The major purpose of this report is to describe the strategy utilized in the West Virginia State Department of Education to overcome barriers to educational change in an organizational setting. The first part of the report describes two interventions, disposable organization (an ad hoc institution temporarily assembled to solve specific short-term problems) and system analysis, and explains how these two interventions were implemented to bring about desirable changes in the State's school transportation system. The second part of the report, included in the appendix, is a detailed account of how system analysis applied to an ongoing State education agency program can provide useful information for decisionmakers. (Author/MLF)
STRATEGY FOR CHANGE

Prepared for the
Committee on Barriers to Educational Change
Southern States Work Conference
1972

Ernest Berty
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Foreword

The major purpose of this report is to describe the strategy utilized in the West Virginia State Department of Education to overcome "barriers to educational change" in an organizational setting. Each member state of the Southern States Work Conference was requested to include in its report the model used in planning for change. Each state is also expected to submit a progress report in January 1972 and a final report by May 1, 1972.

This report consists of two major parts. The first part describes the two interventions, namely: (1) disposable organization, and (2) system analysis, and how these two interventions were implemented to bring about desirable changes in the State's school transportation system. The second major part is included in the Appendix and is a detailed account of how system analysis applied to an ongoing state education agency program can provide useful information for decision-makers.

Ernest Berty
Office of Research
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STRATEGY FOR CHANGE

Any effort as large as the educational enterprise is difficult to change. The enterprise is structured to run as smoothly as possible, and to reject or resist anything that attempts to alter its rhythm; and, to a greater or lesser degree, those people who serve the enterprise come to identify their own survival with the customary ways of doing things. Many members of the organization tend to confuse their own security and salvation with the status quo. Thus, change is considered by many people to be very disturbing to established ways of doing things. Change is likely to be interpreted as an implied criticism of things as they are, and many members of the organization will take it personally.

The above condition strongly dictates the need to know the answer to the following question: "What kind of intervention in the traditional pattern of operation is needed to loosen up the rigidities or organizational structure and provide the fast-acting response needed to bring about desirable changes?" Intervention as used in the preceding question can be defined as an action which interferes with or reorients processes which ordinarily occur in an organization (Miles 1965).

Two promising interventions to facilitate desirable change as reported in the literature are system analysis (Furse 1968) and disposable organization (Bogue 1971). System analysis can be defined as the process of determining the parts of a system or program and the way in which these parts are related to each other and with the total system. Disposable organizations, on the other hand, are ad hoc institutions temporarily assembled to solve specific short-term problems. It can be assumed that combined together these two interventions should provide twice the impact power on the change process than if each strategy was used separately. The report included herein
will describe how the West Virginia State Department of Education did combine these two interventions relative to an attempt to bring about desirable changes in the State's School Transportation Program.

The educational management process is strongly influenced by the organizational structure under which various functions are accomplished. The traditional contemporary organizational structure characterized by line and staff relationship possesses several serious deficiencies, some of which include the lack of accounting for the impact of informal structures, discourages a "systems" view of the environment, fragmentation of job responsibility that utilizes a narrow range of the talent available, and foremost, reduces the opportunity to change by providing a hierarchial system which encourages the status quo.

What kind of organizational structures can revitalize our education management function so that it will be more responsive and more flexible to our rapidly changing scene? Bogue (1971) suggests "disposable organizations" as a prime vehicle for intervention which can loosen up the rigidities of traditional structure and provide the fast-acting response needed for desirable change. Bogue contends that disposable organizations can be effective antidotes to the bureaucracy that causes relationships in contemporary organizations to fossilize. A disposable organization in its simplest sense is an ad hoc task-force team temporarily summoned into action to focus on a problem-oriented task and dissolved as soon as it resolves its problem. Its salient feature is its temporary nature, which enables it to avoid the many ills associated with traditional bureaucracy. Thus, we can summarize disposable organizations as a tool for change by stating that they are temporary, summoned into action to deal with particular needs and are disassembled when the need is met.
Obviously, the success and influence of any disposable organization is greatly affected by its make-up or membership. A psychological strategy to consider in respect to appropriate membership is to identify and select people whose relevance is determined by the role they play. Membership might include people who will make final decisions about any changes in a particular program, people responsible for developing the program, and people who will implement the program. Membership of this nature reveals how people who are to be affected by any proposed changes will react. The importance of this strategy cannot be overemphasized for in the last analysis nothing much changes—in education or any other social enterprise—until people themselves change.

The West Virginia State Department of Education elected to pilot test the coupling of the two aforementioned interventions, namely: (1) disposable organization, and (2) system analysis, in conjunction with the agency's state-level School Transportation Program. It was assumed that any desirable changes which may result in the transportation program would confirm the effectiveness of this approach. To apply the procedure, it was necessary to develop and implement two models, one for including disposable organization in the decision-making process, and another model to guide the systematic analysis of an ongoing program within the state education agency. Since the two models are major component parts of the planning process, it was imperative that their implementation be closely integrated. This need will become apparent as the models are described.

Figure 1 graphically illustrates how the disposable organization, or ad hoc unit, operates as part of the decision-making process in the agency's planning model. The top row of box headings depicts the various planning phases and the headings in the left-hand column represents the organizational elements. The EXECUTIVE COUNCIL in the left-hand column consists of the...
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**FIGURE 1**

PLANNING MODEL USED BY THE WEST VIRGINIA DEPARTMENT OF EDUCATION
State Superintendent, the Deputy Superintendent, and the five bureau assistant superintendents. Immediately underneath the Executive Council, and shaded to amplify its existence, is the PLANNING COMMITTEE which, in turn, is the disposable or ad hoc organization component for this particular project. For this project, the next row heading, OPERATING PROGRAMS, is the State School Transportation Program. Next is the PLANNING UNIT, which is the agency's centralized planning unit and is officially called the Bureau of Planning, Research and Evaluation. It is currently staffed with six professionals and four support personnel. The arrows and circles indicate who performs what major sub function and the sequential order of their execution. Thus, a careful examination of Figure 1, especially the disposable organization which is highlighted by being shaded, illustrates the key role this ad hoc unit plays in the decision-making process. For the West Virginia project the membership of the ad hoc task force, or Planning Committee, consisted of the State School Transportation Director, several other state education agency personnel, a county superintendent, a county transportation director, and a university professor.

In retrospect the reader should note that the Planning Committee or disposable organization, whose membership consists of key representatives of people affected by any proposed changes, have an opportunity to make a direct input to the agency's legally responsible decision-makers at three pertinent points in the planning process. All of which is based upon the assumption that desirable changes cannot simply be mandated and disseminated from the top down. Now we are ready to turn our attention to probably the most rigorous and time consuming part of the problem-solving process—system analysis.

The primary purpose of system analysis is to provide information on program effectiveness to managers who must take the decisions to keep, modify, or abandon programs in operation. In this respect system analysis should
clearly show the interrelationship of various program activities to each other and to the program as a whole, and attempt to answer questions of the following nature:

1. Does the program fulfill an actual need?
2. Is it feasible to continue as designed?
3. Is its operation as efficient and effective as possible?
4. How well does it achieve its objectives?
5. Is its cost in line with that of other similar programs?
6. In the event of negative responses to any of these questions, can reasons for failure be assigned?

The effectiveness of the management or problem-solving process depends upon getting the right information, in the right form, at the right time, and getting it assimilated into the right management minds. All of which permits decisions to be made with a lower level of risk. To accomplish this, it was necessary to have a model to obtain and provide useful information and at the same time avoid overburdening the decision-makers with more information than they can use.

Figure 2, the Program Planning and Review Model, was developed to provide a practical procedure to facilitate the careful examination of the state-level school transportation program. The entire process can be referred to as educational engineering designed to provide reliable and valid information by which the management decision-making process, as illustrated in Figure 1, can be executed. Furthermore, the Program Planning and Review Model facilitated the execution of the sub-functions which Figure 1 indicates is the responsibility of the PLANNING UNIT.

A careful study of Figure 2 will enable the reader to note that the Program Planning and Review Model has two major component parts, namely:
1.0 Feasibility Study

1.1 Review Operating Goals

1.11 Adequate - Proceed to 1.2
1.12 Not Adequate - Assist Program Director in Revision Process

1.2 Description of Program

1.21 Component Description
1.22 Function Description
1.23 Flow Diagram

1.3 Assess the Information Gathered

1.31 Apply Test of Reasonableness

1.311 Input Variables
1.312 Process Variables

1.4 Report the Results

1.41 Work Accomplished
1.42 Overview of In-Depth Study

1.421 Tasks to be Executed
1.422 PERT for In-Depth Study
1.423 Comments and Recommendations

1.5 Present Report to Decisionmakers

1.51 Terminate Study
1.52 Proceed with In-Depth Study

2.0 In-Depth Study

2.1 Develop Detailed Program Description (Include Procedures Under 1.2)

2.2 Evaluate

2.21 Rationale Evaluation
2.22 Simulation Evaluation
2.23 Cost-Benefit Evaluation

2.3 Conceptualize Needed Changes

2.4 Report the Program Analysis

2.41 Terminate the Program
2.42 Implement Recommendations

2.5 Modify Program Description and Return to 2.2

FIGURE 2
PROGRAM REVIEW MODEL
1.0 - Feasibility Study, and 2.0 - In-Depth Study. The outcome of the successful completion of each of the two major parts provide the information base upon which the disposable unit, or PLANNING COMMITTEE, develops the recommendations, which are, in turn, transmitted to the official decision-making body within the agency, the EXECUTIVE COUNCIL. The results of the application of the Program Planning and Review Model are included in the Appendix.

Bibliography


SUMMARY

The West Virginia State Department of Education endeavored to combine two promising interventions to stimulate desirable changes in the State's School Transportation Program: (1) disposable organization, and (2) system analysis. The disposable organization was an ad hoc task force consisting of representatives of groups who would be most affected by proposed changes. This ad hoc task force functioned in a position that enabled them to make recommendations directly to the agency's decision-makers. This is one of the salient features of the problem-solving process. The other outstanding feature was getting the right information, in the right form, at the right time for these people to become aware of the problems associated with the transportation program. A professionally sound approach devised to provide useful information not only educates decision-makers but also facilitates a consensus being reached.

Obviously the real test of the success of any strategy of this nature are the results obtained. The agency's responsible decision-makers have decided to invest an additional sizeable amount into the State Department of Education's transportation program for fiscal year 1972. The additional funds are scheduled to be used to acquire additional personnel who will concentrate on devising and executing in-service training programs for county transportation personnel. Other changes recommended by the disposable organization are also expected to be forthcoming.

To emphasize the point that information is one of the basic elements which facilitates the management process, the reader's attention is called to the high correlation between the final recommendations of the disposable organization which immediately follow and those recommendations which ensued from the in-depth study, Appendix--Pages 10-13.
Recommendations for Improving School Transportation

The in-depth study of the transportation program was coordinated by the Planning Unit. The Planning Committee, using its own recommendations as a guide, examined each suggested area of study carefully. Analysis and cost-benefit techniques were used in arriving at a set of final recommendations to be presented to the Executive Committee. These recommendations, presented in full below, constitute the design for improving the program of the Division of School Transportation. They will be presented to the Executive Council for its action in the near future.

Revision of Publication

The handbook, West Virginia School Transportation Laws, Rules and Regulations, is currently being revised. A study of this handbook indicates that it contains pertinent state statutes and rules and regulations of the State Board of Education.

However, in a number of sections dealing with matters such as Test Questions for Operators, Preparation for Day's Run, etc., the origin and import of the section is not clear. It is recommended that the current revision reflect a clear separation between those statements that have a basis in State law, State Board of Education regulations, or opinions of the Attorney General and those which represent exemplary or recommended practices.

Study of Two Mile Limit Provision of Law

The authority granted to the county boards (18-5-13 West Virginia Code), "To provide at public expense adequate means of transportation for all children of school age who live more than two miles distant from school by the nearest available road . . . ," is exercised in many instances in a manner which is more lenient than the law itself.

However, there is little, if any, consistency within and among counties in the more lenient provision made for some children to the exclusion of others.

It is recommended that a thorough review of this law be made with a view to considering factors other than distance as the determining factor in providing service or reimbursement to students. Hazardous conditions, age of children, etc. are examples.
In-Service Training for School Bus Drivers

Three alternative school bus driver in-service education proposals were considered. The first of these would have continued the present practice of in-service involving no new expenditures. The second provided for the development at the State level of a package for in-servicing drivers. An additional staff member would have been employed to train county directors in the administration of the in-service package. Approximately $25,000 in new money would have been required to implement this program.

The third proposal, recommended by the Planning Committee, would entail the expenditure of approximately $60,000 in new funds. A brief description follows:

1. Development of In-Service Package
   (12 hr. (in-service time) X 65 hrs. (development time per one hour of in-service instruction) = 780 hrs.
   780 hrs. (total development time) X $10. per hour = $ 7,800.*

2. Drivers' Expense
   12 hrs. X 2,700 drivers = 32,400 hrs. = 108,000.
   (32,400 hrs. is equivalent to 5,400 days
   5,400 days x $20. per day (average pay)

3. Instructors' Expense (State)
   144 classes x 3 days = 432 days classes will meet
   432 class days (4 instructors) =
   108 class days per instructor
   $12,960. per instructor x 4 instructors = 51,840.*

4. Materials
   TOTALS = 5,000.

   *NEW MONEY TOTAL
   $172,640.
   $ 59,640.

University or College Affiliated Professional Growth Programs for County Transportation Directors

Concurrent with the immediate study of a professional growth program to be developed through the auspices of university and colleges, the Planning Committee recommended continued emphasis upon development and implementation of in-service education for bus drivers and county directors of transportation at the regional level. The specific university and college program for county directors of transportation is as follows:

1. Objectives of Program
   a. Provide the basic knowledge and skills required to execute the functions of County Transportation Director
Objectives of Program (cont)

b. Stimulate universities to develop pre and in-service programs which focus on this specialty

c. Encourage counties to assume some responsibility for preparing personnel in this specialty

d. Demonstrate how counties, universities, and the state education agency can work together for mutual benefit

2. Administration of Program

a. Counties select participants
b. Committee approves participants
c. University affiliated
d. Graduate credit offered

3. Qualifications

a. Credentials held
b. Position held
c. Experience

4. Length of Program

Summer, 4-6 weeks

5. Sources of Financial Assistance

a. Regular salary
b. Regular salary plus
c. SEA supported tuition plus stipend

6. Program Content

a. Balance between administrative tasks performed in practice and administrative theory, research study of administration, utilization of concepts from other fields such as business administration

b. Utilization of a variety of instructional methods such as stimulation models, field experiences, etc.

c. Program content may best be achieved by getting answers to questions of the following nature:

(1) What are the outstanding qualities of current preparation programs?
Program Content (cont)

(2) What improvements are needed?

(3) What basic direction should be established for both pre and in-service education?

(4) How can the agencies responsible for preparation cooperate more effectively?

(5) How can cooperation be established with private enterprise in the sound preparation of people in this specialty?

Maintenance and Replacement

Fleet operators of taxis and trucks contend that good maintenance programs prolong vehicle life. The criteria for bus replacement in many counties is almost entirely based on the age of the bus, ten years being the arbitrary age for replacement. It is recommended that a comprehensive standardized record system be designed to serve as a valuable source of information which can be analyzed to:

1. Provide a more realistic bus-replacement policy

2. Evaluate maintenance procedures and

3. Evaluate bus components

Bus Standards and Specifications

Transportation personnel operate under serious constraints in developing bus standards for preparing specifications. It is recommended that the following steps be taken to facilitate the development of bus standards:

1. Develop a more extensive accident investigation procedure, at least for a limited time period, to provide better information for relating the cause of accidents to bus conditions and design characteristics

2. Develop improved maintenance reporting procedures throughout the State to permit analysis of failures which are potential safety items

3. Develop inspection procedures and inspection reporting procedures to provide information which can be used in evaluating the continuing compliance of bus performance with established standards from maintenance to retirement.

Extended Studies

It is recommended that the Division of School Transportation undertake additional study of the following operational areas in order to determine
the feasibility of adopting such practices in West Virginia:

1. Routing and Scheduling

A computerized routing service should be made available to obtain better usage of buses. A start in this direction has been made in Barbour County and is being studied in McDowell County. This promising approach should continue to receive strong support.

2. Larger Transportation Units

Discernible evidence indicates that the system should be reorganized into larger operating units. A specific, detailed plan should be prepared for presentation to the Legislature. To accomplish this end it will be necessary to perform additional research on the present and future distribution of pupils, school transportation facilities, organization, and finances.

3. Centralized Purchasing

The dollar savings to the education system of a State bid-purchase plan has been well demonstrated in other states. Consideration should also be given to State purchase of bus supplies. A study should be made to determine the best purchasing plan. Large-order purchasing can create problems of storage and distribution. This should be studied also.

Increased Expenditures

In order to carry out the previously mentioned recommendations, a substantial amount of money will need to be allocated to the Division of School Transportation.

Recommendations--in the order of discussion--1, 2, 4, 5, 6 and 7 involve, for the most part, investments of staff time in program research and development. It is the recommendation of the Planning Committee that a full time staff member qualified to do research and program development be added to the existing staff.

Recommendation 3 would require a staff of four to develop, update and administer the in-service education program for drivers.

An estimated breakdown of all recommended expenditures follows:

Director of Research and Development (1 x $15,000) = $15,000.
Coordinator of In-Service Education (4 x $13,000) = 52,000.
Secretary (2 x $4,500) = 9,000.
Program Costs

Total $150,000.
APPENDIX

"PROGRAM PLANNING AND REVIEW MODEL"
PROGRAM PLANNING AND REVIEW MODEL

Region III Interstate Project
August 1971

West Virginia Department of Education
Charleston, West Virginia

Ernest Berty
Office of Research
FOREWORD

The major purpose of this paper is to report the planning project which the West Virginia State Department of Education elected to execute relative to the Region III Interstate Project on State Planning and Program Consolidation. Each state education agency was requested to select an operating program and develop a practical plan for planning which would be implemented in correlation with the program selected during the operational period of the project from January 1, 1971 through December 31, 1971. The West Virginia State Department of Education developed a "Program Planning and Review Model" which was executed in conjunction with the agency's State-Level Transportation Program. Participation in this interstate project did enable the West Virginia State Department of Education to confirm the effectiveness of the approach it elected to vindicate.
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State Transportation Program Study

An Introduction

The report included herein represents the execution of a study relative to West Virginia State Department of Education's School Transportation Program. The study was developed and conducted in conjunction with West Virginia's participation in the Region III Interstate Project on State Planning and Program Consolidation which was financially supported by the U. S. Office of Education. Each participating state education agency was requested to select an operating program and develop a practical plan for planning which would be implemented in correlation with the selected program during the operation of the Interstate Project from January 1, 1971 through December 31, 1971. A sub-division of the West Virginia State Department of Education, the Bureau of Planning, Assessment and Evaluation, was cast in the role of a catalyst for identifying and analyzing problems relative to the State Transportation Program.

With the assistance of affected and interested personnel, a Program Planning and Review Model was developed and field tested in conjunction with the transportation program (see Addendum #1). The entire process, in a sense, can be referred to as educational engineering. The implementation of the planning model was a long, involved, and tedious procedure. Nevertheless, the execution of this model, or any other approach which attempts to achieve similar ends, is a necessity if the West Virginia State Department of Education desires to become part of the "cutting edge" as education moves forward in the State.
The careful development and execution of any model of this nature is obviously influenced by an affirmative response to the following question:

Is it feasible to proceed with the planning process relative to the selected program in view of the human and financial resources currently available?

An affirmative answer to this question implies not only the resources necessary to field test the model, but also includes consideration being given to any desirable changes to the program which may emanate from objective evidence gathered during the planning process.

The work accomplished in the application of the Planning and Program Review Model consisted of the following component parts, which are the main ingredients in this written report:

a. Measurable-Management Objectives  
b. Component Description  
c. Function Description  
d. Flow Diagram  
e. Review of Literature  
f. Comments and Recommendations

Obviously, a decision was made to conduct an in-depth study which is one of the possible steps indicated in the Model. The first four (a.-d.) of the aforementioned component parts were executed to provide a comparatively rapid insight into the transportation program's overall nature and function. The execution of these four component parts facilitated the examination and evaluation of the ongoing program. The latter two component parts (e. and f.) provided a base for revealing promising alternative approaches which may be used in overcoming some of the problems identified.

**Measurable-Management Objectives**

To facilitate the evaluation of the State's level transportation program, it was considered desirable to have measurable-management objectives as a guide.
Unfortunately, very few of the SEA's current operating programs use measurable-management type objectives; thus, the management objectives used were of an ex post facto nature and were especially constructed to correspond with the current operation of the program. In order to arrive at an adequate and satisfactory group of objectives, it was necessary to proceed through four translation and expansion levels (see Addendum #2). An examination of these various levels will reveal the movement from global-type goals to more specific objectives. The whole process was carefully executed and monitored with the consultative assistance of the program director and guided by selected published documents. The twelve specific objectives in Level IV provided the base for further examination and evaluation of the program.

Component Description (See Addendum #3)

The Component Description illustrates the operation of the transportation program within the organizational pattern of the West Virginia State Department of Education. Closer scrutiny of these organizational charts will reveal that the state transportation program is currently operated under the supervision of one part-time professional person with one full-time secretary. It should also be noted here that the SEA state-level transportation program has an annual current operating expense budget of approximately $20,000.

Function Description (See Addendum #4)

The program's Function Description, for the most part, depicts the various salient activities or events which are associated with its operation.
Close scrutiny of the enumerated functions under their major and minor sub-divisions will reveal their relationship in attempting to achieve the Measurable-Management Objectives. The reader will probably note that the primary emphasis of the program functions is placed upon monitoring compliance with rules and regulations. Please consider that this is a natural result of the gravitation process when viewed in light of the extent or human and financial resources allotted to this program.

Annual Plan for Transportation Program Activities (See Addendum #5)

The Annual Plan for Transportation Program Activities is simply a flow diagram that reveals the time schedule of the numerous events associated with the program's execution. It corresponds closely with the Function Description and is intended to depict the program's annual cycle of events on a monthly basis. The reader should note that some activities or events occur monthly, some take place either only one or two months out of the year, others occur on request of the recipient, and still others have to be especially arranged and do not confirm to any specific schedule.
Review of Literature

The literature related to school transportation is saturated with advice and suggestions for the improvement of various aspects of the school transportation program. A brief cross-section of this type of literature is presented herein for the purpose of serving as a point-of-departure for further inquiry.

- School transportation costs constitute a major expenditure for many school districts.
- Close supervision by well-trained supervisors is a major factor in reducing bus transportation accidents.
- Careful screening and recruitment of competent drivers is another key factor in reducing accidents.
- Women drivers are considered dependable and constitute a large reserve pool of drivers.
- Equipment which contributes to safer and more efficient transportation includes yellow-colored buses, flashing red lights, eight-inch lettering and identification, fuel tanks on the right side, well-designed windows, fiberglas seats, and adequate braking and electrical systems.
- Internal and external speakers on buses for drivers use are also considered to be outstanding safety features.
- All districts should adopt a policy on bus routing which is strictly followed.
- "Buses to the doorstep" not only promote public support but also enhance pupil safety.
- The use of computers in scheduling bus routes contributes to more efficient and effective service.
- Purchasing chassis and body separately, having complete specifications for each, begin planning at least a year in advance, and distributing specifications to all manufacturers who have local representatives are considered good practice in the purchase of school buses.

- The practice of seeking competitive bids to rebuild older buses has reduced costs 39 to 51 percent of new replacements. The rebuilt buses are depreciated over an eight-year period.

- Aerial photographs and surveys are valuable in developing bus routes.

- Factors which reduce discipline problems on school buses include democratically-oriented drivers, when pupils view the bus ride as a pleasant experience, and when there is a greater number of secondary students aboard rather than vice versa.

- Long-range planning is the best solution for both economy and efficiency.

- Isenberg has developed a comprehensive guide for analyzing the total pupil transportation program.

- A textbook by Featherston and Culp offers numerous suggestions relating to evaluating the transportation program.

- The use of electronic instructional equipment by pupils while enroute over long routes has received a positive response from pupils, teachers, parents, and administrators.
Bibliography

School Transportation Services


Catron, Marion F. "How To Keep Transit Buses Rolling For Less: Rebuild and Depreciate" Nation's Schools 76: 46-47; December 1965.


Nation's Schools. "How To Make Buses Seen As Well As Heard", Nation's Schools 73: 85-85; February 1964.


Overview of the Transportation System

Before any attempt will be made to suggest alternative approaches for improving the existing transportation system, a brief overview of the total existing system will be provided. Up to this point, detailed information has been enumerated relative to one major segment of the transportation system, the West Virginia State Department of Education's Transportation Program. Obviously, general knowledge regarding the complete system facilitates comprehension of the Department's program and its related constraints.

The school bus fleet in the State of West Virginia consists of approximately 2700 buses. These buses annually travel more than 25-million miles in transporting over a quarter of a million pupils at a yearly operating cost of $15 million. The current organization of the school transportation system functions as 55 individual county systems under the general supervision of the School Transportation Division of the West Virginia State Department of Education.

The present transportation system may be described as basically a county controlled system operating under constraints of State regulations and heavily supported by State funds. The State Legislature establishes general pupil transportation goals and policies by legislation and imposes a financial constraint upon the system through appropriation. The State Board of Education interprets and enforces the intent of the Legislature through additional rules and regulations by establishing the responsibilities of the State Department of Education and the counties. The primary constraints also exist with regard to driver qualifications and training and, to a minor extent, bus maintenance through periodic bus inspections. Counties
have primary control over bus routing and scheduling. Counties control bus maintenance, selection of drivers and driver-training programs. Counties also determine the need for transporting children. This need may be based on safety reasons or extra-curricular transportation in addition to the normal transportation. However, some of these practices may not be covered by State reimbursement regulations. In summary, it can be stated that the State statutes which apply to pupil transportation, and the subsequent State Board of Education policies and State Department of Education program functions, permit counties to have wide latitude in the operation of their transportation system. This whole configuration of the transportation system undoubtedly contributes to its basic shortcomings, namely: duplication of effort and facilities; inefficiency, and excessive costs.
SUMMARY OF RECOMMENDATIONS FOR SYSTEM IMPROVEMENTS

Larger Transportation Units

Discernible evidence indicates that the system should be reorganized into larger operating units. A specific, detailed plan should be prepared for presentation to the Legislature. To accomplish this end it will be necessary to perform additional research on the present and future distribution of pupils, school transportation facilities, organization, and finances.

Transportation Policy

A review and possible modification of the present law and policy regarding the service offered and the reimbursement policy appear to be in order. It may be found that a redefinition of the mandatory transportation law is necessary and that factors other than mileage should be considered when determining whether transportation is necessary, such as hazardous conditions. A cursory examination of current practices will reveal a situation in which permissive policy has developed which is more lenient than the law. To make policy and law agree by changing the policy and reimbursing according to law in order to achieve a uniform State practice would certainly raise a storm of protests.

Transportation Personnel

The pupil transportation system is complex and exceeds many municipal transit systems in both number of vehicles and number of passengers. Efficient operation of the system requires the very best talent available. Too often, however, the supervision of transportation services is assigned as an additional duty to an administrator who must also fulfill some other primary
function. Even where a supervisor is assigned full time to pupil transportation, the assignment may go to one whose principal training lies in education instead of in the field of transportation management. Larger administrative units will require direction by people who are highly qualified in transportation if the greatest benefits are to be achieved.

**Centralized Purchasing**

The dollar savings to the education system of a State bid-purchase plan has been well demonstrated in other states. Consideration should also be given to State purchase of bus supplies. A study should be made to determine the best purchasing plan. Large-order purchasing can create problems of storage and distribution. This should be studied also.

**Maintenance and Replacement**

Fleet operators of taxis and trucks contend that good maintenance programs prolong vehicle life. The criteria for bus replacement is almost entirely based on the age of the bus, ten years being the arbitrary age for replacement. The design of a comprehensive record system could be a valuable source of information which can be analyzed to:

a. provide a more realistic bus-replacement policy

b. evaluate maintenance procedures and set guidelines

c. evaluate bus components.

**Bus Driver Training**

To date no large scale evaluation of the benefits of the bus training course has been undertaken. An analysis of the performance of trained versus untrained drivers should be made to evaluate the course content and its general effectiveness.
Routing and Scheduling

A computerized routing service should be made available to obtain better usage of buses. A start in this direction was made in Barbour County and is being studied in McDowell County. This promising approach should continue to receive strong support.

Bus Standards and Specifications

Transportation personnel operated under serious constraints in developing bus standards. Some basic steps which could facilitate the development of bus standards in a more systematic manner are as follows:

a. Develop a more extensive accident investigation procedure, at least for a limited time period, to provide better information for relating the cause of accidents to bus conditions and design characteristics.

b. Develop improved maintenance reporting procedures throughout the State to permit analysis of failures which are potential safety items.

c. Obtain the use of test facilities and develop test procedures to evaluate, under controlled conditions, the compliance of buses with specifications and develop a meaningful set of specifications.

d. Develop inspection procedures and inspection reporting procedures to provide information which can be used in evaluating the continuing compliance of bus performance with established standards from maintenance to retirement.
Financial Plan

The current general financial plan for the transportation system can best be depicted by the following graphic illustration:

### Sources of Funds

- General Fund
- Local Taxes

### Expenditure Items

- State Department of Education
- Reimbursement Formula
- County Board
- Purchase
- Operation and Maintenance
- Driver Salaries

West Virginia county expenditures, as a percent of current operating expense, were as follows for each of the last five years cited:

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According to the most recent figures available, West Virginia has the unfortunate distinction of ranking third highest among the states in this respect. This consequence is a set of widely disparate county transportation systems differing in the service provided and in the efficiency and economy of operations. It is recommended that any adjustment in the current financial plan should be coupled with any consideration which may be given to the aforementioned recommendations.
CONCLUSION

The total effort as reported herein and as associated with the Region III Interstate Project set out to accomplish the following:

a. develop a procedure which would facilitate the examination of the current status of the State-level school transportation program.

b. formulate various alternatives which would assist the agency's decision-makers in improving the efficiency and effectiveness of the program.

c. confirm the effectiveness of the approach which served as a model for the whole planning approach.

It can be stated without reservation that the development and application of the Program Planning and Review Model did facilitate the acquisition of a comparatively rapid insight into the transportation program's overall nature and function. The insight provided revealed that the State-level transportation program places heavy emphasis upon monitoring compliance with existing rules and regulations with a very meager investment of human and financial resources. The process also revealed the fallacy of attempting to focus on one isolated sub-system of a larger system, namely, the State-level transportation program as it relates to the total pupil transportation system. This is the primary reason that the recommendations are made relative to the total system of transportation and deliberately avoid any specific reference to the sub-system treated, the State Department of Education's transportation program. It was strongly felt that any significant consideration which may be given by the decision-makers to the suggestions regarding the total system will have more of an impact of bringing about desirable changes than if the process was reversed. This relationship is analogous to a single classroom teacher attempting to implement the desirable practice of team teaching in isolation of the rest of the school staff.
1.0 Feasibility Study

1.1 Review Operating Goals

1.11 Adequate - Proceed to 1.2
1.12 Not Adequate - Assist Program Director in Revision Process

1.2 Description of Program

1.21 Component Description
1.22 Function Description
1.23 Flow Diagram

1.3 Assess the Information Gathered

1.31 Apply Test of Reasonableness

1.311 Input Variables
1.312 Process Variables

1.4 Report the Results

1.41 Work Accomplished
1.42 Overview of In-Depth Study

1.421 Tasks to be Executed
1.422 PERT for In-Depth Study
1.423 Comments and Recommendations

1.5 Present Report to Decisionmakers

1.51 Terminate Study
1.52 Proceed with In-Depth Study

2.0 In-Depth Study

2.1 Develop Detailed Program Description (Include Procedures Under 1.2)

2.2 Evaluate

2.21 Rationale Evaluation
2.22 Simulation Evaluation
2.23 Cost-Benefit Evaluation

2.3 Conceptualize Needed Changes

2.4 Report the Program Analysis

2.41 Terminate the Program
2.42 Implement Recommendations

2.5 Modify Program Description and Return to 2.2
(1.0) Undoubtedly the first major step in any program review is to learn enough about the program to determine whether the possible benefits of the analysis are great enough to justify the anticipated investment of time and effort into the review process.

(1.1) In a program review, the initial task is to examine the operating goals. Generally, these goals will be stated in a broad global manner. Thus, technical assistance should be provided the program manager in translating these global goals into more precise, operational objectives. This will facilitate the establishment of priorities for each of the originally stated goals.

(1.2) The next procedure in this model is to develop a description of how the program is currently operating. Such a description will include: (a) a component analysis of the program, (b) a functional analysis, (c) a general flow diagram of the program's current operation. A component breakdown is usually illustrated through an organizational chart and an accompanying description. Program functions are typically shown through a chart that resembles an organizational chart but depicts functions rather than components. A flow diagram shows the program operation arranged in sequential order, proceeding logically from one operation to another.

(1.3) At this point an appraisal of the information gathered should be made. The results of this evaluation determines whether an in-depth study of the program should be conducted. If it is judged that the operational objectives are being adequately achieved as a result of applying a test of reasonableness, then, obviously, there would be
some question concerning the immediate need for any program modification. The primary focus in this appraisal will center around this question: "Is it feasible to develop strategies, procedures, and materials to achieve the operational objectives in view of the human and financial resources available?"

(1.4) The aforementioned approaches permit the analyst to acquire a comparatively rapid insight into the program's overall nature and function. Now the analyst should have an adequate base upon which he can recommend whether an in-depth study should be executed. The content of the feasibility report will consist of two major parts. Part I will review the work accomplished. Part II will attempt to describe in some detail the work to be accomplished in an in-depth study. PERT, or something similar, would be a valuable tool to use here because it presents, in graphic form, a detailed plan, a timetable, and manpower requirements for further study. Part II should also make recommendations, along with an assessment of their probable acceptability, that will be made in a further analysis; and it should indicate the gains to be expected if these recommendations were implemented. Obviously, such recommendations are very tentative. If the feasibility study permitted stating these recommendations with certainty, little need would exist for further study. The elements enumerated herein can be crucial to the decision as to whether a complete study should be conducted.

(1.5) It is recommended that the decisionmakers be presented with a written feasibility report followed by a discussion involving program personnel and other interested personnel. At this point a decision is made relative to further study.
(2.0) If a decision is made to execute an in-depth study, a detailed program description is performed. This description will simply be a refinement and expansion, if necessary, of the information gathered under the procedures in (1.2). The main purpose is to get a complete understanding of the program's operation.

(2.2) The next step is to evaluate the program operation. This evaluation would include the following:

(2.21) Rational analysis to reveal any inconsistencies and missing steps in the descriptive flow diagram, inappropriate behavior, inappropriate or ambiguous organizational structure, undesirable behavioral alternatives, inappropriate percents of people or things at various decision points, undesirable functional organization, over-staffing, etc.

(2.22) Simulation analysis in which live and/or computer simulation techniques are applied to find solutions to such problems as those mentioned in (2.21).

(2.23) Collect comparative cost-benefit statistics to determine if program is being executed in an efficient and effective manner.

(2.3) Following the evaluation it is decided whether to conceptualize changes in the program, in which the analyst modifies the descriptive statements, studies the possible effects of such changes, and then either suggests additional changes or reports on the program analysis;

-or-

(2.4) Simply report the program analysis. In either event a report of the work accomplished is made. When the report has been made, a decision is made either to terminate the activity, maintain it as it was, or proceed with the implementation of the recommended changes.
Description of the Program Review Model

Summary

In the manner just described, the analyst begins by examining the program goals, proceeds through the feasibility study, and, in those instances which it appears desirable, conducts an in-depth program study. The in-depth study includes a program description, a program evaluation, possibly some changes on re-evaluation, and a report of the work accomplished.

EB: mh
GOALS AND OBJECTIVES

STATE TRANSPORTATION PROGRAM

Level I

1. To provide educational opportunities for all children regardless of the distance they may live from an appropriate school center of the proper grade level.

2. To provide educational experiences for children beyond that which may be obtained in a classroom situation (e.g., special, co-curricular and extracurricular activities).

Level II

1. To encourage the provision of adequate service for all eligible students within a designated area in compliance with State Board of Education standards and regulations.

2. To encourage the provision of maximum safety of all students transported.

3. To encourage the efficient and effective operation of the transportation program.

4. To encourage the achievement of the best service possible from the resources available for this purpose.

Level III

1. To encourage the provision of adequate service for all eligible students within a designated area in compliance with State Board of Education standards and regulations.
   a. provide a sufficient number of buses which will facilitate system-wide service within a reasonable time limit.
   b. provide an express-type service for children living in remote areas in order to minimize the time these children spend on a school bus.
   c. provide financial compensation in lieu of school bus service to those children who cannot be efficiently and economically accommodated.

2. To encourage the provision of maximum safety of all children transported.
   a. provide for safe school buses and equipment.
b. provide for competent vehicle operators

c. eliminate unnecessary hazards along transportation routes

d. provide for adequate supervision of vehicle operators

e. provide for adequate maintenance of equipment

f. select appropriate bus stops which minimize the danger of accidents

3. To encourage efficient and effective operation of the transportation program within the resources available

a. provide for the observance of time schedules in order to eliminate inconveniences to waiting children

b. provide for a sufficient number of buses to avoid overloading and lengthy routes

c. provide for economical purchase of buses

d. maintain adequate maintenance procedures and facilities to insure minimum expenses and maximum safety in operation

e. provide for comparable cost-benefit data, such as:

   (1) administration and supervision costs

   (2) driver costs

   (3) vehicle operating costs (supplies, maintenance, insurance, etc.)

   (4) number of miles driven

   (5) cost per mile

   (6) number of pupil passengers

   (7) cost per pupil passenger-mile
Level IV

1. A sufficient number of buses will be provided to ensure that all eligible children will be transported at a bus capacity level which does not exceed ten percent of the manufacturer's Rated Capacity nor beyond the appropriate time limits cited in the Comprehensive Educational Program as indicated by an examination of county reports.

2. An express-type bus service is provided for all children who live in remote areas in order to comply with the recommended time limits as measured by an examination of each county's schedule of bus routes and stops.

3. Financial payment in lieu of school transportation, when bus transportation is not furnished, will be provided to eligible children as evidenced by their ability to qualify under state laws, and standards.

4. Safe school buses and equipment will be maintained for all children transported as demonstrated by the information included in Form STD-2, the monthly inspection reports, and the quarterly inspections performed by the Department of Public Safety.

5. All children transported will be provided competent bus operators as determined by each county's compliance with state laws and standards relative to the employment and training of bus operators.

6. All unnecessary hazards along transportation routes will have been eliminated as demonstrated by the number of parental complaints received, observations made by bus operators and supervisors, and the examination of the causes of all accidents reported.

7. Adequate supervision of bus operators will be provided as demonstrated by each county's compliance with state standards relative to preservice and in-service training, periodic proficiency and physical examinations, the number of complaints received, and other information included in the reports submitted to the State Director of Transportation.

8. County transportation personnel will have selected appropriate bus stops that minimize the danger of accidents as demonstrated by the number of complaints, official accident reports, and various spot checks executed by the State Director of Transportation.

9. Time schedules will be closely followed in order to eliminate inconveniences to waiting children as demonstrated by the number of complaints received by the State Director of Transportation.
10. New buses are purchased through competitive bidding on a regular schedule as demonstrated by compliance with state standards as revealed in the reports submitted to the State Director of Transportation.

11. Each county maintains adequate bus maintenance procedures and facilities to ensure minimum expenses as demonstrated by the existence of a regularly scheduled preventive maintenance program.

12. Each county will be encouraged to achieve the best service possible from the resources available as demonstrated in the compilation of comparable cost-benefit data in the following areas:
   a. administration and supervision costs
   b. driver costs
   c. vehicle operating costs (supplies, maintenance, insurance, etc.)
   d. number of miles driven
   e. cost per mile
   f. number of pupil passengers
   g. cost per pupil passenger-mile

EB: mh
COMPONENT DESCRIPTION

BUREAU OF SERVICES & FEDERAL PROGRAMS

- Division of Transportation
- Division of Food Services
- Division of Federal Programs
- Office of Veterans Education
- Technical Assistance Unit
- Civil Defense Education Unit

ADDENDUM #3
COMPONENT DESCRIPTION

DIVISION OF TRANSPORTATION and DRIVER EDUCATION

Transportation Program
- Director
- Secretary

Driver Education Program
- Director
- Secretary
- Two Program Specialists
- Two half-time Secretaries
A. Provide leadership in the development of a statewide comprehensive school transportation program.

1. Prepare and distribute a handbook for school bus drivers.
   a. familiarization with bus and equipment
   b. execution of emergency drills
   c. use of special warning and stop lamps
   d. how and where to make stops along roadway
   e. cooperation with other highway users
   f. entering and leaving loading zones at school plants
   g. entering or leaving garage or storage area
   h. diagnosis of mechanical difficulties
   i. procedures for post-accident and post-road failure

2. Prepare and distribute a manual for maintenance and service personnel.
   a. availability of maintenance and service publications for equipment being serviced
   b. regularly scheduled training sessions
   c. preventive and other maintenance procedures
   d. repair procedures
   e. servicing procedures
   f. inspection of vehicles and equipment
   g. procedure for completing necessary maintenance records
   h. planning and forecasting the supply of parts and other equipment

3. Provide consultative and technical assistance to county transportation personnel upon request.

4. Plan and direct the evaluation and appropriate redesign of state and county transportation operations.
5. Plan and direct inservice training programs for county transportation personnel.

6. Assist in planning workshops for passenger safety.
   a. pedestrian practices to and from the bus stop
   b. how and where to wait for the bus
   c. what to do if bus does not arrive
   d. how to enter and leave bus
   e. when and how to use emergency exits
   f. cooperation with the bus driver
   g. how to cross the highway
   h. procedures in event of an accident, road failure, or other mishap
   i. student management in securing desirable behavior

7. Assist counties in developing effective methods for controlling passengers.

8. Assist counties in the recruitment, selection, and licensing of school bus drivers.

B. Recommend and encourage the implementation of school transportation policies.

1. Prepare and distribute a manual for use of county transportation directors and administrators in implementing the State's school transportation policies.
   a. principles related to the procurement of equipment and supplies
   b. principles related to recruitment, selection, instruction, placement and supervision of school bus drivers
   c. principles in the determination of transportation areas
   d. principles in routing, establishing stops, and scheduling buses
   e. principles related to standees, length of time on bus, and supervision of passengers
Function Description (cont)

ADDENDUM #4

B. 1. (cont)

f. principles relative to non-public school students

g. principles on the use of special lighting and signaling equipment

h. principles relative to exceptional students who require special care

i. principles on the frequency and the method of evaluation

j. principles on the maintenance and inspection of equipment

k. principles relative to emergency procedures

l. principles regarding the keeping of records

m. principles relative to various means of communications

2. Require and maintain appropriate reports and records.

3. Provide assistance to counties in the development of individual county policies, rules and procedures.

a. procedures for controlling passengers

b. procedures for relating to other highway users

c. procedures for vehicle operation and maintenance

d. procedures for relating to other staff members

e. procedures for vehicle operation under emergency conditions
### ANNUAL PLAN FOR TRANSPORTATION PROGRAM ACTIVITIES

#### ADDENDUM #5

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<td>Provide Consultative and Technical Assistance to County Transportation Personnel Upon Request.</td>
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<td>Plan and Direct the Evaluation and Appropriate Redesign of State and County Transportation Operations.</td>
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<th>Plan and Direct Inservice Training Programs for County Transportation Personnel.</th>
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<td>a. School Bus Operator Preservice Training</td>
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<td>b. Annual State School Transportation Conference Clinic Type for Administrators and Maintenance Personnel</td>
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<td>c. Seven Regional School Transportation Meetings</td>
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<th>Assist in Planning Workshops for Passenger Safety.</th>
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<th>Assist Counties in Developing Effective Methods for Controlling Passengers.</th>
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<td>a. Regulations for Pupils Transported in School Buses</td>
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<th>Assist Counties in the Recruitment, Selection, and Licensing of School Bus Drivers.</th>
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<tr>
<td>a. School Transportation Personnel</td>
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<td>b. Certified List of School Bus Drivers</td>
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ANNUAL PLAN FOR TRANSPORTATION PROGRAM ACTIVITIES

**ADDENDUM #5**

Prepare and Distribute a Manual for Use of County Transportation Directors and Administrators in Implementing the State's School Transportation Policies.

- West Virginia Transportation Laws, Rules and Regulations - (booklet)
- Certified List of All Vehicles Used in Transporting Pupils
- Rules and Regulations of the State Board of School Finance for the Purchase of School Buses by County Boards of Education

Audit and Approve Items Below:

- A Check List to be Submitted by School Official with All Bids for School Bus Chassis and Bodies
- A Check List for School Bus Chassis Bidders
- Bid Invitation Required for Use in Purchasing School Bus Chassis
- Bid Offer Required for Use in Purchasing All School Bus Chassis
- Specifications of Chassis to be Delivered
- Chassis Bid Breakdown
- Bid Invitation Required for Use in Purchasing School Bus Bodies
- Bid Offer Required for Use in Purchasing All School Bus Bodies
- Body Bid Breakdown

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a. Monthly Statistical Report on Transportation


   d. Monthly Accident Report