying this, Jim came back to the back of the room, stood for a few minutes, then returned to the door. Now he comes back to the back of the room again.

9:55 Jim stands at the side of T.

T says, "Now. Let's close our workbooks, so that we can start on our words, please."

Jim hands T the note that the boy gave him at the door.

T reads the note.

T writes something on the note.

Mrs. Apple

Mr. Bond

(5) Morning Seatwork

(8) New More Streets and Roads Reading Group

(10) Word Pronunciation Game

g While she is writing, T says, "Sit down in your chairs, please." This comment was directed to the students in the reading group.

T now hands the note to Jim which he takes to the boy at the door.

T says, firmly but with a smile, "Now, Les, put your pencil down, please, and listen."

Les was still trying to finish some work in his workbook.

T makes a comment.

All the students are paying attention, except Les.

T says, "What's the matter, Les? Would you please just lay your workbook down and get ready, please."

They have all picked up their books and turned to the proper page.

9:57 T gets up and puts the initials of the names of each student on the blackboard.

Susan gets up and stands by the blackboard directly under these initials. She will keep track of how many words each student can pronounce correctly.

T asks, "Mark, will you begin?"

At the back of their reading books, there is a list of vocabulary words. Each student will continue to pronounce words until he makes a mistake. Then the next pupil will start pronouncing. The object of the game is to see who can pronounce the most words.

Mark begins reading the series of words.

Randy raises his hands, interrupts and says, "Mark didn't pronounce that word just right."

T says, "Well, aren't you being awfully critical?"

"The object of this game is to see if we know all of the words."

Mr. Bond

Mrs. Apple

(5) (8) (10c)

Morning Seatwork

New More Streets and Roads Reading Group

Word Pronunciation Game

Billy, who should be at his seatwork, is over at the sink, "cleaning up" the area.

T, noticing that Billy is not at his desk says, "Billy, I appreciate your help but I wish that you would do your work first."

He dries his hands, returns to his desk.

T says, "All right, Mark, you may go on."

Mark continues to pronounce words.

Becky raises her hand.

Becky says, "Did he say that right?"

T says, "Yes, he did. He didn't mispronounce that. He pronounced it correctly."

Mark continues to read the words.

T says, "Whoops."

So the students raise their hands.

T says, "All right, count up and see how many words you pronounced."

Mark counts the words.

Mark says, to Susan, "42."

Susan writes 42 on the blackboard.

T says, "Duane, you're next."

Duane starts pronouncing words.

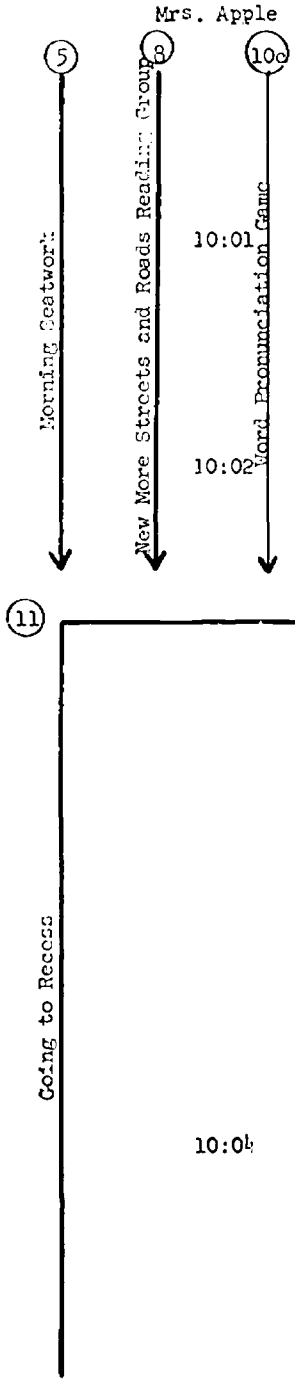
T, turning around, says, "Steve and John, you have been doing too much talking and not enough working."

Steve and John return to their desks and begin reading.

Duane gets stuck on a word.

Mrs. Apple

Mr. Bond



T says, "All right. We'll have to stop there, then, if you can't get that word."

"All right. My goodness! That's good, Duane, you pronounced a lot of words."

10:01 T says, "We'll continue after recess, after we're back."

T says, "We're going outside today and I'm also going to take Mrs. Brown's class outside because she's hurt her leg badly and can't go out, so both of our classes will go out together."

"Now, would you go back to your seats and sit down, please."

10:02 The students in the reading group begin going back.

All the students except Susan, have started back to their seats.

T returns to her desk at the front of the room.

T says, "Boys and girls, take your seats please."

Susan returns to her desk.

T says, "Now these people who are working on the play will have to do so that it doesn't disturb anyone around. Now you sit at your desks."

"Now, while you were together, (in the Teachers' Coffee Room), you were supposed to decide on what each person was to do. You're not supposed to be talking now."

T leans over to Ina's desk, looks at her paper and says, "That's fine."

T moves over to the side of the room.

There are four boys at the back of the room getting several balls out of the closet.

10:04 T says, "I think I just made a statement back there. Did you hear me?"

T is making this comment for the benefit of two students who are talking at the back of the room.

T says, "Rows 5 and 4, would you pass quietly, please."

Mrs. Apple

Mr. Bond

(11)

Going to Recess

T dismisses the class for recess by rows, as each becomes ready. The children may go to the rest-room first, after which they return to the classroom and line up by the door. Then all will go outside to play.

These two rows go out of the room.

T says, "You boys who are getting the balls, will you come back to your seat, right away."

The boys do this.

10:05 T says, "Row 3 may pass quietly."

T says, "We can't call your row unless you're quiet."

T says, "Row 2."

Some of the students are over at the side of the room by the door. Some of them have gone out of the room to the restroom.

T walks over to the side of the room, gets a paper, and puts it on her desk.

T looks at a paper that Ruth brings to her.

T says, "That's fine," and puts this paper on her desk.

T walks back over to the side of the room by the door and says, "Class, recess begins now. It's up to you."

"Now, Row 1 may pass quietly, please."

Debra and Linda are still at their desks.

10:06 Debra gets up and goes over to line up by the door.

Then Linda does the same.

All of the students are lined up at the door.

T says, "Kitty, go to Mrs. Brown's room and tell them that we're ready."

The students are standing very quietly.

Mrs. Apple

Mr. Bond

Going to Recess (11)

T says, "Keep the balls still, please. Don't bounce them."

Mark leaves the line, goes over to his desk to get the ball he had there, and then returns to the line.

10:07 They continue to wait quietly for Mrs. Brown's class.

T says, "Debra, may I see you after we get outside?"

Debra nods her head - yes.

T says, "John and Gary, sit down, please."

They have been juggling with the balls which they have been holding.

T says, "I know that we have to wait a few moments, but we need everyone's help. Did you give us your very best help? Just remember that everyone must do his best part. You two boys follow up the back of the line."

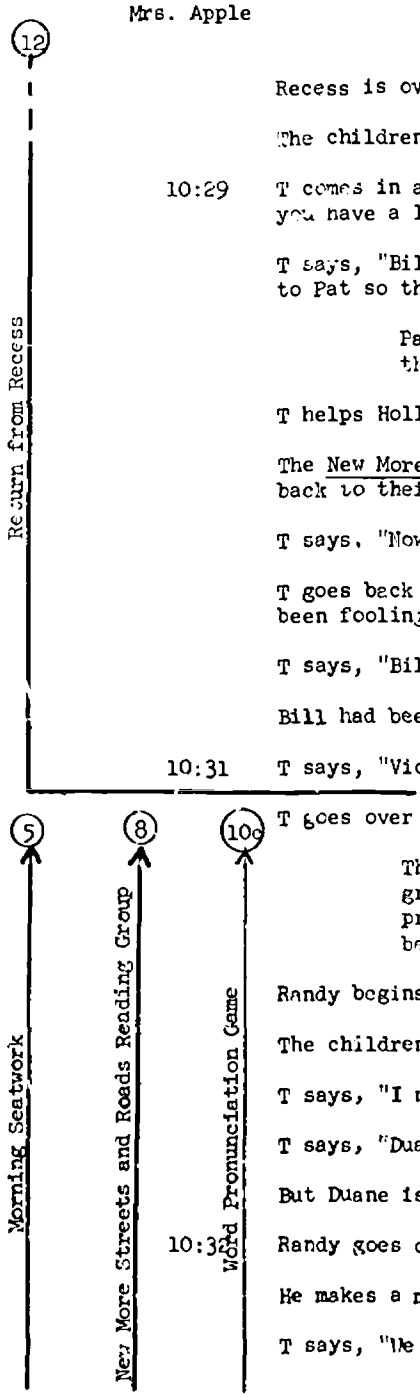
They start to go out of the room.

10:09 They are all out of the room.

End of observation.

Mrs. Apple

Observer: Mrs. Noble



Recess is over.

The children begin coming in.

10:29 T comes in and says, "Children, get right to work because you have a lot to do."

T says, "Bill, stop playing with that ball and give it to Pat so that he can put it away."

Pat is the ball caretaker for the day.

T helps Holly with a question on her worksheet.

The New More Streets and Roads reading group has gone back to their table.

T says, "Now I want to see everyone working!"

T goes back to the cupboards, extricates Randy, who has been fooling about, and closes the door.

T says, "Bill, please get back to work."

Bill had been dallying by the sink.

10:31 T says, "Vickie, will you please return to your seat."

T goes over to the reading circle table and sits down.

The New More Streets and Roads reading group will continue with their word pronunciation game that they started before recess.

Randy begins reading words.

The children gave out a gasp at one word and hands went up.

T says, "I need hands only. No words."

T says, "Duane?"

But Duane is mistaken in saying that Randy made a mistake.

10:32 Randy goes on reading.

He makes a mistake on the word women.

T says, "We always have trouble on that, don't we?"

Mrs. Apple

Mrs. Noble

(3) Morning Seatwork

(8) New More Streets and Roads Reading Group

(10c) Word Pronunciation Game

T then says, "Les, sit up straight."

"What does plural mean, Les?"

Les does not know.

T continues, "Women is plural. Do you know what that means? Can any of you remember?"

T goes on, "Does women mean more than one or just one?"

T says, "Susan?"

Susan says, "One."

The children say, "Oh!"

T asks, "Susan, use the word in a sentence."

"Now, children, just wait a minute."

T repeats, "Susan, use it in a sentence."

Susan does not do this.

T says, "Becky, you give us a sentence using women."

Becky says, "There are many women in the world."

T says, "All right. Is that singular or plural? Is that one or more than one?"

T says, "Susan?"

Susan answers correctly.

T says, "All right, plural means more than one."

T says, "All right, we'll have to stop now."

"Randy, do you want to count your score?"

"Is that more than you had last time or not?"

Randy says, "More."

T says, "Oh. More. Good!"

T says, "All right, Les. We'll begin with what?"

Les says, "Direction."

Mrs. Noble

Mrs. Apple

(5) Morning Seatwork

(8) New More Streets and Roads Reading Group

(10c) Word Pronunciation Game

10:34 Les begins reading from the list of words.

Billy and Vickie have gotten up from their desks to get a drink of water.

T says, "Billy and Vickie, sit down."

Vickie sits down but Billy takes a drink before he goes back to his desk.

T continues, "No, Billy. We've already had a break this morning."

"You ought not to interrupt the reading group this way."

T then says, "I'm sorry, Les, for this interruption."

Les makes a mistake in pronunciation.

Hands go up and gasps are heard.

T says, "Just a hand, not a voice. Let's be courteous."

T says, "Les, what kind of a mistake did you make?"

Les says, "It should be broke instead of broken."

T then says, "Susan, write 25 under Les's name."

Susan does so.

Susan is continuing in her role of scorekeeper.

Becky starts to pronounce words.

T says, "Becky, point to the word."

T then says, to the rest of the group, "Are you with us?"

Becky goes on reading the words.

T says, "I heard an error there. Did you catch it, Mark?"

Mark says, "Yeah, it should have been spilled," in regard to Becky's pronunciation of it.

Mrs. Apple

Mrs. Noble

(5) Morning Seatwork

(9) New More Streets and Roads Reading Group

(10c) Word Pronunciation Game

T says, "No."

"That's correct, but it was the word before it."

The word that T is referring to is slid.

Randy raises his hand.

T says, "Randy?"

Randy answers correctly.

T says, repeating after Randy, "Slid is correct."

Randy goes on talking.

T says, "Just a minute, Randy."

But Randy continues with another criticism of the way that Becky pronounced the word slid.

T says, "Becky, pronounce it again."

Becky does so correctly.

T says, "Now, Randy, don't be so picky."

10:37

T says, "All right, Susan, now you start."

T continues, "Now, Susan, nice and loud."

Les has his hand up and has had it up for a long time.

T says, "Wait just a minute, Susan."

T says, "Yes, Les?"

Les makes a criticism.

T says, "Susan, say it over again."

Susan makes a mistake.

T says, "That's right, it's something else."

T says, "Let's close our books now."

"We only have time for one round today."

Mrs. Apple

Mrs. Noble

(5) (6) (10g)

Morning Seatwork

Now More Streets and Roads Reading Group

Word Pronunciation Game

T says, "Let's see if we are improved."

T says, "Did you improve, Mark?"

Mark says, "Yeah."

T says, "Yes, you did."

"You did, too, didn't you, Duane?"

T then says, "Oh, no, you had such a large score last time, didn't you?"

T goes on, "Randy did better this time."

Les gives his accounting.

Susan gets anxious to tell.

T says, "Just a minute, Susan."

T then says, "Becky, how did you do?"

Becky gives her score.

T says, "Well, we have improved, haven't we?"

T continues, "How did you come out this time, Susan? Not as well, did you?"

Susan gives her score.

T then says, "Susan, you may erase the board now."

Susan does so.

(13d)

Story Summaries

T says, "Now we are going to have our stories today. We're really taking a long time for our reading group today, but we have a lot of work to do."

The students are to choose a story in their reading book which they will tell about to the group. They are not supposed to read it, but tell it.

T says, "Now, who is going to read our story today?"

Hands go up.

T asks, "What were the directions the other day?"

Mrs. Apple

Mrs. Noble

(5) (8) (13c)

Morning Seatwork

New More Streets and Roads Reading Group

Story Summaries

T says, "Randy, can you tell us?"

Randy says what he thinks the directions are.

T says, "No, we didn't say to read the story. Were you here when we discussed the directions?"

Les has his hand up.

T says, "Les?"

Les says, "We were to read the story and then tell the group about it."

T says, "Mark, would you like to tell us your story and let's close the book. This will be a story hour and let's listen with our ears and give attention."

Mark says, "Am I reading?" (Meaning, "Is it my turn?")

T says, sharply, "What do you mean, are you reading?"

Mark backs down and says, "Oh, yeah."

Becky has her hand up.

Becky says, "I think that it's my turn."

T asks, "Mark, is Becky first?"

It turns out that she is.

T says, "Becky, come around the table and stand by the blackboard, so that we can see you better."

Becky does so.

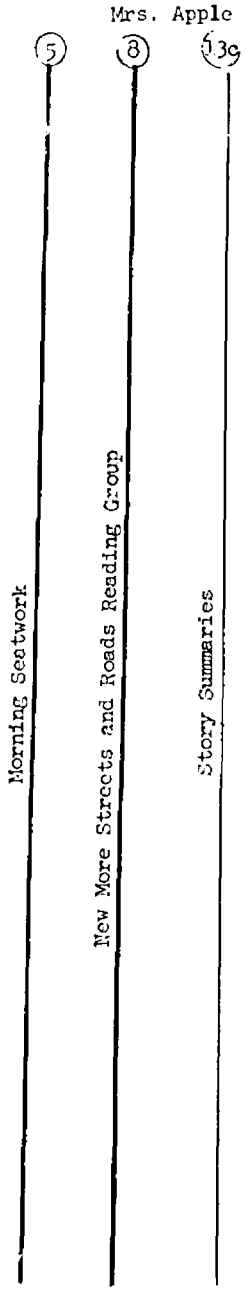
10:41 Becky begins to tell her story.

> The name of Becky's story is The Knee-High Man.[1] The gist of her story is:
> A knee-high man wished to be big.
> He asks for advice from a horse
> and from a cow on how to grow big.
> But their methods don't work for
> him. Finally, he asks the advice of
> an owl who points out to the man
> that he has no need to get bigger
> so the little man stays knee-high.

[1] W. S. Gray, A. S. Artley, M. H. Arbuthnot. The New More Streets and Roads, Scott, Foresman and Co., New York, 1953.

Mrs. Apple

Mrs. Noble



T says to Greta, who is sitting at her desk, "Greta, you should be working at your desk, not talking."

Becky does not finish her story satisfactorily; her audience is left unclear about some of the points of the story.

T, prompting Becky, says, "All right, that's what makes the cow grow nice and large, isn't it? Did this help this little knee-high man?"

Becky shakes her head - no.

T goes on, "So he had to be satisfied with being small, didn't he?"

T then says, "Now who has it next? Randy, were you going to give your story?"

Randy nods his head - yes.

Randy says, "Shall I stand up?"

T says, "Yes."

T says, "Les, your book should not be open."

Randy stands up and begins his story.

> The name of Randy's story is The North Wind.[1] The gist of his story is: The North Wind and the Sun have an argument about who is the strongest. They decide to resolve the issue by seeing which one can make a traveler take off his cloak. The North Wind huffs and puffs, but cannot blow it off. The Sun, by making it very hot, succeeds in getting the man to take off his cloak, and is the winner of the contest.

T interrupts and says, "Randy, you're not standing very straight."

---

[1] Ibid.

Mrs. Apple

Mrs. Noble

(5) Morning Seatwork

(8) New More Streets and Roads Reading Group

(13c) Story Summaries

Randy corrects his posture and continues with his story.

> Meanwhile, the children are working at their desks; everybody is quiet and working pretty well at a conglomeration of activities. O sees maybe 7 worksheets, some library books, some reading books and also some art.

Randy has another story. He goes back to his book to check upon the name of it. While doing so, he continues to talk.

T says, "Randy, don't talk while you're walking."

T pulls him back over to his original standing position.

Randy, however, goes back over to his chair by the table, to check his book again.

T waits, smiles and says, "All right."

10:44 Randy returns to where he was standing and begins his story.

> The name of Randy's second story is The Three Giants.[1] The gist of this story is: Long ago there lived a wicked Queen who had a beautiful daughter. The Queen promises to marry her daughter off to the man who can answer three very difficult questions. Many try and fail. One prince, on his way to try, meets three giants; one with long arms and legs, one with super sight and one with super hearing. With their help, the prince is able to answer all three of the questions and he and the princess live happily ever after.

Randy forgets part of the story, and he says, "I can't remember," so he goes back to look in his book.

T says, "That's all right, just tell us what you remember."

---

[1] Ibid.

Mrs. Apple

Mrs. Noble

(5) (8) (13c)

Morning Seatwork

New More Streets and Roads Reading Group

Story Summaries

Randy says, "Well, I can't remember."

Randy shuffles through his book.

T says, "Becky, we're supposed to keep our books closed."

T continues, "We're listening to Randy. He's going to tell us about it."

Randy, in a tone of discovery, says, "Oh, yeah."

Randy returns to his standing position and goes on with his story.

There is a short pause.

Randy again forgets a particular portion of the story, and he says, "I can't remember," and goes back to his book.

T says, "Don't go back to your book. Just tell us what you remember."

T says, "What would be a good way to end this story, Randy?"

Randy says, "I don't know," and again turns to his book for the official ending sentence.

T says "That's all right, honey, you did fine. Do you want to skim over just a minute and think of a good ending?"

T says, "I think he did a nice job telling about it; it sounds like a good story, doesn't it? How many of you would like to read The Three Giants?"

Three hands go up.

T says, "Quickly, honey. Let's hurry, Randy. We have a lot more to do."

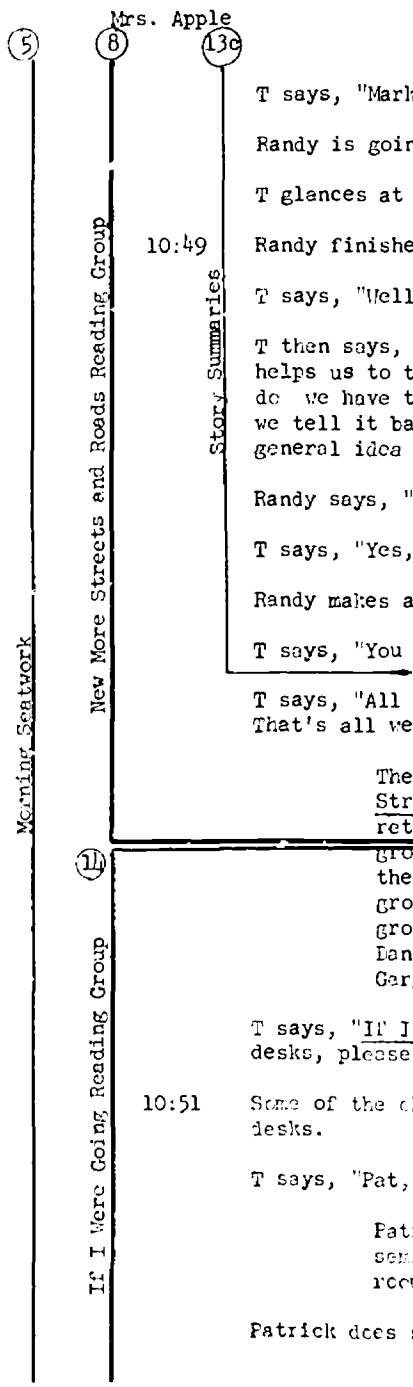
Randy is looking at his story in the book.

10:48 T says, "Randy, could you close your book now and just quickly tell us an ending sentence."

Randy still wants to find out what the Queen's three questions were to the prince.

Randy finds two of them, and wants to tell the group.

T says, "All right, Randy."



T says, "Mark, you're not paying attention."

Randy is going on with an extensive summary of this story.

T glances at the clock and continues smiling at him.

10:49 Randy finishes his recital.

T says, "Well, fine."

T then says, "Boys and girls, in telling our story, this helps us to think back on the details, doesn't it? But do we have to think of every single thing (detail) when we tell it back to the group? We should just tell the general idea of the story."

Randy says, "But these things were important to my story!"

T says, "Yes, I know they were."

Randy makes a comment.

T says, "You did. Now you were ahead of us, weren't you?"

T says, "All right, you boys and girls may take your seats. That's all we have time for this morning."

The six children in the New More Streets and Roads reading group return to their desks. The next group that will meet with T is the If I Were Going reading group. The children in this group are Kitty, John, Holly, Dan, Patrick, Carolyn, Linda, Gary, Steve, Joal and Jim.

T says, "If I Were Going group, would you stand by your desks, please."

10:51 Some of the children in the class begin standing by their desks.

T says, "Pat, will you arrange the chairs for me?"

Patrick will arrange chairs into a semi-circle at the back of the room and to the side of the table.

Patrick does so.

Mrs. Apple (14) Mrs. Noble (5)

Morning Seatwork

If I Were Going Reading Group

T deals with Debra.

This phrase, deals with, is used when O is not near enough to hear the content of the interaction between T and the student.

T reprimands Billy.

The phrase, reprimands, is used when the content is not clear.

Linda has a complaint.

T settles it with her.

T walks to the back of the room.

T says, "Steve, Joal and Jim, come on back now."

10:52 T reprimands Les.

T then says, "All right, the rest of you come on back here now."

T says, "John, we are going to have a discussion together; we'll check the worksheet in the morning."

John reluctantly leaves his desk and comes back to the reading circle.

T says, "Danny, pick up your chair to move it; don't pull it."

T says, "Jim, push over and make a place for people to sit."

T says, "John, think about each other" as Dan tries to squeeze his chair in.

John moves over.

T says, "Randy and Becky, get in your seats. We're working at our seats this morning."

T asks, "Are there any questions about the story this morning?"

Kitty raises her hand.

Mrs. Apple | Mrs. Noble

(5) Morning Seatwork

(14) If I Were Going Reading Group

(15c) Reading Aloud

T says, "Well, Kitty, you bring your paper to my desk later on and I will help you."

10:54 T says, "All right, we're going to have a little review now."

"I would like to hear you read for just a moment. If we could finish our last part of the book, now that Mr. Sanders and his wife are coming back from their trip."

T continues, "They have visited lots of countries in this book, haven't they? They are going to arrive home today."

"I'd like to have you read out loud this part."

T questions, "Where are they coming back to?"

T says, "Steve?"

Steve answers correctly.

T says, "I would like to hear you read out loud today. It's been two or three days since we have. Page 330."

T repeats, "Joal, page 330."

T looks pointedly over at Mark, who is not paying close attention to his seatwork.

T then says, "Jim, wait a moment until you have everybody's attention."

T says, "Watch your audience."

10:55 Jim begins to read.

T taps her pencil, meaning that whispering among those doing seatwork must stop.

T says, "Jim, let's wait until John has found the page."

T says, "Are you with us, John?"

After a long pause, John shakes his head - no.

T says, "Dan, will you help him?"

T says, "Now, John, you must keep up."

Mrs. Apple

Mrs. Noble

(5) (11) (15c)

Morning Seatwork

If I Were Going Reading Group

Reading Aloud

T then says, "All right, Jim, go on reading."

T says, "All right, Pat," (meaning for Patrick to start reading).

Patrick begins to read.

T helps Patrick out as he reads.

T says, "Kitty, can you help Pat?"

T taps her pencil to reprimand Billy.

Patrick continues to read.

10:58 Patrick finishes reading.

T asks, "What does it mean, in spite of?"

Kitty raises her hand.

T then asks, "Kitty?"

Kitty answers correctly.

Gary is the next student to read.

T says, "Billy, you are making too much noise when you roll that paper."

Gary continues to read.

T says, "All right, Gary, you have to read nice and loud so Mrs. Apple can hear every word."

Gary continues reading a little louder.

T says to the children at their desks, "All right, I shouldn't hear a bit of talking, please."

T continues, "Linda, would you like to go on?"

Linda begins to read.

T says, "Thank you, Linda," as she finishes.

T says, "I'm not making our readings very long because I'd like to hear everyone read today."

T says, "All right, Kitty. Nice and loud."

Mrs. Apple

Mrs. Noble

(5) Morning Seatwork

(14) If I Were Going Reading Group

(15c) Reading Aloud

11:01 Kitty begins to read.

T taps her pencil to stop some whispering that is going on among the children at the desks.

T says, "All right, good," as Kitty finishes reading.

T then says, "Danny, will you start."

Danny begins to read, after a short pause.

Meanwhile, at their desks, Randy and Les are working together with their English workbooks, as are Ruth and Greta.

A couple of children are still working with their art.

Two other students are practicing spelling by themselves.

Danny is still reading.

11:03 T says, "Joal, can you help Danny out?"

Danny is having trouble with some of the words.

T says, "Danny, try and read a little louder so that we can hear you."

Dan has trouble with the word caravan.

Steve has his hand raised.

T says, "Steve?"

Steve says, "Caravan."

Dan continues to read, without repeating the word.

T says, "Wait a minute, Dan, you left out caravan."

Dan goes back and repeats caravan.

11:04 T says to some of the children at their desks, "That's all for the play. We'll have to go with what we have. The scissors are too disturbing."

Mrs. Noble

Mrs. Apple

5 — Morning Seatwork

14 — If I Were Going Reading Group

15c — Reading Aloud

This remark is principally aimed at Billy and Ina. Billy looks unhappy.

T then says, "All right, John, your turn."

T motions to Becky to be quiet.

John continues reading.

Billy has written a note to Debra regarding the props for the play; however, he can't pass it to her without attracting the attention of T.

T says, "What does it mean - stolen a march?"

Patrick raises his hand.

T says, "Pat?"

Patrick answers incorrectly.

Jim raises his hand.

T says, "Yes, Jim?"

Jim does not have the right answer.

T says, "Kitty?"

Kitty also answers incorrectly.

T then says, "Jim?"

Jim does answer correctly.

T says, "All right, Joal, your turn."

11:06 Joal begins to read.

T says, "Becky, would you please close the door?"

Billy is still trying to get Debra's attention by throwing spit balls at her. Finally Debra catches on, and Billy shows her the note.

T sees a part of this action, and taps her finger on the table.

Mrs. Apple

Mrs. Noble

5 | 10 | 15

Morning Seatwork

If I Were Going Reading Group

Reading Aloud

However, Billy and Debra still communicate, mostly verbally.

11:07 Joel is still reading.

Debra gets up from her desk to go over to talk to Billy, then changes her mind and returns to her seat.

T notices all of this action.

T says, "All right, let's go on. Stephen."

Steve begins to read.

T says, "No, Steve, that's not right."

As Steve is reading, T taps him on the shoulder and whispers, "Speak up, we can't hear you."

Steve reads a little bit louder.

Steve finishes reading.

T says, "All right, I'm sorry we didn't have a chance to hear every person."

"Holly, did you have a question?"

Holly's hand had been up, but she shakes her head - no.

T says, "That must have been a very interesting poster that Mr. Sanders was looking at in the railroad station.

This is in reference to their story that had to do with the return of Mr. Sanders from a trip and how a poster in the railroad station got him interested in making another trip.

T says, "Did you enjoy this book?"

"Did you learn a lot about different countries? We learned about them in geography, didn't we? How many of you think we learned something new about some countries that you didn't know before?"

Hands go up in the reading group.

Mrs. Apple

Mrs. Noble

(5) Morning Seatwork

(14) If I Were Going Reading Group

T looks at Steve and says, "You didn't learn a thing new in that book?"

Apparently, Steve did not raise his hand.

Steve grins.

T says, "I don't think you're being very honest, are you?"

Jim says, "He's kidding."

T says, "Well, I want to find out..."

Patrick interrupts and says something to Jim.

T says, "Excuse me!" T directs this comment to Patrick and Jim.

T continues talking.

John interrupts with a comment.

T says, "If you want to say something, would you raise your hand?"

(16c) Review of Countries

T says, "Now children, I have written names of the different countries that Mr. and Mrs. Sanders visited, and I would like to have you pick one of these out of the pile and tell what you learned from the book about this country and add anything else you might know about the country that wasn't in the book. You know, customs and industries."

T has written down the names of the different countries on slips of paper which are about one foot by two and a half inches.

11:10 T says, "All right, who is going to be the first one to draw?"

T says, "Pat's going to be brave. All right."

Patrick draws a slip of paper.

T says, "You stand up here in front of the map and read the name."

Previously, T has drawn down the map on the wall that is behind the reading circle.

Mrs. Apple

Mrs. Noble

5 Morning Seatwork

11 If I Were Going Reading Group

16c Review of Countries

Patrick has gotten Brittany.

Patrick grimaces.

T says, "All right, Brittany. Can you find Brittany on the map first? Can you find your country?"

Patrick stands there and looks at the map and finally he says, "No."

T says, "Carolyn, can you help him?"

Carolyn points to Lapland.

T says, "Kitty, what is the name of the country that Carolyn pointed at?"

Kitty says, "Lapland."

T then says, "Joal, can you find Brittany?"

Joal points to Great Britain, which is accepted as a correct answer.

T says, "Close your books."

Patrick, continuing his recitation, says, "Well, their industry is fishing and baking and most of the people sleep in something like cupboard boxes."

T says, "I didn't understand that. Cupboard boxes?"

Patrick says, "Yeah."

T says, "Do you remember anything else about the country? What else?"

Patrick says, "Well, they have a Feast Day."

T says, "Well, tell us about the Feast Day."

Patrick says, "Well, everyone is there, and they go out fishing until their boat is filled and then they come back in and artists are there, and they paint pictures of people."

T reprimands Steve.

T says, "All right, it's quite an exciting day for them, isn't it?"

T says, "Your books should be on your lap quietly," reprimanding any of those who have their books open.

Mrs. Noble

Mrs. Apple

(5) Morning Seatwork

(14) If I Were Going Reading Group

(16c) Review of Countries

T asks, "Can anyone remember anything more?"

Joal says, "Also in Brittany they eat snails with sauce."

T says, "Oh yes," and smiles. "That was the country, wasn't it?"

T says, "Yes, Steve?"

Steve makes a comment.

T says, "Why don't you open your book and look at the map, and we'll be sure that we can find Brittany. Who can find it?"

"What page is it on?"

Joal says, "Page 146."

T says, "Page 146. All right."

T says, "I don't think that's the best one, is it? Pat?"

Patrick goes up to the big map again.

John is anxious; he knows where it is.

Patrick sits down.

T says, "All right, John, you come up."

John stands and points to a part of France, which is where Brittany really is.

John sits down

T asks, "How did they travel between Brittany and England?"

T asks, "What part of which country is Brittany in?"

T says, "John?"

John says, "It is a part of France."

11:14 T says, "You're right; yes, you're right," looking at a better map in their book. "Then they traveled down to Spain, didn't they?"

T says, "They would go to England by what transportation, Jim?"

Mrs. Apple

Mrs. Noble

(5) Morning Seatwork

(14) If I Were Going Reading Group

(16c) Review of Countries

Jim had his hand up.

Jim says, "Boat."

T says, "Can you add any other things to that story, any other customs you can remember in Brittany?"

T says, "Linda?"

Linda says, "They cook over an open fire."

T says, "Is that the way everybody does in Brittany? Do they all cook their food over an open fire?"

Linda pauses.

T says, "Is that what you meant, Linda? Does everyone cook that way? And they have no stoves?"

Linda says, "Well, they cook in a fireplace."

T says, "That's right."

Kitty raises her hand.

T says, "Kitty?"

Kitty has a comment to make.

T says, "All right, let's try another country since our time is going on."

T says, "Who is going to be the next brave one?"

Jim raises his hand.

T says, "Oh, you can see through them, can't you."

Evidently the names of the countries show through on the back sides of the slips of paper.

T covers the backs of these slips of paper with her hands.

Jim has drawn Africa.

T says, "Can you find Africa on the map?"

This causes quite a commotion; the children think that's very funny because Africa is right in the center of this map, very large and prominent.

Mrs. Apple — Mrs. Noble

(5) Morning Seatwork — (11) If I Were Going Reading Group — (15c) Review of Countries

11:16 Jim says, "They ride camels out on the desert. They have camel sellers."

T says, "Tell us what a camel seller is."

Jim says, "It's a person who sells camels."

T says, "That's a good way to describe it, isn't it?"

T continues, "Tell us how they go about it in the story."

John's hand goes up.

T says, "Would you like to tell us that, John?"

John says, "Well, sometimes they walk around with their camels or camel, yelling to get attention so people might buy them."

T says, "Is that the only way?"

John goes on, "Or they might go into the market pl[illegible]d just stand by the camel."

T asks, "What are some of the good things about cam[illegible]ls that they look for when they buy camels? Can you t[illegible]l us that, Jim?"

Jim says, "In one of our stories, Ali's mother t[illegible] that he should look for the camel that had all [illegible]eth."

T says, "All right, good."

"Can you tell us more about Africa?"

Jim says, "They have sun; they have houses and [illegible]d the climate is usually real hot."

T says, "Would you tell us that again?"

Jim does so.

11:18 "Can you add any more to that, Pat?"

Patrick says, "Well, I didn't learn it in the b[illegible] they also eat dates and rolls."

T says, "Steve, how about you?"

Steve says, "Well, they eat sweet meats."

T says, "Joel?"

Mrs. Apple

Mrs. Noble

(5) Morning Seatwork

(14) If I Were Going Reading Group

(16c) Review of Countries

Joal adds a comment.

T then says, "What else can you add, Pat?"

T looks up and says, "You are doing too much talking." (This is directed toward the children at their desks. They had been quiet for a long time, though.)

T then says, "Billy, sit down. I don't want to see you out of your seat again."

T goes on, "Billy, get that arithmetic sheet out and get busy before I look back there again, please."

Billy returns a crayon to Debra by tossing it over to her.

Patrick continues by telling what bandits or robbers do.

11:19 T says, "What was special about the white camel?"

T says, "Holly, do you know?"

Holly had not raised her hand.

There is a long pause; Holly can't answer.

T then says, "How about you, Dan?"

Dan had not raised his hand.

Dan also can't answer.

Patrick and Jim, both anxious to answer, are engaging in a mild form of horseplay with their hands.

T lets this go on.

Steve attempts to enter into this horseplay.

At this point, T shooshes them.

T then says, "Kitty, do you know what is special about the white camel?"

Mrs. Apple

Mrs. Noble

(3) Morning Seatwork

(14) If I Were Going Reading Group

(16c) Review of Countries

Kitty says, "The Africans think they are good luck charms; and if you have a white camel, you are supposed to have good luck."

T says, "Yes, a white camel means good luck."

T then says, "Let's do one more country. Let's have a girl this time."

T says, "Carolyn, you pick a slip."

Carolyn comes and picks one.

11:21 Carolyn draws England.

A small portion of the events go unrecorded as O changes tapes.

Various children have been saying which countries they would like to visit.

11:2[illegible] Patrick tells which country he would like to visit.

T says, "Tell me about the beds in Brittany that are different. What is different about them?"

T says, "What is it, Pat? No, let somebody else tell about it because you mentioned it first."

T says, "Dan?"

Danny says, "Well, they had a sort of...really looks like cupboard things where there were two..."

T interrupts to reprimand Mark, who is supposed to be busy with seatwork but is not.

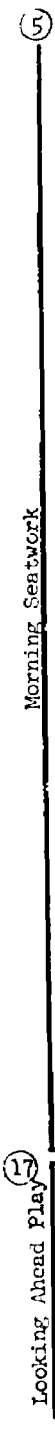
Danny goes on explaining how the beds have doors that close.

T says, "Linda?"

Linda says, "I would like to go to Spain."

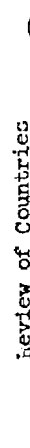
T says, "What is it that you liked about Spain especially?"

T reprimands Patrick with a snap of her fingers.



Mrs. Apple

Mrs. Noble



Linda had no special reason.

T then says, "Yes, John?"

John says, "I want to go to Africa so that I can go to the Congo."

He seems to expect a reaction, but gets none.

T says, "I'm sorry but we won't have any more time to talk any longer."

"You did well today."

T continues, "We'll have more discussion tomorrow."

T reprimands Dan and John.

T continues, "You're to review the rest out of your books. We'll check the worksheets tomorrow. If you will just leave them on your desks, so we won't have to stack them."

T says, "If you can get to your seats, we'll see if we can't have our little play. Go to your desks and get to your seats right now."

T deals with Jim.

T deals with John.

T hurries Patrick along.

T says, "Quiet."

T deals with Carolyn.

T reprimands Jim.

T says, "Will you sit down, please, right away. Everyone listen. Everyone. Stop. Freeze, right where you are."

Everybody freezes and everything is silent.

11:30 T says, "Everyone clear his desk now as soon as I say thaw. Be ready. Turn your chair just so you can see back here. We'll try to have our little play. I need your help, and I'm only going to give you a couple of minutes to get ready. You may thaw."

The noise starts up again.

Mrs. Apple Mrs. Noble

17

T says, "I don't want to hear you."

People are getting ready to watch the play by turning to face the back of the room. Most of the children are sitting on top of their desks.

T says to Steve and Patrick, "Separate desks." They were sitting on the top of the same one.

Ina shows T what she has made.

T compliments her, says, "Well, for goodness sakes, you made that this morning!"

T deals with Leigh Ann.

11:31 T says, "Quickly. In just about a minute, we are going to start."

T says, "Danny, separate desks," as Danny is sitting on John's desk."

T says, "Do you want me to move the table? Ina, do you need the table?"

T says,"Everyone, stop. Stop moving furniture and just sit down."

Ina says, "Well we do. We do need the table."

T says, "Gary, help her move the table."

Gary and Ina turn the table around.

T returns to the front of the room and says, "All right, get into your places. Debbie, are you ready? What do you need?"

Debra disappears into the Teachers' Coffee Room without answering.

T says, "Billy, do it right or you're going to sit down," meaning they won't do it at all.

11:33 Mr. Smith, the principal, comes into the room.

Mr. Smith works with some papers that he received from T.

He whispers to her about something.

T answers out loud.

Looking Ahead Play

Mrs. Apple Mrs. Noble

(17)

Mr. Smith says, "All right, thank you" and leaves the room.

Meanwhile Debra has returned to the classroom.

Ruth says, "This is a play about a man who goes to town, and we've been practicing it and we're going to put it on for you."

This play is called Manwick Goes to Town and is a story in their reading book, Looking Ahead.[1] The gist of the play is: A country bumpkin, Manwick, persuades his mother to let him go to town (which he has never seen) to sell some butter. Manwick mistakes a large rock for Friend Town (his mother told him the town was big so he'd know it when he got there) Manwick convinces himself that Town (the rock) wants to buy his butter so he pours it over the rock. Then he decides that he'll have to collect his money on the morrow. The next day, the rock (Town), of course, doesn't pay him for the butter, so Manwick gets angry, strikes the rock, upturns it and finds gold. Now he thinks that Friend Town (the rock) has been deliberately sitting on his money all the time. Mother explains what must have happened (bad men hid the money under a rock), tells him more exactly what a town is and sends him off to sell some meat. Manwick "sells" the meat to some dogs. The dogs don't pay, so Manwick goes to the palace to report his loss to the King. In order to see the King, Manwick must first promise each of two footmen, half of what he gets from the King. Manwick's story makes the princess laugh, which was the condition a man had to fulfill in order to win her hand. Manwick, however, refuses the princess; instead,

Looking Ahead Play

[1] W.K. Durr, E. Lehr, P. McKee, M.L. Harrison, A. McCowen. Looking Ahead. Houghton Mifflin, 1966.

Mrs. Apple

Mrs. Noble

17

he asks for 100 blows of a stick which are administered to the two footmen, 50 apiece. The King likes Manwick's wit and cleverness so that Manwick marries the princess after all.

Billy plays the part of Manwick; Debbie plays the part of his mother. The part of the dogs is played by Vickie, Leigh Ann is the Princess, Ina is the King and Greta is the second footman. Ruth is the narrator.

T says, as Billy pauses, "Let's keep the story moving, Billy!"

T says, "Ruth, speak up."

Billy (Manwick) finds some money and he picks it up and says, "I have to take it home to Mother."

The children laugh; apparently the idea that Debra is Billy's mother is very funny.

Billy picks up these toy gold pieces of paper and brings them to Debra (Manwick's mother).

The children enjoy the idea that Friend Town (a rock) was sitting on the money.

Then Debra (Manwick's mother) says, "This is some meat, and I need somebody to take it to town for me."

Billy says, "Could I?"

Debra says, "Well, all right, but the town has people in it."

So, Billy (Manwick) goes to town again.

11:39 The play is continuing.

There is a pause in the play. O doesn't know what is causing this pause.

Billy (Manwick) says, "Dogs, do you want my meat?"

He gives the meat to Vicki (the dogs).

T says, "Let's hear," meaning they should speak louder.

Looking Ahead Play

Mrs. Apple Mrs. Noble

(17)

Looking Ahead Play

There has been a jump in the play, but it gets them to the point where Manwick goes to see the King.

T hands O a note which says that this play is all made up from the reading of the story.

T says, "Let's keep the play moving."

Ina (the King) says, "Well, since you were so stupid, I don't think that you should have a prize or anything."

Then there is a pause and laughter.

T says, "Time is running out, so let's keep things moving."

Ina (the King) wants to give him the princess as a wife, but Billy (Manwick) says that he doesn't want that; he wants to be hit with a stick, 100 times.

T interrupts, "Billy, would you repeat that?"

Billy does so.

Ina (the King), begins giving spanks to Greta (the footman).

T says, "Now, let's not be silly."

11:44 They finish the play.

There is much clapping.

T hushes them.

T says, "Boys and girls, you at the play just stay there for a minute until we get back into our seats."

T reprimands John.

Debra says, "We're not finished."

T laughs and says, "I'm sorry, I thought it was over."

There is great laughter by the students.

T says, "I'm sorry. If you were not, go ahead and finish."

So people reassume their places.

T says, "Excuse me, Ruthie."

Mrs. Apple Mrs. Noble

(17)

T then says, to the rest of the class, "Sit right where you were quickly."

Ruth announces the cast.

Bill was Manwick.

Debra was the mother.

Ina was the King.

Greta was the second footman.

Leigh Ann was the princess.

Vickie was the dog.

T reprimands John.

T says, "Let's turn around and get into our seats."

T reprimands John again.

T deals with Gary.

T then says, "That was a nice job," referring to the play.

T says, "Leigh Ann, fold up your robe so that you can take it home."

T says, "Mark, will you help me rearrange this table?"

11:46 The room is quiet and ordered.

T says, "Ina, put the things back on the table so they won't be in your way."

T then says, "And may I have you face this way, please."

T is standing at the front of the room by her desk waiting for more complete attention.

T says, "John, all right, would you put your head down."

John does so immediately.

This seems to be a technique to calm John down.

T takes some magazine pages from her desk.

Looking Ahead Play

Mrs. Apple — Mrs. Noble

(17) Looking Ahead Play

T says, "Boys and girls, this was their favorite story from their reading book, that they wanted to act out."

"How many of you would like to read Looking Ahead?"[1]

Hands go up.

T says, "John, put your head down and keep it down."

John does so.

T says, "Of course, if we were going to be professional actresses and actors, we would have to rehearse a lot and iron out all the wrinkles and things; but for just a classroom job, I think you people did a fine job, don't you?"

(18) Creative Writing

11:47 (19c) h Introduction to Creative Writing

T says, "I would like to talk to you about some pictures I found, and I thought they might bring to mind an idea for a story. Here is one that I think is real cute."

T says, "What do you think is happening in that picture?"

The picture shows a classroom with the teacher in the back and a child who has got a tall tower of objects balancing on each other. The teacher looks annoyed.

T says, "Do you think you could..."

T says, "Vickie?"

Vickie comments on the picture.

T says, "What is going on? I think you could say lots of things about this."

T calls on Dan, Leigh Ann and Mark for comments regarding this picture.

Dan, Leigh Ann and Mark have comments to make.

T then says, "Here is another one of my favorites."

T holds up a picture.

---

[1] Ibid.

Mrs. Apple

Mrs. Noble

(18)

(19c)

Creative Writing

Introduction to Creative Writing

The picture shows a poodle dog jumping up to take a drink out of a drinking fountain, which his master has turned on.

The children get a big kick out of this.

T says, "Yes, Pat?"

Patrick says, "I even have a title for it. It's Hogging All the Water."

T says, "I can't hear you. Say it again."

Pat does so.

T says, "I still can't hear you."

Pat repeats it once more, this time a little louder.

T says, "Jim, what does this picture mean to you?"

Jim gives his comments.

Leigh Ann says, "I've got another title for the picture, Something Funny Happening."

T reprimands Mark.

T then says, "Debbie, how about you?"

Debra makes her interpretation.

The children enjoy her comments.

Les says, "I have a title for the picture, Wet Face."

T laughs and says, "All right."

T looks toward the back of the room and all is silent.

11:50 T says, "I said it very nicely, but I do need your help. Sit up and give your attention this way, please."

O believes this comment was directed at Billy.

T says, "Oh, let's see, here's one you'll like. It may call to mind some stories you might write about this picture."

T holds up a picture.

Mrs. Apple (18) (19c) Mrs. Noble

Creative Writing

Introduction to Creative Writing

The picture shows a dog and a monkey investigating each other.

T says, "You know you have heard make-believe stories about animals. Do you think you might be able to write a make-believe story about this picture?"

T says, "Vickie?"

Vickie has trouble getting started on a story.

T helps Vickie get started on an idea.

Vickie finally finishes her story plot.

T says, "Yes, Billy?"

Billy says, "I can't tell what that white stuff is that is coming down."

The "white stuff" is a part of the dog, a brown and white basset.

T says, "Oh, you can't see it very well. Let me move down and show it to you."

T shows the picture around, moving down between the first two rows by the window.

T says, "All right, John, you can put your head up."

T asks, "Do you know why I told you to put your head down?"

John nods his head-yes.

T says, "Will you not do that any more?"

John grins and shakes his head-no.

T then asks, "What kind of a dog is this in the picture?"

The children immediately know that it is a basset hound.

T holds up another picture.

T says, "Do you think of a story or an idea that might go with this picture?"

The picture shows an owl.

Mrs. Apple — Mrs. Noble

19c

Introduction to Creative Writing

11:52 T says, "How about some of you using your imaginations? Get them to work."

T says, "Yes, Jim?"

Jim says, "Well, I've got a title for it."

Then Leigh Ann gives a title.

T reprimands Billy.

T says, "Randy?"

Randy gives his story title.

T says, "Billy?"

Billy gives a story title.

T then says, "Debbie?"

Debra responds with a title.

T reprimands Duane.

11:53 T says, "Well, let's do one more quickly here."

T says, "Oh, for the boys especially."

All the children say, "Oh, boy."

T holds up a picture.

T says, "This might cause lots of different plots for stories."

> This is a picture of a baseball game, showing a player running and sliding into a base.

T says, "Billy?"

Billy wants to contribute another idea for the owl picture. He thinks his idea is pretty funny. So do some of the other children.

T then returns to the baseball picture.

T says, "John?"

John says, "My title is Tie Goes to the Runner, No, He's Out."

Mrs. Apple

Mrs. Noble

18

19c

Creative Writing

Introduction to Creative Writing

T says, "Jim?"

Jim says, "I've got a title."

Jim then shouts out, "You're Safe!"

T says, "Only now, how would you show that on paper? You showed it in your voice, but not how you would show it on paper."

T says, "Carolyn?"

Carolyn says, "Writing it all in capital letters."

T says, "Ruth?"

Ruth says, "In great big letters."

T says, "Well, that's what she meant," meaning Carolyn.

T says, "Raise your hand; no voices."

T says, "Joal?"

Joal says, "Exclamation marks."

T says, "Vickie?"

Vickie tells about her brother catching a baby bird.

11:55 T says, "Boys and girls, I'll tell you what I want you to do. When we come back at noon, I want you for the first half hour to pick one of the five pictures on the board; and I want you to use your imagination and write a story. It does not have to be make believe; it can be anything that comes to your mind. A plot that you can develop from one of the stories. How many know what they want to write right now?"

Over two-thirds of the hands in the class go up.

T says, "Excuse me, excuse me," to get their attention as a babble of voices burst forth.

T says, "You may pick any one. When you come in at noon, get out your paper and begin on your story."

"Now what are we going to remember about good story writing? First of all, get our ideas and our plot down on paper. Then go back and proofread and look for what things in your writing?"

Mrs. Apple

Mrs. Noble

18

19c

Creative Writing

Introduction to Creative Writing

T says, "Randy?"

Randy says, "Margins and indents."

T says, "Good margins. Good margins on both sides."

There are voices.

T says, "I'm sorry, Greta, I didn't hear what Randy said."

Randy adds, "Punctuation."

T quickly erases the board and writes on the board, margins.

T also writes on the blackboard, punctuation.

T says, "You mentioned something else."

Randy says, "Indent."

T says, "Indenting," and writes that on the board.

Gary raises his hand.

T then says, "Gary?"

Gary says, "I have something to say about one of the pictures."

T says, "Could we take it in just a little bit? Let's finish this now."

T says, "Billy?"

Billy says, "Capitalization."

T says, "That's right," and writes that down on the board.

T then says, "Ruth?"

Ruth says, "Paragraph form."

T says, "Just over all these are good paragraph form; all these things are good paragraph form, aren't they? Indenting, margins."

T says, "Well there are some other things we didn't mention."

T says, "Vickie?"

Vickie gives such a quiet answer that O can't hear her.

Kitty raises her hand.

Mrs. Apple — Mrs. Noble

(18) Creative Writing

(19) Introduction to Creative Writing

T says, "Kitty?"

Kitty says, "Keep to the subject."

T says, "Keep to the subject. Keep to the subject. That's a good one."

T writes keep to the subject on the blackboard.

T says, "And then in one paragraph we should have all the sentences that tell about one thing, shouldn't we? And when we change the idea or subject, we change or put a separate paragraph, don't we? So keep to the subject," she says, finishing writing this on the board.

T says, "And use several paragraphs for ideas. Well, we'll talk a little bit more as we read our stories. Perhaps we can in the first half hour get some of the stories finished so that we can read them during milk time. Would you like that?"

The children seem enthusiastic over this suggestion.

T says, "Greta, are you sleeping?"

Apparently she looks a little sleepy.

Greta answers, "No."

Debra asks, "Can we write something that really happened?"

T says, "You can branch off any way you like to."

11:58 A bell rings at this time.

(20) Going to Lunch

T says, "I'm sorry, I would like to hear everything you have to say, but we haven't time now. All right now. Good posture and let's straighten up your desks."

T opens the hall door.

T says, "Susan, erase everything on the blackboard but the rules for good story writing."

Susan comes up to the board and starts erasing.

Billy comes and stands by T.

T says, "I would like to see your hand; I did know that you were asking me, but I haven't got time to answer you right now."

Mrs. Apple

Mrs. Noble

(20)

T says "Get your sweaters and coats, those of you who have brought them."

T says, "Row 5, line up by the door."

T then says, "All right, row 4."

The children begin to line up.

T says, "Take home the things that you brought," referring to the children in the play who brought props from home.

11:59 T says, "All right, row 3."

T says, "Get your sweaters and coats, please. The bell has rung."

T says, "I can't call row 1, yet. Les, I'm waiting for you to get ready."

Les was talking to Ina.

T says, "Row 2."

T deals with Gary by the door.

Becky has helped erase the board. All three now leave the blackboard area.

T deals with Jim at the door.

T says, "All right, row 1."

T says, "Billy, hold onto the paper crown that you've got."

T then says, "Just a minute. A nice line."

T waits for the boys to straighten up.

Greta and Ina are looking at the pictures on the board.

Vickie finishes writing the date on the board.

One of the girls has very carefully erased the list of story writing reminders that T wanted left on the blackboard.

T now leaves her position by the door and steps into the room.

T says, "Billy, go back and put your chair in nicely."

Going to Lunch

Mrs. Apple

Mrs. Noble

20

Going to Lunch

Billy does so, and returns to the line.

T says, "These people, Vickie and Susan," tapping the desk, "put your chair in."

These two children come out of the line and put their chairs back.

Vickie and Susan return to the line.

T says, "All right, straighten up now. We're waiting, Leigh Ann."

Susan raises her hand.

T says, "Susan, you'll have to wait."

T says, "All right, have a nice lunch."

12:01 The line of children moves out of the room.

End of the morning observation.

Mrs. Apple Mrs. Noble

(21)

Return from Lunch

The children have gone home for lunch. The afternoon observation begins with about five or six children in the room when the first bell rings at 12:50.

O will begin recording events when T calls the class to order.

T says, "It's five till now; let's take our seats."

12:53 T says, "John, stop that and sit down."

T reprimands Billy.

T says, "I asked you to take your seats. Did you hear me? Why didn't you do it then? Please."

John, sitting at his desk, is laughing.

T, coming over to John, says, "John, let's settle down."

T deals with Carolyn.

Several of the children are up out of their seats and are looking at the pictures that T has put up on the blackboard at the front of the room.

T says, "Gary, sit down."

T then says, "Billy, now that's all. Sit down!"

Billy had gone up to look at the map.

T finishes dealing with Carolyn.

12:54 T deals briefly with John.

T deals with Debra, also very briefly.

T says, "You boys, Randy, Les, Mark, Jim, sit down."

These boys were looking at pictures on the board.

The room has a busy sound. One girl is reading a library book, two others have taken out paper upon which to write.

Mrs. Apple Mrs. Noble

(21)

Return from Lunch

T says, "Gary, I need your help."

T is indicating to Gary that he should sit down.

T walks over to the table in the back of the room. She puts some tin foil and other objects down on the table. These will be used for a science lesson.

Linda raised her hand.

T deals with Linda.

Vickie comes over and stands by T.

T deals with Vickie.

Holly comes up to T.

T deals with Holly.

T then goes into the Teachers' Coffee Room.

In a few seconds, T returns to the classroom.

T says, "Jimmy, sit down."

T asks, "Dan, are you my special helper?"

Dan says, "Yes."

T says, "I have a job for my special helper."

T and Dan go over to the counter by the windows.

Students are still talking together; some have begun to write their assigned stories.

T deals with a question from Joal.

T goes on showing Dan how to collate some mimeographed pages and how to staple them together.

T says, "Ina, clean off your desk."

T then says, "Duane, you help Dan and staple the pages as he gets them ready."

12:57 T leaves them, saying, "I want 26 of them."

Mrs. Apple

Mrs. Noble

(21)

T stops at Les's desk and says, "You know, I never did understand the meaning of your title."

Les has written down his title for the baseball picture. He has called it Ticklebee.

Les explains his title to T.

T deals briefly with Randy.

T returns to the table at the back of the room with more science materials.

More of the children are getting out paper on which to write their stories.

T reprimands John.

12:58 T says, "I like the way you are getting to work, Bill; that's what I like to see."

T continues to lay out the science materials.

Susan borrows some paper from Holly.

Patrick is sharpening his pencil. Steve is holding his hands cupped underneath the sharpener to catch the shavings as Becky and Joal are emptying the container for the pencil sharpener.

T comes over to Randy's desk and says, "Let's move your desk back a little because Ina is too crowded."

T then says to Ina, "I want you to turn around and keep your face pointed that way."

Outside, a bell sounds.

1:00 T says, "That's the last bell, folks."

Immediately things quiet down.

Everybody is in his seat, except for Dan, Duane and Mark.

Mark has joined Dan and Duane and is helping collate and staple the pages.

Return from Lunch

Mrs. Apple

Mrs. Noble

(22)

Attendance Time

T says, "Good afternoon, boys and girls."

All of the children say, "Good afternoon."

T takes attendance and says, "Would you please."

T stops taking attendance and says, "Eyes this way, please."

These last two remarks are directed at Billy, who is not listening.

Billy keeps on writing his story.

T says, "Eyes this way, please!"

Billy stops writing and looks up.

T says, "You have your pencil and paper ready. Good posture. Clear your desks so you will have good writing space."

T sits down at her desk and continues taking attendance.

It is very quiet in the room. Several of the children are writing on their stories; others are sitting there with paper ready.

T says, "Gary, did you stop by Cindy's at all?"

T, looking at John, says, "I hear a voice."

Gary says, "Oh, I forgot to stop there."

T repeats, "You forgot. Okay."

T says, "And who else is absent?"

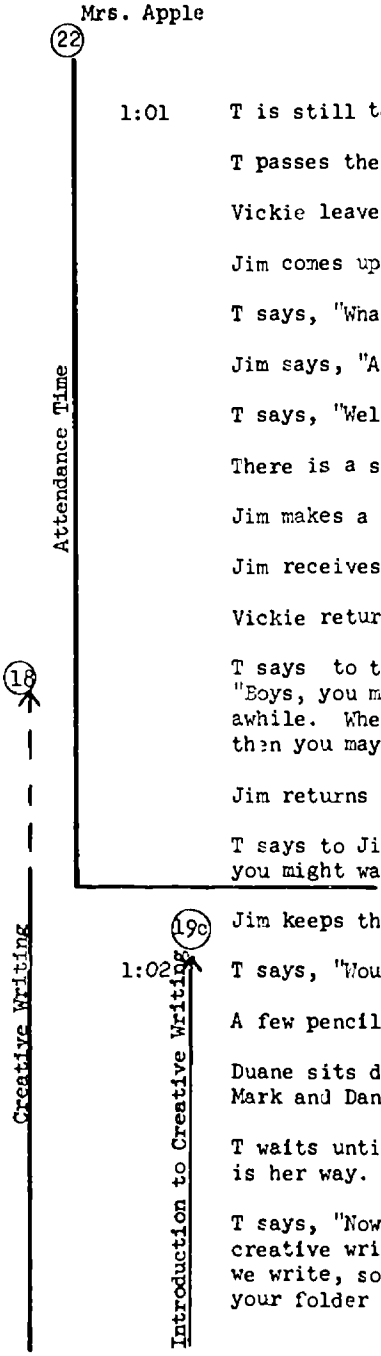
Vickie, who has come up to T's desk, says, "Pam."

T says loudly, "Cindy and Pam are absent."

The children's general appearance of surprise at T's loud statement indicated that this must have been to inform O.

Mrs. Apple

Mrs. Noble



1:01 T is still taking attendance.

T passes the attendance slip to Vickie.

Vickie leaves the room.

Jim comes up and rummages in the pencil box on T's desk.

T says, "What are you looking for?"

Jim says, "An eraser."

T says, "Well, why don't you ask me about it?"

There is a short pause.

Jim makes a conciliatory statement.

Jim receives his eraser and returns to his seat.

Vickie returns to the classroom.

T says to the boys doing the collating and stapling, "Boys, you may stop now, and we'll finish that after awhile. When you finish that last group that Mark has, then you may sit down."

Jim returns the eraser to T's desk.

T says to Jim, "Why don't you keep that on your desk, you might want to erase some more."

Jim keeps the eraser and returns to his seat.

1:02 T says, "Would you put your pencils down, please?"

A few pencils can be heard to click.

Duane sits down, having finished his stapling task. Mark and Dan have already sat down.

T waits until all pencils are down and all attention is her way.

T says, "Now, we are going to have this be our last creative writing for this year, our last story that we write, so let's make it a real good one to put in your folder for your mothers and daddies to read. Think

Mrs. Apple

Mrs. Noble

Creative Writing

18

Introduction to Creative Writing

19c

of the things that we talked about this morning; good margins, capitalization, punctuation, and most of all let's try to develop a good plot for each one of the stories."

A male teacher brings an encyclopedia into the room.

T says, "Can I help you?"

After a ten-second conference, he leaves the room.

T says, "Well, boys and girls, now we have all of our encyclopedias back. We have been worrying about that, haven't we?"

Some of the children do look relieved at the recovery of the book.

T goes on, "Anyway, let's worry about handwriting and all of these things. After you read the story, let's proofread these stories. Proofread as if you were the editor of the newspaper."

T then says, "If you feel you need some changes that need to be made, do it before you hand it in, so that I won't need to make so many marks on your paper. Do the best you can on spelling. Use your dictionary; let's not get bogged down with one word all during the whole writing time. Make an attempt at it and then put a little line under it and later on you can go back and look it up in the dictionary. Get your thoughts down first."

T says, "All right, how many know what they are going to write about now?"

Many hands go up.

T says, "Good; all right, let's begin."

T goes on, "There can be a half-an-hour or twenty-five minutes of real good writing time."

23c

Composing Period

1 Patrick raises his hand.

T walks over and deals with Patrick.

John raises his hand.

Mrs. Apple (18) (23c) Mrs. Noble

Creative Writing — Composing Period

T rolls up the map that was in the back of the room.

T then comes over to John's desk.

T says, "John, I don't think you have had a good pencil all this year. You've either had a stub or that thing."

John has one of those very long and very fat pencils.

T goes on, "You know it is real important to your handwriting. That's awfully long to write nicely."

T says, as she examines the pencils on John's desk, "What about this green one? Is it long, too?"

T continues, "Well, you think about that next year and always have a real thin pencil because that one is really too fat for hands: that's for a smaller child."

1:05 T interrupts to deal briefly with Holly.

T then says, "Well, John, let's use the best one you have, but you tell Mother tonight that let's be sure to watch those pencils."

T has a word with Leigh Ann.

.....

The recording of events is interrupted as O changes tapes.

....

1:10 T comes over to Billy's desk and looks over his shoulder.

T laughs as she leans over to look at his paper.

Several of the children turn to look in that direction.

It might be interesting to note that every child that O can see is writing in cursive, without any instructions from T on this point.

The phone in the hall rings loudly, disturbing no one.

Vickie goes over to use the dictionary.

T tiptoes through the room and closes the hall doorway.

Mrs. Apple

Mrs. Noble

18

23c

Creative Writing

Composing Period

Holly and Debra raise their hands.

T comes over and deals briefly with Holly.

T then stops by John's desk to see what he has done.

Becky is sharpening a pencil.

T says, "Uh oh, Becky."

Becky looks.

T says, "You will have to take care of that before or after school."

Becky says, "I did, but it broke."

T says, "All right."

It is not clear as to what broke and needs to be fixed.

Ruth raises her hand.

T goes over to her desk and deals with her.

Debra still has her hand raised.

T sees that Randy has also raised his hand.

T says, "Randy, turn around."

T deals with Debra.

1:12 T comes over to Randy's desk.

Randy says, "How do you spell this word?"

T says, "Susan, this is no time to visit."

Susan had stopped to talk to Holly.

T continues helping Randy to spell.

Mrs. Apple (23) Mrs. Noble

T says, to the class as a whole, "Don't get bogged down with spelling. Get your thoughts down. Draw a line under the word, then go back and go look them up; you can spend the whole half hour looking up a word if we don't have our thoughts on paper. Get your thoughts on paper first."

T turns back to Randy and says, "Just draw a little line under it. That's right, and then you can look it up. Draw a line under it."

T leaves Randy.

John tosses the eraser that he borrowed from Greta back to her; it bounces across the room. They grin and grimace at each other, then Greta goes and gets it.

Becky says something to Patrick.

Patrick responds.

Composing Period

T says, "What's the matter, Becky?"

Becky says, "I ran out of paper, and I needed another piece."

T says, "Well, I'll go get some in the office. You tell Mother tonight that you need a little bit more to get through the next two days."

Duane raises his hand.

Duane needs help in spelling a word.

1:16 T gives Duane this help.

Carolyn raises her hand.

T says, "I'll be right there."

T begins collating the arithmetic papers, the job that she had originally assigned to Danny.

Steve goes and gets a dictionary and returns with it to his desk.

Ina goes over to get a dictionary and returns with it to her desk.

Mrs. Apple

Mrs. Noble

(18) (23c)

Creative Writing

Composing Period

Susan comes over to ask T a question.

1:17 T deals with Susan.

Susan returns to her desk.

Mark raises his hand.

T finishes collating the papers.

T starts to go back to her desk, looks over Ina's shoulder, then continues to her desk and puts down the collated papers.

1:18 T goes over to Carolyn and answers her question.

Mark still has his hand up.

The room is pretty quiet; the children are working, once in a while communicating in whispers.

Billy gets out of his seat and goes and gets a drink.

T finishes dealing with Carolyn.

Susan is up out of her seat, talking to Holly; they whisper about their stories.

T says, in a whisper, "Billy, sit down."

T comes over to deal with Mark.

Vickie has her hand raised.

T walks over and deals with Vickie.

Susan comes up to the board to look at one of the pictures.

1:20 T finishes with Vickie.

T says, "If you were not able to see the picture, you are welcome to walk up here, one at a time, and look at your picture again, if you couldn't see it well when I held it up. One at a time."

Les is immediately out of his seat to go look at his picture.

Mrs. Apple — Mrs. Noble

(18) — (23c)

Creative Writing — Composing Period

T says, "What can I do for you, John? Can I help you?"

John had gotten out of his seat to talk to Patrick.

John says, "Nothing."

T says, "Then you don't need to be up, do you?"

T closes some of the venetian blinds.

Susan gets up to look at the pictures.

Holly gets up to look at the pictures.

T says, to the class, "Remember, good posture."

Ruth's hand goes up.

T deals briefly with Ruth.

Everyone is now back in his seat.

1:21 John raises his hand.

T goes over to John.

T deals with John.

Joal gets out of her seat and goes to look at one of the pictures.

Susan gets up and goes over to talk to Holly.

T finishes with John.

T says, "Susan, sit down."

Vickie says, "Can I sharpen my pencil?"

T says, "Yes, Vickie."

Ina gets up and goes over to look at her picture.

T is dealing with Holly.

T says, "Don't waste time walking around."

Mrs. Apple — Mrs. Noble

Creative Writing

(18) (23c) Composing Period

.....

O interrupts the recording of events to ask Mrs. Apple to open the venetian blinds; more light is needed for the camera.

.....

T deals with Ina.

1:22 The room is lighter now.

The room has become more shuffly.

T says, "Excuse me; I hear some talking."

Susan gets up out of her seat and starts over to T.

T is dealing with Billy.

T indicates to Susan to keep on coming.

Leigh Ann goes back and gets a reading book from the shelves.

T helps Susan spell a word.

Billy gets out of his seat and goes over to look at the science demonstration; he fingers some of the objects.

T watches Billy.

Then Billy wanders across the room to the pencil sharpener.

T continues to help Susan spell her word.

Patrick is up at the board, looking at a picture.

Holly gets up to throw something away.

Billy, having sharpened his pencil, comes up to look at the pictures.

T says, "One at a time. Come right back to your desk, please."

Billy wanders off.

Mrs. Apple (18) (23) Mrs. Noble

Creative Writing

Composing Period

1:24 T finishes dealing with Susan.

T deals with Debra.

Leigh Ann takes her reading book back to the shelves.

Steve returns to his desk.

Becky gets up from her desk, holding a piece of paper.

Susan says something to John.

T says, "Susan, let's stop talking."

Becky is going over to the wastebasket with her piece of paper.

T says, "Stay in your seats; we'll pass the wastebaskets later."

Becky returns to her seat, still holding her piece of paper.

T continues to deal with Debra.

Dan gets up to look at a picture.

John also gets up to look at a picture.

T finishes with Debra.

1:25 T says, "One at a time."

Dan and John continue looking at the pictures.

T repeats, "One at a time, please!"

Dan returns to his desk.

T comes across the room and, looking over Patrick's shoulder, kind of snorts.

The children in the immediate vicinity look over to see what is going on.

T comes over to Steve's desk and says, "You must proofread your paper. Every word that you're not sure of, look it up."

Mrs. Apple (18) (23c) Mrs. Noble

Creative Writing — Composing Period

1:26 T comes over to John, who had his hand raised.

T finishes with John.

T returns and deals with Steve again.

T is reading Steve's paper.

Vickie is standing by the blackboard with her hand up.

Debra wanders over to T.

T leaves Steve's desk and starts for the front of the classroom.

Debra follows T.

T becomes aware of her and turns around and deals with her between Gary's and Linda's desks.

T notices Vickie and says, "Just a minute."

T continues dealing with Debra.

T finishes with Debra.

T deals with Vickie and says, "They can be whatever you imagine them to be."

Susan comes up and says, "Those are apples."

Ruth has her hand up.

T goes back and deals with Ruth.

Mark's hand is up.

T goes over and deals with Mark.

1:28 T finishes with Mark.

T says, "Debra, let's remember good posture."

T goes over and looks at Becky's paper.

T reads the paper and says, "Is that your title?"

Becky points to Patrick.

T says, "Well, I want this to be Becky's story, not Pat's story."

Mrs. Apple (18) (23)

Mrs. Noble

Creative Writing

Composing Period

T then says to the class, "Boys and girls, after you are through, some of you are now, proofread your paper and look for the things we talked about. You be the grader; and also if you have conversation, be sure that you have used quotation marks and those things we talked about--the capitals and the commas."

T says, "Danny, how are you going to get done if you are looking back there? Turn around in your seat, put your feet under your desk; that's where they go."

Debra comes up and shows T her finished product.

It seems that Debra, Steve and Becky are about the only ones finished with their papers.

1:30 T finishes with Debra.

T comes over to look at Gary's paper and laughs at what is written there.

Debra's hand is up.

T deals with Debra again.

Susan and Holly are talking.

T reprimands Duane and Randy who are whispering.

A loud voice in the hall can be heard to say, "Boys, keep quiet, please."

This causes a bit of a stir in the classroom, and T quiets the children.

Susan goes up to the board to look at the pictures.

T reads Leigh Ann's story. T laughs as she reads, which pleases Leigh Ann.

Becky is up at Gary's desk, talking to him.

Jim is waiting to talk to T.

Billy is also waiting to talk to T.

Susan returns to her desk, having finished looking at the pictures.

Mrs. Apple

Mrs. Noble

Creative Writing

Composing Period

13

23c

John goes up to look and immediately returns to his desk.

T now deals with Duane at his desk.

Jim and Bill are still waiting.

T finishes with Duane.

T reads Jim's story and says, "All right, you have a lot of proofreading to do, don't you?"

Then T turns to Billy, starts to read his story, and says, "You have a lot of proofreading to do, too, don't you?"

Then T says, "Oh, goodness, come up here. I'm going to have to sit down."

T whispers to herself, "I'm tired."

T sits down at her desk and continues to read Bill's story.

T reprimands Duane.

Vickie gets up to get a drink of water.

Randy also gets up to get a drink of water.

T says, "There will be no drinks unless it is very important, then I understand."

1:34

T then says, "All right, Billy, you go back and proofread now."

Kitty comes up to T's desk and shows her the finished story.

T reads Kitty's story.

Billy has given Vickie his story to read.

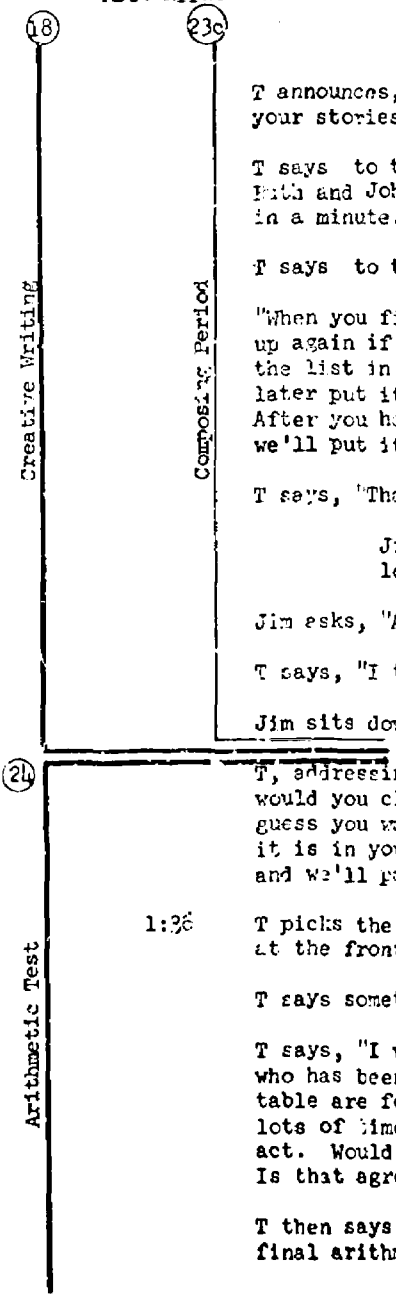
T reprimands Billy by saying, "Don't share your story now; we will share stories later on."

T says, "All right, Kitty, you go on back to your desk now."

T then says, "I'll read all of the stories when they are handed in."

Mrs. Apple

Mrs. Noble



T announces, "Boys and girls, it is time for you to put your stories aside now."

T says to the children who are at her desk--Holly, Beth and John, "Sit down, please. I'll talk to you in a minute."

T says to the whole class, "Lay your story aside."

"When you finish your arithmetic test, you can pick it up again if there is time then. We'll put it down on the list in the morning as something to finish, and later put it in the folder for Mother and Daddy to read. After you have proofread and Mrs. Apple has seen it, we'll put it in our folder."

T says, "Thank you, Jim. Will you sit down now, please?"

Jim is up near the pictures, looking at them.

Jim asks, "Are the t and v in television capitalized?"

T says, "I think it usually is."

Jim sits down at his desk.

T, addressing the entire class, says, "All right, now would you clear your desk except for your folder. I guess you want to leave your dictionary on there unless it is in your way; then put it down beside your desk, and we'll pass out the arithmetic final test."

1:36 T picks the tests up from her desk and stands waiting at the front of the room.

T says something to Randy.

T says, "I would like to say to you, Bill, and everyone who has been back there, that those things on the table are for science. We've had things back there lots of times for science, so you should know how to act. Would you please not pick up those things now. Is that agreed?"

T then says, "Take one test, please. This is our final arithmetic test."

Mrs. Apple

Mrs. Noble

(24)

T stands at the front of a row, counts out enough papers for that row and then hands the tests to the first person in that row. Each child keeps a test and hands the rest to the student in back of him.

Les is holding his story in his hand.

T says, "Is that all right with you, Les? Would you put it aside then, please, and get ready for our arithmetic test?"

Les does so.

(25c) 1

T says, "This includes the work that we have done all year, and you'll have to do some good thinking on it. You may not get it all finished; it has several pages, but I have written large, and it took several pages to put the work on. If we aren't finished, I'm going to collect at a certain time and we'll hand them back out in the morning and finish them; I don't want you to take any of this kind of work home."

T says, "I want to know what you know. We won't share any answers; it's not what you and your neighbor know together, it's just what you know from this year."

"I'd like to have a real good job done on this, your very best job. Do not hurry and take your time."

Patrick has his hand up.

T says, "Yes, Pat?"

Patrick asks, "If there is any division, do we use long division?"

T says, "Yes."

T adds, "In multiplication, you may use the short process that we used yesterday. You do not need to show all of the partial products."

Jim comes up to T with an extra test.

There is a question as to whether Steve has one or not.

Arithmetic Test

Instructions for Test

Arithmetic Test

Mrs. Apple (24) (25c) Mrs. Noble

Instructions for Test

T starts to reprimand Jim, but it turns out that Steve does have a test paper.

T continues to pass out test papers, row by row.

Leigh Ann brings up an extra test.

T says, "There, I thought I had enough," as she counts up enough test papers for the last row.

1:38 T says, "Class, just look at the front page and that's all."

T says, "Put your name on the right hand side."

T says, "Look just at the first page, please, Gary."

T says, "Now, as far as directions are concerned, each part has its own directions that you should be able to read and understand after all of our discussions this year. I don't think I need to read the directions for each part, do I? If you have a question, raise your hand and I will answer it."

T says, "I'll say it again, on division, I want to see all of the steps. Everyone understand that?"

The children all say, "Yes."

1:40 Bill has his hand up.

T says, "Bill?"

Bill says, "Did you say that this was for this year or for the whole book? When I looked at it, it looked like for the whole book."

T explains, "It would be the same thing, Billy, the whole year and the whole book."

Bill grins and nods.

T says, "It is over everything we have done this year."

Steve has his hand up.

T says, "Steve?"

Mrs. Apple (18) (25c) Mrs. Noble

Arithmetic Test

Instructions for Test

Steve asks, "On Test 4, on that division, should we show our long division when we do those problems?"

T says, "No."

T continues, "What are the directions?"

Steve reads, "Replace each box with a numeral."

There are nine problems having to do with multiplication and long division. For example:
2) $4 \times \square = 32$
3) $8 \div 2 = \square$

T says, "I can't see any other questions that you might have."

"Oh, yes. Would you look at the third page, please, at the top."

"There is no sign for the problems at the top of the page. The sign should be subtraction," using Vickie's test to look at.

T says, "Would you put a subtraction sign on each of those three problems?"

T writes three subtraction signs on the blackboard.

T goes down each row, checking to see if the children have written in the subtraction signs.

T says, as she goes about the room, checking, "Uh huh, uh hum, good. That's right."

A jet flies over very low and startles some of the children.

T says, "We've been studying about sounds traveling fast, haven't we?"

T says, "Yes, Pat?"

Patrick says, "I didn't like that plane very much. It didn't make a sonic boom," and he grins.

Mrs. Apple

Mrs. Noble

(25)

T says, "All right, would you think that we could have seen the plane before we heard it if we had been outside?"

Many of the children say, "Yes."

T says, "Raise your hand."

John says, "No, you couldn't see it."

Greta says, "I think you could see it."

T says, "What did we find out yesterday in our experiment?"

John says, "We could see it before we heard it. You couldn't hear it because it was flying too high."

T says, "You didn't hear it?"

John says, "I heard it, yes, but you couldn't see it. Probably because of the sunlight in the clouds."

T says, "That's a good comment, too, because that might obstruct our view, wouldn't it?"

Patrick has his hand up.

T says, "Pat?"

Patrick says, "I think that light does travel faster than sound, because if it was up so high, you couldn't hear but you could still see it."

T says, "All right. All right."

T says, "I was looking here on your third page. All right, everybody's attention back on your third page, please."

T is still checking on the subtraction signs.

Instructions for the Test

1:43 T says, "All right, you may begin."

T says, "When you have finished, you may work on your story. Just leave your test on your desk; if you don't get finished, you may finish in the morning."

T deals briefly with Linda.

Mrs. Apple

Mrs. Noble

(24) Arithmetic Test

(25c)

Instructions for Test

T comes over to deal with Jim.

T then deals with Joal.

T checks with Steve.

T deals with Becky.

T says, "Class, on the third page there is a question. One number is not clearly printed; it is the middle problem on page three at the top. Point to it."

T looks all around the room to see that the people are pointing to it.

T says, "Bill, point to it, please. Are you? Thank you."

T says, "It should read 5,026 take away 4,378. That should be a seven; seventy-eight."

1:44 T says, "All right, you may begin."

T says, "We would like to have it absolutely quiet. Do not get up and disturb anyone; let's have it absolutely quiet. Stay in your seat."

(26c) K

Holly raises her hand.

T comes over and deals with Holly.

T goes over and opens the hallway door.

Holly goes to the back of the room to look at the Arithmetic Vocabulary chart that is hanging on the blackboard.

Test-Taking

T says, "Danny. Good posture."

The children don't look as though they are working; they look more thoughtful.

T says, "I know you will have to turn in your chair to find the word if you are not sure of the spelling; that's all right. Be real quiet."

T is referring to the Arithmetic Vocabulary chart that is on the back blackboard.

T comes over and deals with Carolyn.

Mrs. Apple (24) (26c)

Mrs. Noble

Arithmetic Test

Test-Taking

Some of the children are getting up and going to the back of the room to look at the chart: Jim, Holly, Susan, Duane, Debra and Mark.

T says, "One at a time."

They all go back to their seats except Susan.

T says, "Go on and then when you get your turn, you can go back there."

John has raised his hand.

Kitty has also raised her hand.

T comes over and deals with John.

Susan returns to her seat.

Mark gets up and goes over to the chart.

The children are sort of drawn irresistably to the chart.

Vickie, Mark, Susan, Holly and Jim are there.

T says, "One at a time, one at a time. How are we going to see the chart unless we are there one at a time?"

Mark, Vickie, Jim and Holly return to their desks.

Susan finishes looking and then returns to her desk.

Jim comes back up to the chart.

Then Holly goes over to the chart.

T says a word to Debra.

Ruth has her hand up.

T deals with Ruth.

Still Susan, Mark, Holly, Jim and Vickie are back at the chart.

T says, "One at a time."

As soon as she says this, they move back a little.

Mrs. Apple | Mrs. Noble

24 | 26c

Arithmetic Test

Test-Taking

T says, "Use your judgement. Let's not all pile up back there."

1:47 T comes over to deal with Duane.

T finishes with Duane.

T says, "We may not visit with our neighbor at all."

It is not clear to O if T is talking to Gary or to Linda.

Les gets up for a drink of water.

Vickie, Jim and Mark are still back there using the chart.

Les is standing by the water fountain, looking at the chart.

Susan gets up and goes back to look at the chart.

T deals briefly with Carolyn.

Ruth has her hand raised.

T deals with Ruth.

1:48 T finishes with Ruth.

T deals with Debra.

T finishes with Debra.

Jim has a question that T answers.

Then T says, "Step aside, please. Do not stand right in front of the chart. We should already know how to spell these words. We shouldn't have to look. We have worked with them for a long time now."

Randy makes a comment.

T indicates that he should be quiet.

Susan starts to go back again to the chart.

T says, "That's too many back there, Susan. Can't you see that, honey?"

Susan sits down again.

Mrs. Apple (21) (26c)

Mrs. Noble

Arithmetic Test

Test-Taking

T finishes dealing with Holly.

T says to the group at the chart, "Step aside. Just look at your own paper. Step aside so that we can all see. Wait your turn."

T deals with Vickie.

Debra, Mark, Vickie and Les are now back at the chart.

Billy gets another drink of water.

T reprimands Billy.

T moves Jim's desk over a bit more to the wall.

T wanders around the room looking at the children.

Billy is at the science table again, looking at the exhibits.

Billy notices T watching him.

T smiles at Billy.

Billy sits down at his desk.

T again says to the group back at the chart, "Step aside now. Let's not bunch up there so we can see, too. Cover your work when you are finished."

Debra has her hand raised.

T deals with Debra.

1:51 T finishes with Debra.

T says, "Mark, you're not to work your test problems back there."

Mark returns to his desk.

T goes over to Becky and says, loudly, "It takes some real good thinking. Not every one of them is going to be real easy; we'll have to do some good thinking."

Mrs. Apple

Mrs. Noble

(21) Arithmetic Test

(26c) Test-Taking

T finishes dealing with Becky.

T wanders up between the rows.

T says, "Think about your work carefully, Becky, and see what they mean."

T stops to deal with Holly for a moment.

Les has his hand raised.

Randy raises his hand.

T goes over to Randy and says, "Think out what the problem is and try and put down what you think is correct."

T urges, "Randy, let's keep in mind what we've said about good posture."

1:52 T goes over to deal with Holly.

T then deals with Patrick, very briefly.

Les's hand is up.

T has Becky turn her desk so that Becky is facing the sink at an angle, and is turned away from the class.

T comes to the front of the room.

T says, "Randy, let's get your shoe tied and then let's get this test done."

Randy had been occupied with the tying of his shoe.

T says to the whole class, "You may use scratch paper if you need to; you may use this paper over to the side if you like."

T continues, "Gary is using scratch paper for some of the answers that are in equation form."

T comes over to answer Lea's question.

T says, "Les, now, be careful. Think what the question asks and then put in what you think is correct. Think it out; it takes some good thinking."

Mrs. Apple (24) (26c) Mrs. Noble

Arithmetic Test

Test-Taking

1:54 T says, "Ina, I am either going to have to put a zero on the paper or you are going to have to stop writing. What has Mrs. Apple said about that?"

Apparently Ina is writing with an ink pen, which is not allowed.

T continues, "Don't look like you don't know what we are talking about. What is it?"

This conversation catches the attention of several of the children.

T goes on, "Ina, you are going to have to do the whole paper over again."

T says, "Now, don't feel badly about that because I have told you before that you will have to do these all over again. Now, I'm trying to be nice to you, not mean."

T asks, "Ina, will you be able to copy quickly on a new test?"

Ina is red-faced and defeated.

Becky has her hand raised. Also, her desk is now turned more in the direction of the class.

T collates another copy of the test for Ina.

T says, "I'm sorry about it, aren't you?"

T, in an effort to comfort Ina, says, "It wasn't working very well, was it?"

T pats Ina on the head.

T gives Ina a new copy of the test.

Ruth has her hand up.

T comes over and deals with Ruth.

Becky raises her hand and says, "I've got two front sheets on my test."

T says, "Well, come with me and we'll fix it up."

T and Becky go over to the shelves.

Mrs. Apple (24) (26) Mrs. Noble

Arithmetic Test

Test-Taking

T says, "The boys put the tests together and they missed a page."

T puts her back to the shelves and stands looking out into the room as she pulls the staple out of the paper.

1:58 Becky says, "Thank you."

On her way back to her desk, Becky stops and shows Bill her renovated test.

John comes up to talk with T.

T nods her head at him and says, "Raise your hand first."

John returns to his desk and immediately raises his hand.

T comes right over to John's desk and deals with him.

1:59 T pats Dan on the head and says, "You'd better get back to work."

Dan had been daydreaming.

.....

The recording of events is interrupted as O changes tapes.

.....

During the tape change, the following events occurred:

T reprimands Kitty and Greta because Kitty was going to help Greta with a problem.

T indicated to them and the entire class that this was not appropriate behavior for a test. T also indicated that even if they were talking about something else, T would think that the discussion was about the test.

T returns to her desk and sits down.

Mrs. Apple

Mrs. Noble

(24) (26c)

Arithmetic Test

Test-Taking

2:04

T says, "Doesn't that look ever so much nicer in pencil, Ina?"

T sits at her desk and looks at a magazine.

T gets up and wanders around the room, looking over the shoulder of some of the children.

The room is very quiet.

Holly's hand goes up.

T goes over to Holly's desk.

Holly says, "My test isn't stapled anymore."

T says, "Well, you come over to my desk."

T and Holly come over to T's desk.

T staples Holly's test.

Holly says, "Thank you" and returns to her desk.

T sits down at her desk.

Susan gets up and comes over to T's desk; Susan also restaples her test.

T asks, "Did yours come apart, too?"

Susan says, "Uh huh."

Susan returns to her desk.

T gets out a series of announcements--a Quarterly Report--and begins making corrections on them, inserting them within this Quarterly Report as she works.

The room is quiet; the children are working pretty hard on this test.

T gets up and walks around the room, holding the Quarterly Reports in her hand.

T returns to her desk.

Carolyn's hand is up.

Mrs. Apple (24) (26c) Mrs. Noble

Arithmetic Test

Test-Taking

T says, "Carolyn?"

Carolyn comes up to T's desk.

T deals with Carolyn.

T dismisses Carolyn.

2:07 Becky comes up to T's desk.

Becky laughs and says, "My test is all out of order."

T says, "I think they tried to hurry too much. Oh well, you just have an extra sheet here."

T numbers the pages for Becky so that she won't get confused.

T says, "That's what happened."

2:08 Becky returns to her seat.

Billy comes up to T's desk.

T says, "Billy, I can't help you with the problem, but you can use the scratch paper to work on."

Billy stands there, kind of swaying.

Billy then goes back to his seat.

Jim then comes up to T.

T deals with Jim.

Susan comes up to T's desk while T is still busy with Jim.

Vickie gets up out of her seat and goes back and says something to Bill.

Billy wants her to stay and talk to him, but Vickie refuses.

T then says, "No whispering, please; I'll think it's about the test, and I'll have to give a zero, won't I?"

Vickie starts to get a drink of water.

T says, "Vickie, honey, is it an emergency?"

Mrs. Apple

Mrs. Noble

24

26c

Arithmetic Test

Test-Taking

T says, "We're going to get a little break in a little bit."

T says, "Jim, this has been studied in the last chapter. You do the best you can."

T dismisses Jim and he returns to his seat.

2:10 T deals with Susan who has been waiting by T's desk.

T says, "Yes, Ina?"

T leans over her desk to look at what Ina is pointing at and deals with Ina regarding her paper.

Billy gets up to get a drink of water.

T says, "Let's not have any more drinks until break time."

Billy says something to Becky.

Billy makes funny noises with his mouth.

T says, "Is it an emergency, Bill?"

Billy says, "My mouth is dry."

T pauses, looks at him, smiles and says, "Well, you use your judgement; do you think you need to make that noise now?"

Billy goes back to his desk and sits down.

Ina is sitting there, just looking at T.

T says, "Ina, I'm sure you will know how to work that problem if you just give it some thought."

2:12 No one is finished yet.

T remains at her desk, going through the Quarterly Reports again.

John gets his arithmetic book out and puts it on top of his dictionary.

T notices this immediately, shakes her head and says, "John, put your arithmetic book away."

John does so.

Mrs. Apple (24) (26) Mrs. Noble

Arithmetic Test

T says, "Ina, you just go on."

Ina needs encouragement to continue working on the arithmetic test.

Kitty comes up to T's desk.

T deals with Kitty.

Bill is out of his seat and is back at the shelves.

Bill makes the same silly noise with his mouth.

T immediately looks at Billy and kind of smiles at him, as she continues to deal with Kitty.

Billy, as if "caught in the act," gets right back into his seat with a very red face.

T says, "Now, Billy, you'd better get busy."

2:13 Test-Taking

T gets up and goes to the back of the room and sits down at the demonstration table. She takes with her the Quarterly Reports.

T takes this action so that she can keep an eye on Bill.

Becky comes over to T with a question.

T answers Becky's question.

Becky returns to her seat.

John goes back over to T.

Becky gets out of her seat to throw away some paper.

T continues to deal with John.

The rest of the room is quiet.

Bill is working very sporadically.

Becky returns to her seat.

John returns to his seat.

Mrs. Apple

Mrs. Noble

(24) Arithmetic Test

(26c) Test-Taking

T says, "John, you look your work over again."

John has apparently finished his test, and this suggestion seems to leave him depressed.

Ruth is talking to Leigh Ann.

T asks, "Ruth, what do you need?"

Ruth says, "I'm getting some paper from Leigh Ann."

Carolyn comes up to T.

T deals with Carolyn.

T then says, to the whole class, "Turn around, do your own work."

(27) Exercises

T, apparently deciding that some break is needed, says, "Let's all stand for just a moment. Put your pencil down. Stand up and stretch for just a moment."

John is still glum and watery-eyed.

T says, "Come on. Way up tall to the ceiling. Take this minute and stretch."

T stretches--her hands up high over her head.

Leigh Ann and John don't stand up.

T urges, "And touch your toes. Everyone."

T bends over and touches her toes.

Leigh Ann gets up.

John, and now Danny and Gary are still sitting.

T says, "Come on, boys, get up."

T says, "Get up and exercise a minute; it's very good for you. Please. Touch your toes a little bit."

The children are going up and down.

T goes on, "Get the crinkles out. We're going to get the crinkles out."

Mrs. Apple | Mrs. Noble

(27)

Some of the children giggle.

T says, "Now, let's hang over like a rag doll."

T bends over in a very relaxed fashion.

So the children, they all hang over.

John still hasn't gotten up, nor has Gary.

T says, "And arms out to the side. Make circles with your hands."

T makes wide circles with her arms.

2:17 T says, "Gary and John, I would like for you to join us, please."

Randy also sits down now.

Gary and John get up.

T says, "Randy, you too."

Randy says, "I have already got up and sat down."

T says, "Okay."

T says, "Big circles."

The children make big circles with their arms.

T says, "And hop on one foot."

T hops on one foot.

All the children hop on one foot.

T says, "Hop on the other foot. Now touch your toes."

T says, "All right, let's make a circle with your head all the way around. Loosen up those muscles. Back around the other way."

T goes through the actions herself.

2:18 T says, "All right, now sit down."

Exercises

(21)

(26c) "Let's get back to work."

(24) Mrs. Apple (26c) Mrs. Noble

Arithmetic Test

Test-Taking

The children do so. Some of them look happy, others just relieved to be able to get back to work. They look like they are concentrating pretty intensely.

John continues to look unhappy.

T returns to her desk and sits down.

Patrick comes to T's desk.

T deals with Patrick.

Billy comes over to T.

Billy comes closer as though to see Patrick's paper.

Patrick returns to his seat.

T deals with Billy.

John comes back to T's desk.

T says, reprovingly, to John, "Excuse me."

John returns to his seat.

Randy is lingering around T's desk.

2:19 T finishes with Billy.

Billy returns to his desk.

T begins to deal with Randy.

T finishes with Randy.

Randy goes back to his seat.

John returns to T's desk.

T deals briefly with John.

T says to John, "Just leave it that way and then when we go over the test, we'll learn how to do it, won't we?"

John goes back to his desk, again looking very depressed and unhappy.

Mrs. Apple (26c) Mrs. Noble

Arithmetic Test

Test-Taking

Vickie comes over to T's desk.

T deals with Vickie.

2:20 T finishes with Vickie.

Vickie returns to her desk.

John gets up to put his test in the regular arithmetic box.

T says, "No, John, keep it on your desk."

Ruth raises her hand.

T goes back to Ruth's desk and deals with her there.

T finishes with Ruth.

T moves to the front of the room.

T stops at Danny's desk and says, "Did you have your hand up?"

Danny shakes his head - no.

T says, "Oh, I'm sorry, I thought you did."

T returns to her desk, puts a rubber band around the pages of the Quarterly Reports and places them on top of other papers on her desk.

T says, "Ina, you'd better keep right busy."

Sighs are beginning to be heard around the room. The children are working pretty intensely on the test.

Jim gets out of his seat and asks a question while he is two desks away from T.

T says, "Mark, you shouldn't talk to Bill. I'll think you are talking about the test."

Mark's face is red.

2:22 T answers Jim's question.

Jim returns to his desk.

Jim raises his hand.

Mrs. Apple (24) (26) Mrs. Noble

Arithmetic Test

Test-Taking

T goes over to Jim's desk and deals with him.

T returns to the front of the room.

Jim gets up and goes over to Leigh Ann to borrow a piece of paper.

T watches this interaction and then sort of relaxes as she sees that it is only about a piece of paper.

T walks over to Danny and says, "You made good use of that scratch paper."

Danny blushes a little bit.

T returns to her desk, takes out her copy of the Listen, Speak and Write book,[1] and leaves it on top of her desk.

T then wanders around the room.

T stops at Joal's desk and looks over her shoulder.

Joal has finished her story and T picks it up.

T goes to the back of the room, stopping to say something to Patrick.

T begins to read Joal's story.

Linda gets up to throw something in the wastebasket and then returns to her seat.

T brings Joal's story back to her.

Joal has apparently finished her arithmetic test and is reading a library book.

2:25 At this time, maybe four students have finished their arithmetic tests: John, Joel and maybe Steve and Gary.

T moves over to Ina's desk and says, "That's it, Ina."

[1] M. Monroe, R.G. Nicols, V. Caballgreete, H.M. Robinson. Listen, Speak and Write. Scott Foresman & Co. 1963

Mrs. Apple

Mrs. Noble

(24)

(26)

Arithmetic Test

Test-Taking

Then T goes over to Susan's desk and makes a brief comment to her.

T continues to walk around the room.

Kitty gets up and puts her test into the arithmetic box.

T says, "Keep them at your desk."

Kitty apparently doesn't think that this is meant for her.

Billy repeats T's statement to Kitty as she passes him on the way back to her desk.

Kitty returns and retrieves her test and then goes back to her seat.

T is over at Becky's desk, checking her test.

T is just more or less just looking over shoulders now.

T says to Jim, "Let me see how you are doing."

Jim doesn't look too pleased about it.

2:27 T comes back to her desk.

Kitty is over at the shelves, selecting an extra-curricular book.

T says, "All right, class, let's put down our pencils; we've worked long enough on this."

Randy says, "Oh, let's finish it."

T, stopping objections, says, "No. Let's put your pencils down."

"We'll finish them in the morning. We've worked long enough on them."

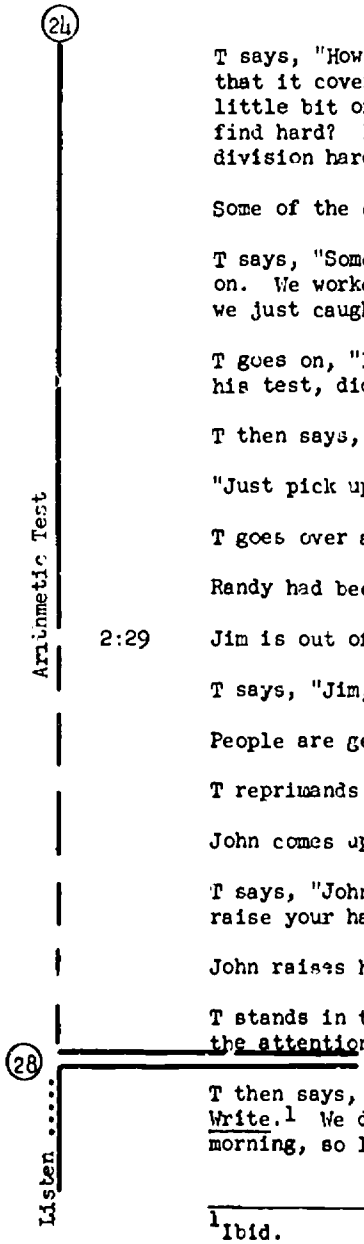
T says, "Danny, why don't you pick them up for us since you are the special helper, please."

Vickie raises her hand.

Danny gets right up and begins to collect the tests.

Mrs. Apple

Mrs. Noble



T says, "How did you feel about the test? Did you feel that it covered well what we have studied this year? A little bit of everything in here? What things did you find hard? I noticed that some of you still found the division hard, didn't you?"

Some of the children say no and some say yes.

T says, "Somehow it seems like this week we just caught on. We worked hard and we always do, and it seems like we just caught on, didn't we?"

T goes on, "I know Mark felt that way when he worked his test, didn't you, Mark?"

T then says, "Let's stop now."

"Just pick up the papers as you go, Danny."

T goes over and picks up Randy's test.

Randy had been reluctant to relinquish it.

2:29 Jim is out of his seat.

T says, "Jim, go and sit down."

People are getting up all over the place.

T reprimands Jim.

John comes up to T.

T says, "John, I will answer your question if you will raise your hand."

John raises his hand on his way back to his desk.

T stands in the center front of the room and waits for the attention of the class.

T then says, "All right, let's do our Listen, Speak and Write.[1] We didn't do our Listen, Speak and Write this morning, so let's do it now, it's time for this."

[1] Ibid.

Mrs. Apple

Mrs. Noble

(28)

Listen, Speak, and Write

John looks thoroughly frustrated.

Leigh Ann raises her hand.

T says, "Yes, Leigh Ann?"

Leigh Ann says, "We didn't do any English this morning."

T says, "We wrote on paper, didn't we? Isn't that English? Where did we learn about paragraph form, and indenting, and margins? Where did we study about that, Leigh Ann?"

Leigh Ann grins and says, "Yes, I guess that was English."

T says, "I called that English. I guess we could just call it creative writing."

Jim's hand is raised.

T says, "Jim, you come on over."

Jim does so.

T deals with Jim.

T finishes with Jim, and he returns to his desk.

T says to the class, "Will you please turn to page 65."

T repeats, "Turn to page 66."

T waits for people to find page 66.

Danny is still collecting test papers.

T smiles at Danny as he passes by her.

T says, "Let's lay our books down flat on your desks so I can see your faces better. It's hard to hear what you say sometimes; let's put our books flat on our desks, please."

T is telling the students to lay their Listen, Speak and Write books down on the desks, but to leave them open and face up so that the students can still read them.

Mrs. Apple

Mrs. Noble

(23)

Listen, Speak, and Write

2:32 T repeats, "Lay your books down, please."

T then says, "What did we call the words last week--we talked about words that were names for places and for people and things--what did we call those words, do you remember?"

Carolyn raises her hand and says, "Nouns."

T says, as she writes the word nouns on the blackboard, "Who can say some nouns that are words for me?"

T says, "Kitty?"

Kitty says, "Grocery store."

Debra raises her hand and says, "She, he, him, Mother, Father."

T says, "Now, just a minute. Mother, Father would be names for people, wouldn't they? We're going to just talk about those words that are on page 66."

T says, "Susan?"

Susan says, "Family."

T says, "You see all these words on the top of page 66 that can be used as nouns."

"For instance, I want you to listen to the story."

"Put on your thinking caps and listen for just a moment."

T goes on, "See if you can see anything unusual or any way that we might change the story and make it just a little bit better or easier to listen to."

T stands and waits to get the attention of the students.

Danny is fussing around in his desk.

T waits for Danny.

Finally, Danny notices this.

Mrs. Apple

Mrs. Noble

(28)

Listen, Speak, and Write

T says to Danny, "Lay your book flat on the desk and turn your page open."

T begins to read a paragraph from the teachers manual in which the noun Tommy is used over and over again when it would be simpler to use a pronoun.

T then says, "Do you see anything unusual about that story?"

Hands go up.

T says, "Les?"

Les says, "They say Tommy all of the time."

T says, "Yes, they do."

T then says, "Kitty?"

Kitty says, "The neighbor children were talked about more than they had to be."

2:35 T says, "There are some words that we can use in place of the name and not always say Tommy. There are some other words such as the word that Kitty mentioned, such as they, that could be used in place of it. You were using it in place of what word?"

Kitty says, "Neighborhood children?"

T says, "All right, and they stood for the neighborhood children. Let me read the first sentence and then let's see what other words we can put in place of the name."

T reads: "Tommy went into the house to get a ball and bat."

T then says, "Let's read the next one."

T reads: "Tommy took the ball and bat from the closet and took the ball outside."

T then asks, "What might we use in place of that?"

Randy's hand is kind of halfway up.

T says, "Randy?"

There is a pause.

Mrs. Apple Mrs. Noble

Listen, Speak, and Write

(28)

T says, "Do you think we need to use Tommy again or what might we use?"

Randy finally says, "He."

T says, "He is a good word that we might use."

Kitty raises her hand and says, "We could use them."

T writes he and them on the blackboard.

T says, "Now the sentence reads like this: 'He took them from the closet and took the ball outside.'"

T reads the next sentence: "Tommy invited the neighbor children to play ball with Tommy."

T then says, "What can be done to change that sentence to avoid using Tommy again?"

T says, "Jimmy?"

T changes and says, "Gary?"

Gary says, "I was just stretching."

T says, "Okay, then. Jimmy?"

Jimmy says, "Him."

T writes him on the blackboard.

T reads the next sentence.

They replace the nouns neighbor children with they and Tommy with him.

T then says, "All right, all of these words can be used in place of nouns."

"Is Tommy a noun, boys and girls."

The children say, "Yes."

T says, "It's the name of the person, isn't it? These words which we have just mentioned are called pronouns."

T writes pronouns on the blackboard.

Mrs. Apple | Mrs. Noble

(25)

Listen, Speak, and Write

T says, "Let's say that together."

The children say, in unison, "Pronouns."

T says, "Because they are used for," and she underlines pro, "nouns," and she underlines nouns.

T continues, "If we would just try to talk without using he, she, and it, and without all of the words that we use in place of nouns, our talking would certainly sound funny, wouldn't it? Because we would always have to use the proper names."

T says, "The word pro stands for for, boys and girls, so this word pro means for nouns."

2:37 T says, "Let's read the story on page 66 and see how many pronouns you can find."

T says, "Greta, would you read the list of pronouns?"

Greta reads: "We, you, she, them, they, he, me, him, I, her."

T says, "All right, good."

T says, "Do you see the story there on the yellow part of the page? Point to it on page 66, please."

The children point to the right story.

T says, "Billy, will you read the first sentence?"

Billy had not raised his hand.

Billy reads: "'Aunt Sarah was married last Saturday,' Jean said to Nancy."

T says, "All right, Bill, let's stop there. Are there any pronouns there?"

Bill reads and says, "Aunt Sarah is the name of a person."

T says, "Would that be the name of a pronoun; would that be like we have been talking about here?"

Bill shakes his head - no.

Mrs. Apple

Mrs. Noble

(25)

Listen, Speak, and Write

T says, "What would Aunt Sarah be, class?"

Everybody says, "Noun."

T says, "It is the name of a person, isn't it?"

T says, "Do you see that, Billy? The pronoun is used in place of it. Do you see what they are talking about?"

T then says, "Billy, read the next sentence and see if you see any pronouns."

Billy reads: "She had me for the flower girl."

Billy watches the hands go up.

T asks, "Billy, do you see any pronouns there?"

Billy says, "Me."

T says, "Good, me is one."

T says, "Vickie, are there any more pronouns?"

Vickie says, "Flower girl."

T says, "Would that be a pronoun, boys and girls?"

Many of the children say, "No."

T says, "Some say no. Boys and girls, what would it be?"

T says, "Ruth?"

Ruth says, "It's a noun."

T says, "Pronouns are listed at the top of the page. So what noun is the word she being used for in this sentence?"

T goes on, "'She had me for the flower girl in the wedding.' Who are they talking about?"

Joel has her hand raised.

T says, "Joel?"

Joel says, "Aunt Sarah."

Mrs. Apple

Mrs. Noble

(23)

Listen, Speak, and Write

T says, "They are using it for Aunt Sarah, aren't they?"

T then says, "She had me. Who is, ah, or for what word is that standing?"

Patrick has his hand up.

T says, "Pat?"

Patrick says, "Jean."

T says, "Jean. All right."

"Let's go on to the next sentence. Are there any pronouns in that?"

Debra has her hand up.

T says, "Would you read it for us, Debra?"

Debra reads: "Mother made a beautiful blue dress for me to wear."

2:40 T walks over to the hallway door, reaches out and closes the door. Then T returns to the front of the room.

T says, "Are there any pronouns in that sentence?"

Debra says, "Me."

T says, "That's right."

T says, "Linda, would you read the next sentence?"

Linda reads: "Have you ever been to a wedding?"

T asks, "Are there any pronouns?"

Linda says, "You."

T says, "For what noun is that standing; who is you?"

T asks, "Linda?"

Linda says, "Nancy."

T says, "All right, she is talking to Nancy, isn't she?"

T says, "Let's go to the next one."

(25)

Listen, Speak, and Write

T says, "John, would you begin for us?"

John reads: "'Oh, yes! I love weddings,' said Nancy."

T asks, "Any pronouns?"

John looks at the sentence and makes a face of concentration.

Hands are up.

T says, "Good detectives, here."

T waits for John.

T says, "Oh, they all want to help you so much, John. Can you find it?"

John shakes his head - no.

Ina has her hand up.

T says, "Ina?"

Ina says, "I."

The students laugh.

T says, "And for whom is I standing? Whose place is it taking?"

Ina says, "Nancy."

T says, "Otherwise, she would have to say: 'Oh, yes! Nancy loves weddings, said Nancy.' So it is the pronoun I in place of Nancy's name."

2:42 T says, "Read the next sentence for us, Gary."

Gary reads: "At one wedding, Bobby and I threw rice at the bride and groom as they left the church."

T says, "I didn't hear very well. Could you hear, Bill?"

Billy says, "No."

T says, "Read it one more time."

Mrs. Apple

Mrs. Noble

(28)

Listen, Speak, and Write

Gary reads again: "At one wedding, Bobby and I threw rice at the bride and groom as they left the church."

T says, "Now, that was real fine. Are there any pronouns in that sentence?"

T says to Duane who is tying his shoe, "Duane, honey, we need your help, too."

Duane says, "I'm tying my shoe."

T says, "Get your shoe on."

Gary has paused a long while before answering, "I is one."

T asks, "What noun is it taking the place of?"

Gary says, "Nancy."

T says, "Do you see any others?"

Ina raises her hand.

T says, "Ina?"

Ina says, "They."

T says, "The bride and groom. All right. Very good."

T goes on, "What do we call the words that take the place of nouns?"

Everyone says, "Pronouns."

T says, "Who can tell me the names of some pronouns?"

T says, "Patrick?"

He answers.

T says, "Another one, Randy."

He offers one.

T says, "Another one, Greta."

She answers.

T says, "And another one, Susan."

Susan answers.

Mrs. Apple

Mrs. Noble

(28) Listen, Speak, and Write

T points to Holly, then to Jim, to Dan, Vickie, Ina, Bill, Kitty, Debra, and Susan. In rapid succession, each child names a pronoun as he or she is called upon.

T then says, "All right, who can tell me now in your own words what a pronoun is?"

T puts her Listen, Speak, and Write[1] book away.

2:44 T says, "What kind of words are they; tell me what they do. Who can tell me in his own words?"

At least a third of the hands are up.

T says, "Greta?"

Greta says, "They take the place of nouns."

T asks, "And what do nouns do, Steve?"

Steve says, "Well, they are the name of something."

T says, "Are they the name of something or are they the word for the name of things, persons or animals?"

The content of the response to T's question is not clear.

T then says, "You are doing just real good."

T says, "Put your books away now quietly and we'll take our break."

The children put their books away.

(29) Going to Recess

During this break, the children will first be dismissed to go to the restroom. They will return to the classroom and line up by the door. When all are ready, the children with their playground equipment, will proceed outside.

Holly asks, "Can I stay in and finish my story?"

---

[1]Ibid.

Mrs. Apple | Mrs. Noble

(29)

T says, "If you would like to. Yes."

T says, reprovingly, "I beg your pardon!"

"We are going to take our break. Come back to your seats."

Randy, Gary, John and Jim have gone running back to the playground equipment closet.

T says, "Who are our playground boys?"

Randy raises his hand and leaps out of his seat.

T says, "I did not say to get up!"

Randy sits down and says, "Gary is the one."

Gary says, "Not me. It's Carolyn."

Randy is out of his seat again.

T says, in no uncertain terms, "Sit down!"

T says, "Now, your playground helper..."

T stops, snaps her fingers and says, "Gary, sit down!"

T says, "Your playground helper wouldn't raise his hand. Those people; I'm warning those people who take out the equipment; bring it back. I've said this from the first of the year, haven't I?"

T goes on, "We're taking our break, first. We will then come back and line up; you can get your equipment then. There is no point in taking it into the restroom and taking it out again."

Billy says, "What if we're not going to the restroom."

Billy gets no answer.

2:46 T says, "All right, let's have Row 5 and Row 1 pass quietly for their break."

T dismisses the children to go to the restroom by rows.

T says, "There is no one who has to be back in that corner."

Going to Recess

Mrs. Apple

Mrs. Noble

(29)

Going to Recess

Jim, Les and Billy are back there.

Jim, Duane, Joal and Becky line up by the door.

T asks, "Why are you back there, Gary? Do you want him to bring something special for you?"

Gary nods his head - yes.

T asks, "Are you a playground helper, Gary?"

Cary shakes his head - no.

T says, "All right."

T says, "Your recess begins now."

There is a big, whispered discussion in the back of the room involving Gary, Patrick, Jim, John, Carolyn and Randy.

T says to these children, "If you want to talk all afternoon, that's all right. We won't have time for recess because it's time to go now."

Children are hurrying around.

T says, "Better put something on your papers here, folks."

T then says to the group that is carrying on the whispered discussion in the back, "All right, that's all the talking. Get out of there."

T continues, "Randy, we have to go. Do you have all the equipment? That's fine."

T says urgingly, Carolyn, are you going to take a break?"

Carolyn moves along a little faster.

2:47 T says to a child who complains he can't find certain equipment, "Well, it's a good thing because you can't take it out, can you?"

Gary has gotten a ball.

T says, "Row 3 and Row 2, you may pass quietly now."

Mrs. Apple

Mrs. Noble

29

Going to Recess

Kitty motions for Susan to come.

T says, "All right, Row 4."

Duane has a ball.

T says, "Duane, are you a playground helper? Who carries the balls out? No one ever but the playground helper."

Duane looks noncommittal.

The children are lining up at the doorway, waiting for children who have gone to the restroom.

T has her finger up to her mouth indicating quiet.

T asks, "Gary, do you need something?"

Gary says, concerned, "I can't find that little ball that I had. I think Les has it."

T says, "You share and work it out outside."

Linda is working on something, maybe her reading assignment.

T leaves the room, steps across the hallway, opens the boys restroom door and says, "Hurry up, boys."

T returns to the classroom.

Leigh Ann has been looking for something on T's desk.

T asks, "Can't you find it, Leigh Ann?"

Leigh Ann shakes her head.

T comes over to help Leigh Ann.

T says to the children lined up by the door, "Is it too much to ask you to stand in line without talking while we get ready to go?"

T gets her whistle out of her desk drawer, which is apparently what Leigh Ann had been looking for.

T moves back to the doorway.

Mrs. Apple | Mrs. Noble

Going to Recess

(29)

T says, "Linda, did you want to go outside and get some exercise?"

Linda straightens up her papers and then goes over to the line at the door.

T says, "We have just two or three girls who we are waiting for."

T smiles at Joal, taps her on the shoulder and says, "Go tell them we are ready to go."

Joal leaves the room and hurries down the hall.

It is very quiet in the room; the children wait to go out.

T reprimands some of the boys in a very quiet voice.

T says, "Are you coming, Bill?"

Billy shakes his head - no.

T asks, "Why not?"

Billy says, "I don't have anything to do outside."

T says, "With all of the playground equipment and with all of the games we have. What do you mean you don't have anything to do?"

John offers a comment.

T reproves John, "I'm sorry. Is your name Bill?"

T goes on, "Billy, what do you mean?"

Billy says, "I just don't have anything to do."

T says, "I just don't understand."

T points to John and says, "Raise your hand."

John does so and says, "He wanted a ball, but all of them were taken."

Mrs. Apple

Mrs. Noble

29

Going to Recess

T says, "Well, now for goodness sakes, if we have three balls or four balls or whatever in our room, that's a lot of equipment; we can't have one for every single person. So what are we going to have to do? What have we done all year?"

Linda raises her hand.

T says, "Linda?"

Linda says, piously, "Share."

T says, "We're going to have to learn to share, and we'll have to work in something that all of us can take part in."

John says, "We're sharing," pointing to Jim.

Jim says, "Billy wanted another ball, but Gary had already taken it. So I could tell Billy that he and I and John could kick the ball back and forth."

2:51 T says, "Well, you come on and join us, Billy."

Joal and the rest of the girls return from the restroom.

T signals them to go out of the room.

Billy doesn't look very happy about going.

They go out very quietly; John is still not happy, Gary does not leave.

The observation ends with Gary still in the room.

Mrs. Apple Observer: Dr. Gunn

(30) Return from Recess

3:07 Recess is over.

The children return to the classroom.

T urges, "Now take your seats. Sit down and rest."

T goes on, "You can finish the stories that you're working on while you're resting."

T goes over, closes the door and says, "We can have the door open later."

3:08 T says, "Maybe we can read some stories in class."

T takes her purse out of the desk and gets out her cosmetics, mirror and a comb. She proceeds to comb her hair, powder her nose, etc.

.....

The recording of events is interrupted as O fixes the tape recorder.

During this time the milk has been distributed.

.....

(31) Milk Time

T says to Patrick, "All right, you pass out napkins and straws."

T says, "Kitty, go back and sit down. We'll hear it from your seat."

Kitty had come up to T and asked if she could read her story.

The children begin having their milk.

Les raises his hand and asks, "Could we make a picture of our story?"

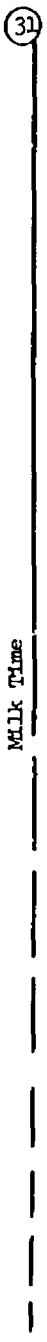
T goes over to Les's desk.

Les repeats, "Could we make a picture of our story?"

T looks down, sees that he has used a pen and says, "We don't use pen on our stories. If you want to make a picture, you get another piece of paper.

Mrs. Apple

Dr. Gunn



3:12 T says, "We have a science lesson to do this afternoon so I'd appreciate your very best cooperation."

"We'll finish the story while we are drinking our milk. Maybe tomorrow we'll have time to hear those stories."

T continues, "Who would like to volunteer for our prayer?"

Jim raises his hand.

The children stand.

The prayer is led by Jim.

The children finish the prayer and sit down.

The children continue drinking their milk.

Steve comes over to T and asks, "What kind of tape is used to put things up on the blackboard?"

T says, "Well, that's masking tape."

T shows some masking tape to Steve.

T pulls her chair away from her desk, sits down and says in a friendly voice. "Be good listeners, now, and we'll listen to the stories."

The five pictures are on the blackboard. They show: 1) a pupil balancing objects while, unknown to him, a teacher looks on disapprovingly, 2) a dog stretching for a drink from a fountain, 3) a dog and a monkey looking each other over, 4) a wise owl, 5) a runner sliding into base in a baseball game. The child will come up and point to the picture that he has chosen and then the child will read the story that he has written to illustrate his picture. The rest of the students are to listen and evaluate.

T says, "Jim, will you start, please."

Mrs. Apple — Dr. Gunn

(18) — (32c)

Creative Writing — Reading Stories

Jim comes to the front of the room.

T says, "What picture did you choose?"

Jim points to the picture of the baseball player making a sliding run into a base.

Jim begins to read his story.

Jim continues to read his story about an argument during a baseball game and about the foolishness of some people in this game.

3:14 Jimmy finishes his story.

T laughs a bit as Jim finishes.

Jim starts to return to his seat.

T reaches out her hand and says, "Jim, would you leave your story with me?"

Jim hands it to her and returns to his seat.

T says, "Boys and girls, did you hear any good descriptive words in there?"

Kitty offers a word that's descriptive.

Randy volunteers a descriptive word.

T says, "Holly?"

Holly offers a descriptive word.

Les raises his hand and makes a contribution.

His word is not descriptive.

3:15 T says, "Jim's story is expressive because he has nice dialogue."

T says, "Yes, Vickie?"

Vickie volunteers another way in which Jim's story was expressive.

T holds up Jim's paper and says, "Now, if you were to edit this, how about your margins?"

Mrs. Apple

Dr. Gunn

18

32c

Jim finally says, "I'd indent them a little bit."

The milk drinking is mostly finished.

T says, "Who's next?"

3:16 T says, "All right. Carolyn."

T asks, "Which picture did you choose?"

Carolyn points to the picture of the owl.

Carolyn starts to read her story.

T says, "Just a minute, Carolyn, we can't hear you. I want you to start over. The windows are open and it's hard to hear."

Carolyn starts over; reads her story.

Carolyn has a little trouble reading her story.

Carolyn finishes her story.

T gives a little laugh as Carolyn finishes.

Billy raises his hand.

T says, "Bill?"

Billy says, "Can I read next?"

T says, "Just a minute, Bill, we're not through talking about Carolyn's yet."

T holds out her hand and accepts the paper from Carolyn.

T says, "You've got pretty nice margins there, pretty good handwriting."

T goes on, "Class, see how she remembered to indent at the beginning of the paragraph?"

T continues, "Carolyn used good margins and has a nice looking paper."

T writes something on a piece of paper.

Then T says, "Bill?"

Bill sits up quickly.

Creative Writing

Reading Stories

Mrs. Apple

Dr. Gunn

(18) (32c)

Creative Writing

Reading Stories

T says, "Wait a minute, Bill. We want to have you read like a third grader and we don't want you to act silly. We do want to hear your story. Think you can do that?"

Bill says, "Yes."

Bill marches up to the front of the room, points to the picture he chose and begins to read.

3:19 Billy starts to giggle as he is reading his story.

T says, "Bill, if you giggle like that all through the story, we can't enjoy it."

Bill is acting real silly and infantile. He is almost collapsing with the giggles. He gets some minor encouragement from the rest of the students.

T says, "Well, maybe you better go back to your seat."

So Bill, giggling all the way, reels back to his desk and barely sits down.

T says, "Maybe you can come back later, or do you think you can do it now?"

Billy gets up and comes to the front of the room.

Billy begins to read again.

Billy again dissolves into a fit of giggles.

Billy is being encouraged by John a little bit.

T says, "Bill, sit down. We may come back to you later."

Billy returns to his seat.

T then says, "Patrick, you come up."

Patrick comes to the front of the room and points to his picture; it is the teacher-pupil picture.

3:21 As Patrick reads his story, he gets laughs from the students. This is because he has included Mrs. Apple in his story; in fact, he has made her a butt of some unfortunate incident.

As T is about to say something, John interrupts to make a comment.

Mrs. Apple — Dr. Guinn

(18) — (32c)

Creative Writing — Reading Stories

T says, "John, you have something to say?"

John subsides, indicating he's sorry for the interruption.

T says, "All right, then, I'll finish."

T goes on to say, "It's all right to put names of people in this classroom into your stories. Also if your margins are the same on both sides, the paper would look better."

Kitty makes a contribution.

T then says, "Who chose a different picture?"

Kitty raises her hand, pulls out of her chair and comes to the front of the room.

Kitty points to the picture of the dog jumping up to drink out of a water fountain.

3:23 Kitty begins to read her story.

Kitty finishes reading.

Kitty returns to her seat, taking her story with her.

T holds out her hand and says, "You want to leave that with me?"

Kitty brings the paper back and then returns to her seat.

T says, "Kitty did a nice job with her story, nice margins and everything."

3:24 T says, "Well, Greta, did you choose a different picture?"

Greta says, "Yes."

T says, "Let's hear yours."

Greta comes up to the front and points to the picture of a teacher looking disapprovingly at a boy who is balancing a bunch of apples and rulers in some kind of construction.

Greta begins to read.

Greta's story is about this misbehaving boy and how the teacher gets very mad and is red all over.

The story continues with this teacher again being the butt of this boy's misbehavior.

Mrs. Apple

Dr. Gunn

Creative Writing

18

Reading Stories

32c

The children are laughing and clapping a bit when they hear about the teacher's discomfiture. The spirit of the laughter is friendly, however.

Greta is still reading when someone hollers out, "Yay, yay, yay."

T says, "Just a minute. Let her finish."

Greta finishes her story.

T says, "Greta, I think you meant to say hall instead of hallway."

T goes on, "You used good descriptive words. For instance, like red all over."

T continues, "You used good margins and your handwriting was nice."

3:27 T finishes with a few more approving comments.

T says, "That's all the time we have. We'll do it tomorrow morning. We'll finish. I'll write that down so we'll be sure and do it."

33

Science Lesson

T says, "It's time to start on our science. Let's take out our science books."

T continues, "Now, the rest of you take out your science books, please."

T then says, "Dan, will you collect the rest of our creative writing stories?"

Dan begins to collect the stories.

T picks up her lesson plan book and says, "We're not probably going to get done. We're a whole step behind."

T walks to the middle of the front of the room.

T looks back over to Billy and says, "Do you think tomorrow we could hear the rest of your story?"

Billy says, "Huh?"

T repeats, "Do you think tomorrow we could hear the rest of your story?"

Billy says, "Yeah, I guess I can stop laughing so much."

Mrs. Apple

Dr. Gunn

Science Lesson

(33)

3:29 T says, "We need our science book. Just leave it lay on your desk."

T says, "Leave the science book on your desk but don't open it. We're not going to read in it yet."

Introduction and Direction

(34c)

1

Then T turns to the blackboard and writes down the word light.

Then she turns back to the class, walking in between the first and second seats, and says, "What did we learn yesterday about light?"

T says, "Who would like to start?"

Gary gives an answer about what they learned about light.

T says, "What else do you know about light?"

T says, "Linda?"

Linda gives an answer.

T says, "Kitty?"

Kitty gives an answer but it has already been given.

T says, "Yes, Vickie?"

Vickie says, "Well, it's lighter in the daytime than it is at night."

T asks, "Where do we get our light?"

T says, "Mark?"

Mark says, "From the sun."

T says, "What else do we know about light?"

T says, "Pat?"

Patrick says something about man-made light.

T says, "Ruth?"

Ruth says, "Light reflects."

Kitty raises her hand.

T says, "Kitty?"

Kitty says, "That's right. It does. It reflects on the moon."

Mrs. Apple

Dr. Gunn

Science Lesson

33

Introduction and Direction

34c

T next says, "Debra?"

Debra makes a contribution.

In the meantime, Dan, who has finished collecting papers, brings them up and puts them on T's desk. Dan returns to his seat.

T says, "John?"

John says something about light.

Patrick says, "When I go swimming, the light under water makes a lot of beams."

T says, "Yes, that's right."

T says, "Yes, Jim?"

Jim has a comment to make.

T then says, "Dan?"

Dan says, "I put a spoon behind a glass and when I looked through the glass at the spoon, the spoon looked bigger."

T says, "So what could you make of that? What does the water do?"

Dan says, "It magnifies."

T pauses now.

T moves back away from the desks, returns to a position that is again in the front of the classroom.

T says, "We'll now talk about lights in modern day. See if we can learn two or three new things about light. You may learn some new things that you could try on, some things that you could experiment with."

T says, "We'll have our little groups to divide up like we did before."

The students will be divided up into four groups. Each group will have the same materials to work with, but each group will work with them independently.

Mrs. Apple

Dr. Gunn

Science Lesson

Introduction and Direction

33

34c

T holds up a worksheet that they are going to use.

The worksheet has five questions followed by discussion and conclusions. After the students perform the experiment, then they are to answer each of the questions.

T says, as she holds these worksheets up, "I want each one of you to answer each one of these questions. They're not very difficult, it won't take very long. I want one person in the group to do the reading of the questions, then each of you answer the questions on the worksheet."

T walks to the back of the room to the demonstration table.

T says, "Now, we have these things. Do you know what they are?"

T holds a prism up in the air.

T says, "Now, we only have one so what will that mean we have to do?"

The students say, "We have to pass it on when we are done with it."

T says, hurriedly, "Our time is running short so we'll have to work rapidly."

T says, "All right, I want these people," and she points to six people, "to gather around Linda's desk - with a pencil."

T points to Ina, Vickie, Dan, Gary and Jim to gather around Linda's desk. These students pick up their chairs and move to Linda's desk.

T walks over to Linda's desk and puts down a batch of the worksheets.

3:34 T says to the children at Linda's desk, "No talking until you've had all the directions. Is that clear? Okay?"

Mrs. Apple

Dr. Gunn

(33) (34c)

Science Lesson

Introduction and Direction

T counts out six more people. These are to gather at Randy's desk.

These students are Randy, Greta, Les, Susan, John and Holly. These students move their chairs to Randy's desk.

As T finishes counting, she looks at the first group where there has been some slight talking and T says, earnestly, "I thought I made myself clear?"

This is a warning that there should be no talking.

T puts down a bunch of the worksheets on Randy's desk. The gathering around Randy's desk is causing some confusion.

John bangs his chair.

T says, "John. Put your chair down, John."

T moves closer and illustrates, saying, "Now, John, you can move your chair like this and it won't make so much noise."

T repeats to the group at Linda's desk, "Now, no talking until you've heard the directions."

T now begins to count out the third group.

The students in this group are Kitty, Billy, Mark, Duane, Debra and Ruth. These students move their chairs to Kitty's desk.

T says, as she finishes counting out the third group, "No talking."

The children that remain become the fourth group.

These children are Patrick, Becky, Carolyn, Steve, Joel, and Leigh Ann. These students move their chairs to Patrick's desk.

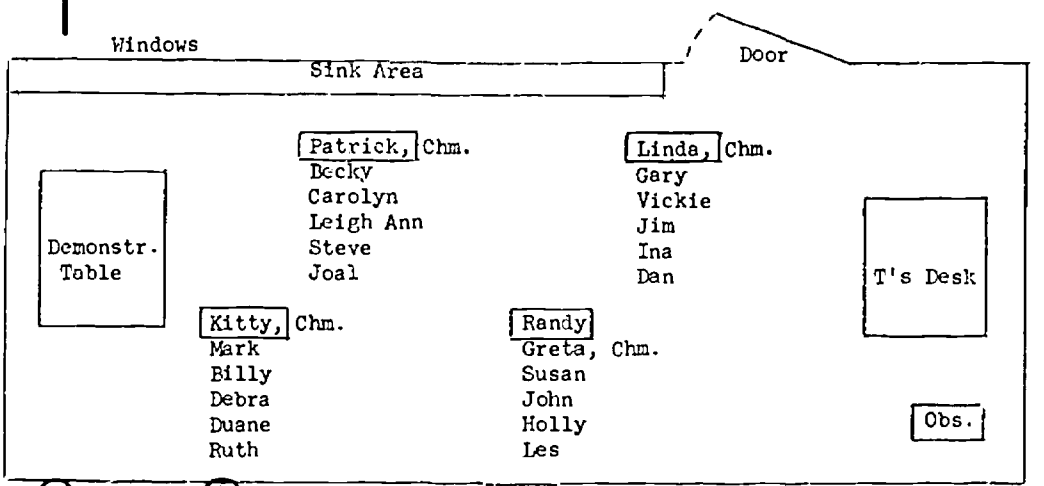
Mrs. Apple

Dr. Gunn

(33)

m

The following map shows the position and composition of each of the four groups.



(33) (34c)

Science Lesson

Introduction and Direction

T gives the third and fourth groups their worksheets.

T says, to the third group (Kitty's), "No talking."

T comes to the front of the room.

3:36 T says, "May I have your attention. I want your eyes on me."

T snaps her fingers and says, "Listen."

T is smiling, nice but T is definite.

T stands there for a few moments and waits until she gets their attention.

T says, "Would you, Linda, be the chairman of your group?"

Then T says, "Would you be the chairman here, Greta?"

T says, "And you, Kitty, be the chairman there."

T says, "Patrick, you be the chairman of your group."

T then gives the directions for this activity. The chairman reads the question, the children perform the experiment and each child writes down his answer on his own worksheet.

Mrs. Apple | Dr. Gunn

33 | 34c

Science Lesson

Introduction and Direction

For example, question no. 1 reads: "Hold a glass in front of your eyes. Can you see through it?_____."

3:37 T says, "Ten minutes is all the time that we have. We can get done in ten minutes, but some of us can't be acting silly."

T goes on, "Remember, we have to pass the prism along to the other groups."

T continues, "And don't do anything with that last question, the question about discussion and conclusion."

T goes to the back of the room to the demonstration table.

3:38 T says, "Kitty, you come and get your tray of science materials, now."

The materials include a prism, a piece of frosted glass, a clear glass cup, a piece of tin foil and a mirror.

Kitty does so and returns to her group.

T says, "Patrick, you come now and get your materials."

Patrick comes and gets his materials, then he returns to his group.

T then says, "Greta, you come now."

3:39 T says, "Now you all must remain seated in your chairs. You cannot walk around the room."

Greta drops her tray of materials on the floor.

T says, "Now, children, what does this mean? What must we do?"

Linda says, "We must be very quiet."

T says, "That's right. You must whisper."

T raises her hand and says, "If I do this, that means you're too loud.

3:40 T says, "Linda, you come now and get your materials."

Mrs. Apple

Dr. Gunn

Science Lesson

(33)

(34c)

Intr. and Direct.

T says, "Linda, did you get a mirror? Who didn't get a mirror?"

T comes to her desk at the front of the room and gets a mirror out of her purse.

T takes this to Linda's desk and gives her the mirror.

T walks to the back of the room, carrying with her the worksheet that the students are working on.

(35c)

Group Work

The four groups are now busily at work.

T now stands by Linda's group and is showing the children how they can get started with the glass objects that they have.

T now goes over to Randy's group and says, "Now, children, each of you should have a chance to work with each of the things."

T walks back to Kitty's group and shows the children which object they are to use.

3:42 T says to the group as a whole, "Children, where it says clear glass, use the clear glass cup. I just couldn't get that many glasses in my bag this morning."

T says, "Don't worry about spelling. Just write down the best you can."

T walks over to Jim, who is in Linda's group.

T says to Jim, who is looking at the prism, "See what you can see with the prism, then write it down and pass the prism on."

Jim looks for a while and then passes it on.

3:43 T is wandering about the room seeing where she might step in to be of some help.

The children are happily fingering the various props.

It appears to O that the children are more interested in play with the objects than in learning about light.

Mrs. Apple (33) (35) Dr. Gunn

Science Lesson — Group Work

3:44 T wanders over to Linda's group by the door and says, "Dan, hold the prism up to the sunlight and then write down what you see."

Ina, in that same group, is now holding the prism.

T says, "Ina, hold it up to the sunlight. Tell us what you see and then pass it on. It's got to get all the way around the room."

T holds her hand up in a warning fashion to the whole group, hoping that this will quiet the room a little bit.

T is at the back of the room.

T returns to Linda's group by the door and takes the prism.

T brings the prism over to Patrick's group by the sink.

3:46 T leaves this group and wanders by Kitty's group at the back of the room by the demonstration table.

T talks with the children in Randy's group about what you can see with frosted glass and what you can't see.

The children in this group are having some difficulty understanding the separate sections in question four.

> Question four reads: "Hold the different things on your table up to the light. Which things can you see through? Which allow light to pass through? Which allow no light to pass through?" The idea here is to get the difference between opaqueness, transparency and translucence.

T raises her hand and asks for more quiet by signal and by shushing.

T says to Becky who is in Patrick's group by the sink, "Okay, pass it on. Pass it on, honey. Haven't got much time."

3:48 T snaps her fingers and says, "Mark."

> T is indicating to Mark that he is being too noisy.

Mrs. Apple — Dr. Gunn

(33) — (35c)

Science Lesson — Group Work

John is clowning around.

By now, most of the children are pretty much industriously engaged in their work.

3:49 T chastises John by saying to him, quietly and soberly, "That doesn't go."

T says again, to the whole group, "Sh-h. Hold it down. Hold it down."

T goes over to Linda's group, by the door, and says, "Just write down whatever it is that you see."

T then goes over to Kitty's group, at the back, and tries to settle them down a little bit.

Apparently, Billy is using somebody's pencil when he should be using his own.

3:50 T says, "Billy, don't do that."

T then takes the prism away from Kitty.

Kitty doesn't want to let go, but T tugs and is insistent.

T is holding the prism in her hand but Billy grabs it away from T.

T says, "Billy, you must hold the prism to the sunlight."

Billy pays no attention whatsoever to her.

T snaps her finger and says to him in a loud, definite voice, "Will you listen to Mrs. Apple?"

Then T softens her voice and says, "Turn it to the sunlight."

O can certainly empathize with T; Billy is acting like a selfish, dominating infant.

T anxiously turns around and looks at the clock.

Apparently T wants to get that prism all the way around the class if she can before she has to call this lesson off.

Mrs. Apple

Dr. Gunn

Science Lesson

(33)

(35c)

Group Work

T takes the prism over to Randy's group, by T's desk.

T says, to this group, "Hold it away from your eye and look."

3:52 T leans over Randy's shoulder and says, "What do you see? What do you see, honey?"

.....

The recording of events is interrupted as O changes tapes.

.....

During the interval of changing tapes, a rain has come up outside.

T is saying, "Now, will you do something for me? Just leave the materials right on the desk and we can do this tomorrow but we have to start to get ready to go home."

3:54 Several children are beginning to move their chairs back to their regular places.

Not all of Randy's group has been able to look through the prism.

Les is using the prism; "hogging it" so that the students around him, who want to use it, are unable to do so.

T sees this and says, "Les."

Les gives it up without much trouble to Holly.

As Les hands it over, T says, "That's right. Give her a chance."

3:55 The school bell rings.

T says to Ina, "We need your help, honey."

T is indicating that Ina should put her materials away.

There is a big stir in the class now as children are moving chairs, putting away materials, etc.

Mrs. Apple

Dr. Gunn

Science Lesson

(33)

Cleaning up involves putting the props back on the demonstration table where they were just before this lesson started.

Carolyn comes to T with a big book.

T says, "Not right now, honey."

But Carolyn insists, apparently really needing T's attention.

T says, "Well, put the book on the shelves."

(36c)

T says, "Boys and girls, now come on. Sit down. I want to talk to you a few minutes before you leave."

T comes over to John and Holly, who are looking through the prism and says, "Isn't that pretty?"

T reaches out and takes the prism and says, "We do need to leave school on time so let's put it back on the table."

3:56

T is still urging students back to their seats. This is kind of hard to do because there are lots of interesting props around.

T says, again, "And remain in your seats, please."

T has all but about two in their seats.

Review of Work

T erases the word <u>light</u> from the blackboard.

T stands with her hands folded and waits in the middle front of the room.

T starts to talk about the worksheet.

T says, "Excuse me."

T goes on, "I'm really not the one who should say <u>excuse me</u>, do you think? I'm not the one who is interrupting people, am I?"

T says this directly to Billy.

Billy says, wide-eyed and innocent, "No."

T settles Billy down.

T says, "Now about your papers. You turn these papers in when you leave."

Mrs. Apple

Dr. Gunn

(33) Science Lesson

(36c) Review of Work

T continues, "Can you tell me something you found out about this when you did it?"

T says, "Carolyn, how about this first question."

> The first question reads: "Hold a glass in front of your eyes. Can you see through it?"

Carolyn gives her answer.

T says, "Pat, the second question."

> The second question reads: "Put a piece of paper in the glass. Now can you see through it?"

Patrick gives his answer.

T says, "Kitty, the third question."

> The third question reads: "Hold a mirror in front of your eyes. Can you see through it? Can you see what is behind you?"

Kitty gives her answer.

T says, "Jim, the fourth question."

> The fourth question reads: "Hold the different things on your table up to the light. Which things can you see through? Which allow light to pass through? Which allow no light to pass through?"

Jim gives his answer.

T asks about the mirror, for example.

T says, "Les?"

Les makes his comment.

Mrs. Apple

Dr. Gunn

(33)

(36c)

Science Lesson

Review of Work

3:58

T, dealing with the mirror, asks, "Why is it that you could see behind you with a mirror?"

Many students raise their hands.

T says, "Greta?"

Greta tells about who she saw.

T says, "No, I don't want to know who you saw, but why you saw them."

Debra gives the correct answer.

T says, "Does anyone know the word that we use when we can see through something?"

T says, "John?"

John says, "Transparent."

T says, "Is there anything else that you saw that you could see through?"

Ina raises her hand.

T nods permission for Ina to answer.

Ina says, "You could see through the wax paper."

Apparently, T is trying to get the students to say that they can't see through the wax paper. They can only see light through it.

Jim makes this difficult by saying, "I can see through the wax paper."

T says, "Okay, but let's go get the paper and see."

T goes back to the demonstration table and brings back a piece of wax paper.

It's quite clear that one
can see through the wax paper.

T has a few exchanges with pupils.

T finishes up by saying, "I'll have somebody look up the word transparent, and then see if the definition given for transparent will describe accurately what one has with the wax paper."

Mrs. Apple

Dr. Gunn

Science Lesson

(33) (36c)

T puts the piece of wax paper down on her desk and faces the class once more.

T says, "Now, would you put these papers inside your folder? It's time to go, please."

T goes over to the hallway door and says, "I want to see my decorations committee a little bit after school."

Billy asks, "Can I look up the word transparent?"

T says, "You certainly may. We'll put your name on the board."

(37)

T opens the hallway door and signals to the children that they can line up now for dismissal.

They line up.

4:01 The children begin leaving the room.

T stands in the doorway, talking to some of the children.

T comes back into the room.

School may be considered officially over.

A woman, wearing shorts, comes in the room to collect her rubber plant.

The woman says to T, "Seems to do better here than it does at home."

The woman leaves, carrying her rubber plant.

Going Home

4:03 T is talking to the small group of children in the decorations committee about plans for tomorrow.

These decorations involve costumes. This activity will not be recorded.

There is one other child besides members of this committee in the room.

This child, Dan, is going on sweeping the floor with a dust pan and a brush.

Billy comes to the door of the classroom, along with John.

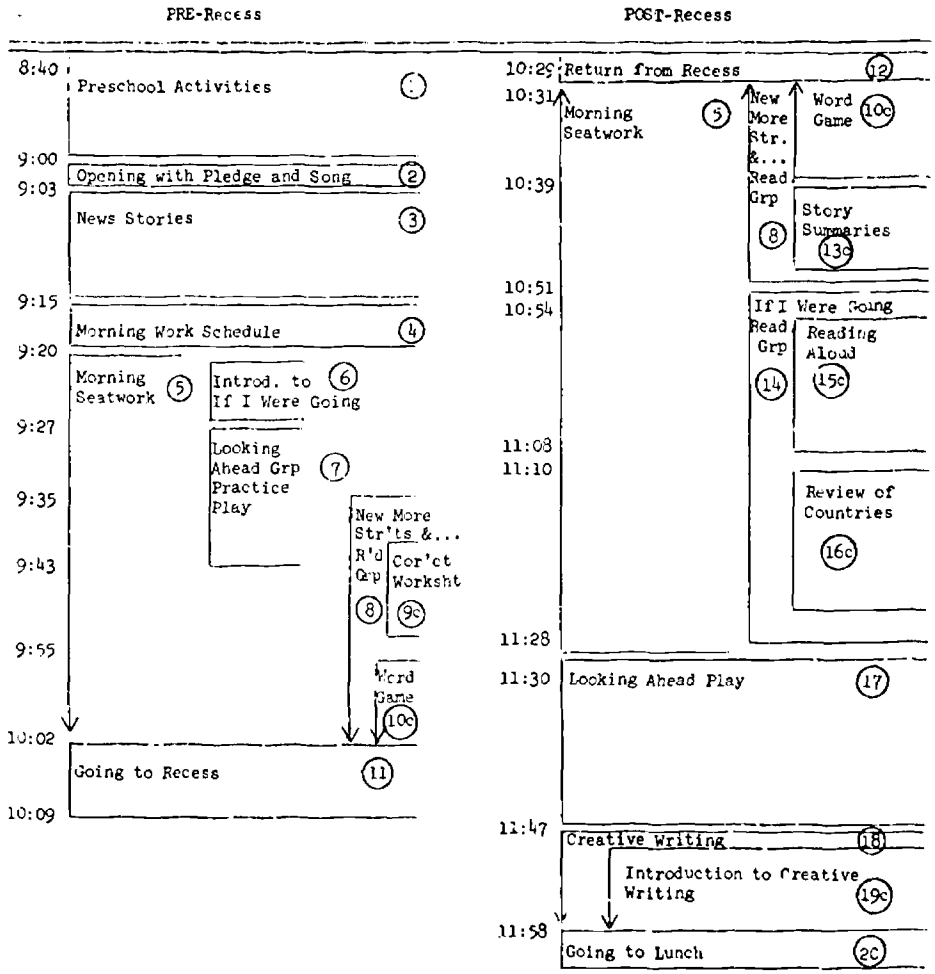
Billy does something that T severely disapproves of.

Mrs. Apple Dr. Gunn

T shouts out, "Billy, you come here."

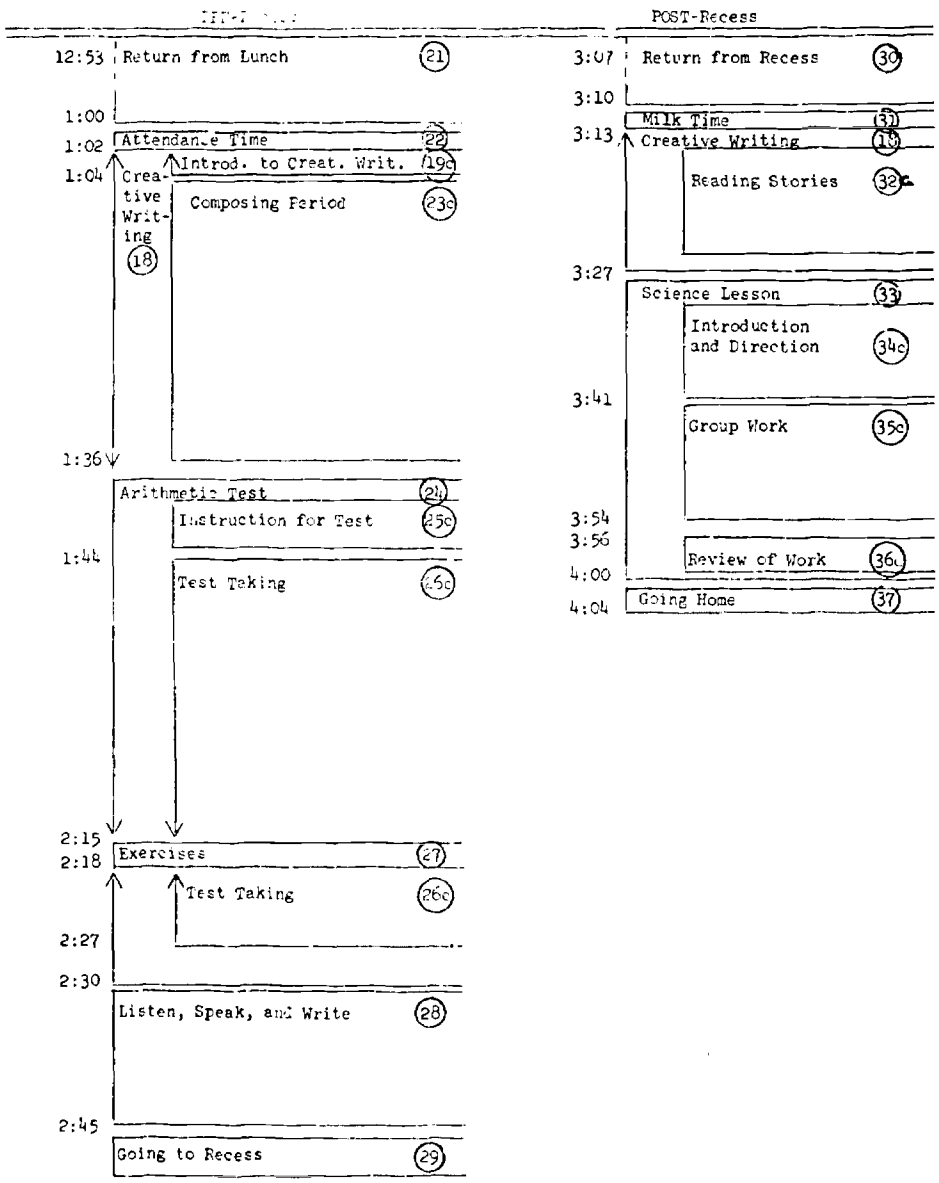
T goes immediately to the door, leaves the room and apparently is going to either punish or correct Billy's behavior.

4:04 End of observation.



Organization of Mrs. Apple's Third Grade Classroom

from 8:40 a.m. to 11:58 a.m.



Organization of Mrs. Apple's Third Grade Classroom from 12:53 p.m. to 4:04 p.m.

APPENDIX D

QUESTIONNAIRE DESIGN: A CASE HISTORY APPROACH

Walter Schenkel
and
Sam Sieber

February 1969

Bureau of Applied Social Research
Columbia University

INTRODUCTION*

This paper examines that sector of survey research which is generally referred to as questionnaire construction. Textbooks on research methods devote little space to this initial phase of survey research. At best they provide abstract guidelines that overlook a host of small, but cumulatively important decisions. One reason for this state of affairs is that little is known about the myriad day-to-day considerations that enter into the design of a questionnaire. In the absence of detailed case histories of individual instruments, this situation will undoubtedly persist.

The only consistent effort to develop case histories known to the authors has been made at Columbia University's Bureau of Applied Social Research, where project directors have been encouraged to keep records expressly for the writing of such histories. We now have at our disposal a series of chronicles that pose a number of interesting solutions to common problems. The purpose of this paper is twofold: to summarize these case studies; and to afford an example of this type of work for other methodologists.**

The present paper is only a beginning, and many gaps will undoubtedly be noticed. Many readers will no doubt be reminded of illustrations from their own work on questionnaires that fall within our areas of interest. The student might find it useful to ferret out further examples from interviews with project directors. Thus, our paper should be viewed as a progress report and a stimulus to further inquiry.

The paper is divided into two parts. Part I sets itself the task of analyzing the existing case histories according to typical decisions made by questionnaire writers. It also attempts to detail the sources of revisions. Then, in Part II, we present a new history of a questionnaire used in a survey of educational administrators. This case study should give the reader a clearer notion of how questionnaire histories are developed.

PART I

A SYNOPSIS OF CASE HISTORIES

As with social research generally, the planning of survey research proceeds in accordance with two major steps: (a) the specification of either a problem or a hypothesis; and (b) the construction of indicators for the concepts or variables composing the problem or hypothesis.

Research problems are generated by a variety of circumstances. They may emerge from a vague yearning to "know more" about a subject, from a desire to improve theory, from the need for a solution to an operational problem, from a surprising turn of events that requires explanation, and so on. Problems may or may not be transformed into hypotheses, the latter being assertions about reality that call for verification. Problems are questions of how, what, and why; hypotheses are testable statements about everything from the simple status of a condition to the strength and direction of a relationship between two or more theoretical variables. A single piece of research, of course, may examine several problems or several hypotheses, or a combination of both problems and hypotheses.

The next step in any research plan is to select or to invent indicators for the "nominal definitions"--the concepts or dimensions--comprised in the problem or hypothesis. These indicators are sometimes called "operational definitions." It is at this point that the researcher must decide whether he will conduct an experiment, do documentary analysis, go into the field as an observer, or design a questionnaire. If he chooses the survey method, he has selected one of the most challenging forms of research methodology.

Surveys are deceptively simply to a neophyte; to a seasoned researcher, they often mean years of hard work. It is not uncommon for the construction of a questionnaire to absorb months of intense concentration, pre-testing, consultation, and more pre-testing. As many as five years can elapse between the beginning of a survey research project and its satisfactory completion, and sometimes it takes much longer; and the final product is generally no better than the questionnaire (although it can be poorer, due to unsophisticated treatment of the data). Further, the survey method is so powerful, so potentially encompassing of the subject under study, that the analyst will be able to measure concepts that did not originally occur to him. In addition to solving the original research problem he can test dozens of hypotheses or explore any number of uncharted areas that present themselves only much later. This feature of surveys is a virtue which is shared with exploratory field work (i.e., observation and informant interviewing). Field work, however, does not often undertake to make precise quantitative measurements. It is not inappropriate, therefore, to assert that one of the unique values of surveys lies in the precise measurement of unanticipated concepts.

The vast, exploratory potential of surveys has its drawbacks, of course--for example, the danger of alienating respondents with instruments of unconscionable length, of running out of time or funds stemming from elaborate data-processing requirements, and of becoming lost in a welter of data when the time for analysis and report writing finally arrives. These dangers are anticipated daily by an experienced researcher in the construction of his questionnaire. It is these pitfalls, together with the intriguing potentialities of the instrument for measuring unforeseen ideas, that make questionnaire design one of the most exciting, and most exacting, of all the tasks connected with research on social life.

Ideally, a case history might provide information about every step that leads from the beginning of an inquiry to the final instrument. This ideal situation would require an immense amount of very detailed documentary evidence, however, not only of the subsequent changes that take place in a draft questionnaire, but also of the rationale behind each of these revisions. To accumulate such complete documentation is virtually impossible. Many changes--and among them some of the more important ones—are never recorded, since they may be made by the individual investigator on the spur of the moment. Also, when asked later about the reason for a particular change in the instrument, the investigator may not be able to remember. The questionnaire historian is thus faced with the problem of finding documentary evidence, written or oral, for many of the revisions. This shortcoming reduces the scope of any such undertaking from the beginning, inasmuch as the case historian will be able to give a truthful account only of those changes that he feels are well-documented.

As already suggested, we regard oral information about the development of a questionnaire as important an historical source as written evidence. In fact, an interview with the director of a project or with his associates might provide a fund of information which could never be found in written materials. But whereas the reliability of the written document remains the same over time, the reliability of oral information decreases as time pases. The optimum documentation on which to base a case history would comprise:

(a) detailed written records, such as all drafts of the questionnaire, memoranda circulated among persons connected with the project, minutes of meetings in which the instrument was discussed, results of pre-tests (including interviewers' appraisals), and correspondence with experts bearing on the development of the questionnaire;

(b) detailed and recent oral documentation, such as interviews with the project director and his associates (which should take place during the questionnaire development or as soon as possible after its completion).

To our knowledge, there exists no case history of a questionnaire based on all of the evidence mentioned above. This is not always the historians' fault, but rather that of the investigator who fails to leave documents with an eye to their possible use in case histories.

However, no complete history of a questionnaire can be written if certain of the above-mentioned ingredients are missing. Probably most crucial are drafts of questionnaires and interviews with the project director.

By drawing upon the work of researchers at Columbia, we are at least able to identify certain strategic turning-points in the writing of questionnaires. But more and better case histories are needed. Only by accumulating a number of cases can we hope to elevate questionnaire construction from the realm of an art to that of a craft, and perhaps eventually to the status of a science.

A. TYPES OF CHANGES

1. Changes in Format

a. Changes in the Relative Position of Questions

(1) Separate Sections

An illustration of the use of separate sections in a single instrument is mentioned in Part II of this paper. Sieber and his associates designed a questionnaire for deans of schools of education. The instrument's purpose was to get as much information as possible about the organization of educational research in the context of schools of education so that barriers could be identified. One large set of questions focussed on routine institutional information, such as enrollment, faculty size, type of degree offered, etc., while the other dealt specifically with research activities and elicited certain opinions. It was decided to place the routine institutional questions in the very beginning of the instrument to enable the respondent (a dean) to assign one of his assistants to supply the factual information without divulging his answers to more confidential questions in the remainder of the instrument.

The preceding example shows that a single questionnaire may be administered in more than one way, providing that the information obtained in different sections is different in nature. In a survey of the students at Columbia College, a lengthy section was administered by interviewers, and then a shorter section was given to the students to fill out privately. This latter section contained sensitive items, such as religious affiliation, income of parents, cheating behavior and dating habits; while the interview focussed on more public types of information, such as the reason for choosing Columbia, and contacts with professors and administrators. Thus, a single questionnaire was divided into two parts for separate forms of administration, the two sections representing distinct levels of inquiry.

(2) Sequence of Individual Items

There are also a host of more minor decisions regarding the placement of questions. An excerpt from the history of the Columbia College survey illustrates a common pitfall.

> An illustration of carelessness was the placement of two questions which elicited the same information adjacent to one another. The first of the two was: "What were the most important reasons for your decision to attend Columbia?" One of the major reasons that we expected to be cited was: "Because it is in New York City." But the following question read:
>
> How interested were you in attending Columbia because it was in New York City? Would you say you were:
>
> Very interested - 1 Somewhat interested - 2
> Uninterested - 3
>
> IF INTERESTED AT ALL: Why were you interested in being in New York City?
>
> Reviewing the questionnaire after the pre-test, we realized that if the student had already said that the College's location in New York City was a main reason for his attendance, the next question was going to seem redundant. Furthermore, the second question was meant to refer to the notion of New York City as a center of metropolitan culture, so it was moved to the "cultural activities" section of the instrument.

b. Open-End vs. Pre-Coded Questions

Some questions required the respondent to reply in his own words, while others provide a list of response categories. The former are called "open-end" or "free answer" questions; the latter, "closed-end" or "pre-coded" questions. A closed-end question is used when the investigator either knows beforehand the possible range of responses, or wishes to elicit responses according to a standard format that he himself imposes upon the respondent. Open-end questions, therefore, are usually asked in situations where categories of response cannot be predicted, that is, in cases where the investigator wants the respondent to express his attitudes or experiences as fully as possible. Later on, these replies may be coded into certain categories, used as a source of new observations, or presented as anecdotal material in the final report.

An example of extensive use of open-end questions is found in Kadushin's instrument. The investigator's main interest in this study was to learn the reasons that individuals seek psychiatric aid. Since very little is known about what compels individuals to seek such aid, the investigator was interested in any sort of variable that might shed some light on the problem, such as who the persons are that advise a patient to look for psychiatric help, what these persons say, and so

on. A whole series of open-end questions was used to explore this uncharted area of human behavior. A few examples follow:

> Have you ever read any books or pamphlets or seen anything on the radio-TV or elsewhere in search of help with your problem? When?
>
> Do you know of any other people who have the same problem as you have?
>
> IF YES: A. When did you find out they had these problems?
> B. What did they do about it?
>
> Did anyone ever notice your problem or mention it to you?
>
> IF YES: A. What did he (she) say to you? Did he (she) offer any specific suggestions?
> B. What did you say to him (her)?
>
> What made you decide to talk to a _____ (profession)?
>
> Was it a hard decision?
> Did you think it over for some time?

Exploratory questions of this kind have the advantage of not "leading" the respondent, which is liable to happen with structured questions that present the respondent with alternative replies. On the other hand, there is the danger that the respondent will simply forget to mention one of the alternatives, or worse, will decide against expressing an alternative because he assumes that the reply would be inappropriate or perhaps even embarrassing. The failure of an open-end question to elicit a response that was nevertheless on the respondents' minds is shown by Sieber's history of a questionnaire for union members.

> The researcher was interested in the reasons that workers demand wage increases. In the first pre-test questionnaire, the respondents were asked specifically about the influence of higher profits on their desire for higher wages:
>
> > Do you think that your earnings should be raised with the increase of profits?
>
> Seventeen of the 19 pre-test respondents answered affirmatively. In a previous question, however, none of them had mentioned higher profits as a reason for annual wage increases. This question was an open-end one:
>
> > Please state the reasons why you feel that your earnings should increase from year to year even if the costs of living do not change.

> In the second pre-test questionnaire, therefore, the respondents were provided with a list of eight possible reasons for wage increases. Included in this list was "higher profits." And in replying to the question, 7 out of 16 respondents checked this reason. Notice that this proportion was higher than that elicited by the open-end question, and lower than that elicited by the question that focussed specifically on higher profits.

This case illustrates how the format of a question can influence responses. Perhaps the only solution to this type of problem is to ask the same question in alternative forms.

c. Using Synonyms to Avoid Repetitiousness

This category may seem to present a relatively trivial problem; however, repetition of the same term may tend to bore the respondent and ultimately result in decreased reliability of the answers. Gill and Caplovitz, in their case history of the instrument used to measure faculty apprehension during the McCarthy years, report that synonyms for the verb "to worry," such as "to wonder" or "to think about," not only reduced boredom, but helped to keep the tenor of the instrument from becoming pessimistic in its overtones.

d. Length of the Questionnaire

Just as the wording of a question may determine whether the investigator obtains reliable answers, the length of the instrument may have a certain influence on reliability. In the case of topics that require a great deal of coverage, the problem of fatigue is a very real one. Two kinds of fatigue seem to be anticipated by the designers of questionnaires covered in the case studies: respondent fatigue and interviewer fatigue. In addition, there is the problem arising from lengthy questionnaires and conflict with other demands on the respondent's time.

(1) Respondent Fatigue: A respondent subjected to a long interview may show a natural tendency to become tired. The researcher who requires a long instrument in order to obtain all the information he needs is thus torn between getting all the information he wants, while risking a decline in reliability toward the end of the instrument, or getting only part of the information he wants, while being certain that the reliability of the information remains high through the instrument.

(2) Interviewer Fatigue: Our case histories contain no example, but it is known that polling organizations regularly catch interviewers who get tired of their painstaking work and start fillin in the instruments themselves. This is of course an extreme example, but there are less extreme cases where interviewers simply become less accurate in taking down a respondent's remarks (open-ended questions are especially vulnerable to distortion due to interviewer fatigue).

(3) Conflict with Other Time Demands: Persons in highly responsible positions sometimes want to get the interview over as quickly as possible because of other demands on their time. Time pressures on the respondent who is confronted with a lengthy questionnaire can thus decrease the reliability of the interview. (On the other hand, certain busy respondents may appreciate the opportunity to withdraw awhile from their duties and chat with an interviewer.)

2. Changes in the Content of the Questionnaire

Revisions in content range from relatively minor ones (such as adding or dropping certain questions) to quite important ones (such as adding or deleting complete sections of the questionnaire). Every questionnaire usually undergoes many changes that affect its content before the final version is ready.

A dramatic case of a large-scale change in content occurred in the study described in Part II of this paper. In order to gather information about as many organizational variables as possible that might affect the quality of research done in schools of education, questionnaires were designed for the deans of the schools and for directors of research units within the schools. Later, a knowledgeable adivsor told the investigators about a third position in schools of education that might affect the conduct of educational research, namely, the position of research coordinator. Thus, a new questionnaire was designed specifically for these individuals.

Modifications in content can be roughly classified into two major divisions: focussing; and the elimination of affect-laden terms.

a. Focussing

There are actually two sides to the problem of focussing a questionnaire--focussing on the researcher's concepts or variables, and focussing on the respondent's frame of reference. The former is a matter of choosing indicators to match the "nominal definitions" (or higher order concepts) in the theory, while the latter is concerned with choosing indicators that also match the respondent's frame of reference. In a manner of speaking, questionnaire items must serve two masters.

An illustration of the first type of focussing is provided by a case history of a questionnaire used in a survey of the "comparative reference groups" of union members. The first pre-test of the questionnaire demonstrated the imprecision of the following questions:

> Do you compare yourself with certain groups of workers in other industries?
>
> Are there any such groups of workers in other industries with whom you compare yourself and who earn more than you?

Are there any groups with whom you compare yourself who earn less than you?

The word "compare" in the first version did not elicit similar kinds of responses since it was used without any reference to standards of comparison, such as wages, job security, and job placement (Sieber, 1962). In the second version, the word "compare" was eliminated in the first section of the question. Instead of using the vague term "compare," the respondents were asked about similarities between themselves and workers in different industries in terms of job characteristics and wages:

Please name any group of workers in other industries whose work, training, skill, etc., is similar to yours.

(IF ANY): What do you know about their wages compared with your own wages?

Finally, the criteria according to which the respondents were to identify similar workers elsewhere were altogether dropped. Instead, the workers were simply asked about other workers elsewhere with "jobs like yours":

Do you happen to know of any jobs like yours in other industries where the rate is higher than your rate?

(IF SO): What do you think is the reason for it?

Is the rate what it should be, or should it be higher or [illegible]?

Thus, the question was clearly focussed on wage comparison. Both standards of comparison were dealt with elsewhere in the questionnaire. By sorting out the different components of "comparative reference groups," the researcher gradually focussed the questionnaire on wages, security, and job placement as bases of comparison with other workers.

Focussing on the respondent's frame of reference is also a major task in questionnaire construction. For example, in the pre-test survey of Columbia College students, the term "professor" was consistently used to refer to their teachers. Queries from the respondents about the exact meaning of the term showed that they were more aware of the prestige of the title and of the distinction between "full" professor and "associate" professor than was expected. This awareness led to the deletion of the word "professor" and the substitution of "instructor." In addition, the interviewers were instructed to explain the term in the event of uncertainty.

Since the investigators were studying people in a college environment, it was necessary to consider carefully the known features of that environment when making up the questionnaire, i.e., the organization of Columbia University and the rules and regulations within which the students were obliged to study and live. From the responses on the

pre-test, it was found that certain rules had escaped notice. For instance, when one student was asked the following question, his reply was quite enlightening:

> During this school year, did you seek any information or help from any Columbia officials, such as deans, student advisors, registrars, and so on?
>
> Yes - 1 No - 2
>
> IF YES: (a) Which official (or officials) was that?
> (b) How would you characterize your contacts with this (or these) offical(s)? Would you say that it was:
>
> Very satisfactory - 1 Fairly satisfactory - 2
> Somewhat satisfactory - 3 OR Very unsatisfactory - 4

A student replied that all the responses to the first part of this question would probably be affirmative since the students were required to see an advisor at least twice a year—at registration. He went on to say that if the purpose of the question was to single out those students who had had unusual contacts with Columbia officials, this question was not going to do it. Usually, at these semi-yearly meetings (according to our informant) the advisors merely approve the program of the student without fuss, so the "contacts" reported would all be termed "satisfactory." Following this advice, the question was revised:

> During this school year, did you personally visit any Columbia officials such as deans, student advisors, registrars, and so on to seek information or help--that is, beyond routine visits, such as for program approval?
>
> Yes - 1 No - 2
> Etc.

By using the words "personally visit" and then giving an example of what was not wanted, the investigator hoped to single out those who had had unusual contacts with the administration. We can surmise the effect of the change by looking at the number of respondents who answered "no" to the final form of the question. Forty-three per cent of those answering the questionnaire said they had had no contacts, other than routine, with the administration. This percentage is large enough for us to be able to assume that the question was interpreted in the way it was intended.

Another college feature that promoted an adjustment in the Columbia questionnaire was the presence of certain student organizations on campus. The question read as follows:

> There are several student organizations on campus which sometimes discuss college policies with the administration. Have you personally ever registered a complaint against an administrative policy or practice through a student organization, such as the Columbia Student Association, a Fraternity, the Student Non-Violent Committee, or other group?
>
> Yes - 1 No - 2

The problem, as it was soon learned from the respondents, was that there was no group called the "Columbia Student Association." Also the "Student Non-Violent Committee" (really the Student Non-Violent Coordinating Committee—SNCC) did not have a chapter on the Columbia campus at that time. In order to preserve the respect of the respondents, the groups' names had to be changed; and so the investigator substituted "Student Council, CORE, and ACTION" for the incorrect names.

Sometimes the only thing that can be done with questions that do not fit the respondents' frame of reference is to eliminate them entirely. Kadushin, for example, originally intended to measure the attitudes of the psychiatric patients in his study towards professionals in general. Specifically, he wanted to relate Parsons' pattern variables to the orientations of his respondents. It turned out, however, that the respondents could only respond to his questions about professionals in terms of <u>individuals</u> with whom they had interacted. As the case study relates:

> People thought in terms of a specific doctor, but not in terms of a profession. It was fruitful to ask them "What made you decide to talk to a minister? or social worker? or bartender? or astrologer?" but not "What made you think that a minister (etc.) could help with your problem?"

In this instance, the original questions about "professionals" was pitched at too high a level of abstraction for the respondents. By asking about the <u>individual</u> professionals whom they had encountered, and what it was that the patients liked about them, the questions were adjusted to a more concrete level of experience.

<u>b. The Elimination of Affect-Laden Terms</u>

It is not always easy to predict the reaction of respondents to certain terms. The survey designer must therefore be constantly on his guard against "halo" words, loaded questions, pejorative innuendos, and the like. In a series of true-false questions in his study of decisions to undertake psychotherapy, Kadushin presented the statement: "Only crazy people go to a psychiatrist." An analysis of the pre-test responses showed that an unusually large proportion of the respondents had <u>disagreed</u> with the statement--probably because many of them were aware that they were psychologically disturbed but did not want to be termed "crazy." Thus, the statement was changed to, "Only severely disturbed people go to a psychiatrist."

In the questionnaire intended to measure the effects on academic freedom of the McCarthy investigations, the researchers sought a term that would denote sensitive political issues. One question underwent six changes in wording, four of which are shown below:

1st version: Have you noticed a tendency in social gatherings on the campus to avoid unpleasant political topics?

2nd version: . . . on the campus to avoid political topics that might start an argument?

3rd version: . . . on the campus to avoid political topics that might be controversial?

4th version: Have you noticed more of a tendency lately in social gatherings on campus to avoid controversial political topics?

Pre-tests indicated that the word "unpleasant" was too loaded. Who would deliberately want to discuss unpleasant and presumably offensive topics? The word "argument" was tried, but interviewers reported that respondents were bothered by this word, too. Finally, the term "controversial" was decided upon, and then other revisions were necessary to sharpen the focus of the question.

B. SOURCES OF CHANGE

Thus far we have said little about the sources of the revisions mentioned above. The authors of the case histories seem to assume that pre-testing is the single most important source of change in questionnaires. Many changes, however, are often introduced long before the first draft of an instrument is ready for pre-testing, and others occur later wholly independently of pre-tests. The sources of revision can thus roughly be subdivided into (1) pre-testing and (2) all other sources.

1. Changes Based on the Results of Pre-Tests

In a summary case history of several pre-tests, Brooke lists five objectives of pre-testing:

1. To test the efficiency of the questionnaire as a transmitter of concepts to the respondent and the efficiency of the answer categories as the transmitter of the respondent's answers;

2. To test for any interference with or distortion of this transmission through interviewer misunderstanding or confusion about the meaning or method of handling the questionnaire;

by respondents? Has the proper range in environment and experience been allowed for, or does the pre-test turn up apparently significant cases which cannot be fitted into the model, and apparently significant indicators which are not included in the model;

4. To test the competence of the selected universe as a suitable and competent source of data on the subject under study;

5. To identify and reduce to a minimum those circumstances in which the interviewer has to adapt or supplement the carefully controlled wording of the questionnaire to specific concrete cases which do not fit the more general circumstances.

As mentioned earlier, a number of months may ensue while the instrument is being prepared and pre-tested. The following is a typical schedule, which has been drawn from Nash's history of the questionnaire for financial aid officers:

PRELIMINARY INTERVIEWS AND PRE-TESTS

Description	Date	Number of Interviews
Personal visits and informal conversations from a prepared agenda	April	4
Telephone interviews to determine organization, type of program and person responsible for financial aid	April	16
Exploratory depth interviews from a prepared open-end questionnaire	June	18
Pre-testing of the various drafts of the questionnaire both by mail and in person	July-October	27

In addition to the two preliminar drafts prepared over the summer, there were seven drafts between September and November. As the preliminary interviews and pre-tests progressed, there was a sharpening of the questionnaire from exploratory, open-end items to pre-structured. The questions in the preliminary drafts were intentionally very general "in order to give us something to work from or refer to at a future time." For example: "Who are the sources of support?" and, "Are there problems in the administration of financial aid at your college?

What sort?" The process of focussing the questionnaire is demonstrated by comparing this latter, free-answer question with the final version:

Which of the following are sources of dissatisfaction?

a. Too much work
b. Too much pressure
c. Insufficient recognition or prestige
d. Insufficient pay
e. The colleges' aid policies and practices
f. Students who are impolite or unappreciative
g. Parents who are demanding or uncooperative

Thus, it is often advisable to employ unstructured questions in the early phases of questionnaire design. These questions can be converted into a more structured form if warranted by the replies of the pre-test respondents.

Since pre-testing is regarded as a crucial stage in questionnaire construction, our case histories give abundant evidence of revisions based on pre-tests. Here we shall present only a few examples to supplement those already mentioned.

In Nash's study of college financial aid officers, the following question was asked of respondents in a preliminary sample:

How important was your role in the college's decision as to whether or not it would have the Federal Work Study Program?

The respondents told the interviewer there were a number of people who were important in making this decision, so the question was changed to read:

How important is each of the following in deciding whether or not your college would have the Federal Work Study Program?

__Yourself
__President of the College
__Director of Admissions
__Financial Aid Committee
__Business Manager
__Other Administrators
__Faculty

Langenwalter reports that one of the questions addressed to Columbia College students dealing with the students' off-campus activities "downtown" was misunderstood in the pre-test.

. . . one would assume that New York City would not change markedly enough in a few months to affect student behavior, and so would not cause us trouble. But at the time the pre-test questionnaire was being administered, the new Lincoln Center

for the Performing Arts had just opened at 66th Street. Forgetful of this event, we had defined "downtown" in our questionnaire as "below 59th Street," thereby excluding the major cultural center of New York.

As a result of questions raised by respondents in the pre-test, "below 59th Street" was changed to "below 72nd Street."

A questionnaire designed to study parents' expectations and behaviors regarding their children's education ran into difficulty early in its construction. In a pre-test version, one question took the following form:

Here is a list of things that parents sometimes do.

a) On the average, about how often do you do them?
b) Do you think you should do this more often, less often, or about as often as you do it?
c) Do you think the teacher thinks you should do it more often or less often than you do?
   A. Help your child with his homework.
   B. Talk with your child about what he's doing at school.
   C. Scold or punish the child for not doing well in school.
   Etc. [total of 18 items]

Brooke reports that the pre-test interviewers complained that they felt awkward and uncomfortable asking these questions, and that the parents' behavior was observed to be restless and embarrassed under this quizzing. Also, they had the feeling that respondents' answers about what they should do tended to conform to their answers about what they reported doing at the beginning of the series. Many revisions were made as a consequence. After four waves of pre-tests, the original 18 items of behavior were reduced to 9 through observation and analysis of overlapping items and items which were answered in the same way by all respondents. Further, only the first question (part a above) was preserved in its original form. Parts b and c were changed to:

b) Are there any things at all that you think it is important for you to be doing differently than you are in order to help (your child) to get the most out of school?
c) Are there any things you think (the child's teacher) would like you to be doing differently than you are?

   (IF YES): What things?

As Brooke points out, by the end of pre-testing 54 reiterative queries had been reduced to 13. The more "open-ended" approach also permitted a more exploratory investigation of these matters, and therefore allowed for adjustments to the respondents' frame of reference.

Survey researchers usually try to administer the pre-test instrument to a sample as similar as possible to the one receiving the final instrument. A replication of the real sample is difficult to

achieve, however, in cases where the ultimate population is quite small. In his study of the organization of education research (see Part II), Sieber was confronted with this problem. Since the questionnaire was intended for deans of schools of education--a very small universe--he did not want to use any of the prospective respondents for his pre-test. He found in retired deans, however, a group that was very similar to the intended population, and pre-tested the instrument with these individuals.

Simulated pre-tests are also frequently carried out. By a "simulated pre-test" we mean the use of acquaintances or colleagues to react to the questionnaire. This procedure combines both expert advice and pre-testing inasmuch as the "simulated" respondents will not only answer questions, but comment upon the instrument in terms of their own experience with questionnaire construction or their knowledge of the real respondents.

2. Other Sources of Revision

This category, which includes all sources of change that are not a direct result of pre-testing, is quite large. Three main sub-categories can be distinguished, however:

a. Updated Information

While constructing a questionnaire, the researcher often consults sources that bear on his subject matter. Nash lists the following sources for updating her knowledge of financial aid in college before she began constructing a pre-test version of her instrument:

- data about similar studies elsewhere
- review of the relevant discursive literature
- content analysis of college catalogs (this was done in order to gain more descriptive information about the work of financial aid officers)
- interviews with local financial aid officers
- observation of workshops of financial aid officers

b. Sheer Rumination

As with any sort of writing, the author will frequently go over the questionnaire to improve its English, to clarify a point, to delete an item that seems unworkable and so on. Thus, in Kadushin's questionnaire concerning the decision to undertake psychotherapy in a religio-psychiatric clinic, the following question was inserted into an early draft:

> Because of our necessary ignorance in these matters [i.e., certain theological issues about the existence of God], I can neither believe nor disbelieve in Good.

Upon reexamining this item, the questionnaire designer decided that the word "ignorance" might be ego-threatening, and therefore changed the item to read:

> Because we can't know enough about these things, I neither believe nor disbelieve in God.

In the same questionnaire, concern for a more colloquial tone dictated the following change from:

> Clergymen are the final authorities on questions of the theology and the interpretation of the faith.

to:

> Clergymen have the final say on questions of theology and faith.

Changes of this kind are so obvious that they are almost never recorded, even by our conscientious historians of questionnaires. And yet, perhaps the great majority of revisions derive from simply scanning the questionnaire for bad grammar, awkward phraseology, irrelevant inquiries, and the like.

Sometimes it is necessary for the designer to turn his attention to other matters in order to regain a proper sense of proportion and style. In her case study of the Columbia College questionnaire, Langenwalter refers to a "cooling off" period that follows intensive work on a questionnaire, providing a certain freshness of vision.

> Usually toward the end of the writing stage, the researcher develops what might be termed "questionnaire construction fatigue." He becomes impatient with arranging and re-arranging the instrument, and may become careless as a result. The cooling off period gives him the opportunity to develop a more objective attitude toward the questionnaire which may help him to see weaknesses that were not noticed earlier. (If questionnaire writing were strictly a "one-shot" affair, construction fatigue could have a serious effect. As it is, any sloppiness arising from this type of fatigue can be detected by the researcher through pre-testing and eliminated in the final version.)

c. Expert Advice

The term "expert advice" embraces suggestions made by the investigator's colleagues and by outside experts. In Part II, where we present the history of a questionnaire designed for research administrators in education, the crucial role of an Advisory Committee will be described in detail, and the importance of local colleagues will also be illustrated.

PART II

A CASE HISTORY

History of the Questionnaire for Administrators of Graduate Schools or Departments of Education (Paul F. Lazarsfeld and Sam D. Sieber, a survey of the organizational aspects of educational research, 1963/64)

Although the present case history is based on documentary evidence which the director preserved specifically for this purpose, it is still not as complete as it could be. For example, the written documents do not include minutes of certain meetings in which modifications in the instrument were discussed; thus, there is relatively little material about the reasons for many detailed changes reflected in successive drafts of the instrument. Fortunately, one of the present case historians was the project director, who was able to fill in many gaps in the documentary materials. But the span of four years since the development of the instrument probably reduced the accuracy of recall.

Apart from the problem of finding and specifying the documentary eevidence used for the case history, the historian faces another problem --that of the breadthof his coverage. This problem is more serious with certain populations than with others. Questionnaires submitted to selected groups of professionals--which was the case here--usually contain scores of questions because of the complexity of the respondents' work and their anticipated ability to express themselves on many topics. Even with a relatively limited amount of documentation, it would be an almost impossible task for the case historian to describe the documented changes in the entire instrument. Thus, he will usually have to select a certain section of the questionnaire--preferably the one which posed the most problems and for which the best possible documentation exists. The present case history will therefore deal mainly with changes that took place within a section of the questionnaire entitled "Institutional Information," partly because the changes in this section were better documented than in the other sections, and partly because the changes were quite important to the study.

The instrument discussed here, intended for deans and chairmen of graduate schools or departments of education, was used to gather information about the organizational context of educational research. Parallel questionnaires were designed for (1) directors of bureaus doing educational research within departments of education, and (2) coordinators of research programs within these departments. These last two questionnaires will only occasionally be referred to in our discussion. Thus, the investigators designed three different questionnaires in order to gather as much material as possible about the many facets of educational research and its organization. Four types of information were collected in each questionnaire: institutional data (both routine and not so routine), subjective data (attitudes, opinions), background information about the respondents, and experiences or behaviors of respondents.

A Brief Background of the Study

The project originated in 1962 when Professor Paul F. Lazarsfeld was asked by the Research Committee of the College Entrance Examination Board to conduct an exploratory study of the reasons for the seemingly poor quality of educational research in the United States. Together with the second author of this paper, Professor Lazarsfeld began to analyze the existing literature on the problems of educational research. Based on extensive reading and on numerous discussions with persons involved in educational research, the investigators began to assemble an inventory of the organizational variables that might account for poor research quality. This exploration resulted in a report called Organizing Educational Research[1] which dealt with a description of the various organizational settings for educational research, and which raised a number of "problems" and "hypotheses." After the publication of the report, the two investigators were encouraged to expand the initial scope of the project by gathering empirical data and testing their impressions. This second, empirical part of the study was carried out under a grant from the U.S. Office of Education, and resulted in a final report, The Organization of Educational Research, submitted to the U.S. Office of Education in 1966.[2]

Each phase in the process of questionnaire construction will, for the prupose of this paper, deal with the construction of a single draft. Phase 1 will range from a discussion of the initial steps to a description of the instrument's first draft; Phase 2 will deal with the development from the first to the second draft; Phase 3 with the development from the second to the third draft, etc. Since there were six drafts and a final questionnaire, the process of developing the instrument will be discussed in terms of seven phases.

Although the investigators had clarified the major concepts in which they were interested in the monograph Organizing Educational Research, they did not preclude the inclusion of concepts that might emerge during the data-gathering stage or during the analysis. In short, they were alert to the possibilities of measuring "unanticipated concepts." This is exemplified in the notion of research climate, which was presented in the final report as an index of the number of status-groups in the school (dean, faculty, etc.) that ranked research above teaching and service as responsibilities of the faculty. Similarly, such important concepts as "styles of research leadership,"

---

[1]Paul F. Lazarsfeld and Sam D. Sieber, Organizing Educational Research. (Englewood Cliffs, N.J.: Prentice-Hall, 1964.)

[2]Sam D. Sieber (with the collaboration of Paul F. Lazarsfeld), The Organization of Educational Research. (New York: Bureau of Applied Social Research, Columbia University, 1966.) All final questionnaires are presented in an appendix of this report. A revision is being prepared for publication.

"innovativeness of the director," and "production of researchers" were not contemplated when the questionnaire was constructed, but were nonetheless measurable later on and figured prominently in the final report. In short, by drawing upon domains of variables concerned with the social organization of research, such as "interest in research," "activities of directors," "occupations of graduates," it was possible to delineate more powerful concepts later on and to find appropriate measures for them in the questionnaire.

Of the questionnaire's many drafts, only one was submitted to a proper pre-test that involved a sample very similar to the ultimate sample of respondents. The instrument was constructed for self-administration by the respondents, but with the help of field representatives to deliver and retrieve the questionnaire. The field representatives were chosen from among the junior faculty and advanced graduate students at the institutions in which the dean or head of department was located. (For a detailed description of the use of field representatives, see Appendix E of the final report.)

Lazarsfeld and Sieber were assisted by two types of advisors. One was a formally established advisory committee composed of six persons who were very knowledgeable about educational research and its organizational context. This advisory committee performed a function that could be termed "strategic" inasmuch as its major task was to guarantee that the investigators would pursue the most relevant questions. The second, more informal group was composed of local colleagues of the investigators whose task was chiefly "tatical"--that is, to advise the investigators on how to improve the wording of questions and organize the instrument. (Local colleagues were convened formally on two occasions.)

Although it took the investigators six months to arrive at the final version of the instrument for deans, not all of their time was spent on the project. Both investigators had other university tasks; also, a certain lapse of time occurred after each draft had been subjected to either a pre-test or a "simulated pre-test." The reasons for these lapses were discussed in terms of "rumination" and the "cooling-off period" in Part I of this paper.

THE SEVEN PHASES OF THE QUESTIONNAIRE

PHASE 1: FROM THE INITIAL STEPS TO THE FIRST DRAFT

Preparatory work for the first draft of the instrument was started in early July 1963. The exploratory research for Organizing Educational Research had provided the investigators with three types of conceptual guidelines:

(a) a general problem to be investigated: what were the effects of organizational arrangements on educational research activities;

(b) a number of hypotheses, or propositional corollaries, of the problem. For example: educational research that is carried out in research "bureaus" within graduate departments of education is of higher quality and of broader significance than research done in an uncoordinated way by individual scholars;

(c) several domains of variables, such as the following: history of the organization, its internal structure, its external relationships, and the leadership styles of research coordinators and bureau directors. It was this third type of conceptual guideline that turned out to be especially important later on.

When an investigator starts to work on the first draft of his instrument he sometimes looks for other questionnaires which have successfully elicited information about the variables he intends to study. Thus, Sieber borrowed questions from instruments used by Berelson (study of graduate school deans), Milavsky (a study of graduate business school deans), and Wilder (a study of reading researchers and experts). The instruments from which the investigators borrowed had one feature in common: they contained questions that sought to gather data about the organization of university research and research training. One of the questions borrowed from Berelson, for example, dealt with the attitudes of deans toward certain criticisms directed at the structure of graduate schools (Question 1 on the first draft):

> The following specific points have been made in the criticisms directed at the graduate schools over the past few years. On the whole, how do you feel about each of them? ("agree strongly," "agree," "can't say," "disagree," "disagree strongly")
>
> - With the numbers of students now involved in doctoral study, it has become almost impossible to provide the basic necessity of research training, namely, proper apprenticeship relations.
>
> - The quality of doctoral work is limited these days by the fact that most students are motivated by the practical objective of getting a job rather than the objective of becoming a research scholar.
>
> - Doctoral candidates are too often allowed or encouraged to attempt a major contribution as their dissertation rather than to take on a manageable topic that can be finished in a reasonable time.
>
> - Doctoral work is conceived too much as professional training, oriented to practice, rather than as academic learning, oriented to scholarship.
>
> - The graduate schools unduly stress research and research training at the cost of properly preparing college teachers.

- Two degree programs should be set up at the doctoral level—one for researchers, one for college teachers.

Another battery of questions was borrowed from Wilder's questionnaire developed for reading researchers:

> . . . The following is a list of factors that some people claim have hindered the advancement of educational research. If you think any of these has hindered educational research, place a check in the appropriate box (leave blank if you think it has not hindered research).
>
> [The two response categories were "major hindrance" and "minor hindrance."]

Fifteen statements followed, and a sixteenth statement was added because of its special relevance to schools of education:

- Isolation of schools of education from the liberal arts division.

While about half a dozen batteries were borrowed from the three questionnaires mentioned, most of the material in the first draft of the instrument was newly formulated.

The major domains of variables assembled for the first draft of the dean's instrument were:

(a) Problems of educational research
(b) Problems of graduate schools
(c) Arrangements for educational research
(d) Purposes of the school's graduate program
(e) Financing of research
(f) General educational opinions of deans
(g) Institutional data
(h) Personal information about the dean

As mentioned before, our attention will be mainly devoted to revisions in the section on "Institutional Data" because this is the section which is best documented.

The questions borrowed from the Berelson and Milavsky instruments were included in the first draft not only because they had already been addressed to deans, but also in order to permit comparisons between the Berelson and Milavsky data and those of the present study. The necessity of adding questions that were of immediate relevance to education, however, caused the gradual deletion of these borrowed items from later versions of the questionnaire.

It is noteworthy that the section on "Institutional Data" was very brief in the first draft, consisting of three questions only (the first of which was borrowed from Berelson, the second and third from Milavsky):

1. Please provide the following figures for new graduate students for the academic year 1963-64.

   - Applied for admission to graduate school _____
   - Accepted for admission _____
   - Actually registered _____

2. As of September, 1963, what is the total number of students working for the doctorate in the School or Department of Education? _____

3. What is the salary level for each of the following faculty positions in your school?

   [The faculty categories were: Instructor, Asst. Professor, Assoc. Professor, and Full Professor. Salary ranges were provided in the question.]

Later on, as a refinement in the first draft, the following question was inserted between Questions 2 and 3 in order to disclose the relative importance of the school or graduate department of education within the particular university:

> Of the total number of doctoral degrees awarded by the university last year, approximately what percentage were awarded by the school or graduate department of education?

Despite this additional question, the domain of variables dealing with "Institutional Data" in the first draft was still only slightly covered. This first version of the questionnaire was not presented for discussion to the advisory committee; instead, the investigators discussed it with a few of their colleagues.

PHASE 2: FROM THE FIRST DRAFT TO THE SECOND DRAFT

The section on "Institutional Data" remained the same in the second draft; however, changes were made in other sections. Thus, in the section dealing with "Arrangements for Research" of the first draft, Question 5 had been as follows:

> How satisfied are you at present with the administrative provisions for research in the School or Department of Education?
>
> Very satisfied
> Satisfied
> Dissatisfied
> Very dissatisfied

The investigators decided (a) to reduce the number of answer categories from four to three, and (b) to follow-up on the dissatisfied responses with an open-end probe. Thus, Question 5 looked as follows in the second draft:

How satisfied are you at present with the administrative provisions for research in the school or department of education?

Extremely satisfied
Moderately satisfied
Not satisfied

IF YOUR ARE NOT SATISFIED: What improvements would you like to see?

The open-end question about possible improvements was intended to allow the investigator to delve directly into problems of research organization.

A second major change in the second draft dealt with another question under the heading of "Arrangements for Research." The second draft contained two completely new questions on this topic. The first concerned the position of graduate students within the institution's research program:

In an average school year (excluding the summer), approximately what percentage of the doctoral students are research assistants for faculty members who are doing research outside of any research organization that may exist?

_____ %

Do graduate students provide teaching or supervisory assistance in order to relieve faculty members for research?

_____ Yes _____ No

If they do, about what percentage of the entire faculty is relieved in this way to do research?

_____ %

The second addition concerned the relationship between faculties on education and liberal arts faculties:

Which of the following arrangements with liberal arts faculties exist? (Please check as many as apply.)

___ Students are sent from the liberal arts department into the school or department of education for courses

___ Students are sent from the school or department of education into liberal arts departments for courses

___ Joint appointments with liberal arts departments for teaching

___ Joint appointments with liberal arts departments for research

___ Visiting professorships for teaching

___ Visiting professorships for research

___ Full-time appointment of professors entirely trained in the liberal arts division of a university

___ Distinct departments within the school of education which are staffed mostly by professors trained entirely in the liberal arts division of a university

___ Interdisciplinary committees or similar groups which include professors appointed to a liberal arts department

___ Other (please specify) _____

These two additions relfected a growing concern on the part of the questionnaire designers with research training and interdisciplinary relations. The final report devoted a good deal of attention to these aspects of research organization, drawing upon the data in a way not anticipated when developing the instrument. For example, the list of interdisciplinary relations was used to construct an index of formal ties with other departments.

Concurrent with the development of the second draft (which was to be submitted to the advisory committee), two memoranda were prepared and sent to the advisory committee, and also to the members of the informal group of colleagues. The memoranda, which described the purpose and scope of the intended questionnaires, were intended to introduce the instrument to the advisers.

The first memorandum dealt with the theoretical dimensions of the study. It discussed the formal organization of schools of education in terms of two major categories: inputs and internal organization. The three input categories were "founding and historical development," "personnel," and "facilities." With respect to "founding and historical development," the memorandum notes:

> Observations about the historical dimension of our study are classified under "inputs" because we have chosen to measure the extent to which past events have been incorporated in present structures. For example, the ideas of the organization's founder may be regarded as infusing later forms of organization.

Under the heading "personnel," the investigators broach the issue of the "double hierarchy" of research and teaching:

> Because research bureaus are integral parts of larger social systems, we need to know the attachments of bureau personnel to these larger systems in order to trace their influence on the bureau. It may be, for example, that the external statuses of the bureau personnel determine activities and goals to a greater extent than the formal policies of the administration. Also, knowledge of the latent statuses of personnel will be important in measuring the integration of the bureau into the university structure. Further, we should know something about the relative rankings of these statuses in the prestige structure of the school of education and in the university, so that we can use "rank-sets" as an explanatory variable in analyzing organizational loyalty and commitement to research. For example, an instructor may be more committed to the organization than a full professor because the latter possesses an alternative status outside the bureau which is of higher rank than his bureau status.

In the second draft of the questionnaire, these problems are primarily reflected in the questions under the heading "Arrangements for Research."

The discussion of the internal organization of the school of education centers on manifest characteristics and latent characteristics. Manifest characteristics are those that can be shown on a conventional organization chart, while latent characteristics are those that are not readily visible and that often underlie the former. The former are divided into "division of labor" (specialization and departmentalization) and "coordinative mechanisms" (Hierarchy of authority and communication networks and their contents); the latter into "informal authority," "pattern of interaction," "incentives for performance," and "morale." For the sub-category "incentives for performance," the investigators state:

> Because educational researchers are often capable of garnering considerable financial and status rewards for performing services for school systems, or from engaging in administrative activities in the university, the question arises of how the discrepancy between compensation for research and for other roles is resolved. In other words, what incentives does the organization offer that balance the rewards in other fields? In addition to the inducement of possible publication of research results, there may be the incentive of making a contribution to the body of scientific knowledge. Those who are competing for the usual managerial rewards will probably be few in number, but should nonetheless be identified. Thus, it may be possible on the basis of our questionnaire to classify researchers into several types according to the primary inducements they express.

In short, the first memorandum was an effort to block out domains of variables.

The second memorandum was also prepared for the first meeting of the advisory committee. As contrasted with the first memorandum, which dealt primarily with domains of variables and their measurement, the first part of the second memorandum dealt with more practical problems, such as the length of the questionnaire. For example:

> The questionnaires at present are quite lengthy, requiring about an hour and a half of the respondent's time. This partly arises from our desire to include as many items as possible so that the major topics and overall objectives of the questionnaire would be delineated. It may be that a long questionnaire is essential; and in view of our reliance upon institutional representatives to see that the respondents fill out and return the questionnaire, we may reasonably expect a high return-rate. On the other hand, there is the danger of antagonizing the respondents, or of receiving partially or indifferently answered questionnaires. Further, if the topics can be covered adequately with fewer, more discerning questions, then there is no reason to commit ourselves to a longer version. Our first problem, therefore, concerns the optimum time that we can expect deans and directors to spend on the questionnaire.

Also, under "problems of organizing the questionnaires," there is a reference to the proper location of the section "Institutional Data" in the questionnaire intended for deans:

> The section on Institutional Data was placed at the end so that it could be turned over to an administrative assistant who might be more familiar with recent statistics. This procedure would also ease the burden on the deans. Perhaps it would be necessary to make this section detachable from the questionnaire so that the assistant would not be able to read the dean's replies; or the section could be placed at the beginning of the questionnaire and filled out before the deans give their responses to the remainder of the questionnaire. Or, would either of these procedures unduly complicate the representative's job of insuring that the questionnaires are answered by the deans and collected in time?

And there was also the perennial problem of deciding about the proper sequence of questions:

> Articulation and Flow: We realize that it is important to conduct the respondent through the questionnaire as smoothly as possible, avoiding abrupt changes of subject and misplacement of contingent questions.
>
> Some questions in our mind are the following: Should impersonal questions about organization and finances precede more personal ones having to do with research experiences, or would the reverse order be more likely to draw out the respondent's interest at the beginning? Should general attitudes

about research be tapped before inquiring into the arrangements which have been established to promote research; or would the reverse order provide the respondent with the more appealing situation of being able to justify the arrangements which he has already reported? Do particular items lead naturally into the items that follow?

The second part of Memorandum Two deals with more substantive questions. They are worth mentioning here to show the major preoccupations of the investigators and their advisors in the early stage of questionnaire construction, and the admitted inadequacy of the early drafts:

1. Relations of schools of education to the major testing organizations: At present we know very little about the alternative ties between testing organizations and universities. We have felt unqualified, therefore, to phrase questions that touched on these relationships. Some possible alternatives that come to mind are: jointly sponsored projects, visiting professorships for personnel in testing organizations, and leaves of absence for professors to work in the organizations. What are the alternatives of which the committee members are aware?

2. Compensation of Bureau directors for services to local schools: In view of the possible conflicts between service demands and research obligations, it is important to know the director's degree of involvement in service work and the rewards he receives. There are two ways in which service workers are compensated, however: they can receive fees directly from the client, or they can receive a salary from the university. It would be understandable if some faculty members wished to conceal the amount of money they received from private consulting. And yet, the amount earned from this source might be an important indicator of involvement in service work, and might explain why less research is done. It is possible to delve into this sensitive area by direct questioning; if so, how? Would it be better to ask only about the amount of time devoted to services and to ingnore the magnitude of the reward?

3. Morale or integration of the Bureau staff: We have not included any items concerning the level of morale or interpersonal integration within the bureaus. The relations between organizational morale, informal leadership, and productivity seems to us to be important topics. But is it also possible to obtain reliable data on these matters in the framework of the present questionnaires; should the topic be deferred altogether until we are able to make field observations of a sub-sample of bureaus; or should it be covered primarily in the questionnaire for all bureau personnel, which has yet to be designed? If there are questions that should be included in the present questionnaire for directors, which ones would be likely to catch this right information?

4. Other aspects of the Bureau's informal organization: We have also omitted questions relating to such informal aspects as the communication network, vertical and horizontal social distance, informal authority, and personal interactions outside of work. Should this subject also be deferred until the field studies are undertaken; should it be covered cheifly in the questionnaire for all bureau participants; or are there particularly discriminating items which should be used in the present questionnaires as well?

5. Other topics or questions suggested by the committee members: At this juncture we will want to hear from the committee members about any additional matters that should be dealt with in the questionnaires. It may be quite necessary to substitute new ideas for those that we have tentatively planned.

The investigators then took up the thorny problem of the definition of terms used in the questionnaire:

There are certain key terms used throughout the questionnaire which have variable meaning in normal discourse. The most important are research, service, facilitated research, research teams, and research units and organizations. For the most part, we have tried to specify what we mean by these terms. In some cases we have given more or less operational definitions (service, facilitated, and teams). In the case of research, we initially ask the respondent how he understands the term; later we contrast the term with service in the hopes that the two activities will not be confused in ensuing questions. We have not offered a definition of the terms unit and organization except by way of contextual connotation, and for the sake of variety we have occasionally used the word bureau in the director's questionnaire.

Have our efforts to clarify these terms been sufficient? Are there other key terms which may be unclear to the respondents, or which amy not be understood uniformaly by all respondents?

The second draft was very careful to spell out the origin of every question by means of symbols in the margins; thus, members of the advisory committee and the informal group of colleagues were able to see immediately whether a particular question had been constructed by the investigators or had been drawn from a previous instrument.

PHASE 3: FROM THE SECOND DRAFT TO THE THIRD DRAFT

A discussion of the second draft by the advisors, and a "simulated pre-test" with the same adivsors, produced a number of suggestions for revision. Thus, the third draft differed from the second in the following respects:

(a) The draft submitted for discussion to the committee was preceded by an introductory letter addressed to the deans explaining the purpose of the project. A suggestion was then made—stemming from fear that the instrument might become too long—that the questions should be divided into two major groups, "Institutional Data" and "Opinions and Experiences of Deans and Chairmen." This division was made so that the respondents could have the section on "Institutional Data" filled in by their assistants. As a result of this suggestion, the introductory letter in the third draft was changed to clarify this procedure. All the sections of the instrument not relating to "Institutional Data" were rearranged under the general heading "Opinions and Experiences of Deans or Chairmen."

(b) With respect to the section on "Institutional Data," a new question was introduced:

> Is either a teaching certificate or professional experience in the schools a formal requirement for admission to the graduate program?
>
> | | Yes | No |
> |---|---|---|
> | Teaching Certificate | ___ | ___ |
> | Professional Experience | ___ | ___ |

This question was aimed at discovering whether the schools or graduate departments of education were narrowly occupational in their selection procedure.

(c) With regard to changes in other parts of the questionnaire, there were very few deletions but a good number of additions, an in all cases the new additions were questions that originated with the investigators. Thus, as already mentioned, the third draft contained a higher proportion of questions drawn up by the investigators than did either the first or the second draft. Also, the borrowed questions now began to disappear.

Many of these new questions stemmed from the meeting with the advisors. For example, in an effort to take into account the varied meanings of certain major terms used in the questionnaire, the following question was introduced:

> Since the term "educational research" is used in a variety of ways, it is often difficult to know what a person means by it. To which of the following kinds of activity do you ordinarily apply the term "educational research"? (Check as many as you wish)
>
> ___ Collecting statistics on school practices and educational outcomes, sometimes called "school status studies"
>
> ___ Designing new curricula and methods of instruction

___ Evaluating the effectiveness of new curricula and methods

___ Local school surveys (curriculum, financial, plant, etc.)

___ Investigating factors which affect the teaching-learning process in the classroom

___ Disseminating new curricula, methods of instruction, or other school practices

___ Investigating factors which affect school administration

___ General psychological studies of human learning or development

___ Presenting evidence to legislators of the need for greater support for the schools

___ Developing new tests and measurements

___ Analyzing the key concepts or philosophical assumptions underlying current educational issues

___ Studying the educational research journals for lecture materials

PHASE 4: FROM THE THIRD DRAFT TO THE FOURTH DRAFT

The third draft was revised and resubmitted to the committee as draft number four. The section on "Institutional Data" was considerably expanded; instead of the five questions that made up the section in the earlier draft, the new section now contained fourteen questions. Some of the additions follow:

Approximately what percentage of the graduate faculty of education was trained entirely in the liberal arts and sciences outside of any college, school, or department of education?

___ None

___ 1 - 5%

___ 6 - 10%

___ 11 - 25%

___ 26 - 50%

___ More than 50 %

Are there any distinct departments within the graduate program of education wich are staffed mostly with professors trained entirely in the liberal arts and sciences?

___ Yes ___ No

IF YES: Which department(s)? _____

Are professors who apply for sabbatical leaves required to state the purpose of the leave?

___ Yes ___ No

IF YES: Is research an acceptable justification?

___ Yes ___ No

To the best of your knowledge, about what percentage of professors who have taken sabbaticals in the past five years have conducted research while on leave?

___ %

At the end of the sabbatical, are professors who have done research required to report their work to the administration?

___ No ___ Yes

IF YES: What form does this report usually take?

_____

Are leaves of absence without pay given to faculty members who wish to do research?

___ No ___ Yes

IF YES: About what percentage of the faculty has taken such leaves in the past five years?

___ %

And at the end of the questionnaire:

Would you please send us any materials which describe the faculty research program, for example, a list of faculty publications, or a history of research in your institution.

If you have reports which indicate the types of positions which doctorate recipients hold, we would appreciate receiving a copy.

PHASE 5: FROM THE FOURTH TO THE FIFTH DRAFT

The fifth draft was to be the crucual one because it was to be pre-tested systematically with a group of retired deans, a solution that was adopted because the ultimate sample was too small to "use up" responsents in pre-tests. Since the fifth draft took over the questions

on institutional data from the third draft exactly as they were, we shall not dwell on this version.

PHASE 6: FROM THE FIFTH TO THE SIXTH DRAFT

The pre-tests introduced greater realism into the questionnaire. For example, here are two versions of a question, one before and one following the pre-tests:

Before pre-test:

> Approximately what percentage of the graduate faculty of education was trained entirely in the liberal arts and sciences outside of any college, school, or department of education?
>
> Are there any distinct departments within the graduate program of education which are staffed mostly with professors trained entirely in the liberal arts and sciences?

Following pre-test:

> Approximately what percentage of the graduate faculty of education received their highest degrees from a liberal arts and science department rather than from a school or department of education?
>
> Are there any distinct departments within the graduate program of education which are staffed mostly with professors who received their highest degree from liberal arts and science departments?

The responses in the pre-test indicated that the request to enumerate faculty who were "trained entirely in the liberal arts and sciences" was unrealistic. First, deans were not in a position to know this datum; and second, virtually no faculty members in education were trained entirely outside education. By replacing the inadequate phrase "trained entirely in . . ." with "received their highest degree from . . ." the respondents' knowledge was not overtaxed, since it can be assumed that a dean knows roughly how many teachers on his staff have doctorates or master's degrees in education, and how many have degrees in academic disciplines.

When the fifth draft was sent out for pre-testing, the investigators sent the committee a new memorandum, the purpose of which was to justify the inclusion of new questions. Here is an illustrative excerpt:

Deans' experiences with educational research

> As in the case of bureau directors, in order to fully understand the deans' policies and opinions, we need to know something about their past experiences with research. First, we want to measure their personal involvement in teaching and conducting

research. . . . Also, we ask several questions about personal background which might have a bearing on professional careers.

Second, we are interested in their observations about research, especially in their own school. Here we shall get into the problems that arise from allowing time off from teaching, from accepting funds from outside the university, and from other administrative responsibilities associated with the faculty's research. Their opinions about what constitutes educational research, the hindrances to the advancement of educational research, and the utility of research to practitioners, also fall under this heading.

With regard to the section "Institutional Data," the major change entailed moving the section from the end of the questionnaire to the beginning. The rationale behind this change was that deans should be able to hand the instrument to their assistants for completion of the section before supplying us with information that they might regard as confidential. Also, it was decided not to make the institutional section detachable because of the danger of its being mislaid.

In the section "Institutional Data," the order of the questions was modified, and the two following questions were dropped altogether:

Is there a residency requirement for the doctorate in education?

___ Yes ___ No

IF THERE IS: Which of the following residence requirements apply to the Ed.D. and which to the Ph.D. program?

[5 categories]

An open-end question regarding interchange between academic departments and the school of education was extended somewhat:

Former version:

In general, how fruitful have interchanges been with the academic departments in the univeristy; and what problems have been encountered, if any?

Revised version:

In general, how fruitful have interchanges been with the academic departments in the university; what problems have been encountered, if any; and what directions would you like future interchange to take?

With hindsight, it is surprising that the size of the education faculty had not been asked in any previous versions. Hence, a question was added:

How many instructors are teaching courses to graduate students in the school or department of education?

PHASE 7: FROM THE SIXTH DRAFT TO THE SEVENTH DRAFT

Drafts 6 and 7 are basically the same. The only change introduced is a purely technical one: coding symbols are added, and the copy is prepared for the printer.

CONCLUSION

Not every questionnaire has to be rewritten as many times as the one examined in this paper; but there are many instruments that require an even larger number of preliminary drafts. As has already been pointed out, a case history such as the present one must be deficient in many ways. And yet, if the number of case studies are expanded, one day we shall be able to prepare a systematic treatise on the development of social surveys. The reader is therefore invited to try his own hand at this task. Few exercises are more informative of the travail and excitement of questionnaire design.

APPENDIX E

PROFILING INSTRUCTIONAL PACKAGE

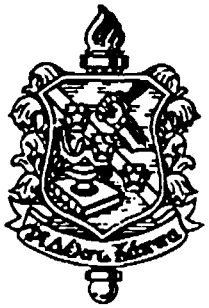
by

William J. Gephart
&
Bruce B. Bartos

ERIC

PHI DELTA KAPPA

RESEARCH SERVICE CENTER



OCCASIONAL PAPER

#7 PROFILING INSTRUCTIONAL PACKAGE

by

William J. Gephart
Director of Research Services
Phi Delta Kappa

Bruce B. Bartos
Research Assistant
Phi Delta Kappa

August, 1969

INTRODUCTION

Why evaluate the methodology of educational research? Why not accept the facts stated in published research reports? Two things provide the bases for the answers to those questions. The first is found in the nature of the research activity itself. The second relates to the adequacy of already existing techniques employed by researchers. The latter point is quite straightforward; our techniques are far from fool-proof! The former is a little more complex. For an investigation, the researcher designs a situation which *approximates* the reality of the problem he is studying. Since there are some unknowns in any situation, these approximations will not coincide with reality. For these two reasons, the user of the research results is cautioned against a blind acceptance of them. Unless all the details of the research activity are understood, the findings *must* be considered with reservations.

Research activities are multifaceted. The procedure outlined in the Research Profiling Flow Chart takes into account those facets. It examines first whether the research is a test of a hypothesis or an answer to an empirical question. Although a test of the hypothesis inherently has more levels of soundness both should present logical arguments. The flow chart traces this logic. Next, the flow chart focuses on the generation of data. Three elements are explicated here: the representativeness of the units studied, the treatments or experiences common to those units, and finally, the manner in which the phenomena have been measured. The final facet of the research process is data analysis. Each of these segments will be explained in detail, but first, a brief statement is needed regarding the basic approach proposed, that is, profiling.

PROFILING: AN APPROACH TO THE EVALUATION OF RESEARCH REPORTS

These materials are designed to assist the individual in PROFILING, a form of evaluation of educational research. They are, in effect, a set of instructional materials including three interlocking components. The first component consists of EXPLANATORY STATEMENTS about the research process, in general. The second component consists of DIRECTIONS for doing the actual profiling of the research report. A RESEARCH PROFILING FLOW CHART, a RESEARCH PROFILE SHEET, and two additional graphic aids to understanding make up the third component. The reader should imagine himself as a PROFILER in a situation requiring justifiable decisions about accepting or rejecting the conclusions stated in a given research report.

To aid the Profiler several statements need to be made about the format of this presentation. The first and second components are differentiated by their print layout. More specifically, the first component (explanatory statements) uses wide margins and this type face. In contrast, the directions component is indented and in a different type face. The charts and figures of the third component are located at the end of this packet, on fold-out pages. This enables the figure to be viewed while the several related pages of text are being studied. As concepts and keywords basic to the process of profiling are presented, they are HIGHLIGHTED by capitalization.

At this point, Figure 1 on Page 39should be folded out for viewing while reading the next section. It presents a block diagram on the FACETS OF THE RESEARCH PROCESS, which these materials cover. The PROFILE in the bottom-left corner is a distillation of the final product of this package - the Research Profile Sheet. The Profile will also be found in the upper-right hand corner of the profile sheet.

As already indicated, research methodology has many facets and it involves an inherent logical argument, the selection of subjects to be studied, structuring of experiences for those

subjects, measurement related to those experiences, and analysis of the collected data. Most reports of research present sound procedures in some of these facets and weak procedures in others, a condition that precludes a single statement, "This research is good/bad!"

There is a second reason for not making a single statement about the soundness of the conclusions. The use of research findings is complicated by variation in the need for information in professional decisions. There are times when one must use conclusions which are at best only tentative. There are other times in which the need for information requires almost a *guarantee* of truth. For example, if the need for knowledge in an area is great and the amount of risk to personal safety is relatively low, conclusions can be accepted and operated on despite weaknesses in the procedures used to generate those conclusions (Example, a study of a process to produce cheaper textbooks). On the other hand, if there is a possibility of personal injury, conclusions based on weak procedures cannot be tolerated. Consider for a moment the work on the development of a typical virile strain vaccine against rabies. Preliminary findings can give us sufficient information to work with the vaccine on animals. But until the research methodology is firmly established, we are morally restrained from conducting research which involves humans. Research methods in the social sciences seldom invoke such drama; however, the same concerns exist.

There is one more reason why a completed peice of research and its conclusions cannot be labeled "good" or "bad". That reason deals with the unpredictable future uses of a research finding. A research effort is completed and stored in the professional literature. However, it may eventually be put to use in any number of ways by different professionals, ways which preclude the possibility of determining once and for all the value of each particular effort.

Regardless of the knowledge needs or professional circumstances, a given conclusion ought not to be accepted, held tentatively, or rejected without careful evaluation of the research procedures used to generate it. Once the research user under-

stands the strength of the procedures and the various facets of the completed research, he is in a better position to use the conclusions of that research in professional decisions. It is asserted that the profiling procedure in this paper will facilitate the labeling of the methodology of completed research reports, and thus aid the research utilization process.

FACETS OF THE RESEARCH PROCESS ELEMENTS OF PROFILING

The conducting of an empirical study requires several steps. Those steps are the elements upon which the profiling activity focuses. They include: (1) the structuring of a logical argument, (2) the generation of data, and (3) the statistical analysis of data. All three items are involved in investigations which test hypotheses while only (2) and (3) are used in studies which attempt to answer empirical questions.

Now refold the FACETS OF THE RESEARCH PROCESS page fold-out and continue reading.

729

Logic

Before detailing these elements it seems important to define the meaning of the terms TEST OF A HYPOTHESIS and ANSWER TO AN EMPIRICAL QUESTION, as they are used throughout this document.

Two mutually exclusive categories of questions exist; empirical and non-empirical. The word "empirical" connotes a direct observation. An EMPIRICAL QUESTION, then, is one for which there is possibly a direct observation to determine its answer. Non-empirical questions require a combination of direct observation and inferences about the observation and related concepts. A couple of quick and simple examples will solidify these statements. How many test items on the arithmetic section of the California Achievement Test will be answered correctly by a specific child? To answer that question, the test is administered, scored, and the items marked correctly are counted. The number

726

correct *is* the direct observation. Consider the same situation but a question which cannot be labeled "empirical". Does a specific child understand arithmetic? The answer to that question *is not* directly observable. Understanding is a *mental* activity not visible or countable in any direct manner. An answer can be generated; however, it requires the selection of some directly observable activity is a logical indicator of understanding. In this case we probably would look at *both* the number of items answered correctly *and* the grade level of the child.

A HYPOTHESIS in the context of research is a tentative statement asserting a relationship between two or more things (Kerlinger, 1964). Some example hypotheses will help to make the point:

1. Teachers provide a different instructional treatment for boys than they do for girls.
2. Instructional method A is better than instructional method B.
3. Numerous short periods of memorization time are better than one concentrated period.

The analysis of the elements of these hypotheses requires the understanding of the term VARIABLE. In this presentation variable refers to anything that can exist in different quantities or qualities.

In the first hypothesis the two things, the two variables, are instructional treatment and sex. It asserts that there is a different quality of instructional treatment for the different qualities of sex. A TEST OF that HYPOTHESIS is an attempt to determine whether or not this is in fact true.

The second hypothesis also contains two variables. One of them is explicitly stated; the other implied. The explicitly stated variable is "instructional methods". Two qualities, method A and method B, of that variable are delineated in the hypothesis. The implied variable is the "better" output from that instruction. It might take one of several forms, including achievement, speed, utility, etc. In the report of a test of that hypothesis, the exact nature of the implied variable would have to be delineated through the procedures used by the investigator.

In most research activities it is impossible to make a direct observation to determine the truth of a hypothesis. Consider the third hypothesis above: short periods of practice are better than one extended period for memorizing a passage. Memorization exists within the mind of the individual. We cannot tell if memorization has occurred without calling for some other more observable activity. The activity most typically used is the recall of the memorized material. Thus the researcher reasons that if the hypothesis is true, certain things should be directly observable. In this case, better recall of the passage will be seen on the part of the students who use the repeated short periods of practice than on the part of the students who use the one extended practice period.

The third hypothesis also relates implicit and explicit variables. The explicit variable is the approach to memorization, either repeated short periods or one extended period. The implicit variable is the quality of the results, that is, the degree to which the individual memorized the material. Again, a test of the hypothesis would have to make explicit the nature of that second variable. This analysis should make clear that hypotheses are statements about variables AND relationships. Sometimes these are made explicit, other times implicit.

An hypothesis is an *assertion*, the truth of which must be determined. One says in effect, "Here is a statement I believe to be true. I will now engage in certain activities to establish the soundness of that belief." Those activities constitute tests of the hypothesis. And until they are conducted, the truth value of the assertion is minimal

The Structuring of a Logical Argument

A LOGICAL ARGUMENT is inherent in a test of a hypothesis. It is described by the mathematical logician, George Polya (1954) as consisting of a major premise, one or more minor premises, and a conclusion.

The MAJOR PREMISE is typically a statement which asserts

"If the hypothesis is a true statement, then specified events will be observed as indicators of that truth." An example of a major premise can be seen in relation to the first hypothesis in the list above. That hypothesis says that teachers give different instructional treatments to boys than they do to girls. As indicators of the truth of that statement, a researcher (McNeil, 1964) reasoned that boys would be nominated more often than girls as the persons to whom the teacher directed certain kinds of actions. This major premise could be stated as,

> If the hypothesis (teachers provide a different instructional treatment for boy than they do for girls) is a true statement, then systematic differences by sex will be seen when children are asked to name the students who receive specified teacher treatments.

The first part of this major premise is an indication that a researcher is seeking evidence on which to judge the truth of a hypothesis. The second part, that is, the actions which are to be observed and used as indicators are called the CONSEQUENTS.

Two kinds of MINOR PREMISES have been evolved from Polya's work (Raths, 1969). The first deals with the observation of the consequents. Where they or were they not seen? The exact nature of this minor premise in a given study is determined *after*: (1) a situation is structured in which the consequents should occur; (2) that situation is observed; and (3) data from those observations have been analyzed. In the example referred to above, significant differences were observed. The minor premise in this case was, "There is a systematic sex differentiation in the nominations." Note: This premise *does not say* that the hypothesis is true. Rather, it focuses on the observations. There was a difference seen in the nominations.

The second category of minor premises is necessary because of MULTIPLE CAUSATION principle in research in the social sciences. Any event which we observe is likely to be shaped by many factors. Consider the event: obtaining significant differences by sex of the students named as recipients of specified teacher treatments. Factors which contribute to that event range from systematic differences in the groups of boys and girls in

terms of age, maturity, and intelligence, to using teacher-student interactions that *must* be differentiated by sex. If one asks to whom does the teacher say, "Zip up your fly!", she ain't talkin' to girls.

Because of this MULTIPLE CAUSATION PRINCIPLE, a test of any hypothesis must concern itself, in part, with all of the possible causes for an observation. In conducting such a test an investigator establishes circumstances in which observations are made. Those observations are the possible result of many factors. One of those factors is or should be the relationship expressed in the hypothesis. The other factors are RIVAL HYPOTHESES (alternate explanations for the event). When he structured his study, the researcher ought to have done things which ruled out those rival explanations. The second category of minor premises covers the extent to which those rival hypotheses *are* ruled out.

Completed research could be divided into three categories with respect to the second minor premise. The first would include those efforts in which *no* rival explanations are apparent. In the second category rival explanations *may* exist. In the final, rival hypotheses are difinitely involved.

The last element of a logical argument is the CONCULSION. Its form in a given study is dependent upon the nature of the *two* minor premises. This is because the first of these presents information as to whether or not the observation was made, while the second indicates whether rival hypotheses are present. If the consequences predicted are observed, support for the truth of the hypothesis is presented. If the observation is not made, support cannot be claimed (Note: Failure to make the predicted observation does not automatically mean rejection of the hypothesis.) The second minor premise determines the strength of the conclusion. If rival explanations are known, very weak support of the truth of the hypothesis has been developed. If there is the possibility but not the probability of rival explanations, tentative support is generated and the hypothesis is at least credible. And finally, if no rival explanations or rival hypotheses are conceivable, the truth of the original hypothesis is very much more credible.

At this point, the logic section of the Research Profiling Flow Chart (page 41) and the Research Profile Sheet (page 47) should be folded out. The flow chart consists of RECTANGLES, DIAMONDS, CIRCLES, and PRINTOUT-SYMBOLS. The rectangles indicate activities engaged in; diamonds represent questions about these activities; and circles delineate specific alternative answers to these questions. The pattern of connections between these symbols leads an individual through the chart. At several points the user can find a printout-symbol - a four-sided figure with one curved side. This indicates a LABELING that is to take place on the Research Profile Sheet. When one of these figures is encountered, the Profiler marks the profile sheet as directed by the statement within the figure, *and proceeds to the next section on both the flow chart and these written instructions.* A trapezoid and an elongated hexagon have special purposes which are obvious upon inspection.

Work with the Research Profiling Flow Chart starts in the upper left corner. The trapezoidal input box indicates that the Profiler has a report from the professional literature. His first instruction is to examine that report for a presentation of DATA. Data in this instance mean numbers, scores, or frequencies of observations that have been made during the research. The first question raised simply asks whether or not data are presented. If they are not, the analysis activity is stopped and the appropriate label is checked on the profiling sheet. The report is either not a research effort *or* it is an incomplete part of the research process.

If data are presented, however, the path leads through connector number 1, and the Logic sector of the chart. The discrimination between a test of a hypothesis and an answer to an empirical question is undertaken. To make the discrimination the individual is asked first to examine the report for the existence of an hypothesis. The definition of an hypothesis was given on page 5; it is repeated in the activity box as two or more variables and a predicted relationship between them. The next question faced in the evaluation process is, "Is a

hypothesis presented?" Let us consider the results of a negative answer (exit Q) before we take up the positive ones.

Examine the text of the report to see if specific questions are posed and answered. If they are not, stop all further work with the chart and mark the "Stop" space at the top of the Research Profile Sheet. If, however, questions *are* posed and answered, two possibilities still exist. As the Profiler will remember from the material presented earlier, questions can be either empirical or non-empirical. The next decision in the flow chart deals with that discrimination. "Are the questions answerable by direct observation?" If the answer is "Yes", a label is required. The labeling of a report as an "Answer to an empirical question" refers to the profile sheet again and asks for a check at space Q under Logic. Once that check is made, the Profiler proceeds as directed by the arrow to connector number 2 on the flow chart. If the answer is "No", one further decision needs to be made.

Consider again the examples used to distinguish between empirical and non-empirical questions in the earlier discussion. The empirical question was, "How many test items on the arithmetic section of the California Achievement Test will be answered correctly by a specific child?" The non-empirical question was, "Does a specific child understand arithmetic?" In this latter case, there is a logical combination of referents that is observable - score and grade level.

On the flow chart, a "Yes" in response to "Is a logical referent observed to answer the question?" also causes us to mark space Q on the Research Profile Sheet and to move on to connector number 2. A "No" indicates a "Stop" label and a termination of further activity with this report.

Return to connector number 1. If the question "Is a hypothesis presented?" is answerable with "Explicitly" through specific statements or "Implicity" in the content of the work, both are treated alike and exit H is taken.

At this point the report has been analyzed either as an answer to an empirical question or as a test of a hypothesis. If it is the latter, the logical argument underlying that test must

be delineated. As shown on the flow chart, this is initiated by identifying and stating the hypothesis and the consequents which are to be observed. In effect, the Profiler is asked to determine the major premise in the logical argument. That identification task will require careful reading of the research report. The Profiler should note either the explicit or the implicit hypothesis being tested, and the observations which the researcher is using as evidence that his hypothesis is true. Here a concern is introduced about the major premise that was not alluded to in the earlier discussions. There *must* be a logical and acceptable connection between the hypothesis and the items to be observed. And absurd example may help to make the point. A test of the hypothesis that method A is better than instructional method B *could not* be made by observing the average annual wind velocity in a given community. There is no *logical connection* between the hypothesis and the specified consequents in this case. Nothing about wind velocity attests to the difference in quality of the two instructional methods.

Now return to the decision box on the flow chart which asks "Are the consequents logical if the hypothesis is a true statement?" If a negative response is obtained, the Profiler is directed to "Stop" and label since it is useless to consider further an invalid test of a hypothesis. A positive response leads to the activity box which requires the location of the section of the research report dealing with the observation of those consequences. In this case the focus is on the *first minor premise* in the logical argument. "Were the consequents observed?" For the answer to that question the Profiler should check the data analysis section of the report. Look for statistics which indicate significance in the observations. Three possible answers, two of which lead to the same conclusion, are shown in the Flow Chart. Those two are: the report either does not say that these events were observed, or it says in fact they were not observed. In either of these cases a "No conclusion" label is required. That is, no conclusion can be made at this point regarding the truth of the hypothesis. Given that label and interest in pursuing the details of the study

further, the individual goes to connector number 2.

If those consequents were in fact observed (the third possible answer), the *second minor premise* needs to be examined. An earlier discussion said that this premise deals with rival explanations for the observation. The flow chart refers to these as RIVAL HYPOTHESES. The Profiler examines the entire report to identify the existence of possible alternate explanations for the events observed.

There are two general sources of rival explanations: variables inherent in the problem area being studied; and variables related to the research process itself. As an example of the first general source, consider again the hypothesis: Instructional method A is better than instructional method B. Suppose two groups have been established, one taught by method A, one by method B. A common achievement test was used at the end of the instructional program. Significant differences were seen which indicate greater achievement on the part of the students who used instructional method A. If the group of students who were taught by method A were more intelligent than the group that experienced method B, a rival explanation (rival to the hypothesis being tested) would be provided. The same situation would exist if the group of students receiving method A were systematically older or if that teacher were a noticably better teacher. These and other variables related to the treatment are *possible* rival explanations for the observation that the group which received method A outscored the method B group.

The second source of rival explanations is the research process itself. The observations can sometimes be explained as a direct result of the *procedures* followed by the researcher. Consider an investigation in which the group taught by method A received the treatment at a time when the students were fresh and alert, and the group receiving method B was scheduled for a period when they were tired and drowsy. This time-sequence factor could explain the observed differences.

Another example of a research-process-caused rival explanation is *cueing*. Pretests can alert students to the content of instructional material in the treatment to follow. If the pretest is

designed so that it has a *bias* toward method A, this bias is a rival explanation for the observation. An excellent list and discussion of the rival explanations that stem from the research process itself has been presented by Campbell and Stanley in the HANDBOOK OF RESEARCH ON TEACHING (1963).

After the profiler has examined the report for possible rival hypotheses or rival explanations for the observed results, he asks himself the question, "Are rival hypotheses (1) known to be present, (2) possibly in the study, or (3) not identifiable?" The answer to this question leads again to a label under the Logic section of the Research Profile Sheet. It should be noted that this question, and its answer, establishes the relative strength of the conclusions that can be formed from the research findings. That strength ranges: from the truth of the hypothesis is verified (always short of absolute proof), to the truth of the hypothesis is credible, to the other extreme, the truth of the hypothesis is questionable. Once this label is attached as directed by the profiling chart, the Profiler moves to Phase 2.

Note: Only one label should be checked for each study. If you have checked more than one label on the Profiling Sheet, you should go back to the start of the Logic section, re-read the general statements, and follow the directions again.

The LOGIC section of the profile sheet has now been completed, indicating that the logical bases for the study have been evaluated. Refold the LOGIC sheet and fold out the Data Quality sheet (page 40).

DATA QUALITY

As indicated earlier, a researcher identifies a question to be answered or a hypothesis to be tested. To achieve either of these, he structures a situation in which he generates or accumulates bits of information called DATA. These bits of information might exist in the form of numbers or in the form of repeated verbal statements. In the first case these are more likely called "scores,"

in the second the term "frequencies" is appropriate. The data for any given study are shaped by the procedures followed by the investigator.

The Generation of Data

The second major facet in the research process, the generation of data, contains three elements. If variation occurs in any of these three, a different set of data is generated. REPRESENTATIVENESS is the first of these elements. Consider an investigation of the effects of test anxiety on student achievement. A test of test anxiety is administered to graduate students, and the high and low 25 per cent are selected as subjects. The results from the achievement test will yield a particular set of data. On the other hand, if the study uses a randomly selected group of high school seniors, an entirely different set will be produced. And neither group of subjects is representative of students in general.

The second way to cause variation in the data is the TREATMENT or experiences of the subjects. Again the test anxiety area provides an example. One set of data could be generated by a treatment in which the subjects are given an achievement test that was constructed for students at a much higher level of education. Consider the same group of students but a slightly different treatment. In this case, a test at the appropriate educational level is administered repeatedly. Each day that it is given the test is described as an exact replica of one which will be given to them in the not-too- distant future. That future test will determine whether or not they are allowed the educational program of their choice. The focus is still the effects of test anxiety, but the shape of the data will be somewhat different than in the first case.

The third shaping aspect in data generation is MEASUREMENT. If the effects of a specified treatment on a specified group are measured by a paper and pencil test such as the Mandler-Sarason Test Anxiety Questionnaire, one set of data will be generated. If, however, the arm rests of the chairs in the classroom were wired for galvanic skin-response measurements, a

quite different set of data would be obtained.

These three aspects of data generation, as related to data quality, can be displayed graphically with the cube (Gephart & Ingle, 1969) displayed on the Data Quality Cube fold out. The height of the cube stands for representativeness or sample quality (OA). This is the degree to which the units studied characterize a specified population. Treatment or experience is represented on the width of the cube (OC). And measurement quality is displayed by its depth (OG).

The range of quality on the representativeness dimension is from a high (point A on the cube) at which perfect representation of a specified population is assured, to a low (point O) at which some unspecified units were studied. Quality points between these extremes will be discussed later.

The treatment scale of quality has a similar pair of dimensional extremes. At point C would be those studies which define the treatment in terms of its character, sequence, and duration. The other extreme (point O) would indicate those cases where the units studied have some common but undefinable set of experiences. In such a case the researcher is unable to state definitively what actually happened to the subjects.

The third dimension of the cube, measurement, has a low (point O) at which some records were kept - but probably for other purposes than the research study in question and in a manner which leaves their validity and reliability unknown or at least in doubt. The other extreme (point G) would be an instance in which the measurement was carried out through perfectly objective, valid, and reliable techniques.

One can hypothetically locate research projects on or in this cube. For example, a project which either used a total specified population or selected a perfectly representative sample of that population would be located at point A. If the content and sequence of all of the treatments employed were completely detailed in the report by the researcher, the project would then be at point B. Finally, if the measuring techniques were perfectly objective, valid, and reliable, the study would rest at point E. Any given study seldom reaches this level of data generation quality.

Rather, it falls somewhere between the extremes, either on one of the faces of the cube or somewhere inside the cube.

Dimensions for the Data Quality Cube

The previous section sketched in the extremes on the data quality cube. The evaluation of a specific piece of research requires the identification of points between these extremes. Scales for the three factors in data generation, representativeness, treatment, and measurement, will be detailed in the discussion which follows. After that, the profiling flow chart areas dealing with these scales will be discussed.

The representativeness scale handles the dual question, who was studied, and whom do those units studied represent? The research project is undertaken for the purpose of reaching a conclusion. Conclusions do not float in a vacuum. They are related to a particular time and setting. A given conclusion, then, has at least two aspect: it is about some thing; and it is applicable in some setting. In this respect, two terms are common in the language of researchers. They are "population" and "sample." A POPULATION is a total set of persons or things included in a discrete group which can be described on a specific set of variables. A SAMPLE is a fraction of the population, and can be described by the same set of variables. A sample may or may not be an accurate representation of the population of interest. To be an accurate representation, a sample must display proportionally the same distribution as does the population on all the relevant variables. Consider the following example: all of the students in grades 7, 8, 9 enrolled in Washington, D.C. public schools on March 14, 1969 could be a population? they are certainly a discrete group. The set of variables which would describe that population include: (1) occupational status--students; (2) grade of enrollment--7, 8, 9; (3) date--March 14, 1969; (4) location--Washington, D.C. The four variables used in describing this example population are of an inclusion/exclusion nature. To be a member of that population, all four must be satisfied. To be a member of a sample from that population, an individual must

also display all four of these characteristics. A sample of that population would be a fraction of the students in the specified grades at the specified time in the specified location.

In order to determine whether that sample is *representative* of the population, the distributions on the four variables above and distributions on additional varibles related to the topic being studied must be examined. That is, on the variable "occupational status," the population would be described as 100 per cent student, 0 per cent for anyother occupational category. On the variable "grade of enrollment," fractions of the population would be distributed at the 7th, 8th, and 9th grade levels. The sample, to be representative, must display the same attributes, that is, 100% of the individuals in the sample must have the occupational status of students. And, the proportion of the sample enrolled in the 7th, 8th, and 9th grades must be identical to that found in the population as a whole. These along with date and location items would be the basic inclusion/exclusion criteria.

The other variables to be considered to determine the representativeness of this sample are outside of the inclusion/exclusion categories. They would include for example, sex and intelligence, as those are other relevant variables on which the population listed above could be described. In a specific research project these two variables may be related to the variables in the hypothesis being tested. Thus, to be a representative sample the individuals to be included in a study would have to display proportionally the same distribution of sex and intelligence as exists within the population. In any given study still other relevant variables may have to be considered to determine if a representative sample has been selected.

There are several ways in which subjects or units are selected by researchers. These range from the simple use of available units to the examination of the entire population. Between these extremes are sampling activities involving random selection, purposive sampling, and the solicitation of volunteers. RANDOM SELECTION involves procedures which guarantee that every member of the population has an equal probability of being selected. There are numerous variations in random sampling

appropriate for varying sizes of populations and/or varying purposes in investigations. These variations include stratified random sampling, random cluster sampling, and two- or three-stage random sampling. The essence of each of these, however, is that each element in the population has an equal probability of being selected as a part of the sample.

PURPOSIVE SAMPLING involves deliberate decisions and actions on the part of the researcher. After reasoning that a population can be subdivided into specific categories, he searches through the population and selects units in each of those classifications.

At times investigations are undertaken either in settings or on topics which require that the subjects VOLUNTEER for participation. The characteristics of these volunteers cannot be assumed to be generally held by the population to which the investigator may wish to generalize. The very fact that some individuals choose *not* to volunteer while others do represents some differences. Typically, the characteristics which lead to volunteering are not known or explicated in the specific study.

Given the above discussion of the extremes and intermediary points, the REPRESENTATIVENESS SCALE or unit quality has five points.

Those are:

R_1 = an unidentified group of subjects was studied.

R_2 = volunteers were studied.

R_3 = purposive sampling from a specified population established the group studied.

R_4 = random selection from a specified population established the group studied.

R_5 = the entire population was studied.

(The symbols R_1, R_2 . . . will be used in connection with these statements in the profiling activity).

As one moves from the top to bottom of this list, the representativeness of units studied improves in quality. These units structure the next section of the research profiling chart.

Before stating this section, remember that as a profiler you are trying to find one statement from the list above that best

describes the sample involved in the study being evaluated. That statement will be found when you work through the next flow chart to a symbol that says LABEL. When you reach that point go on to the next section. Close page fold out and open the DATA QUALITY-REPRESENTATIVENESS fold out, page 42. Here the use of the Research Profiling Flow Chart continues at connector number 2. The Profiler is directed to identify the population of interest and the sample studied. This information should be stated explicitly in the report. If not, it can sometimes be determined by examining various sections of the report. For example, if the population of interest is not explicitly described in the introduction of the research problem or in the procedures section, it can sometimes be inferred by examining the conclusions made. In or near his conclusions the researcher usually summarizes the central characteristics of his study, including references to the larger group from which the sample was drawn. The reader should realize that a research report *ought* to be more explicit. The proper location for population characteristics is the procedures or data analysis sections.

In this phase, the first question faced by the Profiler is, "Does the report delineate the population to which the generalizations apply?" The term "delineate," in this question, infers that the researcher ought to know, and state, the population boundaries, that is, the inclusion *and* exclusion variables which describe them. Furthermore, he ought to have specified the nature of the population on variables which are related to the subject being studied. If the answer to that question is negative, that is, the population of interest is *not* delineated, the Profiler is advised to identify the units studied and answer the question, "Are the studied units described in terms of their distribution on relevant variables?" If this has not been done, the label R_1 is checked on the Research Profile Sheet. Such a project would be an instance in which an unspecified group was observed and in which the reader does not know to whom the findings and conclusions apply. If these units are described, it may be possible to identify the

population by extrapolation. The conclusions and findings would then apply to similar groups. An affirmative answer to the question above directs the Profiler to treat the report as though the population were indeed thoroughly specified.

The next activity proposed in evaluating a given piece of research is the identification of how the units studied were selected. A series of questions follow this identification procedure. Each question leads either to a label or to the next question. The first of these is, "Was the entire population studied?" If the answer is "Yes," the label R_5 is checked on the Research Profile Sheet. If the entire population was *not* investigated, the Profiler asks the question, "Was randomization employed to select a sample from the population of interest?" The focus here is on *whether* randomization was employed, not on which randomization technique. It should be understood at this point that this is a random selection of subjects from a specified population, in contrast with random assignment of subjects to specified treatments. If the answer to *this* question is affirmative, the label R_4 is checked. If the answer is negative, still a third question is raised. "Were the units selected through deliberate or purposive procedures, from volunteers, or by some unknown means?" Again, these items lead to labels. Deliberate selection to R_3; Volunteers to R_2; and Unknowns means to R_1. Once these decisions have been reached the Profiler is directed to connector number 3, which leads to an analysis of the treatment characteristics of the study. There is one exception that must be considered first. Does the report have more than one sample? (For example, is there a sample of students AND a sample of teachers?) If so, repeat this entire section for the second sample.

Now refold page 42 - Representativeness.

The treatment dimension on the Data Quality Cube has been described as ranging from the situation in which some unknown treatments were experienced by the subjects, to the other extreme in which the details of the experience are completely known and controlled. Four additional quality levels can be

described between these two extremes. The set of six levels makes up the treatment scale. It is readily divisible into two equal groups. One group covers those instances in which the researcher states a theory. The other gourp covers those projects in which a theoretical base for the variables studied is missing (not presented). In this context a THEORY is a formualtion of apparent relationships or principles underlying certain observed phenomena which have been verified to some degree. It consists of the identification of the variables that are involved and/or interacting in a system. A theory should also state what is known about the variables and about the manner in which they interact.

Three categories of variables can be described. The first includes those variables in either the hypothesis being tested or in the empirical questions being answered by the study. The second category (MEDIATING VARIABLES) includes those recognized in the theory as related to, affecting, or interacting with the specific variables being studied. The third category encompasses those variables which, according to existing information, cannot be included in the theory but which *might* have an effect on the variables central to the research effort itself. These are called EXTRANEOUS VARIABLES in this presentation.

Let it be asserted here that theory-based research is of higher quality than atheoretical works. Problems and unknowns in the field of education must exist as components of *some* system. When a hypothesis is stated, at least two variables are made explicit. Many other variables are involved, however. The relationship between those variables stated in the hypothesis and the other associated varibles is an important definer of the system being studied. The same assertion is made about a study which answers an empirical question. Such studies typically investigate the manner in which the subjects distribute along some single variable.

When a theory is stated, quality of a given treatment is dependent upon the degree to which control is asserted over all of the variables. The lowest possible level in this respect would be control over the variables being studied. The next level would include this control plus control over additional variables seen

related in the theory. There is still one better level. The state of our knowlege about the field of education is such that it is very possible that additional variables are related to those we are studying, and as yet not made explicit in our theory. Therefore, it is possible to have control over the variables on which we are focusing, the related variables in our theory, and not to have control over still some additional important variables. The best possible treatment would be one for which certain procedures are used to control this last category.

When the research report fails to state a theory, three levels of quality can be described. The lowest is the instance in which something occurred, the details of which are not known. This is the situation experienced by most historical and descriptive researchers and, in such studies, is not bad. In both of these, something has happened to a group which makes them of interest to the researcher. However, that something, these experiences which are the treatment being studied, cannot be delineated by the researcher. All that is known is that something of an undescribed nature was experienced by the subjects studied.

The next level would be the use of a procedure which is generally known in the field but which is not described in detail in the research. An example of this can be found in the numerous studies which refer to "the traditional method" of teaching. Unless that "method" is more carefully defined, the nature of the treatment cannot be considered to have been described in detail.

The third level of quality, given the lack of a theory statement, requires that the treatment employed be described in sufficient detail to enable another researcher to replicate (repeat) the study.

The six items above are the points which make-up the TREATMENT SCALE on the Data Quality Cube.

They are:

T_1= No theory; something undefined happened to the units studied.

T_2= No theory; treatment not thoroughly described, used research procedures described elsewhere.

T_3= No theory; treatment described in detail in the report.

T_4= Theory stated but no controls on variables.

T_5= Theory stated and mediating variables controlled.

T_6= Theory stated, mediating variables controlled, and techniques used to distribute possible extraneous variances.

This scale serves as the basis for the labels in the assessment of the treatment in the next section of the profiling flow chart.

Fold out the chart on page 43.

The considerations and decisions necessary to select one of the treatment labels starts at connector number 3. The Profiler is asked first to identify the details of the treatment as specified in the report. Next, he asks, "Has each step of the treatment been specified?" If the answer is negative, still another question is raised about the detailing of major features of the treatment. "Were the major details of the treatment stated or was a standardized procedure used?" Three possible responses exist. If neither of these have been identified in the report the document is labeled on the profiling sheet as T_1 - something of an undefined nature happened to the units studied. If either standardized research procedures were used or the major steps were detailed T_2 is checked on the profiling sheet. In this case the main features of the treatment are known but details necessary for replication may very well have been omitted.

If the answer to the question about specificity of the treatment is affirmative, the Profiler is asked to find three things: (1) the theoretical bases for the treatment; (2) controls for the variables known to be involved in the theory; and (3) controls for those variables extraneous to the theory. Profiling continues through the examination of the question, "Does a theory identify relevant variables and detail their interrelationships?" If the answer to that question is "No," the report is labeled T_3 - no theory is stated but the treatment or experiences of the units studied is described in detail. If the answer to the question was "Yes," still another question is raised. That question seeks information regarding the level of control described in the research. If a theory was stated but controls were asserted over only the variable or variables studied the report is labeled T_4. A T_5 label is attached to

those projects which describe controls for the variables being studied *and* those related variables stated in the theory. Finally, the T_6 label is applied to those projects which include controls listed in T_5 plus procedures for controlling variables extraneous to the theory. An example of a procedure used here is the random assignment of units to the various aspects of treatment in the study. If individual units display differences in the characteristics on variables not known to be relevant in the theory, it is assumed that randomization will distribute those differences on a chance basis among the several aspects of the treatment. Once the Profiler has moved to a label for the treatment he is directed by the flow chart to connector number 4. *Remember only one label should be made for each treatment.* That connector leads into the analysis of the quality of the measurement activity in the report.

To measure, according to Webster, is to use a standard, to ascertain the extent, degree, quantity, dimensions, or capacity of something. All of these terms connote the use of numerical quantities rather than verbal descriptions. Standard research texts often define MEASUREMENT as the assignment of numbers to objects according to specified rules. That definition suffices well in this context. All research activities, be they historical, descriptive, or experimental, are incomplete without measurement. The historical researcher collects bits of recorded information, classifies them according to rules, and counts their frequency in the established categories. The descriptive researcher collects current bits of information, classifies them, and therefrom generates distributions. The historical researcher classifies *after* finding the bit of information; the descriptive researcher classifies *as* he collects the information; and the experimenter classifies *before* he gathers his data. In all cases, numbers are generated according to pre-specified rules.

It is possible to specify rules, follow them carefully, and still wind up with a poor quality of measurement in a given project. An absurd example helps explain the point. Consider the task of determining which schools in a system have the highest academic

achievement level. The data-gatherer is told to stand at the front entrance of a school and count the number of students who have to duck their heads to enter the doorway. That counting task is a very well defined activity of assigning numbers. It does not, however, provide a good measure of the academic achievement of the school. It would not be considered as a valid instrument for measuring achievement. In research this term INSTRUMENT, refers to the tools used in measuring. In a given research project the term "instrument" may refer to a standardized test, a test devised for the project, a questionnaire or some apparatus designed to make a record of an event or performance. To validly measure achievement, the researcher would have to scrap his counting of students who must duck to get through the door, and utilize an instrument which gets at achievement. VALIDITY, then, is the degree to which an instrument is a true measure of those items being investigated.

Another characteristic of sound measurement is RELIABILITY. If the use of a measuring instrument produces one score at one point in time and another score at another point in time, it cannot be considered as a good instrument. Consider again an absurd example. A rubber yard stick would not serve as a reliable measure of length when used by different persons or by the same person at different times to measure the length of a room. Such an instrument would yield different scores. A reliable instrument is one which produces identical scores when used by different persons or the same person at different times to measure the same item.

Still one further item is needed to consider the quality of measurement. That item is OBJECTIVITY. It also concerns the degree to which different people would obtain the same result. It focuses on differences caused by the *user* where reliability focused on differences caused by the structure of the tool itself. Consider in this case the task of measuring the quality of a musical performance. Although one might be given a very specific set of rules, there is still a great degree of personal judgement involved. That fact makes it difficult for a number of judges to record the same scores for the same performance. An example of

a measuring instrument with high objectivity would be a commercially standardized test for which the correct response to each item is given and explicit details are provided about computing a score. In such a case, every one who grades the test ought to be able to arrive at the same score for any given answer sheet.

In summary, then, total evaluation of the data in a given piece of research must consider the validity, reliability, and objectivity of the measurement activity. If the data upon which the conclusion is to be based are generated by valid, reliable, and objective measuring activities, the measurement aspect of the research project can be considered to be methodologically sound.

In light of the preceding discussion, six levels of measurement data quality can now be described. The two extremes, as indicated in an earlier section, were: (1) a low, representing the obtaining of data with instruments for which we have no information (The data were probably from records kept for other purposes and merely "reworked" for this study.); and (2) a high, representing measurements obtained through perfectly valid, reliable, and objective techniques (Probably using, but not restricted to, a well-known commercially produced and standardized instrument). Between these points lie four additional quality levels that are predicated on two concepts - how the instrument was developed and its relative strength for the specific measurement task undertaken.

Instruments are born out of one of three sources - a new project, an earlier project, or a test manufacturing company. For this presentation these have been designated as PROJECT DEVELOPED, OTHER PROJECT DEVELOPED, and COMMERCIALLY PRODUCED instruments respectively.

The six levels on the MEASUREMENT SCALE are:

M_1= Information available that the instrument is INVALID for this use.

M_2= Project Developed instrument with LOW validity (V), reliability (R), objectivity (O), or NO INFORMATION about Commercially Produced and Other-Project Developed instrument.

M_3= Used Commercially Produced or Other-Project Developed instrument with LOW V, R, O for this application.

M_4= Used Project Developed instrument or Other-Project Developed instrument with MODERATE V, R, O for this application.

M_5= Used Commercially Produced instrument with MODERATE V, R, O or other instrument with HIGH V, R, O for this application.

M_6= Used Commercially Produced instrument with HIGH V, R, O for this application.,

The rank-order of the measurement scale reflects an inherent assumption. It is that the greater the professional exposure of an instrument, the greater the probability of its criticism, revision, and validation. Hence, commercially produced, commercially standardized instruments *should* be the best available. Next come instruments that have been tested on other projects. Last in line are instruments whose first wide-spread exposure occurred with the publishing of the report being evaluated.

Connector number 4 in the upper left hand corner of the flow-chart on the measurement fold out (page 44) leads into a consideration of the quality of measurement. In recognition that a number of measuring instruments may be employed in any given study, the Profiler is asked first to identify each one and then to list it on the back of the Research Profile Sheet. *The profiling task proceeds on a cyclical basis until all of those listed instruments are labeled.*

The first step in the cyclical labeling of the individual instruments is a question which separates data-gathering instruments, and associated data about their validity and reliability from those with high PFMA (Plucked From Mid-Air) factors. Those instruments that were just "plucked" and forgotten have a termination label of M_2, a low level on the measurement scale. A "Yes, But Invalid" answer, however, is worse than having no information at all. Label it M_1. Remember -- The instrument must be a true measure of at least those items being investigated. If no label has been

reached yet, continue through the chart at the "Yes, Valid" exit.

Determining the origin of the instrument is the next concern. Responses to the question, "Is the instrument Project Developed (PD), Other-Project Developed (OPD), or Commercially Produced (CP)?" will be more fully explained in the corresponding paragraphs below. The Profiler selects the answer appropriate for the instrument being evaluated and applies the instructions under that answer. When the point of labeling is reached, recycle and follow the *same* procedure for the next instrument listed on the back of the profile sheet.

Project Developed (PD). If the measuring instrument was developed expressly for this project, the answers to the question, "Is the Validity, Reliability, Objectivity (V,R,O) low, moderate, or high?" carry a slightly lower weighting than for other instruments. This same question is asked for the other two categories also. "Low" has an M_2 level, while a "Moderate" V,R,O for tests from this project are placed at the M_4 level. A project developed instrument with "High" ratings is given M_5. Again, the rationale for giving a less-than-the-best rating here is that the top is reserved for commercial products with their greater audience of critics.

Other-Project Developed (OPD). The validity, reliability, and objectivity (V,R,O) of instruments adopted from other research projects must now be examined. Lack of a valid connection between the instrument and its use in this study warrants an M_1 level. If there is no information other than its origin, and M_2 is listed.

Since an OPD instrument, by definition, has undergone previous development and testing, a "Low" V,R,O has been rated M_3, the same as for a commercial product. For the "Moderate" and "High" responses the instrument is treated the same as a new one created just for this project, and M_4 and M_5 are assigned, respectively.

Commercially Produced (CP). Still another tack is taken for test which are commercially developed, produced, and standardized. While lack of information and lack of substantiation of the instrument's applicability rate an M_2 or M_1, it is the rating of the validity, reliability, and objectivity levels which reflect the greater confidence in the test manufacturers, like ETS, California Test Bureau, etc. The "Low," "Moderate," and "High" V,R,O designations yield M_3, M_5, and M_6.

The Profiler will note that a commercially standardized test which fails to give validity, reliability, and objectivity information for this application is considered of greater quality than is a project developed instrument with the same lack of information. This ranking is based on the assumption that measurement specialists were involved in the development of commercially standardized instruments. And, that since they are offered on a continuing basis by organizations specializing in measurement, they are more likely to be sound than are project developed ones. In the latter case, individuals frequently are involved who do not have as thorough an understanding of the subtleties of measurement as do the people employed by commercial producers.

At this point it should be restated that this labeling activity is repeated for each measuring instrument employed in the research project. When the final instrument is labeled, the individual is directed to connector number 5, the start of the statistical analysis evaluation.

The Data Quality section of the Research Profiling Flow Chart has now been completed. It should be refolded before going on to the Statistical Analysis of Data which follows.

THE STATISTICAL ANALYSIS OF DATA

STATISTICAL ANALYSIS, in the context of these profiling instructional materials, is the process of simplifying collected data. In most research efforts a large quantity of data is generated. In their raw form data often defy interpretation. A statistical analysis is usually performed to facilitate interpretation. For example, consider ten students who have taken the same test. The number of correct responses for each is: 24,

ERIC

18, 17, 26, 14, 28, 25, 26, 21, and 20. As they are presented here, it is difficult to see them as anything other than an assortment of individual numbers. Most people would not bother to even finish reading all ten numbers. But, analysis can make them understandable as a group. Analyses range in complexity from the simple ordering of the numbers (14, 17, 18, 20, 21, 24, 25, 26, 26, 28) to the determination of central tendency (21.9) and dispersion (16.4 - 26.4). With still more information about the data it would be possible to show measures of association and even make inferences and predictions.

The first of these, ORDERING, shows us that the scores range from a low of 14 to a high of 28, and that two of the scores are identical at 26. The measure of CENTRAL TENDENCY called the mean, or average, equals 21.9. Finally, DISPERSION is the manner in which these numbers spread on either side of the central point. These statements have more descriptive value than does the jumble of numbers presented earlier.

Along with simplifying sets of numbers, statistical analyses are undertaken: (1) to describe a group on one or more variables; (2) to determine whether different kinds of data increase and decrease together; and (3) to determine the amount of confidence that can be placed on the generalizability of observed data. The first of these is generally called DESCRIPTIVE STATISTICS. The second is CORRELATIONAL or ASSOCIATIONAL STATISTICS. And the third is INFERENTIAL STATISTICS. The number of different statistical analyses that can be performed under each of these categories is quite large. The selection of a specific statistical technique is dependent upon: (A) the general purpose of the analysis (the three categories listed immediately above; (B) the scalor nature of the numbers involved; and (C) the number of variables in a specific study. (A) and (B) are discussed in detail below before returning to the Research Profiling Flow Chart. The number-of-variables criterion (C) should be self-explanatory.

The SCALOR NATURE criterion (B) is concerned with both categories of variables and levels of scales. Three categories of

variables can be described:

(1) CONTINUOUS VARIABLES (For example: number of correct responses on a test, age, number of years of schooling, standardized test scores.)

(2) DICHOTOMOUS VARIABLES (Items that are either a or b, such as, sex - male or female, in or out of school, answered or failed to answer a test question.)

(3) ARTIFICIALLY DICHOTOMOUS VARIABLES (For example: number of persons who are over and under age 21, number who passed or failed an entire test.)

Connecting categories of variables and levels of scales are the four cumulative properties of numbers that follow:

(1) NAME CONSTANCY - Each number serves as the name of a distinct group. (Three is a name on a distance scale which refers to a precise category of distances. Five refers to still another category of distance.)

(2) ORDER - Different numbers fit together in a recognized sequence. (Two comes after one and before five. Five comes somewhere after two and before sixteen. A distance scale marked one, two, sixteen, five would be incorrect. This is in contrast with the use of numbers as names in situations where order is not important, as with the numbers on football players' jerseys.)

(3) EQUALITY - Differences between adjacent numbers on a scale are equal. (The distance on a ruler between the numbers 2 and 3 is identical to the distance between the number 8 and 9. In contrast, attitude measurement typically is based on the following scale: (1) Strongly agree, (2) Agree, (3) Neutral, (4) Disagree, (5) Strongly disagree. The change in attitude from (1) Strongly agree to (2) Agree is not necessarily the same as the change from (2) Agree to (3) Neutral.)

(4) ZERO POINT - A true zero point must exist. (On a distance scale there is such a thing as *no distance* a zero point. On some scales that point does not exist, there is no such thing in the *living* human as zero intelligence.),

These four properties are cumulative. That is, property number two, order, cannot exist if property number one, name constancy is not present. Similarly, property number four requires the

existence of one, two, and three.

Given these properties and their cumulativeness, four general levels of scales can be described. They are:

(1) NOMINAL SCALES - the use of numbers as names (Example: assigning numbers to students of different nationalities for analytical purposes; Canadian - 1, English - 2, French - 3, Mexican - 4, etc.)

(2) ORDINAL SCALES - the use of numbers as names for categories that have an inherent order. (Example: rank in class-first, second, third...)

(3) INTERVAL SCALES - the use of numbers to indicate equal spacing between ordered *and* named categories. (Examples: intelligence tests, time.)

(4) RATIO SCALES - the use of numbers as names of equally distant units on measures that have a zero point. (Examples: number of correct responses on a specific test.).

Discrimination among these scalor levels is necessary for proper selection of statistical procedures. It does not make sense, nor does it follow empirically, that a person who ranks 5th in his class on math grades, 3rd on English grades, 8th in science, and 4th in social studies will rank 20th (their sum) or 5th (their average) on a composite of those ranks. It is recognized that such *inappropriate* mathematical manipulations can be made; however, it should also be recognized that in so doing, the nature of the statistical conclusion has been changed. A rank number is information about one's performance in relation to others. An average of several ranks has no relationship to performance. It is merely an exercise in the addition and division of numbers. Statistical formulations have been devised which are appropriate for data generated through the use of the scales above. The researcher's task, then, is two-fold. He must determine the characteristics of his data *and* find the statistic formulated on the same principles.

The term DESCRIPTIVE STATISTICS includes analytic procedures developed as aids in describing a population or a sample of a population. The term generally covers measures of central

tendency and measures of dispersion. Measures of CENTRAL TENDENCY are the statistics called the mean, median, and mode. The MEAN is the arithmetic average of a group of numbers or quantities. It is found by summing the numbers and dividing by how many numbers there are. When the numbers refer to ranks of individuals or order of items, typically a median is calculated. A MEDIAN is a point above and below which fifty per cent of the individuals or items fall. MODE is used for categorical information and refers to that category which has the largest number (Highest frequency) of entries.

DISPERSION includes standard deviation, semi-interquartile range, and total range. A STANDARD DEVIATION is a restricted type of range. It is the distance above or below the mean that is necessary to encompass 34 per cent of a normally distributed population. The SEMI-INTERQUARTILE RANGE is the distance above and below the median which is required to encompass 50 per cent of the units. RANGE is the distance between the upper- and lower-most scores (the extremes) in a group.

CORRELATIONAL or ASSOCIATIONAL STATISTICS are appropriate to those investigations where it is desirable to indicate whether high scores on one measure would coincide with high scores on another. For example, what is the likelihood that students who have high measured intelligence will also have high scores on a specific achievement test and vice versa? This analytic purpose is met through the computation of either correlation or association by a number of statistical procedures (Including: Pearson r, Biserial r, point-biserial r, Phi coefficient, Kendall's W, coefficient of concordance C, Spearman's rho, multiple r, etc). In the selection of a correlational statistic the individual considers first the *number* of variables. In some cases correlation involves two variables; in others three or more. Next, he obtains information about the scalor nature of the variables involved thereby leading to a specific statistic to be used. More explicit directions for selecting the correct associational statistic will be presented in the flow chart section dealing with statistical analysis.

A basic requirement for computation of associational statistics is the existence of a common tie among the scores on the variables to be correlated. For example, to calculate correlation between intelligence and achievement, scores on *both* variables must be available on the *same* individuals. It *cannot* be calculated if one group's intelligence scores are known and another group's achievement scores are known.

A person makes an INFERENCE when he uses something he has observed as evidence about something else. Many situations in education call for inferences. An educator may want to know how intelligent a student is. It is impossible to look directly at the student's intelligence by opening his head and examining the matter there. Since that cannot be done, something else is observed that *can* be logically accepted as an indicator of intelligence. Typically, the student is asked to do something. If his response fits a predicted pattern, it is inferred that he is intelligent. In a research project that attempts a "test of a hypothesis" the investigator is in essence saying, "If this hypothesis is a ture statement, specific things should happen that can be observed." He constructs a situation in which those things ought to occur, measures to see if they did occur, and uses those measurements (numbers) as the basis for inferring that his hypothesis is (or is not) true. INFERENTIAL STATISTICS are procedures that have been developed to simplify numbers used as the basis of inferences.

As in the cases of descriptive and associational statistics, a large number of inferential statistics exist. Again, choice of a specific statistic is dependent upon the scalor nature of the measuring instruments, the number of variables involved, the number of groups involved, and the specific aspect of the data being analyzed. Further explanation of these determinants can be found in any one of numerous statistics texts (Guilford, 1965; Senders, 1958; Walker & Lev, 1953; etc.).

Thus far, this discussion has covered the following aspects of the research process: the logical argument (hypothesis testing and answering empirical questions) and the data quality (unit representativeness, treatment details, and measurement instruments).

Given and understanding of those concepts, we are ready to return to the Research Profiling Flow Chart. The final evaluation activity covers the data analysis procedures used in the research study being evaluated. It begins at connector number 5 on the ANALYSIS fold out (page 45).

As was the case in the area of measurement, it is not uncommon for a specific project to employ several statistical techniques in the data analysis. The Profiler identifies each statistical technique and lists it on the back of the profile sheet. For each procedure listed, he follows the directions of the flow chart until a label is attached.

The pathway to a label starts with a question about the purpose of the analysis. At that point three branches are shown. One of these branches is followed until a lable is identified. The directions for this labeling have been structured in a way which requires that the Profiler read only the material related to the branch taken. The three branches are keyed to answers to the analysis purpose question and are: (A) To describe; (B) To show association; and (C) To support an inference. The necessary material for each of these branches is stated below under the three headings.

(A) TO DESCRIBE. If the purpose of the analysis was to describe the Profiler asks a second question, "Are data based on a nominal, ordinal or interval scale?" The answer to that question names a row in Chart A. Each cell in that row contains a statistic that *should* be in the report. Those that are not are to be listed on a profile sheet.

(B) TO SHOW ASSOCIATION. If the purpose of the analysis is to show association, that is the degree to which scores correlate, a distinction has to be made as to whether two or more variables are involved. If the answer is "TWO," the Profiler determines the categories of the two variables and checks Chart B for the appropriate statistic. The labels of the COLUMNS in Chart B are the categories that underly Variable 1. Given a specific variable one of these columns is identified. The same holds for Variable 2 and the ROWS of Chart B. Using the respective categories for the two variables, the cell at

the intersection of that row and column contains the statistic that should have been utilized in the report. If it was, the label "A" for Appropriately Analyzed is checked on the profile sheet. If the category of the data is too low to warrant using the statistic reported in the study, label it "I" for Inappropriately Analyzed. Example: Analyzing dichotumous data with a Pearson r when the data should be continuous. If the data fit these categories but none of these statistics is shown in the report, indicate an "M" for Missing.

If there are *more than two* variables, appropriate two-variable correlations ought to be found in the report (follow the procedures described immediately above). In addition, check the appropriate special cases listed under Chart B. Again, if these analyses are there, the report is labeled "Appropriately Analyzed"; if not, "Inappropriately Analyzed."

(C) TO SUPPORT AN INFERENCE. If the statistical analysis is undertaken for the purpose of inference, the Profiler is asked to label the independent and dependent variables in the study.

The INDEPENDENT VARIABLE is that variable which is manipulated by the researcher. The DEPENDENT VARIABLE is the variable which is expected to change *as a result* of that manipulation. Consider, for example, the hypothesis that teaching method A will produce greater achievement than teaching method B. The independent variable, the variable to be manipulated in this case, is instructional method. It has two categories, Teaching Method A and Teaching Method B. The dependent variable is achievement. That is, the level of achievement is said to be dependent upon the aspect of instructional method used in the study.

Once the variables are categorized as dependent or independent, the Profiler turns to Chart C to determine the appropriate statistic. He does this by identifying the number of dependent variables (1 or > 1), the number of independent variables (1 or > 1), and their scalor nature. Using that information he can find the appropriate row and column on

Chart C. The statistic stated within that row and column is appropriate for the analysis. If it matches with the statistic actually used by the researcher, the report is labeled "Appropriately Analyzed"; if not, it is labeled "Inappropriately Analyzed." When all the statistical procedures have been labeled the evaluation of the project has been completed and a summary profile on that study has been created.

BIBLIOGRAPHY

Campbell, D. and Stanley, J., "Experimental and Quasi-Experimental Designs for Research on Teaching," In HANDBOOK OF RESEARCH ON TEACHING. N. L. Gage Ed. Chicago: Rand McNally, 1963 p. 175-190.

Gephart, W. J., and Ingle, R. B., EDUCATIONAL RESEARCH: SELECTED READINGS. Columbus, Ohio: Charles E. Merrill Publishing Co., 1969.

Guilford, J. P., FUNDAMENTAL STATISTICS IN PSYCHOLOGY AND EDUCATION: FOURTH EDITION. New York: McGraw Hill Book Company, 1965.

Kerlinger, F. N., FOUNDATIONS OF BEHAVIORAL RESEARCH. New York: Holt, Rinehart and Winston, Inc. 1964.

McNeil, J. O., "Programed Instruction Versus Usual Classroom Procedures in Teaching Boys to Read," AMERICAN EDUCATIONAL RESEARCH JOURNAL 1:113-19; March 1964.

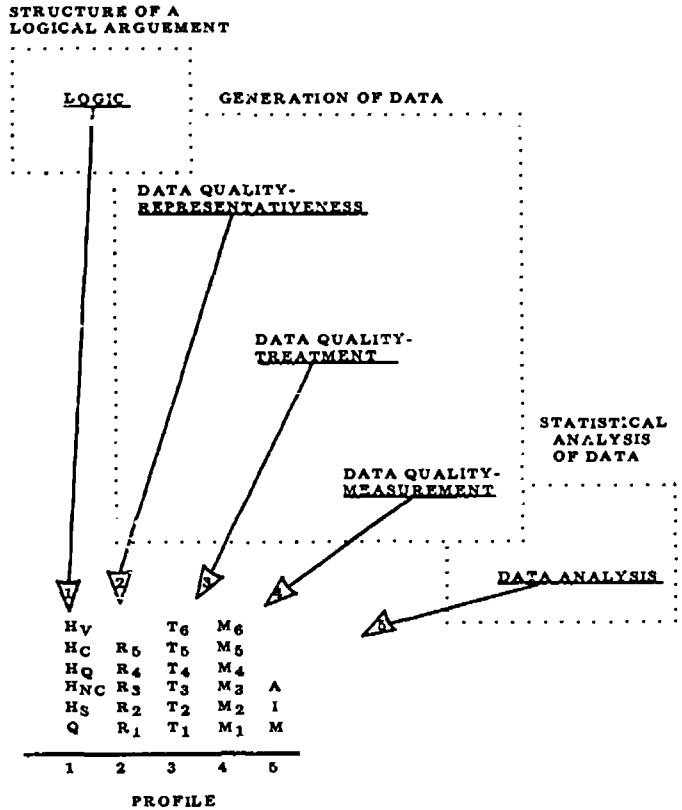
Polya, G., PATTERNS OF PLAUSIBLE INFERENCE: MATHEMATICS AND PLAUSIBLE REASONING Volume II. Princeton, New Jersey: Princeton University Press, 1954.

Ratha, J., "Plausible Logic in Educational Research" in EDUCATIONAL RESEARCH: SELECTED READINGS. (Eds.) W. J. Gephart and R. B. Ingle, Columbus, Ohio: Charles E. Merrill Publishing Co. 1969.

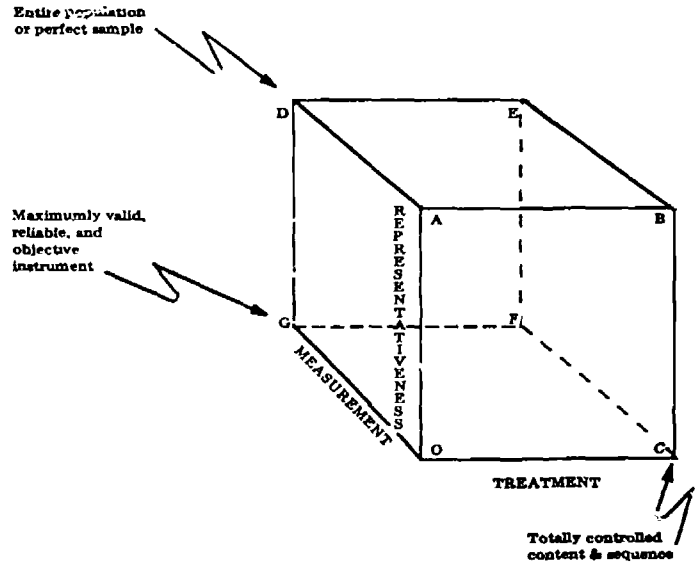
Sanders, V., MEASUREMENT AND STATISTICS. New York: Oxford University Press, 1958.

Walker, H. M., and Lev, J., STATISTICAL INFERENCE. New York: Henry Holt and Company, 1953.

FACETS OF THE RESEARCH PROCESS

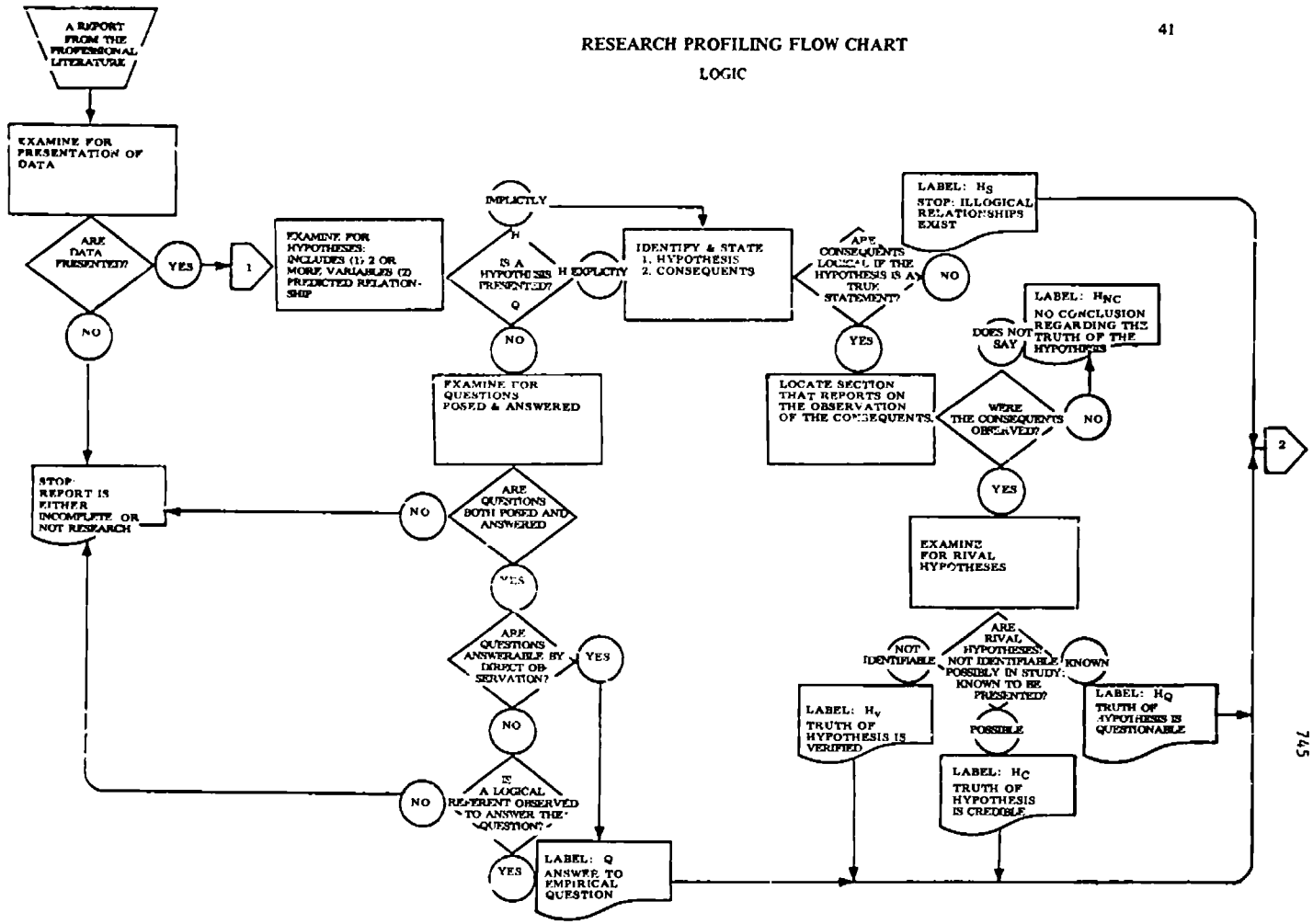


THE DATA QUALITY CUBE



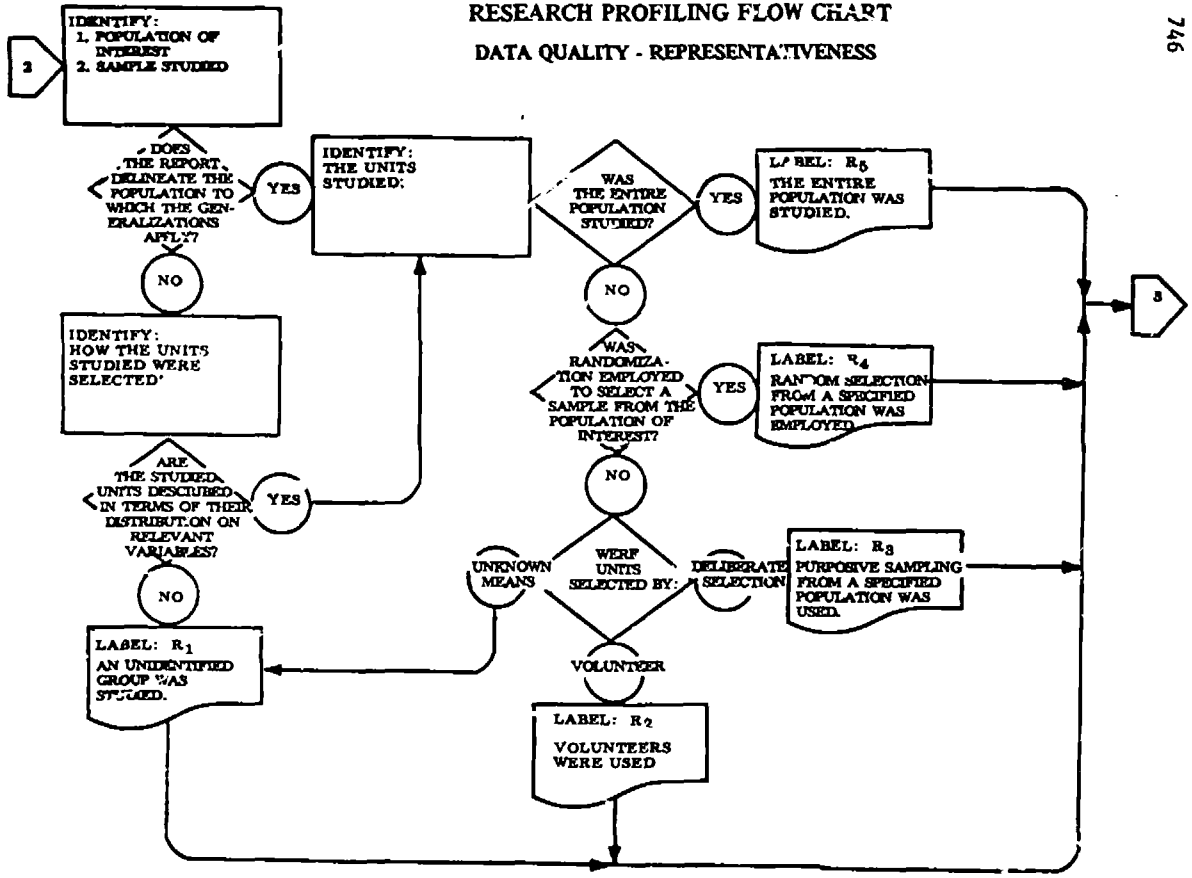
RESEARCH PROFILING FLOW CHART

LOGIC



RESEARCH PROFILING FLOW CHART

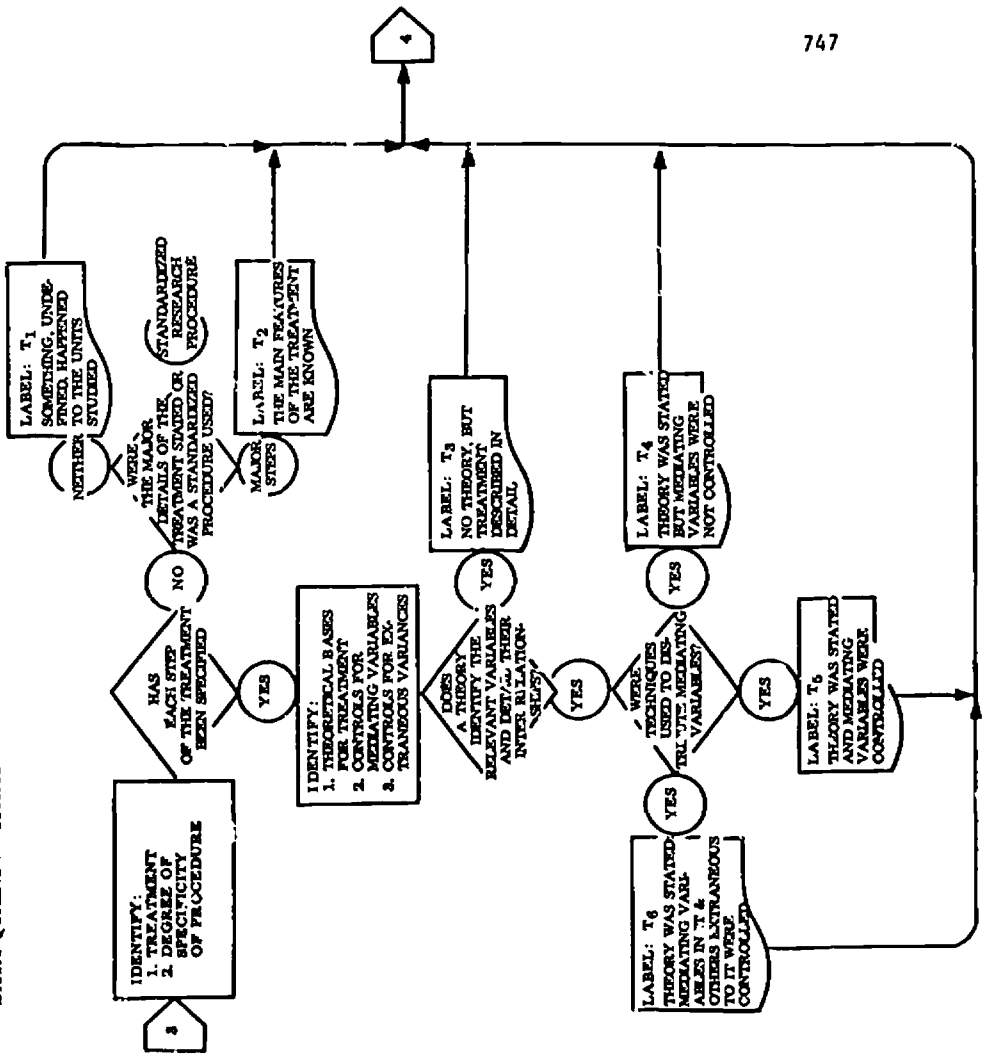
DATA QUALITY - REPRESENTATIVENESS



43

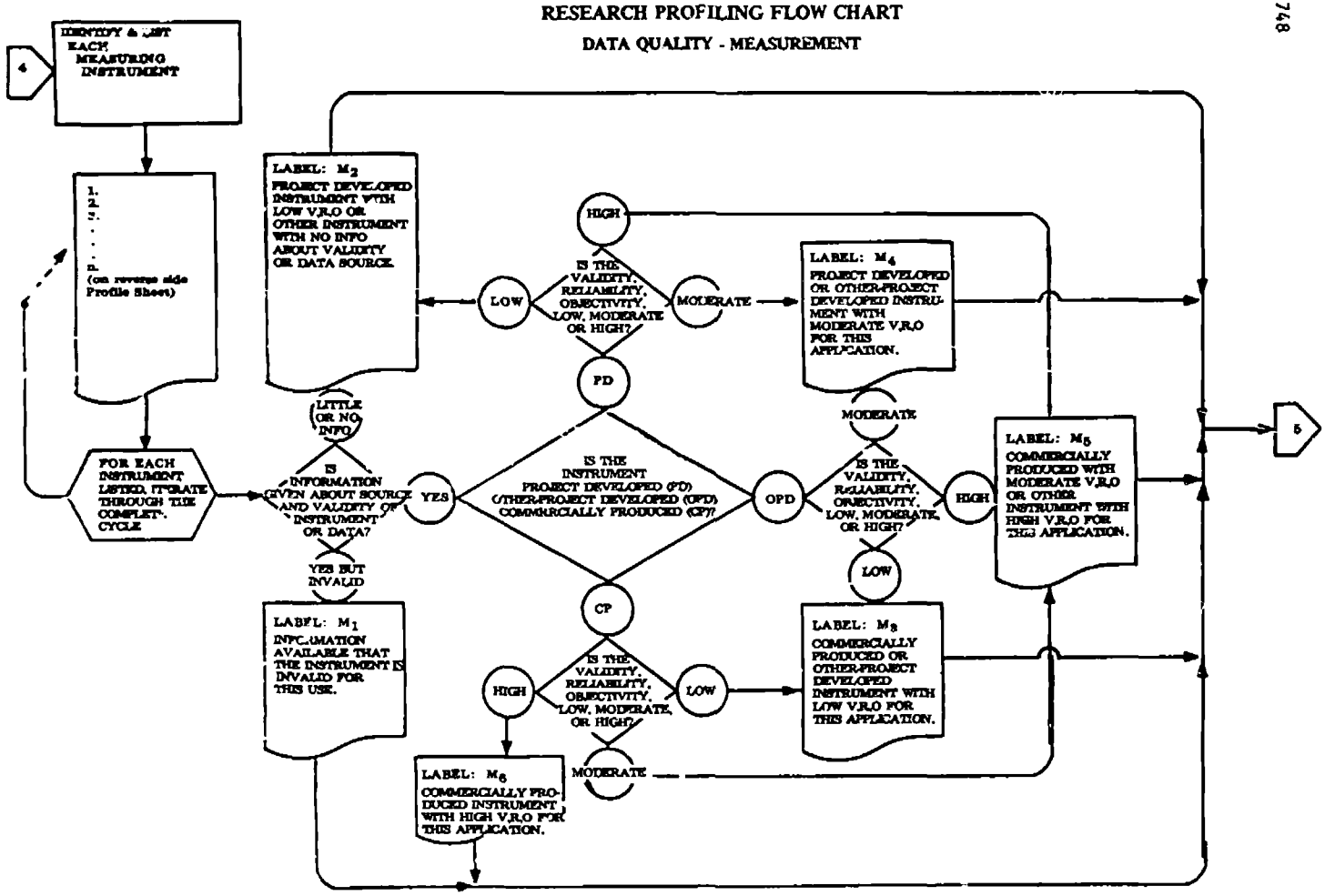
RESEARCH PROFILING FLOW CHART

DATA QUALITY - TREATMENT



RESEARCH PROFILING FLOW CHART

DATA QUALITY - MEASUREMENT



RESEARCH PROFILING FLOW CHART

ANALYSIS

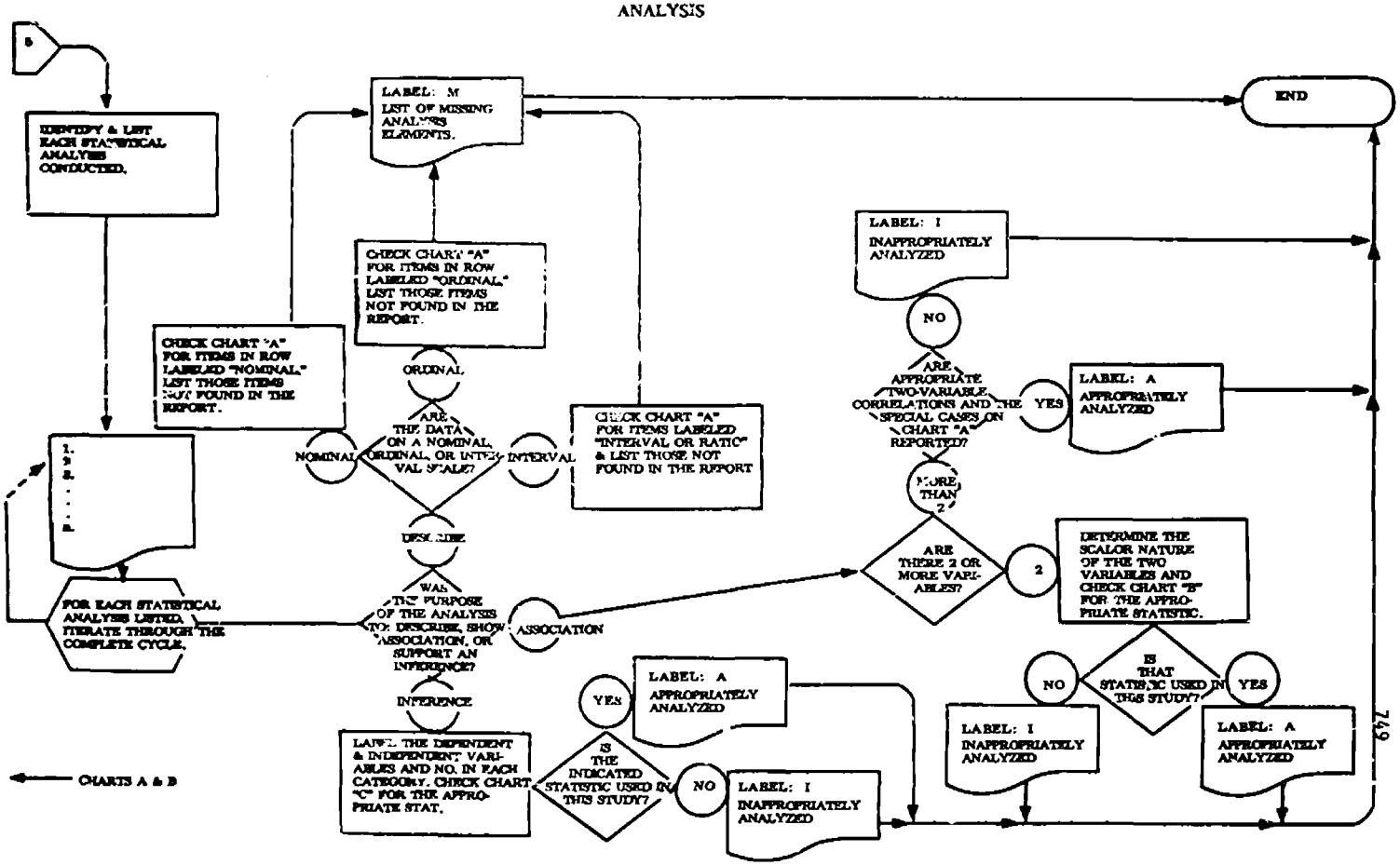


CHART A

POPULATION DESCRIPTORS

	DISTRIBUTION	CENTRAL TENDENCY	DISPERSION
NOMINAL	FREQUENCY IN EACH CATEGORY	MODE	
ORDINAL	FREQUENCY IN EACH SCALOR POSITION	MEDIAN	SEMI-INTERQUARTILE RANGE
INTERVAL/ RATIO	FREQUENCY IN EACH INTERVAL	MEAN	STANDARD DEVIATION

CHART B - MEASURES OF ASSOCIATION

VARIABLE 1*

	CONTINUOUS	FORCED DICHOTOMY	DICHOTOMY*
CONTINUOUS	PEARSON r	BISERIAL r	POINT BISERIAL r
FORCED DICHOTOMY	BISERIAL r	TETRACHORIC r	(NONE AVAILABLE USE CHI SQUARE)
DICHOTOMY	POINT BISERIAL r	NONE AVAILABLE	FOUR FOLD r OR PHI COEFFICIENT

* INTERVAL DATA

SPECIAL CASE
2 VARIABLES

RANK DATA SPEARMAN'S RHO

SPECIAL CASE
MORE THAN 2 VARIABLES

INTERVAL DATA MULTIPLE R
ORDINAL DATA KENDALL'S W
NOMINAL DATA CONTINGENCY COEFF. C

CHART C

INDEPENDENT VARIABLE(S)

DEPENDENT VARIABLE(S)

	NOMINAL 1	NOMINAL>1	ORDINAL 1	ORDINAL>1	INTERVAL 1	INTERVAL>1
NOMINAL 1	FISHER'S EXACT PROB. FOR 2x2 TABLE MC NEMAR'S TEST FOR SIGNIFICANCE OF CHANGES COCHRAN'S Q TEST FOR SEVERAL RELATED PROPORTIONS CHI-SQUARE TEST FOR INDEPENDENCE METHODS FOR MAXIMIZING PROBABILITY OF CORRECT CLASSIFICATION		SIGN TEST MEDIAN TEST MANN-WHITNEY U TEST		ANALYSIS OF VARIANCE	HOTELLING'S T MAHALANOBIS' D^2 FISHER'S DISCRIMINANT FUNCTION
NOMINAL>1			FRIEDMAN'S 2-WAY ANOVA		ANALYSIS OF VARIANCE CORRELATION FACTOR ANALYSIS MULTIPLE DISCRIMINANT ANALYSIS	RAO'S V MULTIPLE DISCRIMINANT FUNCTION
ORDINAL 1	SIGN TEST MEDIAN TEST MANN-WHITNEY U TEST KRUSKAL-WALLIS 1-WAY ANOVA KOLMOGOROV-SMIRNOV 1-SAMPLE TEST	FRIEDMAN'S 2-WAY ANOVA	INDEX OF ORDER ASSOCIATION	ANALYSIS OF VARIANCE WITH TREND ANALYSIS		
ORDINAL>1						
INTERVAL 1	ANALYSIS OF VARIANCE	INDEPENDENT t ANALYSIS OF VARIANCE ANALYSIS OF COVARIANCE	ANALYSIS OF VARIANCE		REGRESSION ANALYSIS	MULTIPLE REGRESSION ANALYSIS
INTERVAL>1	CORELATION FACTOR ANALYSIS MULTIPLE DISCRIMINANT ANALYSIS MULTIPLE REGRESSION ANALYSIS	MULTIPLE DISCRIMINANT FUNCTION			MULTIPLE REGRESSION ANALYSIS	CANONICAL CORRELATION

Most of the measures shown are located with reference to the lowest order of data that should be used with them. One should always be able to transform the observed data downward i.e. interval can be considered ordinal or nominal, ordinal can be considered nominal.

This table is an adaptation of Tatsuoka and Tiedeman's Table 1 in "Statistics As An Aspect of Scientific Method in Research on Teaching" pgs. 154-155, in HANDBOOK OF RESEARCH ON TEACHING, N. L. Gage (Ed); Rand McNally, Chicago, 1963, 1218pp.

H_V		T_6	M_6	
H_C	R_5	T_5	M_5	
H_Q	R_4	T_4	M_4	
H_{NC}	R_3	T_3	M_3	A
H_S	R_2	T_2	M_2	I
Q	R_1	T_1	M_1	M
1	2	3	4	5

RESEARCH PROFILE SHEET

REPORT TITLE: _____

_____

AUTHOR _____ SOURCE: _____

____ **STOP** The report is either not research or it is an incomplete part of the research process.

1 LOGIC

____ **Q** Answer to an Empirical Question

____ H_s Stop, illogical relationship in the test of the hypothesis.

____ H_{nc} No conclusion can be reached from this test of the hypothesis.

____ H_q Hypothesis is questionable.
(Rival hypotheses must be considered a cause of the consequents)

____ H_c Hypothesis is credible.
(Rival hypotheses may be considered a cause of the consequents)

____ H_v Hypothesis is verified.
(Rival hypotheses cannot be considered as a cause of the consequents)

2 DATA QUALITY - REPRESENTATIVENESS

____ R_1 An unidentified group of subjects was studied.

____ R_2 Volunteers were studied.

____ R_3 Purposive sampling from a specified population established the group studied.

____ R_4 Random selection from a specified population established the group studied.

____ R_5 The entire population was studied.

3 DATA QUALITY - TREATMENT

____ T_1 No theory; something undefined happened to the units studied.

____ T_2 No theory; treatment description incomplete, or detailed elsewhere.

____ T_3 No theory; treatment described in detail in the report.

____ T_4 Theory stated but no controls on variables.

____ T_5 Theory stated and mediating variables controlled.

____ T_6 Theory stated, mediating variables controlled, and techniques used to distribute possible extraneous variances.

4 DATA QUALITY - MEASUREMENT

____ M_1 Available information indicates instrument is invalid for this use.

____ M_2 Project Developed instrument with low validity (V), reliability (R), objectivity (O), or other instrument with no info about validity or data source.

____ M_3 Used Commercially Produced or Other-Project Developed instrument with low V,R,O for this application.

____ M_4 Used Project Developed instrument or Other-Project Developed instrument with moderate V, R, O for this application.

____ M_5 Used instrument which was Project Developed with high V, R, O or Other-Project developed with high V,R,O or Commercially Produced with moderate V, R, O for this application.

____ M_6 Used Commercially Produced instrument with high V, R, O for this application.

5 STATISTICAL ANALYSIS

____ A Appropriately analyzed

____ I Inappropriately analyzed

____ M Missing items - incomplete analysis

APPENDIX F

INDIVIDUALS CONTACTED REGARDING THE AVAILABILITY OF RESEARCH TRAINING MATERIALS

Aaron, Ira	University of Georgia
Abrams, Peter	Northern Illinois
Acker, R. Dean	Eastern Kentucky State College
Ackerman, Donald	Office of Research & Grants
Aleamoni, Lawrence	University of Illinois
Allender, Jerome	Miami University
Alspaugh, John	University of Missouri
Ammentorp, William M.	University of Minnesota
Anderson, Harry	University of Georgia
Anderson, James G.	New Mexico State
Anderson, H. A.	University of Colorado
Anderson, K.	University of Kansas
Anderson, R. L.	Eastern Michigan University
Angelino, Henry	University of Oklahoma
Anglin, John	University of Kentucky
Anthony, Albert	University of Massachusetts
Ashton, John P.	Catholic University
Austin, Gilbert	University of New Hampshire
Asher, William	Purdue University
Ashburn, Arnold G.	University of Southern Mississippi
Babich, Arthur	Indiana University
Blackwell, Louis	University of Alabama
Bartl, C.	University of Nevada
Bach, J. O.	Southern Illinois University
Bailey, Benjamin	West Virginia University
Ball, John M.	University of Georgia
Ball, Samuel	Columbia University
Baker, Frank	University of Wisconsin
Baker, Robert L.	Arizona State University
Barker, Donald	Texas A & M University
Barker, Harry	University of Alabama
Barnes, William	University of Arizona
Baron, R. B. D.	Oregon State
Barrenblatt, Lloyd	New York University
Bartel, Carl	Utah State Board of Vocational Education
Barth,	
Barton, Joseph	University of Miami
Bashaw, W. L.	University of Georgia
Bauernfeind, Robert	Northern Illinois University
Baumann, Peemt	University of Toledo
Beck, James	University of Wyoming
Beggs, Donald	Southern Illinois University
Bell, Norman	Michigan State University
Bergan, John	University of Arizona
Beynon, Robert	Ohio State Department of Educational Developmen
Bibb, John	University of Miami
Bjork, A. J.	University of North Dakota
Blank, Leonard	Rutgers
Blankenship, J.	Oklahoma State University
Bledsoe, Joseph	University of Georgia

Bloom, Benjamin	University of Chicago
Blumenfeld, G.	Southern Illinois University
Bock, Darrell	University of Chicago
Bondy, Warran	New York University
Braskamp, Larry	University of Nebraska
Bresnahan, Gene	Emory University
Bridges, C. M. Jr.	University of Florida
Brissy, Lee	University of Oregon
Brobst, H.	Oklahoma State University
Buddeke, Sister Rita	Catholic University
Burma, John	Grinnell College
Burnett, Calvin W.	Catholic University
Cain, G.	Southern Methodist University
Calvin, Lyle	Oregon State University
Campbell, Roald F.	University of Chicago
Carter, H. D.	University of California-Berkeley
Carter, J. E. L.	San Diego State
Chansky, N. M.	Temple University
Charters, W. W. Jr.	University of Oregon
Church, Jay	Ball State University
Clark, D. Cecil	University of Washington
Clark, Richard	SUNY at Albany
Cleary, Anne	University of Wisconsin
Cochran, Glen	University of Arkansas
Coffman, William E.	E.T.S.
Coladarci, A. P.	Stanford University
Collins, Thomas P.	Eastern Kentucky University
Collins, Arnold	University of Cincinnati
Colver, Robert M.	Duke University
Converse, Celestine	Catholic University
Conway, James	SUNY at Buffalo
Cook, Desmond	Ohio State University
Cooley, William	American Institute for Research
Cornell, Terry	University of Arizona
Corwin, Ronald	Ohio State University
Coss, Joe G.	University of South Carolina
Craig, Robert	Michigan State University
Crandell, John	Temple University
Crawford, Jack J.	Central Washington State University
Cremin, Lawrence A.	Columbia University
Cronbach, Lee J.	Stanford University
Crowley, Francis	Fordham
Curry, John F.	North Texas State University
Curtin, Wylma	Catholic University
Curtis, H. A.	Florida State University
Darcy	Fordham University
Davis, F. B.	University of Pennsylvania
Dayton, Chauncy	University of Maryland
DeBlassie, R. R.	New Mexico State
Decker, Harry	University of Wisconsin-Milwaukee
Delon, Floyd	University of Missouri
Della-Piana, Gabriel	University of Utah
Denny, Terry	Purdue University
Denzel, Harry	Southern Illinois

Dethy, Ray	Northeastern University
DiLorenzo, L. T.	New York State Edcuation Department
DiVesta, F. J.	Pennsylvania State University
Dixen, Robert	University of Michigan
Dodd, Lamar	University of Georgia
Doi, James I.	University of Michigan
Dowell, Linus	Texas A & M University
Ebel, Robert	Michigan State University
Edling, J. V.	Oregon State System of Higher Education
Egermeier, J.	Oklahoma State University
Eicher, R.	University of Wyoming
Elashoff, J.	Stanford University
Elliot, C.	University of Cincinnati
Ellis, J. R.	Northern Illinois University
Elsmere, R.	Ball State University
Englehart, Max D.	Duke Univeristy
Ennis, R. H.	Cornell Univeristy
Erickson, Harley E.	State College of Iowa
Ewens, W. P.	Oklahoma State University
Eyman, R. Merle	Southwestern Ohio Educational Research
Fallon, Berlie	Texas Tech. College
Farner, Frank	University of Oregon
Farquhar, William	Michigan State University
Farr, S. D.	SUNY at Buffalo
Feldhusen, J. C.	Purdue University
Ferguson, J. L.	University of Missouri
Findley, Warren	University of Georgia
Finn, J.	SUNY at Buffalo
Fischer, Wyman	Ball State University
Fortune, Jimmie C.	Memphis State University
Friedman, Myles I.	University of South Carolina
Frederick, F.	Oklahoma State University
Fuhr, Bernard	Miami University
Furst, E. J.	University of Arkansas
Forsythe, R.	University of Denver
Gagne, Robert M.	University of California-Berkeley
Gardner, Eric	Syracuse University
Genasci, James	Springfield College
Gerberich, J. R.	University of Maryland
Giblette, J. F.	University of Maryland
Giles, H. H.	New York University
Gill, N. T.	Eastern Kentucky State
Ginther, J. R.	University of Chicago
Glass, Gene	University of Colorado
Goetting, M. L.	Baylor University
Goldhammer, K.	Oregon State University
Gordon, Ira J.	University of Florida
Gordon, Leonard V.	SUNY at Albany
Gourevitch, V. P.	Columbia University
Gowin, D. B.	Cornell University
Graves, W. H.	Texas A & M University
Green, John	University of Idaho

Greene, James E.	University of Georgia
Gregg, Russell	University of Wisconsin
Grise, Robert N.	Eastern Kentucky University
Gronlung, N. E.	University of Illinois
Gross, Chalmer	American University
Gross, Neal	Harvard University
Gruen, William	New York University
Gunn, Eric	University of Southern Mississippi
Gupta, Naim	Ball State University
Guru, Peter	Springfield College
Hagen, Elizabeth	Columbia University
Hall, J. H.	Southern Illinois University
Hallam, K.	Towson State College
Halperin, Silas	Syracuse University
Handy, W. H.	New Mexico State University
Hanscomb, James	New York University
Hardin, Henry	Western Kentucky State University
Harrington, Charles	Ohio University
Harris, Chester	University of Wisconsin
Harshbargar, T. R.	New York University
Hartley, H. O.	Texas A & M University
Hausdorff, Henry	University of Pittsburgh
Hastings, J. T.	University of Illinois
Hayes, Ernest	University of Portland
Hayman, John L.	Auburn University
Hays, L.	Oklahoma State University
Heerman, Emil	University of Nebraska
Hill, Robert E., Jr.	Ball State University
Hills, R. Jean	University of Oregon
Hines, Vynce A.	University of Florida
Hochman, Irvin	Rockland Community College
Hockey, Robert	University of Toledo
Hoeltke, Gary	University of Kansas
Hofstetter, A. N.	West Virginia University
Holloway, H.	North Texas State University
Holz, Emil	University of Michigan
Hopkins, Kenneth	University of Colorado
Hornbostel, V.	Bowling Green State University
Houlahan, Rev. Francis	Catholic University
Howe, Trevor G.	Iowa State University
Hughes, E. J.	Oregon State University
Hughes, Herbert H.	Colorado State University
Hunt, K. W.	Florida State University
Husek, Ted	University of California-Los Angeles
Ikenberry, S.	West Virginia University
Ingle, R. B.	University of Wisconsin-Milwaukee
Irwin, Claire C.	Wayne State University
Jarrett, J. L.	University of California-Berkeley
Jarvis, Oscar T.	University of Georgia
Jaspen, Nathan	New York University
Jensen, John A.	Boston College
Jex, Frank B.	University of Utah

Johnson, Charles E.	University of Maryland
Johnson, Nancy	Macalester College
Johnson, R.	Stanford University
Johnson, Thomas J.	Washington University
Jones, W. C.	Eastern Kentucky University
Jordan, Thomas	Southern Illinois University
Kaczkowski, H. R.	University of Illinois
Kaiser, Henry	University of Wisconsin
Karabinus, R.	University of Arizona
Karas, George G.	Iowa State University
Katzenmeyer, William	University of Wisconsin
Kaya, Esin	New York University
Kaynor, Allen R.	Springfield College
Kelley, Edward	University of Idaho
Kennedy, John	University of Tennessee
Kenny, James B.	University of Georgia
Kerlinger, Fred	New York University
Klausmeier, H. J.	University of Wisconsin
Klein, Alice	Rutgers University
Klein, Charles	Miami University
Knief, Lotus	University of Arizona
Knock, Gary	Miami University
Knowlton, R. G.	Southern Illinois University
Koenker, R.	Ball State University
Kohler, Emmett	University of Georgia
Kooker, Earl	North Texas State University
Kowitz, Gerald	University of Oklahoma
Krammer, Edward	University of North Dakota
Krantz, L. L.	Ohio University
Krebs, Richard	University of Arizona
Kelley, Frances	Southern Illinois University
Lackey, G. H.	University of South Carolina
Lagomaricino, V. S.	Iowa State University
Lake	Fordham University
Lamar, Carl F.	University of Kentucky
Lambert, Nadine M.	University of California-Berkeley
Landskov, N. L.	University of Southern Mississippi
Lane, W. R.	University of Iowa
Lathrop, R.	Pennsylvania State University
Lawrence, Jordan	Catholic University
Leake, Lowell	University of Cincinnati
Lee, J. M.	Southern Illinois University
Leedy, Paul	American University
Lehman, Irvin J.	Michigan State University
Leonard	Fordham University
Lesser, Gerald S.	Harvard University
Lev, Ronald	SUNY at Albany
Lewis, Hazel M.	University of the Pacific
Lindemann, Richard	Columbia University
Lindvall, C. M.	University of Pittsburgh
Lingren, R.	University of Wisconsin-Milwaukee
Locke, L. F.	Columbia University
Lohnes, P. R.	SUNY at Buffalo

Loree, M. Ray	University of Alabama
Lovell, Lloyd	University of Oregon
Layton, Donald	University of Chicago
Langridge, D. W.	University of Maryland
MacGinitie, W. H.	Columbia University
Manis, J. G.	Western Michigan University
Madaus, G. F.	Boston College
Mandeville, Garrett	University of South Carolina
Many, Wesley	Northern Illinois University
Markarian, R. E.	Springfield College
Marascuilo, Leonard A.	University of California-Berkeley
Mayer, G. Roy	Southern Illinois University
Massey, Ben H.	Penn. State University
Massialas, B. G.	University of Michigan
Mayo, Samuel T.	Loyola University
McCandless, Boyd	Emory University
McCann, Lloyd	University of Arizona
McDaniel, Ernest	Purdue University
McGrath, J. H.	University of Utah
McKay, Richard K.	Maryland State Board of Education
McKee, Richard	Ball State University
McIntyre, Charles J.	University of Illinois
McNeil, K.	Southern Illinois University
McQuagge, Carl L.	University of Southern Mississippi
McSweeney, Mary	Michigan State University
Merson, Thomas B.	University of California-Berkeley
McLenden, Jonathone	University of Georgia
Mehrens, William	Michigan State University
Merrill, Reed M.	University of Utah
Meux, Milton O.	University of Utah
Meyer, Donald L.	Syracuse University
Miel, Dorothy	NEA
Michal, Robert	University of Kansas
Miles, Matthew B.	Columbia University
Miller, Ebert L.	Ball State University
Miller, Merle K.	Springfield College
Millman, Jason	Cornell University
Min, Kellet I.	Stanford University
Mitchel, Guy	Baylor University
Mittman, Arthur	University of Oregon
Molbert, Doris	University of Denver
Montgomery, Victor	University of Idaho
Moore, J. William	Bucknell University
Morris, Robert	SUNY at Albany
Morrison, Francis	SUNY at Albany
Moss, Jerome Jr.	University of Minnesota
Mouly, George J.	University of Miami
Munro, Jack	University of Montana
Nelson, Richard C.	Pennsylvania State University
Nelson, Howard F.	University of Minnesota
Newsome, George L.	University of Georgia
Nichols, Robert C.	National Merit scholarship Corp.
Nikoloff, Oliver	SUNY at Albany
Noble, Robert F.	University of Wyoming
Norris, Raymond	George Peabody College

Norton, Daniel P.	E.T.S.
Northern, E. E.	Memphis State University
O'Connor, H. A.	Northern Illinois University
O'Kelly, G. L.	University of Georgia
Ohnmacht, Fred	University of Geo'gia
Oliver, Donald W.	Harvard University
Olkin, I.	Stanford University
Oliensis, David	University of Wisconsin-Milwaukee
Olson, LeRoy A.	Michigan State University
Overton, W. S.	Oregon State University
Page, Ellis	University of Connecticut
Parsons, T. W.	University of California-Berkeley
Patterson, John	West Virginia University
Payne, David	Syracuse University
Peddicord, Paul	University of Southern Mississippi
Pella, Milton O.	University of Wisconsin
Peterson, R. C.	Oregon State University
Peyton, Jim	University of Kentucky
Pingry, R. E.	University of Illinois
Portor, Andrew	Michigan State University
Pratt, L. Edward	Southern Methodist University
Prediger, Dale	University of Toledo
Pruzek, Robert	SUNY at Albany
Pusey, W. W. III	Washington & Lee University
Perrodin, Alex F.	University of Georgia
Rabinowitz, William	Pennsylvania State University
Ralston, Nancy	University of Cincinnati
Raths, James D.	University of Maryland
Ray, John	University of Tennessee
Reece, Walter	University of Cincinnati
Reid, Jackson B.	University of Texas
Remstad, Robert	University of Wisconsin-Milwaukee
Reno, Wayne	University of Cincinnati
Reitz, William	Wayne State University
Richardson, C.	Southern Illinois University
Riese, Marlan	University of Montana
Ritter, Emmett	Colorado State University
Roach, Arthur J.	Texas A & M University
Roberts, Tommy L.	Oklahoma State University
Roscoe, John	Colorado State University
Rosemier, Robert	Northern Illinois University
Rosenbach, John	SUNY at Albany
Rossmiller, Richard	University of Wisconsin
Rothrock, Dayton G.	McPherson College
Rupiper, Omer	University of Oklahoma
Rusalem, Hubert	City University of New York
Rusch, Reuben	SUNY at Albany
Russell, Ivan L.	University of Kentucky
Ryan, T. Antonette	Oregon State University
Rippey, Robert M.	University of Chicago
Schaie, K. Warner	West Virginia University
Santavicca, Gene	Miami University
Sax, Gilbert	University of Washington

Scandura, Joseph M.	University of Pennsylvania
Scates, Douglas	University of Florida
Schalock, Del H.	Oregon College of Education
Schmid, John	Colorado State College
Schmitt, John A.	Boston College
Schutz, Richard E.	SWERL
Scott, Owen C.	University of Georgia
Seashore, Charles	National Training Labs
Seymour, Emery W.	Springfield College
Secord, Paul F.	University of Nevada
Shay, Clayton	Springfiled College
Shirk, Steven	Temple University
Sieber, Sam D.	Columbia University
Silvers, Catherine	SUNY at Albany
Sitgreaves, Rosedith	Columbia University
Skager, Rodney N.	University of California-Los Angeles
Skalski, John M.	Fordham University
Skipper, Charles	Miami University
Slakter, M. J.	SUNY at Bufflao
Slaichert, William	University of Denver
Sletten, Vernon	University of Montana
Sligo, Joseph	Ohio State University
Slinger, George	Miami Univeristy
Sloane, Howard N.	University of Utah
Smith, Gerald	Syracuse University
Smith, Inez	New York University
Smith, Paul F.	North Texas State University
Smith, Raymond G.	Indiana University
Smouse, Albert	Univeristy of Oklahoma
Snyder, Robert	Catholic University
Snowden, James G.	Eastern Kentucky University
Soar, Robert S.	University of Florida
Sparks, Harry	Kentucky State Department of Education
Sparks, Jack N.	Pennsylvania State University
Spencer, R. E.	University of Illinois
Stake, Robert E.	University of Illinois
Stallings, William M.	University of Illinois
Stanley, Julian	Johns Hopkins University
Statler, Charles R.	University of South Carolina
Stecklein, John E.	University of Minnesota
Stokes, Marsden	University of Arizona
Stoner, William	University of Montana
Strickland, C. G.	Baylor University
Shelley, Rex R.	Dakota Wesslyan University
Schoenfeldt, Lyle F.	American Institute for Research
Stritch, Thomas	University of Southern Mississippi
Street, Paul	University of Kentucky
Stunkard, Clayton L.	University of Maryland
Sussman, Marvin B.	Western Reserve University & Case Institute
Shulman, Lee	Michigan State University
Tatsuoka, Maurice	University of Illinois
Tate, Merle	Lehigh University
Taylor, Peter	Rutgers University
Taylor, Robert E.	Ohio State University

Tempero, Howard	University of Nebraska
Thomas, L. Fred	Northern Texas State University
Thompson, Michael	Northern Illinois University
Thorndike, Robert	Columbia University
Torrance, E. Paul	University of Georgia
Tracy, Dick B.	Ohio University
Troxel, Vernon	Oklahoma State University
Tseng, Meng-Shu	West Virginia University
Tucker, Ledyard	University of Illinois
Tuckman, Bruce	Rutgers University
Turney, William	North Texas State University
Tyler, Ralph W.	Stanford University
Theis, Ray D.	University of Wyoming
Uhl, Norman P.	Emory University
Uhlig, George	University of Wisconsin-Milwaukee
Vargas, Julie	West Virginia University
Veneza,	Fordham University
Vincent, William S.	Columbia University
Walsh, John J.	Boston College
Wasserman, Paul	University of Maryland
Watson, Fletcher G.	Harvard Univeristy
Webb, Earl	Texas A & M
Weinberg, Carl	University of California-Los Angeles
Weiss, Raymond	New York University
Weitz, Henry	Duke University
West, Charlotte	Southern Illinois University
White, Mary Alice	Columbia University
Whitfield, Ralph	American University
Wiersma, William	University of Toledo
Wiley, David	University of Chicago
Willey, Darrell S.	New Mexico State University
Williams, John D.	University of North Dakota
Williams, Kenneth	University of Miami
Williamson, John	Colorado State University
Willingham, Welborn	Texas Tech College
Wilson, A. B.	University of California-Berkeley
Wish, Myron	Columbia University
Woodward, H. B.	University of Alabama
Wyatt, W. W.	University of Tennessee
Wylie, Edward J.	Texas A & M University
Wilson, O. M.	Center for Advance Study of Behavioral Sciences
Watt, W. J.	Washington & Lee University

APPENDIX C.

ABSTRACT OF ARLISS ROADEN'S REPORTS ON RESEARCH TRAINING PRINTED IN THE CLARK-HOPKINS STUDY OF RESEARCH MANPOWER NEEDS

Arliss L. Roaden prepared Appendix G, "An Analysis of Research Training Programs," which is based on program descriptions from all directors of Title IV ESEA (Elementary and Secondary Education Act) research training programs and 340 professors of educational research. Program information adequate for analysis focused on 57 research training programs located at 47 institutions. The programs were sorted by institution and by level of study: postdoctoral, doctoral, terminal masters, undergraduate, and short term institutes. In addition, programs were studied to determine substantive specialization, research methodology, course content, and the nature of apprenticeship experiences.

American Institutes of Research and Stanford University were the only two who reported postdoctoral programs. One of these programs was for scientists already in educational research. Although the post-doctorate sharpens the research skills of experienced researchers and broadens the researcher's understanding of researchable problems it offers little promise as a program for preparation of researchers.

Reliance for the preparation of researchers in all disciplines has been traditionally given to doctoral programs. Title IV funds have extensively funded doctoral programs in education. It remains to be seen how effective these programs are for modifying persons from professional roles to research roles. Research manpower shortages may be alleviated through programs for preparing persons to improve and extend what is known about educational research methodology. With this in mind, most program directors emphasized the importance of the research assistantship experience. Research experiences (noncredit) and courses (credit) competed for the time of doctoral students. If research apprentice experiences are considered valuable, then credits for that part of the program might be given.

The doctoral research training programs will very likely increase the number of educational research personnel. It should be noted, however, that participants had already established careers in educational practice, and historically, the job of transformation to a research career has been difficult.

Six terminal Master of Arts degree programs were described. "Terminal" does not mean that participants cannot continue for the doctorate. These programs are self-contained and prepare persons for research roles without further training. Some of the research experiences listed include a research practicum each semester (15-20 hours per week), a weekly seminar, and a weekly meeting with the supervisor of field experiences. One program provided for one day per week on a research project in the local public schools and another assigned students to Educational Research Agencies for two quarters, supervised by agency staff and university faculty.

Abstracted by Lawrence Collins, Research Assistant, Phi Delta Kappa.

The six undergraduate research training programs described were all appended to teacher education programs. Roaden indicated that the undergraduate level might be the best place at which to invest funds and energy to alleviate the R, D, and D manpower shortages for these reasons: (1) some individuals would be able to fill important roles at graduation, (2) persons could enter graduate school without the usual career conflict, and (3) those who continue toward the doctorate without interruption would enter the profession at a younger age than present norms.

The most immediate way to combat manpower shortages is through short term, in-service institutes. Of the 13 institutes described, there seems to have been an overemphasis on textbook methodology, where case analyses, simulation, or practica would have been more appropriate.

In general, programs for improving and extending educational knowledge were at the postdoctoral and doctoral levels, with programs for improving educational practice at the short term, in-service institutes. The Masters' and undergraduate levels, potentially capable of satisfying both of the above objectives, were rarely used.

Although current research training efforts are not meeting the demands, and the programs are still lashed to tradition with emphasis on the methods of experimental psychology, definite efforts are being made to train researchers in education.

Appendix H, "Some Impediments in Mounting Effective Educational Research Training Programs," prepared by Arliss L. Roaden, examined four different topics: the academic and professional traditions in education, institutional and organizational arrangements for research training, characteristics of research trainers, and characteristics of research trainees. Each topic revealed the particular impediments that currently exist.

The academic and professional tradition in education have deemphasized the production of large numbers of researchers in education. Traditionally, the colleges of education have strived to prepare professional practitioners. Consequently, the preparation of educational researchers has been left to the social and behavioral science departments. Unfortunately, these sciences have not been able to successfully prepared educational researchers. Experimental psychology, for example, has not yielded necessary improvements in educational knowledge or practice. Other impediments to mounting effective educational research training programs are the undergraduate colleges of education with their single purpose of preparing teachers, and graduate schools of education, which have directed their efforts at training other educational specialists (e.g., superintendents, principals, and counselors). The traditional impediments that face the graduate schools of education in training educational researchers may be reduced to these three: (1) colleges of education have not been expected to produce their own researchers; (2) the development of educational researchers has been delegated to

the social and behavioral sciences; and (3) the selection and recruitment of persons for training has been from those already trained to be teachers.

The prospects of breaking away from these traditional impediments looks bleak. If research training programs are to be successfully launched, it will depend upon how well educational research is presented as a unique specialty. This means, in part, that university professors must extol the virtues of career patterns different from their own. They have been reluctant to do this in the past.

The institutional and organizational arrangements for research training manifest the second body of impediments to mounting effective educational research training programs. At the core of these impediments is a traditional conflict indigenous to universities, namely, the debate regarding the efficacy of basic and applied knowledge. Service to the public, for example, suggests that the university will heed the public and lose its traditional autonomy. The question of who controls the services for the public must also be considered. Furthermore, the posture of ethical neutrality demands attention. This involves a consideration of those who develop knowledge about public policy and subsequently apply knowledge to practical needs. In a word, what is the relationship between the conceptualization of knowledge and its administration? The point is this: the mission of the university is uncertain, and it is in this atmosphere that colleges of education are inaugurating programs of research and of research training.

Within the university itself, the tasks of teaching and service have traditionally taken precedence over the task of training researchers. The problem here is that the agreement as to the essentiality of apprenticeship experiences is not supported in fact by practice. Three serious impediments to a reliance on research assistantships for training researchers may be indicated: (1) gross differentiation of productive apprenticeship experiences from nonproductive experiences are rarely made; (2) colleges of education are not offering enough research to which students may be assigned as apprentices; and (3) very few students can be apprenticed to the few productive research projects available.

The academic program itself constitutes another category of impediments. The undergraduate, master's, specialist's, and doctor's programs are all broken into distinct components. There is no line of continuity leading from college entrance to the doctorate. This means that the organizational system favors the preparation of practitioners, not researchers.

One step for improving research training would be to begin research training programs at the undergraduate level apart from teacher training. Another step would be to establish MAT-type programs in educational research to attract persons from other disciplines who have a fascination for research.

One alternative for organizing colleges of education to improve research and research training would be to establish institutions for preparing researchers separate and apart from institutions for preparing other specialists. Regardless of what organizational system is finally implemented, however, it is imperative that the students in research training programs be where the research is being carried out.

There are certain characteristics of research trainers which constitute impediments to mounting effective research training programs. Recent data shows that of the total doctoral production of colleges of education, only 150 per year will become producing researchers. At present, the doctoral producing institutions are employing 600 new doctorates per year. About 300 of these doctorates are assigned to work almost exclusively with graduate students. These data indicate an increased tendency for nonresearchers to work with graduate students. This tendency is compounded by those institutions who assign faculty members with greater tenure to work with graduate students instead of assigning younger faculty members. This practice inhibits the younger faculty member from implementing his relatively fresh knowledge of research skills, for he must wait his turn.

The second impediment involves those private educational research agencies, educational laboratories, and ESEA Title I and III programs which have competed for the few educational researchers available.

Thirdly, administrative and other leadership roles have siphoned off research personnel.

A fourth impediment of significance is the age of faculty members. Laurence D. Brown's study shows the average age of 1964 doctoral graduates in education was 38.9 years, with more of them over 50 than under 30 years of age. This finding bears an influence on the quality and quantity of the doctoral graduate's later research productivity. Conflicting points of view can be cited, but in general, it seems that the younger the graduate is at the time of receiving the doctorate, the more productive his research tends to be. Therefore, the mean age of 38.9 years for education graduates does seem to constitute a major impediment to research productivity.

The characteristics of research trainees are an important item to consider if an effective educational research program is to be established. The inability to select and recruit high caliber students may serve as a serious impediment to the success of an effective research program. Strict adherence to a maximum age for entering the doctoral program would control the impediments of full time study, such as the years of experience and the probability of incurring exhorbitant financial debts.

A characteristic which needs further delineation hinges is the difference between researchers and nonresearchers. Student selection with regard to prospective researchers cannot be accomplished without it.

As can be seen from the above comments, impediments to mounting effective research training programs in education are imbedded in academic and professional traditions, institutional and organizational arrangements for research training, characteristics of research trainers, and characteristics of research trainees. The impediments contained within these areas must be obviated before effective research programs can be implemented.