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ABSTRACT

The verbal interaction patterns of selected teachers during a rather structured portion of the reading instruction process were explored. The objectives were (1) to determine if persons identified as above-average elementary classroom teachers of reading differ in these verbal interaction patterns from those identified as beginning teachers during the story-review phase of the Guided Reading Activity (GRA), (2) to determine if above-average elementary classroom teachers of reading have similar verbal interaction patterns, and (3) to develop a conceptual model of the verbal interaction pattern of an above-average elementary classroom teacher during the story-review section of the GRA. Teachers observed were five first-year beginning teachers of grades 3 through 6 and six experienced teachers in the same grades who had been rated as above-average in their teaching of reading skills. Analysis of the data showed no statistically significant difference between the teachers. A bibliography is included. (NH)

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PHASE OF THE GUIDED READING ACTIVITY**

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March 1970

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HEALTH, EDUCATION, AND WELFARE**

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INTRODUCTORY SECTION

Summary

This project was designed to explore the verbal interaction patterns of selected teachers during a rather structured portion of the teaching of reading process. The objectives for the project were:

1. To determine if persons who have been identified as above-average elementary classroom teachers of reading differ in their verbal interaction patterns from those identified as beginning teachers during the "story review" phase of the Guided Reading Activity.
2. To determine if above-average elementary classroom teachers of reading have similar verbal interaction patterns.
3. To develop a conceptual model of the verbal interaction pattern of an above-average elementary classroom teacher during the story review section of the GRA.

Two groups of teachers were selected. One group consisted of five first year beginning teachers of grades three through six. The other group had six experienced classroom teachers in grades three through six, who had been rated as above-average in their teaching of reading skills by their building administrators.

Each of the eleven teachers were observed three times by the same observer while they were carrying on the "story review" phase of the Guided Reading Activity. The data from the observations was collected by using a modification of the Flanders Verbal Interaction Analysis system. The original categories of Flanders were supplemented with seven additional categories related to the teaching of reading and elementary school age children.

This data was collected over a relative short period of time and before the teachers had the opportunity to get feedback on their verbal behavior from the matrices; thus attempting to prevent the teacher from changing his normal verbal interaction patterns.

The analysis of the data was performed in four phases. First, the three individual matrices for each teacher was constructed and analyzed through the use of a Fortran IV computer program. Next, the three matrices for each teacher were consolidated to make a composite matrix for each of the eleven teachers. These eleven matrices were then examined for likeness and differences. The third analysis phase was to combine the matrix for each teacher in the same group. This phase provided data in the form of two master composite matrices, one made up of five beginning teacher's matrices

and one from the six above-average teacher's matrices. These two master composite matrices were then compared. The final phase was the statistical comparison of the two master matrices using the Kolmogorov-Smirnov test for significant difference.

The analysis of the data showed there was no statistically significant difference between these two groups of teachers. An analysis of each of the 17 categories in the two master composite matrices also produced no significant differences. As a result of these findings it was not possible to proceed with the development of a conceptual model which could be used to train teachers to improve their teaching of reading skills.

The most commonly used verbal interaction pattern was the same for both groups of teachers. The following was the most common sequence of verbal interaction behavior: 40 - 9 → 9 - 9 → 22 - 9 → 9 - 22 → 9 - 2 or 9 - 3. In the verbal interaction terms this becomes: Teacher asks broad questions which allow students freedom of expression or higher thought level responses (40); then the student responds with an indepth response and continues to talk for an extended period of time exceeding three seconds in length (9-9); then another student talks without having to be prompted by the teacher; thus producing a free interchange of ideas and a student centered discussion (9-22, 22-9); then the teacher either praises the students for their responses (2) or accepts their ideas and uses them in the reading lesson.(3)

Several trends were found in the data collected. Experienced teacher's matrices had more Student Talk type behaviors and particularly in category 9, Student Initiated Talk. During the time the beginning teachers were talking, they utilized a slightly more indirect approach in the verbal behaviors. These beginning teachers also made greater use of category 4, Asking Narrow Questions, than did the experienced teachers.

When a within group analysis was made of the two groups, independent of one another, there seemed to be a wider range in the teaching styles of beginning teachers. Only one of the experienced teachers was significantly different from the other experienced teachers. This difference from the other teachers in this group was due to an increase in the amount of Teacher Talk and a decrease in Student Talk categories.

Further studies of this nature should be continued. Possible changes should be made by increasing the sample size, using a different criteria for selection and identification of above-average classroom teachers of reading such as peer nomination procedures or trend line data analysis of student achievement scores, etc., or use of theoretical conceptual models to teach with and measurement of student achievement related to the use of these conceptual models.

Introduction

This study was designed to examine the verbal interaction patterns between students and teachers during the "story review" phase of the Guided Reading Activity in grades three through six. An attempt was made to compare the verbal behavior of two types of teachers; beginning teachers and experienced teachers rated as above-average classroom reading teachers by building administrators, during this teaching activity. If a similar verbal interaction pattern related to above-average reading teachers could be identified, then a conceptual model of this behavior might be constructed and taught to other teachers either in preservice or inservice sessions.

Significance of Study and Related Research

In March of 1967, Leo Fay, President of the International Reading Association and reading authority, summarized the use of the "Basic Reading Series Approach" by stating:

"A recent estimate suggests that over 90 per cent of the elementary classrooms in the United States use a basic reading series as the foundation for their reading instruction." (Anderson, 1968)

Almost all of these basic reading series use a similar lesson plan organization. This plan usually consists of four phases:

- I. Preparation or Readiness for Reading
- II. Silent Reading
- III. Story Review, Interpretation and Oral Rereading
- IV. Follow-up, Enrichment and Extension of Skills

This organization is often referred to as the Guided or Directed Reading-Learning Activity. In this study, the term Guided Reading-Learning Activity (GRA) will be used. The major emphasis will be on Phase III, Story Review of the GRA. It is during this segment of the reading lesson that comprehension skills, critical reading skills and analysis of individual students reading problems are stressed.

The type of interaction that takes place during the "Story Review" section of the GRA is mainly verbal communication between students and their teacher. Inasmuch as this is a time of active verbal interaction; then a situation of this nature can lend itself to analysis. The Flanders Interaction Analysis system is one which fits this criteria.

For this project to have educational significance and general application, three basic assumptions are made:

- I. The Guided Reading-Learning Activity is the foundation of most basic reading series and is a system of reading instructions used in a great number of classrooms throughout the United States. (Anderson, 1968; McKee, 1966; Tinker, 1962; Heilman, 1961)

- II. Different types of teachers; superior, average, poor, indirect-direct, etc. do differ in their verbal behavior and interaction analysis. (Amidon and Giammatteo, 1965; Flanders, 1965; Furst, 1962; Fine, 1967; LaShier, 1967; Amidon and Powell, 1966; Amidon and Hough, 1967)
- III. Student achievement is related to certain types and patterns of verbal interaction behavior. (Flanders, 1964, 1965; Soar, 1968; Amidon and Hough, 1967; Amidon and Giammatteo, 1965)

Flanders (1965) showed that teachers who used an indirect teaching style produced higher achievement and better student attitude. Amidon and others (1967) has reconfirmed this assumption. Amidon and Giammatteo (1965) in their study of verbal behavior of superior elementary teachers have shown that the verbal interaction patterns of these teachers do differ substantially from those of average teachers.

Furst and Amidon (1965) carried out a study in grades one through six to determine if verbal interaction patterns differ at the various grade levels during the reading lessons. Bogeners' (1967) study on VIA showed there was a difference in verbal patterns between seven independent approaches used to teach reading; grouping, individualized, etc. Morrison's (1968) study examined three approaches to reading using the Revised Observer Schedule and found that the "same test for every pupil" was associated with a decrease in student-teacher interaction while multi-level and enrichment classroom reading approaches increase positive verbal patterns between teachers and students.

A. Sterl Artley (1969) in a recent article on improvement of reading instruction states: "...to improve pupil achievement in reading one should look first at the teacher and his training." He further states:

"It is not until we have seen the results of teacher characteristics or interaction, or behavior, or whatever, on pupil development that we will have something that we can use in teacher education."

A number of other educators have also indicated the need for concentrating on the "teacher" in reading, rather than the method of reading. Some of these comments are:

"Recent research has amply demonstrated that the difference among teachers are far more important than differences among methods and materials in influencing the reading achievement of children." Albert Harris (1969)

"...teacher is far more important than the method. It is recommended, therefore, that in-service workshops and expert consultive help be provided for all teachers and especially for those with minimal experience." Harris and Morrison (1969)

"The thing that the study probably illustrates more clearly is that the influence of the teacher is greater than that of a particular method, a certain variety of materials, or a specific plan of organization. Given a good teacher other factors in teaching reading tend to pale insignificance."
W. S. Ramsey (1962)

"With regards to reading methods and material... no one approach is so distinctly better in all situations... To improve reading instruction, it is necessary to train better teachers of reading rather than to expect a panacea in the form of materials." Bond and Dykstra (1967)

Hypotheses/Objectives

The objectives of this project are:

1. To determine if persons who have been identified as above-average elementary classroom teachers of reading differ in their verbal interaction patterns from those identified as beginning teachers during the story review phase of the Guided Reading Activity.
2. To determine if above-average elementary classroom teachers of reading have similar verbal interaction patterns.
3. To develop a conceptual model of the verbal interaction pattern of an above-average elementary classroom teacher during the story review section of the GRA.

Essentially, the primary purpose of this study is to construct this conceptual model. If there is a significant difference in the verbal interaction of these two types of teachers and if there is a common reoccurring verbal pattern in the superior reading teachers, then it should be possible to develop this conceptual model.

In light of what Flanders, Amidon and others are saying about changes in the teaching techniques of individuals with awareness of and/or training in the verbal interaction analysis system, then it should be realistic to think that once a conceptual model of a superior teaching technique has been identified, then teachers can be trained to duplicate this model in their classroom reading activity. Through pre-service or in-service education, a teacher could learn factors and phases of this model and incorporate them in their own teaching. This teaching style should then in turn result in greater student reading achievement and attitude.

Methods

Subjects

The subjects were eleven classroom teachers in grades 3 through 6 in the Shawnee Mission Public Schools. Of the eleven teachers, 6 were above-average, experienced teachers and 5 were beginning teachers. Display 1 indicates the grade level taught and sex breakdown of the eleven teachers.

DISPLAY 1

SAMPLE DESCRIPTION

| | <u>Beginning</u> | <u>Experienced</u> |
|---------|------------------|---------------------|
| Grade 3 | 3 Females | 2 Females |
| Grade 4 | 1 Female | 1 Female |
| Grade 6 | 1 Male | 1 Male 2 Females |

The selection of subjects for the study was made jointly by the elementary school principals and the project investigator. Beginning teachers were those just graduated from universities and in their first semester of teaching experience. The experienced teachers group was selected on the basis of principal recommendation. The principals were given the following definition of an above-average classroom reading teacher to guide their recommendations for participants:

- a. identifies well with her students
- b. organizes her classroom environment to provide for individual differences in her students
- c. is concerned with the reading progress of each of her students
- d. attempts to make reading meaningful
- e. is flexible in her teaching techniques
- f. demonstrates in practice and discussion above-average knowledge of child psychology, learning theories, and the teaching of reading

The eleven teachers were located in six different elementary schools. None of the experienced teachers observed were teaching in buildings where beginning teachers were observed.

For the remainder of this project report, these above-average classroom reading teachers will be referred to as "experienced teachers."

Data Collection Procedures

Each teacher was observed three separate times. The observations varied in length of time between 8 minutes to 46 minutes, with the

average length of observation being 22 minutes.

Each observation was made during the same type of teaching activity, the "story review" phase of the Guided Reading Activity. The "story review" phase is that activity which consists of the discussion of a story that has been read either silently or orally.

All observations for any one teacher were made with a period of three consecutive weeks. The investigator did not discuss the results of the data collected during these observations until all three observations had been made.

The teachers were asked to schedule observations during a time when they would be working with students who were not extremely different readers. This request eliminated groups of children who were extremely high or extremely low in their reading performance and achievement. The size of these groups varied from 5 students to 24 students, with the average group size being 10 students.

A modification of the Flanders Verbal Interaction Analysis system was used to collect the data on student-teacher interaction during the observations. The modifications to the original system were developed as the result of actual classroom feedback experience. The first change was to separate category 10, silence and confusion into two categories. After the original Flanders had been used in an interview situation with teachers, it was found that when this category appeared, it was felt by the teachers to indicate confusion. As the number of interviews increased, the emotional tone towards category 10 became more prevalent. To reduce this emotional stress, it was decided to separate these two categories and thus category 33 is used to indicate silence and category 44 indicates confusion. Another modification was a result of the desire to show some form of student independence in a discussion situation. If in a discussion, the students interacted without the aid of the teacher directing them, the original Flanders would only show a series of 9-10-9's or 8-10-8's. To allow the observer to show this student change of speakers and not confuse the recorded 10's as silence or confusion, another category was added; category 22, entitled "Student Interchange". On the other end of the spectrum for this type of activity, class discussions, where the teacher has to direct the students to talk by calling on them by name, another category was added; indicated by the number 11, entitled "Student Name". This classification is often referred to as the "gate keeper" function of the teacher, where her only verbal interaction is simply to call the student's name and the student must respond to the previously stated direction, question or other student response.

This modified instrument was used during the fall of 1968 to observe the teaching of reading in grades 1 through 6. During this time it was discovered that several categories were being relied on quite heavily by the teachers during the Guided Reading Activity. The teachers were asking questions (category 4), giving directions (category 6), accepting and rejecting student response (categories 2, 3 and 7), and having the students reading aloud (category 8).

It was decided to expand some of these categories to get a more in-depth analysis of the reading lesson.

To expand category 4, "Asking Questions", Amidon's (1967) modification using Cognitive Memory, Convergent, Divergent and Evaluative questions was field tested. This system was found to be too definitive and cumbersome to use for the elementary grade classrooms. Amidon and Hunter's (1966) VICS system was tried out in the classroom. From this system the Narrow and Broad Questions categories were incorporated into the modification.

When giving directions, the teachers used basically two types. One type allowed the student to read something that held specific meaning for him, something of a personal nature; such as "Read the part you liked best, is the funniest, etc." The other type required the students to find a very definite answer or phrase similar to the cognitive memory question responses. These two categories were consequently separated into category 60, "Giving Nonrestrictive Directions" and category 6, "Giving Restrictive Directions".

Another modification was to add to category 7, "Criticizing or Justifying Authority", another category 70, "Corrective Feedback", to show whenever the teacher corrects or rejects a student's response.

The last modification was to add a third category to Student Talk. This category was to show when a student was reading orally, category 80, "Oral Reading by Student".

The procedures for using the Verbal Interaction Analysis system was basically the same as described in Amidon and Flanders (1963) manual The Role of the Teacher in the Classroom. See Display 2 for the Summary of Categories for Verbal Interaction Analysis.

DISPLAY 2

SUMMARY OF CATEGORIES FOR VERBAL INTERACTION ANALYSIS

11. Gate-Keeper: teacher directs a student to response by calling student's name, no other words are spoken by the teacher, students must make reference back to previous question, task or discussion.
1. Accepts Feeling: accepts and clarifies the feeling tone of the student in a nonthreatening manner. Feelings may be positive or negative. Predicting or recalling feelings is included.
2. Praises or Encourages: praises or encourages student action or behavior. Jokes that release tension, but not at the expense of another individual; nodding head, or saying

"um hum" or "go on" are included.

3. Accepts Or Uses Ideas of Students: clarifying, building, or developing ideas suggested by a student. As teacher brings more of his own ideas into play, use 5's.
4. Asks Narrow Questions: asking a question about content or procedure with the intent that a student answer. If the general nature of the response can be predicted, such as drill questions or questions requiring one word, or yes or no answers.
40. Asks Broad Questions: asking relatively open-ended type questions, thought-provoking or ones requiring expressions of opinions or feelings; usually will be followed by long answers.
5. Lecturing: giving facts or opinions about content or procedures; expressing his own ideas, asking rhetorical questions.
6. Giving Restrictive Directions: directions, commands, or orders which a student is expected to comply and is followed by a specific predictable student behavior. example:
Read me the part of the story which tells what color the dog was.
60. Giving Nonrestrictive Directions: directions, commands or orders which a student is expected to comply with, but of a nature where the student has a choice, particularly in oral rereading situation where the teacher directs the student to read a section of the story which holds special interest to the individual. Example: Read me the part of the story you liked best or was the funniest to you.
7. Criticizing or Justifying Authority: statements intended to change student behavior from nonacceptable to acceptable pattern; bawling someone out; stating why the teacher is doing what he is doing; extreme self-reference.
70. Correcting a Student's Wrong Verbal Response: that is the wrong answer
8. Student Talk-Response: talk by students in response to teacher. Teacher initiates the contact or solicits student statement.
80. Oral Reading by a Student:
9. Student Talk-Initiation: talk by students, which they initiate. If "calling on" is only to indicate who may talk next, observer must decide whether student wanted to talk. If he did, use this category.

22. Student Interchange: one pupil responds to another student, statements between students which are not solicited.
 33. Silence: pauses, short periods of no verbal interaction.
 44. Confusion: periods of confusion when communication cannot be understood
-

Treatment of Data

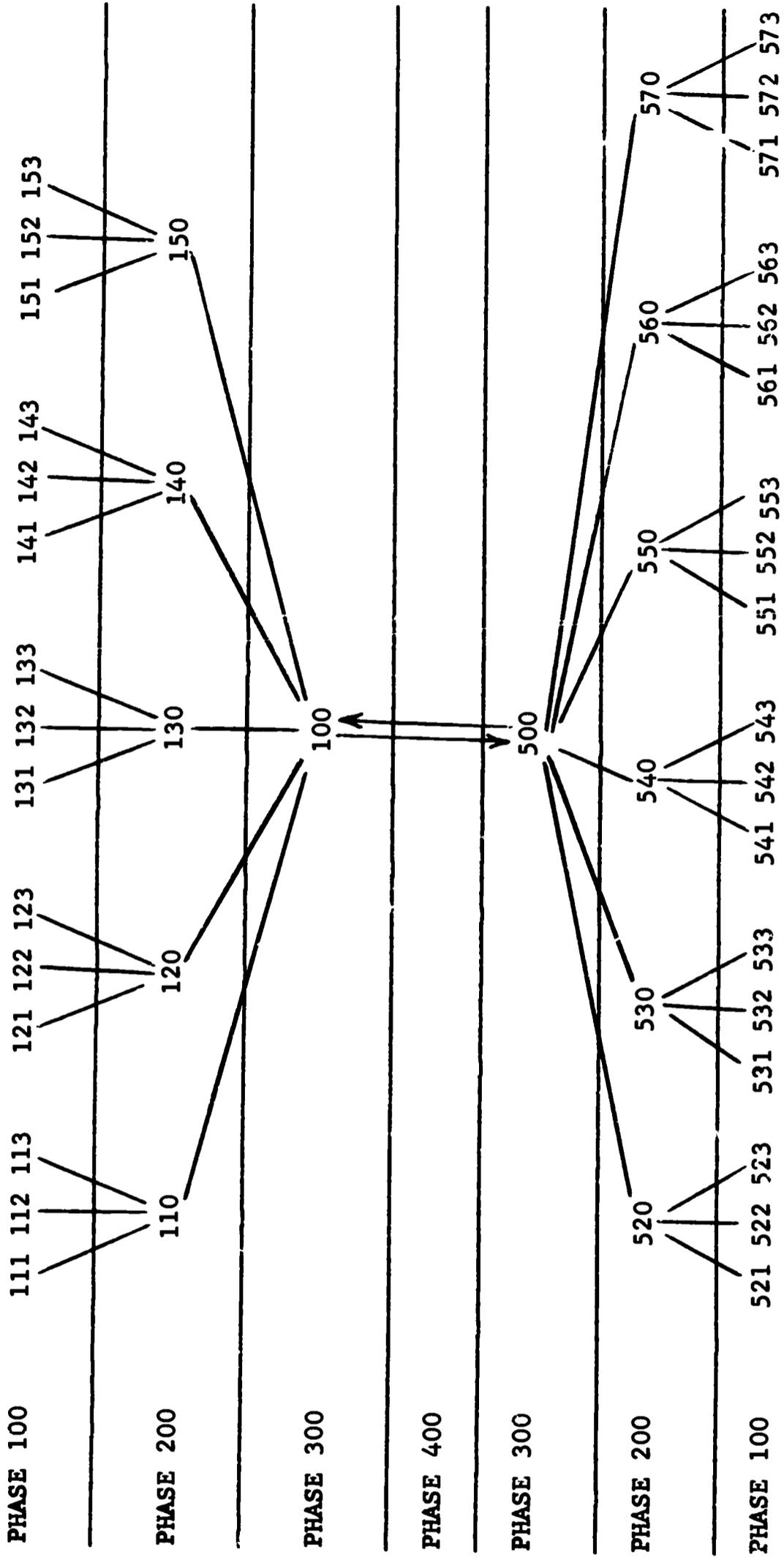
One of the problems in using a verbal interaction analysis system was the combining of the data into a form to make comparisons. At least one tally was made every three seconds during the period of observation, and these tallies must be built into a matrix before data analysis can occur. Building the matrices is a time consuming process and for this study 33 individual matrices had to be developed. In addition eleven composite matrices were built from the 33 and 2 master composite matrices were developed from the eleven composite matrices. To facilitate the handling of this data, a Fortran IV program was written to build matrices and do some of the other data analysis. See Appendix A for Fortran IV program. The data was transferred from the observer's string tally form to a form used by keypunch operators to prepare the IBM punched cards. This data was then fed into an IBM 360/40 computer system for data analysis.

To facilitate the handling of the data for the various teachers involved a teacher coding system was devised. This system assigned a three digit number to each teacher and each observation. Beginning teachers were assigned 100 series numbers, experienced teachers were assigned 500 series numbers. The five beginning teachers' numbers were 110, 120, 130, 140 and 150. The six experienced teachers' numbers were 520, 530, 540, 550, 560 and 570. The third digit in each number was used to denote the sequence of observation. In a typical code number, such as 562, the first digit (5) indicates it is an experienced teacher, the second digit (6) indicates a particular teacher, and the third digit (2) indicates it was the second observation for that teacher.

The data analysis was organized to be carried out in 4 phases. Phase 100 was the building of matrices and data analysis for the 33 separate observations. Phase 200 was the first compiling phase when the three observations for each teacher were developed into a composite matrix for each teacher. Phase 300 was the second compiling stage when all of the beginning teachers matrices were combined to form one master composite matrix and all the experienced teachers matrices were combined to form another master composite matrix. These two master composite matrices, one for beginning teachers and one for experienced teachers, were then compared statistically in the final phase, Phase 400. A graphic illustration of these phases of analysis is presented in Display 3.

DISPLAY 3

DATA ANALYSIS PHASES



The data is analyzed primarily in two forms: ratio, such as I.D. ratios, revised I.D. ratios, S/T ratios, etc.; and percentages, such as percentages in column category total, percentage for individual cells in the matrices or total percentage for extended indirect behavior, etc. These various segments of data are assigned a variable number to simplify the handling and analysis of the data. A complete listing of the variables and their numbers are given in Appendix B.

A procedure suggested by Simon (1966) in producing group data from individual data was used to develop composite matrices. This procedure produces an Average Group Matrix by adding the percentages in each cell, column and row of the individual teachers matrix and dividing each sum by the number of teachers in the group. This program was used in Analysis Phase 200 to 300 to build composite matrices. A modification of this plan was used to move from Phase 100 to 200. To arrive at these composite matrices, the percentages of the three observations for each separate teacher were added and then divided by three to get an averaged matrix or composite matrix. This program gives an average score for each variable to be compared. Thus the averaged group matrix of the two groups of subjects, beginning teachers and experienced teachers, can easily be inspected for differences.

Display 4 presents the scheme for analyzing the data by variable numbers and phases.

The Kolmogorov-Smirnov test was used to test for significant differences between teachers and groups of teachers. (Guilford 1965)

DISPLAY 4

ANALYSIS SCHEME

| ANALYSIS VARIABLES | PHASE | | | |
|--------------------|-------|-----|-----|-----|
| | 100 | 200 | 300 | 400 |
| 1 | X | X | X | |
| 2 | X | X | X | |
| 3 | X | X | X | |
| 4 | X | X | X | |
| 5 | X | X | X | |
| 6 | X | X | X | |
| 7 | X | X | X | |
| 8 | X | X | X | |
| 9 | X | X | X | |
| 10 | X | X | X | |
| 11 | X | X | X | |
| 12 | X | X | X | |
| 13 | X | X | X | |
| 14 | X | X | X | |
| 15 | X | X | X | |
| 16 | X | X | X | |

| ANALYSIS VARIABLES | PHASE | | | |
|--------------------|-------|-----|-----|-----|
| | 100 | 200 | 300 | 400 |
| 17 | X | X | X | |
| 18 | X | X | X | |
| 19 | X | X | X | |
| 20 | X | X | X | |
| 21 | X | X | X | |
| 22 | X | X | X | |
| 23 | | X | X | |
| 24 | | X | X | |
| 25 | | X | X | |
| 26 | | X | X | |
| 27 | | X | X | |
| 28 | | X | X | |
| 29 | | X | X | |
| 30 | | X | X | |
| 31 | | X | X | |
| 32 | | X | X | |
| 33 | X | X | X | |
| 34 | | X | X | |
| 35 | | X | X | |
| 36 | | X | X | |
| 37 | | X | X | |
| 38 | | X | X | |
| 39 | | X | X | |
| 40 | X | X | X | |
| 41 | | X | X | |
| 42 | | X | X | |
| 43 | | X | | |
| 44 | X | X | X | |
| 45 | | | | X |
| 46 | | | | X |
| 60 | X | X | X | |
| 70 | X | X | X | |
| 80 | X | X | X | |

The following is a summary of the data analysis as it is related to the project objectives:

Project

Objective 2

Phase 100. Construct individual percentage matrices for each observation session. A percent matrix has the percentage of time spent in that activity for each cell instead of the raw tallies in each cell: (33 Matrices)

1. To be used in the post interview situation with the teachers.
2. To be used for identifying common patterns for each teacher.

Phase 200 and 400. Construct composite percentage matrices of the three observations for each teacher: (11 Matrices)

Project
Objective 2

1. To identify differences in verbal interaction patterns between above-average and beginning teachers. This examination would be of the "between and within" group nature. The Kolmogorov-Smirnov test will be used for this analysis.

Project
Objectives 1 and 3

2. A Mann Whitney U will be computed for each of the 17 categories to test for significant differences between the two groups of teachers. This information will help in determining major category differences between the above-average and beginning teacher. It will guide in the selection of cells and categories for the conceptual model development.

Project
Objective 3

Phase 300 and 400. Construct a composite percentage matrix for the above-average teachers and a composite percentage matrix for the beginning teachers: (2 Matrices)

1. To test for significant differences between the two groups of teachers, the Kolmogorov-Smirnov test will be used.

FINDINGS AND ANALYSIS

Analysis of Master Composite Matrices

In Analysis Phase 400, the two master composite matrices were compared by using the Kolmogorov-Smirnov Test of Goodness of Fit. The cumulative distribution of the 17 categories of the beginning teachers (Teachers Code 100) was compared with those of the experienced teachers (Teacher Code 500). The K-S test D value for these two groups was .0838. When substituted in the Chi square estimate formula

$$\chi^2 = 4D^2 \frac{N_1 N_2}{N_1 + N_2} \quad \text{the } \chi^2 \text{ was}$$

equal to 1.4044. This value was not significant. The data for this study indicates there was not a significant difference between the verbal interaction patterns of above-average teachers of reading and beginning classroom teachers. Due to this lack of significant difference no attempt was made to develop a conceptual model.

Display 5 shows the master composite percentage matrix for the six experienced teachers. Display 6 shows the master composite percentage matrix for the five beginning teachers. Display 7 gives a column breakdown between the two groups and the difference in percentage points.

An examination of the column totals for the two groups indicates that in only three categories are there differences of greater than 3 percentage points. The three categories that do differ are:

- A. Category 4 - Teacher Asking Narrow Questions
In this category the beginning teachers asked more narrow questions. There was 3.74% points between the two groups.
- B. Category 9 - Student Initiated Talk
In this category the experienced teachers provided the students with more of the opportunities to express their own ideas. Between the two groups there was only 5.83% points difference.
- C. Category 8 - Student Talk-Response
The beginning teachers had students responding in this form more often. A difference of 3.17% points.

The individual cells are compared in the two composite matrices in Display 8. Each cell was ranked as to frequency of occurrence. As seen in Display 8 in the ranking of the top 10 cells for each group of teachers; in the first 9 rank positions the same cells appear in both groups. These 9 cells are not in the same sequence for both groups but they all appear. It is only at the tenth rank position that a different cell appears on one list that does not appear on the other list. These top ten cells constitute 52.40% of all of the tallies of the beginning teachers and 56.93% of the tallies of the experienced.

DISPLAY 5

COMPOSITE MATRIX OF THE SIX EXPERIENCED TEACHERS*

| Cat. | 11 | 1 | 2 | 3 | 4 | 40 | 5 | 6 | 60 | 7 | 70 | 8 | 80 | 9 | 22 | 33 | 44 |
|-------|------|------|------|------|------|------|------|------|-----|-----|------|------|-------|-------|------|------|-----|
| 11 | | | | | | | .02 | | | .01 | | .18 | .08 | 1.63 | | .06 | |
| 1 | .01 | .02 | .02 | .02 | .03 | .02 | .05 | .01 | .01 | | | .04 | .02 | .03 | | | |
| 2 | .27 | .07 | .33 | 1.40 | .97 | .88 | .50 | .04 | | | | .07 | .05 | .91 | | .07 | |
| 3 | .23 | .02 | .60 | .60 | .35 | .63 | .59 | .06 | | | | | | .71 | | .01 | |
| 4 | .01 | | | .54 | .04 | .04 | .11 | .07 | | | 6.01 | .04 | .21 | | | .09 | |
| 40 | | .04 | .17 | 1.49 | .22 | .05 | .01 | .01 | .01 | .01 | .41 | .01 | .01 | 4.60 | | .09 | |
| 5 | .13 | .08 | .13 | .76 | 3.88 | .65 | .06 | | .03 | | .02 | .08 | 1.36 | | | .09 | |
| 6 | .02 | .02 | .27 | .15 | .22 | 1.47 | | | | | .18 | .64 | .60 | | .48 | | |
| 60 | .01 | | | .01 | .01 | .01 | .11 | | | | .02 | .05 | .03 | | .04 | | |
| 7 | | | .11 | .02 | .05 | .05 | .01 | .20 | | | .01 | .02 | .14 | | .01 | | |
| 70 | .08 | | .16 | .10 | .01 | .03 | .01 | | .03 | .03 | .07 | .11 | | | .01 | | |
| 8 | .21 | 2.72 | .28 | 1.21 | .44 | .33 | .37 | .02 | .02 | .20 | .93 | 1.20 | .22 | .51 | .07 | | |
| 80 | .02 | .29 | .04 | .17 | .10 | .14 | .23 | | .11 | .08 | 5.62 | .21 | .01 | .01 | | | |
| 9 | .54 | .20 | 2.51 | 1.81 | 1.39 | 1.94 | 1.68 | .53 | .03 | .23 | .32 | .21 | 21.29 | 3.74 | .20 | .04 | |
| 22 | | | | | | | | | | | .10 | | 4.15 | | | | |
| 33 | .08 | .02 | .02 | .36 | .11 | .24 | .11 | | | | .03 | .07 | .24 | 2.41 | .01 | | |
| 44 | | | | | | | .02 | | .01 | | | | | | | | |
| Total | 1.58 | .26 | 5.64 | 3.22 | 6.29 | 6.78 | 8.43 | 4.15 | .30 | .51 | .67 | 8.11 | 8.16 | 36.44 | 4.26 | 3.63 | .06 |

* N = 9,541 tallies. All numbers in the matrix represent percentage of N.

DISPLAY 6

COMPOSITE MATRIX OF THE FIVE BEGINNING TEACHERS*

| Cat. | 11 | 1 | 2 | 3 | 4 | 40 | 5 | 6 | 60 | 7 | 70 | 8 | 80 | 9 | 22 | 33 | 44 |
|-------|------|------|------|------|-------|------|------|------|-----|-----|------|-------|-------|-------|------|------|-----|
| 11 | | | | | | | | | | | | | | | | | |
| 1 | .03 | .02 | .05 | .08 | .03 | | | | | | | .89 | .08 | 2.07 | | .01 | |
| 2 | 1.23 | .02 | .33 | 2.60 | 1.17 | .78 | .50 | .03 | .02 | | | .16 | .11 | .91 | .03 | .02 | |
| 3 | .37 | .09 | .50 | .71 | .80 | .53 | .25 | | | | | | | .45 | | .15 | |
| 4 | .02 | | 1.22 | .14 | .17 | | | | | .03 | | 8.16 | .07 | .21 | | .10 | |
| 40 | | | .09 | 1.02 | .10 | .02 | | | | | | .07 | | 4.09 | | .31 | |
| 5 | .23 | | .03 | 1.44 | .51 | 4.27 | .60 | .02 | | | | .07 | .02 | 1.14 | | .22 | |
| 6 | .07 | .02 | .39 | .08 | .33 | 1.25 | | | | | | .25 | .43 | .32 | | .23 | |
| 60 | | | | | | | | .03 | | | | | | .02 | | .68 | |
| 7 | .02 | .02 | .11 | .07 | .06 | | | | .12 | | | | | .07 | | .03 | |
| 70 | .13 | | .14 | .11 | .13 | .02 | | | | | | | .07 | .18 | | .03 | |
| 8 | .17 | 4.30 | .83 | 1.47 | .57 | .45 | .33 | | .10 | .37 | 1.49 | .04 | .31 | .74 | .13 | .02 | |
| 80 | | .28 | .01 | .12 | .06 | .19 | | | .01 | .05 | 4.35 | | | .71 | .07 | | |
| 9 | .55 | .25 | 3.12 | 2.21 | 1.18 | 1.04 | 1.19 | .33 | .21 | .37 | .01 | .09 | 13.79 | 4.39 | .16 | .10 | |
| 22 | | | | | | | | | | | | .12 | .71 | 5.03 | | | |
| 33 | .27 | .14 | .01 | .51 | .28 | .25 | .21 | | | | | .11 | .05 | .31 | | .55 | |
| 44 | | | | | | | | .11 | | | | | | .02 | | | |
| Total | 3.09 | .27 | 7.99 | 3.92 | 10.03 | 5.58 | 8.38 | 3.96 | .08 | .60 | .79 | 11.28 | 6.02 | 29.04 | 5.84 | 2.69 | .13 |

*N = 6,468 tallies. All numbers in the matrix represent percentage of N.

DISPLAY 7

COLUMN PERCENTAGE TOTALS AND DIFFERENCES
BETWEEN THE TWO GROUPS OF TEACHERS

| Category | Code 100 Beginning Teachers N=5 % | Code 500 Experienced Teachers N=6 % | Differences Between Column Percentage Totals |
|----------|---|---|--|
| 11 | 3.09 | 1.58 | 1.51 |
| 1 | .27 | .26 | .01 |
| 2 | 7.99 | 5.64 | 2.35 |
| 3 | 3.92 | 3.22 | .70 |
| 4 | 10.03 | 6.29 | 3.74 |
| 40 | 5.58 | 6.78 | 1.20 |
| 5 | 8.38 | 8.43 | .05 |
| 6 | 3.96 | 4.15 | .19 |
| 60 | .08 | .30 | .22 |
| 7 | .60 | .51 | .09 |
| 70 | .79 | .67 | .12 |
| 8 | 11.28 | 8.11 | 3.17 |
| 80 | 6.02 | 8.16 | 2.14 |
| 9 | 29.04 | 36.44 | 7.40 |
| 22 | 5.34 | 4.26 | 1.58 |
| 33 | 2.69 | 3.63 | .94 |
| 44 | .13 | .06 | .07 |

DISPLAY 8

RANKING OF TOP TEN CELLS BETWEEN THE MASTER COMPOSITE MATRICES
OF THE BEGINNING AND EXPERIENCED TEACHER GROUPS.

| Beginning Teacher | | Experienced Teacher | |
|----------------------|------------|------------------------|------------|
| Cell | Percentage | Cell | Percentage |
| 9-9 | 13.79 | 9-9 | 21.29 |
| 4-8 | 8.16 | 4-8 | 6.01 |
| 22-9 | 5.03 | 80-80 | 5.62 |
| 80-80 | 4.35 | 40-9 | 4.60 |
| 9-22 | 4.39 | 22-9 | 4.15 |
| 8-2 | 4.30 | 5-5 | 3.88 |
| 5-5 | 4.27 | 9-22 | 3.74 |
| 40-9 | 4.09 | 8-2 | 2.72 |
| 9-2 | 3.12 | 9-2 | 2.51 |
| 2-4 | 2.60 | 33-33 | 2.41 |

This great similarity of cell sequence indicates why it would be difficult to develop a conceptual model of verbal behavior of experienced teachers. There is no significant difference between the two groups of teachers.

As seen in Display 9 when each of the 17 categories were compared statistically using the Mann Whitney U test, there were no significant differences. The only category which could be considered significant, if the criteria of significance was changed to .10 level, would be category 4, Asking Narrow Questions. This significance would be in favor of the experienced teachers in that their use of this category was less than beginning teachers.

DISPLAY 9

A COMPARISON OF THE BEGINNING AND EXPERIENCED TEACHERS ON THE PERCENTAGE OF TALLIES IN EACH OF THE 17 CATEGORIES

| Variable Numbers | Range of Percentages | | Mann Whitney Test Level of Probability |
|---------------------|-----------------------|-------------------------|--|
| | Beginning Teachers | Experienced Teachers | |
| 11 | .14 - 5.40 | .50 - 2.90 | .330 |
| 1 | .07 - .63 | .00 - .70 | .792 |
| 2 | 4.40 -12.14 | 2.34 - 8.67 | .428 |
| 3 | 2.10 - 5.57 | 1.87 - 4.43 | .662 |
| 4 | 8.70 -13.19 | 4.02 - 9.97 | .052 |
| 40 | 3.50 - 8.83 | 3.59 -11.39 | 1.000 |
| 5 | 5.74 -14.04 | 4.51 -13.86 | .662 |
| 6 | 1.24 - 7.10 | 1.74 - 6.41 | 1.000 |
| 60 | .00 - .34 | .00 - .70 | 1.000 |
| 7 | .00 - 1.17 | .07 - 1.34 | 1.000 |
| 70 | .00 - 1.60 | .17 - 1.54 | .930 |
| 8 | 10.54 -13.64 | 4.36 -12.00 | .178 |
| 80 | .77 -15.24 | .16 -16.97 | 1.000 |
| 9 | 14.07 -36.71 | 24.24 -48.99 | 1.000 |
| 22 | 2.24 -10.74 | 1.24 - 6.54 | .428 |
| 33 | .84 - 4.67 | .77 - 9.10 | .662 |
| 44 | .00 - .40 | .00 - .14 | .662 |

Display 10 indicates the range of percentages for the 11 composite matrices developed for analysis Phases 200. The S/T ratio cited in this display is the ratio of total tallies in the teacher talk categories divided into the total tallies in the student talk categories. These ratios and the range of percentages in Student Talk would indicate that the experienced teachers had more student talk in their reading lessons. An S/T ratio over 1.00 indicates there was more student talk than teacher talk. In the beginning teacher group only 2 of the 5 had S/T ratios over 1.00, whereas in the experienced teacher

DISPLAY 10

A COMPARISON OF BEGINNING AND EXPERIENCED TEACHERS
ON THE PERCENTAGE OF TALLIES IN THE FOUR MAJOR
AREAS OF A MATRIX AND THE STUDENT/TEACHER TALK RATIO

| Variable Description and Numbers | Range of Percentages | |
|---|-----------------------|-------------------------|
| | Beginning Teachers | Experienced Teachers |
| Teacher Talk- Indirect (V#12) | 21.88 - 36.72 | 17.94 - 30.34 |
| Teacher Talk- Direct (V#13) | 11.92 - 17.44 | 9.90 - 18.57 |
| Total Teacher Talk- (V#14) | 36.17 - 50.53 | 30.36 - 47.01 |
| Student Talk- (V#15) | 42.95 - 50.33 | 48.47 - 64.51 |
| S/T Ratio | .85 - 1.39 | 1.03 - 1.82 |

group all six of the teacher's S/T ratios were over 1.00. Again these differences were not significant.

Additional Analysis

Due to the lack of significance of differences between the two groups of teachers any additional analyses would have to be considered as statements related to general trends. These trends are of value in that they can lead us to a better understanding of how individual teachers handle the "story review" phase of the Guided Reading Activity. For this reason most of the following analysis are carried on using data in Analysis Phase 200. In this phase each of the three observations for the individual teachers were combined to form a composite matrix for that particular teacher. This provided five matrices for the beginning teachers and six matrices for the experienced teachers.

When the Kolmogorov-Smirnov test was computed comparing one individual teacher in the same group; such as teacher 110 vs. teacher 120; some interesting results emerged. Displays 11 and 12 show the results of the K-S test.

As can be seen in Display 11, the beginning teachers exhibited some significant differences within their group. All five teachers differ significantly with the other teachers at least once. Two of the teachers, teacher 140 (Female-3rd grade teacher) and teacher 150 (Male-6th grade teacher) showed a difference in verbal pattern twice each with other teachers and between themselves.

DISPLAY 11

A COMPARISON BETWEEN TEACHERS WITHIN THE BEGINNING TEACHERS GROUP
USING THE KOLMOGOROV-SMIRNOV TEST.

| Teacher Number. | Teacher Number | Chi square value From K-SD | Level of Significance |
|-----------------|----------------|----------------------------|-----------------------|
| 110 | 120 | .494 | N.S. |
| 110 | 130 | 5.146 | N.S. |
| 110 | 140 | 6.266 | .05 |
| 110 | 150 | 7.872 | .05 |
| 120 | 130 | 4.917 | N.S. |
| 120 | 140 | 5.094 | N.S. |
| 120 | 150 | 7.589 | .05 |
| 130 | 140 | 13.950 | .01 |
| 130 | 150 | 1.556 | N.S. |
| 140 | 150 | 24.823 | .01 |

Teacher number 140, a third grade female teacher, had the highest percentage of the Indirect Teacher Talk (36.72%) of the five beginning teachers. In the indirect teacher talk categories she had high in Category 4, Asking Narrow Questions (13.19%) and high Category 2, Praises and Encourages (10.58%) and Category 3, Acceptance of Student Idea (5.33%). She also had the group's highest percentage in Total Teacher Talk (50.53%) and the group's lowest percentage in Category 9, Student Talk-Initiation by Student (14.07%) and Total Student Talk (42.95%). See Appendix C for the category totals of all of the beginning teacher's matrices.

In the beginning teacher's group, teacher number 150, a sixth grade male teacher, had the highest amount of Total Student Talk (50.33%). Also within the Student Talk categories his was the highest percentage in Student-Initiated Talk (36.71%), Category 9. In contrast to this he had the lowest amount of Indirect Teacher Talk (21.88%) and the highest percentage of Direct Teacher Talk (17.44%) within the group.

Display 12 shows the K-S test comparison of the shape of the proportions between the teachers in the above-average classroom reading teachers. In general these teachers seem to exhibit extremely similar verbal interaction patterns. There are not as many significant differences among this group as there was in the beginning teachers group. In the beginning teachers group all of the teachers were significantly different at least once, wherein the experienced teachers only four of the six teachers showed any significant difference.

Of the four experienced teachers who were different, the difference can be narrowed down to one teacher. Only one teacher, a sixth grade male, was different when compared to three other teachers. He did not differ from two of the other experienced teachers. The major difference for this individual was he had the highest Teacher Talk (47.01%) and

the lowest Student Talk (48.47%) of all the experienced teachers. He also had the highest use of Praise and Encouragement (8.67%) and the highest amount of Asking Narrow Questions (8.76%) in this group of teachers. See Appendix D for the category totals of all of the experienced teachers.

DISPLAY 12

A COMPARISON BETWEEN TEACHERS WITHIN THE EXPERIENCED TEACHERS GROUP USING THE KOLMOGOROV-SMIRNOV TEST.

| Teacher Number | Teacher Number | Chi square value From K-SD | Level of Significance |
|----------------|----------------|----------------------------|-----------------------|
| 520 | 530 | .958 | N.S. |
| 520 | 540 | 4.275 | N.S. |
| 520 | 550 | 11.480 | .01 |
| 520 | 560 | 1.264 | N.S. |
| 520 | 570 | 1.258 | N.S. |
| 530 | 540 | 4.398 | N.S. |
| 530 | 550 | 9.750 | .01 |
| 530 | 560 | 1.358 | N.S. |
| 530 | 570 | 1.220 | N.S. |
| 540 | 550 | 5.876 | N.S. |
| 540 | 560 | 4.240 | N.S. |
| 540 | 570 | 1.274 | N.S. |
| 550 | 560 | 8.266 | .05 |
| 550 | 570 | 5.139 | N.S. |
| 560 | 570 | 3.080 | N.S. |

Other Areas of Analysis

Analysis of S/T Ratio, I.D. Ratio and Revised I.D. Ratio, Variables 17, 19 and 20

The S/T Ratio, Variable #17

The S/T ratio is the relationship between the Total Teacher Talk and the Total Student Talk. It is computed by dividing the total number of tallies in the Teacher Talk categories into the total number of tallies in the Student Talk categories. If the ratio is above 1.00, then it indicates there is more Student Talk than Teacher Talk. If the ratio is 2.00 it indicates there is twice as much Student Talk as Teacher Talk. If it falls below 1.00 then it shows there was more Teacher Talk than Student Talk.

The I.D. Ratio, Variable #19

The I.D. ratio is the relationship between indirect teacher talk and direct teacher talk. An I.D. ratio of 1.00 means there was equal indirect and direct teacher talk. As this ratio becomes larger it indicates more indirect teacher talk is being used. If the ratio falls below 1.00, it indicates there is more direct teacher talk than indirect.

The Revised I.D. Ratio , Variable #20

The revised I.D. ratio is employed in order to find out the kind of emphasis given to motivation and control in the classroom. This variable eliminates the effects of Categories 4 and 40, Asking Questions and Category 5, Lecturing and gives information about whether the teacher is direct or indirect in his approach to motivation and control. The ratio indicates that as the value increases a greater amount of student centered motivation is being used instead of teacher control.

Display 13 indicates that all of the experienced teachers had S/T ratios over 1.00, which means that in every reading lesson the students talked more than the teachers. Only two of the beginning teachers had S/T ratios over 1.00.

When discussing the I.D. ratio and the Revised I.D. ratio, it should be kept in mind that it has already been determined that the experienced teacher spends less time in teacher talk activities during the "story review" phase of the Guided Reading Activity.

The beginning teachers exhibit some consistency in their I.D. ratios in that all but one of the teachers had I.D. ratios over 2.00 which indicates there was more than twice as much indirect teacher talk as direct teacher talk. Only two of the six experienced teachers had I.D. ratios over 2.00. The mean I.D. ratio for the beginning teachers was 2.27 and the mean I.D. for experienced teachers 1.89.

The Revised I.D. ratio is again a comparison of indirect and direct teacher talk except the questioning categories (4 and 40) are taken out of the indirect figure and the lecturing category (5) is taken out of the direct figure. The beginning teachers exhibited a consistency here also in that all but one of the teacher's Revised I.D. ratios increased. In the case of the experienced teachers the Revised I.D. ratios varied a great deal. Two experienced teachers Revised I.D. rose to over 3.00 which indicates that these teachers used three times as much student-centered motivation as they did student control techniques. One experienced teacher dropped below the 1.00 level which indicates she uses more student control techniques than she does student-centered motivational activities.

Again, the mean Revised I.D. ratio was lower for the experienced teachers than the beginning teachers.

DISPLAY 13

A COMPARISON OF BEGINNING AND EXPERIENCED TEACHERS
S/T RATIOS, I.D. RATIOS AND REVISED I.D. RATIOS

| Teacher Number | S/T Ratio | S/T Mean | I.D. Ratio | I.D. Mean | Revised I.D. Ratio | Revised I.D. Mean |
|-----------------------------|-----------|----------|------------|-----------|--------------------|-------------------|
| <u>Beginning Teachers</u> | | | | | | |
| 110 | .87 | | 2.68 | | 3.18 | |
| 120 | .93 | | 2.78 | | 3.20 | |
| 130 | 1.39 | 1.06 | 2.03 | 2.27 | 2.93 | 2.74 |
| 140 | .85 | | 2.65 | | 2.40 | |
| 150 | 1.28 | | 1.25 | | 1.97 | |
| <u>Experienced Teachers</u> | | | | | | |
| 520 | 1.26 | | 2.94 | | 3.64 | |
| 530 | 1.18 | | 1.26 | | 2.02 | |
| 540 | 1.81 | 1.40 | 1.44 | 1.89 | .80 | 2.31 |
| 550 | 1.03 | | 1.28 | | 1.77 | |
| 560 | 1.82 | | 2.57 | | 4.20 | |
| 570 | 1.28 | | 1.86 | | 1.44 | |

In summary, the data in Display 13 tells us that the beginning teacher had more of a teacher centered reading lesson in reading than the experienced teacher. But the teacher centered situation was of a more indirect teacher talk pattern for the beginning teachers than the experienced teachers. It is important to keep in mind that these are only trends and cannot be considered as significant differences.

Analysis of the Flexibility Factors, Variables 18, 29, 30 and 31

Flexibility Factor 1 (V#18) is the number of cells used in the total matrix. This represents the total number of different interactions that have taken place. In every flexibility factor case, the larger the number, the more types of interactions have been utilized.

Flexibility Factor 2 (V#29) is a count of the number of cells that have tallies in them in those categories related to teacher talk and student motivation. This is the total number of cells used in categories, 11, 1, 2 and 3.

Flexibility Factor 3 (V#30) is the number of cells used in categories 6, 60, 7 and 70. These are the categories related to teacher talk and control of students.

Flexibility Factor 4 (V#31) is the total number of cells used in the student talk categories, 8, 80 and 9.

Display 14 gives a graphic picture of the comparisons of the four flexibility factors. An examination of this data produced no

significant results. A rather consistent trend can be seen in that the experienced teachers as a whole are more flexible in every case. As previously stated the beginning teachers used a slightly more indirect approach than the experienced teacher during teacher talk activity. It is interesting to note though, the experienced teachers in actual time were less indirect but these same teachers used a greater number of types of interactions while being indirect. This tends to indicate that the more experienced a teacher becomes, the more variety of verbal interaction she utilizes.

DISPLAY 14

A COMPARISON OF FLEXIABILITY FACTORS BETWEEN BEGINNING TEACHERS AND EXPERIENCED TEACHERS.

| Teacher Number | FF-1 Total Matrix | Flexibility Factor (FF) | | FF-4 Student Talk |
|-----------------------------|-------------------------|-----------------------------|---------------------------|-------------------------|
| | | FF-2 Revised Indirect | FF-3 Revised Direct | |
| <u>Beginning Teachers</u> | | | | |
| 110 | 92 | 17 | 15 | 23 |
| 120 | 107 | 19 | 14 | 25 |
| 130 | 106 | 19 | 17 | 27 |
| 140 | 111 | 20 | 13 | 28 |
| 150 | 79 | 10 | 10 | 20 |
| <u>Experienced Teachers</u> | | | | |
| 520 | 116 | 23 | 21 | 26 |
| 530 | 126 | 24 | 24 | 31 |
| 540 | 114 | 17 | 20 | 36 |
| 550 | 100 | 16 | 13 | 30 |
| 560 | 91 | 14 | 12 | 25 |
| 570 | 84 | 11 | 16 | 23 |

Analysis of Selected Areas, Variables 23, 24, 25, 26, 27, 28, 41 and 42

All of the data in these selected areas are presented in the form of percentages except variable number 25 which is a ratio of two percentages (V#23 and V#24).

Extended Indirect Teacher Talk (V#23).

This area indicates prolonged accepting behavior on the part of the teacher. This includes extended acceptance of ideas, behavior and feelings, as well as transitions from one of these patterns to another.

Extended Direct Teacher Talk (V#24)

These cells represent the teacher's emphasis on criticism, correction, direction giving or moving from one of these types of influence to the other. Total percentage in this area suggests extended direct influence on the part of the teacher and a heavy focus on the teacher's use of authority.

Ratio of Extended Indirect and Direct Teacher Talk (V#25)

This ratio represents the relationship between extended indirect and direct teacher talk. As this ratio increases over 1.00, it indicates an increase in extended indirect teacher influence. If the number is below 1.00, then that teacher is using more extended control and authority techniques than acceptance of student behaviors.

Steady State Cells - Indirect Teacher Talk (V#26)

Tallies are recorded in these cells only if the behavior lasts for more than three seconds. These cells identify continuous talk in a single category. In this variable these categories are those related to teacher talk which is indirect in nature.

Steady State Cells - Direct Teacher Talk (V#27)

These cells identify continuous teacher talk in single categories. In this variable these categories are those related to teacher talk which is direct in nature.

Extended Student Talk (V#28)

This area represents prolonged student verbal behavior. These cells indicate continuous talk by the students. This area has no teacher talk data in it.

Teacher Response to Student Talk (V#41)

This area indicates the percent of time spent by teachers responding to the students. A comparison of the percentage of tallies in this area indicates the pattern of behavior used by the teacher in response to students at the moment that a student stops talking.

Student Response to Teacher Talk (V#42)

This area indicates the percent of time spent by the students responding initially to teacher talk. A comparison of the percentage of tallies in this area indicates the pattern of behavior used by the students in response to teachers at the moment that the teacher stops talking.

Several of the areas shown in Display 15 are so similar that no trends can be determined. These areas are Steady State Cells-Direct, Teacher Response to Student Talk, Steady State Cells-Indirect, and Student Response to Teacher Talk.

The areas which do show a trend are interrelated. The experienced teachers have almost one-third again as much student talk, 29.76%, as compared to the beginning teachers, 20.08%. When a shift is made to compare the teacher talk activity, the Extended Indirect-Direct Ratio indicates that the beginning teachers had twice as many tallies in the Extended Indirect area as the experienced teachers. This is somewhat meaningless though when a consideration is given to the size of the percentages in this area, 2.59% of the total matrix.

DISPLAY 15

MEAN PERCENTAGES OF TALLIES IN SELECTED AREAS OF ANALYSIS FOR THE BEGINNING AND EXPERIENCED TEACHERS

| Variable Number | Variable Description | Mean Percentages | |
|--------------------|---|------------------------------|--------------------------------|
| | | Beginning Teachers N=5 | Experienced Teachers N=6 |
| 23 | Extended Indirect Teacher Talk | 2.59 | 1.59 |
| 24 | Extended Direct Teacher Talk | 1.48 | 1.91 |
| 26 | Steady State Cells-Indirect | 2.74 | 2.27 |
| 27 | Steady State Cells-Direct | 5.67 | 5.69 |
| 28 | Extended Student Talk | 20.08 | 29.76 |
| 41 | Teacher Response to Student Talk | 19.76 | 18.08 |
| 42 | Student Response to Teacher Talk | 19.83 | 17.65 |
| 25 | Ratio of <u>Extended Indirect</u> <u>Extended Direct</u> | 1.75 | .83 |

Analysis of Theoretical Conceptual Models, Variables 34, 35, 36, 37 and 39

An attempt was made to develop what might be considered as a "Good" Model and a "Bad" Model of verbal interaction for teachers during the reading exercise. The rationale for the selection of the specific cells to be included in these models were taken from several previous studies on what types of verbal behavior seem to be best for increased student achievement and attitude. (Amidon and Flanders, 1963; Amidon and Giammattea, 1965; Amidon and Hough, 1967; Flanders 1964 and 1965; Furst and Amidon, 1965; Hamachek, 1969; LaShier, 1967; and Siegel, 1967.)

G Model Percentage, Variable 34

This group of cells represents patterns which allow the students greater freedom of expression, increased teacher praise and acceptance of student ideas and broad questioning procedures. The G-Model value indicates the total percentages from 21 individual cells. See Appendix B for a list of specific cells. Comparisons would have to be made in relation to what other teachers scored in the model.

G Model Percentage Plus, Variable 35

This area is the total percentage of the cells in the G-Model plus the column percentage total for categories 40, Asking Broad Questions and 9, Student Initiated Talk.

B Model Percentage, Variable 36

This group of cells represents an attempt to deprive the students of freedom of expression, increase use of teacher authority and the asking of narrow questions.

B Model Percentage Plus, Variable 37

This value is the total percentage of the cells in the B-Model plus the column percentage total for categories 5, Teacher Lecture and 7, Teacher criticism and justification of authority.

Model Indirect Ratio MID, Variable 39

This variable is similar to the I.D. ratio previously referred to. It divides category totals from the B-Model into category totals of the G-Model. This ratio can be compared the same as the I.D. ratios, if the value goes over 1.00 it indicates that the teacher is using more of the "Good" Model categories than the "Bad" Model categories.

Display 16 presents the data related to the models. This analysis favors the experienced teachers. The G-Model and G-Model Plus values were consistently higher for the experienced teachers and the B-Model and B-Model Plus values were consistently lower. Also the MID ratios for the experienced teachers were higher. None of these values, though, are significantly different.

DISPLAY 16

A COMPARISON OF THE MODEL VARIABLES
BETWEEN EXPERIENCED AND BEGINNING TEACHERS

| Teacher Number | G-Model % | G-Model+ % | B-Model % | B-Model+ % | MID Ratio |
|-----------------------------|-----------|------------|-----------|------------|-----------|
| <u>Beginning Teachers</u> | | | | | |
| 110 | 39.38 | 76.01 | 22.03 | 30.24 | 1.55 |
| 120 | 36.33 | 74.99 | 20.08 | 28.00 | 1.46 |
| 130 | 44.35 | 81.26 | 17.94 | 26.92 | 1.75 |
| 140 | 20.21 | 38.43 | 25.51 | 31.25 | .96 |
| 150 | 45.02 | 88.03 | 27.32 | 41.43 | 1.65 |
| <u>Experienced Teachers</u> | | | | | |
| 520 | 57.57 | 113.63 | 13.31 | 21.30 | 3.18 |
| 530 | 49.20 | 101.44 | 16.19 | 30.38 | 2.29 |
| 540 | 31.94 | 62.16 | 19.95 | 24.86 | 1.19 |
| 550 | 30.05 | 58.77 | 24.61 | 37.89 | 1.06 |
| 560 | 50.77 | 106.77 | 15.52 | 22.91 | 2.21 |
| 570 | 37.71 | 73.57 | 22.10 | 28.94 | 1.32 |

Ranking of Cells, Variable 32

The individual cells for each teacher's matrix is ranked from most frequently used to least frequently used. Only the first ten most frequently used cells are examined in this analysis.

Display 17 shows the ranking of the cells. The most frequently used cell of all the teachers, both experienced and beginning, except one is the 9-9 cell, the Steady State cell of Student Initiated Talk. The one teacher, a beginning teacher, who did not have the 9-9 cell as top had this cell ranked as fourth.

Due to the fact that there is no significant difference between the two groups of teachers, the frequency of positions of individual cells will be discussed across all eleven teachers instead of breaking them down into two separate groups.

An examination of Display 17 indicates there are two common reoccurring verbal patterns. One pattern is a situation which is often found in many classrooms. This pattern is: 4 - 8 → 8 - 2 → 2 - 4. In verbal interaction this becomes: Teacher asks narrow cognitive-type question (4); then student responds to teacher question with predictable answer (8); then teacher praises student for his response (2); then teacher asks another narrow question. This pattern is very common in most elementary classrooms in this locale.

The second pattern which emerges from the data on the study's eleven teachers is: 40 - 9 → 9 - 9 → 22 - 9 → 9 - 22 → 9 - 2 or 9 - 3. In the verbal interaction terms this becomes: Teacher asks

DISPLAY 17

RANKING OF INDIVIDUAL CELLS AND THEIR PERCENTAGE
FOR EACH OF THE BEGINNING AND EXPERIENCED TEACHERS

| Rank | Teachers Code | | | | | | | | | | |
|------|-----------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| | 110 | 120 | 130 | 140 | 150 | 520 | 530 | 540 | 550 | 560 | 570 |
| 1 | Cell Code 9-9 | 9-9 | 9-9 | 4-8 | 9-9 | 9-9 | 9-9 | 9-9 | 9-9 | 9-9 | 9-9 |
| | Percentage (15.57) | (13.90) | (14.37) | (10.17) | (19.33) | (22.97) | (20.27) | (14.63) | (13.77) | (35.46) | (20.66) |
| 2 | Cell Code 4-8 | 40-9 | 22-9 | 80-80 | 22-9 | 40-9 | 40-9 | 80-80 | 80-80 | 8-80 | 4-8 |
| | Percentage (6.97) | (6.03) | (10.03) | (9.73) | (8.47) | (7.83) | (7.00) | (14.33) | (12.23) | (6.73) | (9.43) |
| 3 | Cell Code 9-2 | 4-8 | 9-22 | 8-2 | 4-8 | 22-9 | 5-5 | 33-33 | 4-8 | 4-8 | 33-33 |
| | Percentage (6.17) | (7.63) | (9.17) | (7.27) | (8.40) | (6.07) | (6.47) | (7.73) | (6.83) | (5.67) | (6.10) |
| 4 | Cell Code 8-2 | 8-2 | 4-8 | 9-9 | 5-5 | 9-22 | 22-9 | 4-8 | 5-5 | 11-9 | 8-2 |
| | Percentage (5.07) | (3.93) | (7.53) | (5.80) | (8.37) | (5.57) | (6.30) | (6.97) | (6.00) | (4.77) | (5.90) |
| 5 | Cell Code 5-5 | 9-3 | 80-80 | 2-4 | 9-22 | 9-2 | 9-22 | 22-9 | 8-2 | 40-9 | 80-80 |
| | Percentage (4.60) | (3.77) | (7.07) | (4.93) | (6.93) | (5.20) | (6.07) | (5.90) | (5.13) | (4.13) | (4.10) |
| 6 | Cell Code 22-9 | 11-9 | 5-5 | 22-80 | 40-9 | 4-8 | 9-5 | 9-22 | 40-9 | 5-5 | 22-9 |
| | Percentage (3.80) | (3.27) | (3.70) | (3.37) | (4.43) | (4.77) | (3.87) | (5.27) | (4.83) | (4.00) | (3.70) |
| 7 | Cell Code 40-9 | 5-5 | 40-9 | 80-22 | 80-80 | 9-40 | 5-9 | 6-6 | 9-2 | 9-2 | 2-4 |
| | Percentage (3.77) | (2.60) | (3.07) | (3.30) | (2.47) | (3.17) | (3.33) | (2.40) | (2.70) | (2.77) | (3.40) |
| 8 | Cell Code 11-9 | 9-2 | 8-2 | 40-9 | 8-2 | 5-5 | 4-8 | 40-8 | 2-5 | 40-40 | 9-22 |
| | Percentage (3.70) | (2.37) | (2.83) | (3.17) | (2.40) | (2.73) | (3.33) | (2.33) | (2.47) | (2.40) | (3.17) |
| 9 | Cell Code 9-22 | 22-9 | 9-2 | 9-3 | 5-4 | 9-3 | 9-40 | 8-8 | 5-4 | 9-40 | 40-9 |
| | Percentage (3.30) | (2.27) | (2.47) | (2.80) | (2.37) | (2.60) | (3.17) | (2.10) | (2.43) | (2.00) | (2.63) |
| 10 | Cell Code 2-4 | 9-40 | 2-4 | 9-2 | 9-5 | 40-40 | 9-3 | 8-4 | 2-4 | 9-4 | 5-5 |
| | Percentage (2.77) | (2.03) | (2.33) | (2.67) | (2.33) | (2.50) | (2.93) | (1.87) | (2.10) | (1.93) | (2.33) |

broad questions which allow students freedom of expression or higher thought level responses (40); then the student responds with an indepth response and continues to talk for an extended period of time exceeding three seconds in length (9-9); then another student talks without having to be prompted by the teacher; thus producing a free interchange of ideas and a student centered discussion (9-22, 22-9); then the teacher either praises the students for their responses (2) or accepts their ideas and uses them in the reading lesson.(3) This pattern based on the percentage of time it consumes is the most common occurring verbal interation behavior for these eleven classroom teachers during the "story review" phase of the Guided Reading Activity.

Some additional trends emerged when further ranking of the cells from the two master composite matrices were developed. Display 8, shows only the top ten most frequently used cells from the two groups of teachers. When this was extended to the top 30 most frequently used cells it was found that 23 individual cells were common to both groups of teachers. Also these 23 common cells represented 70.63% of the Beginning teacher's lessons and 72.54% of the experienced teachers total composite matrix. This means that for the beginning teachers the other 29.37% of their time was spread out over 119 other individual cells or an average of one-fourth of one percent (.25%) per cell. For the experienced teachers 27.46% of their time was spread over 149 other cells or an average of about one-fifth of one percent (.18%) per cell.

The following circular verbal interaction pattern, a linking of the two patterns previously discussed, $40-9 \rightarrow 9-9 \rightarrow 9-22 \rightarrow 22-9 \rightarrow 9-2 \rightarrow 2-4 \rightarrow 4-8 \rightarrow 8-2 \rightarrow 2-40$ represented 46.65% of the beginning teacher's time and 47.45% of the experienced teacher's time. When two additional steady state cells which were frequently used and appeared in the top ten cells of both groups; cell 5-5, Teacher Talk-extended lecturing and cell 80-80, Student Talk-extended oral reading; the total times rose to 55.27% of the matrix for the beginning teachers and 56.95% of the experienced teacher's time. This demonstrates the influence which only 11 cells had on the verbal interaction patterns of these two groups of teachers.

The conclusion would have to be drawn from this analysis of individual cells that even if the two groups of teachers had been significantly different overall in their verbal patterns, this difference would have to be related to individual cells which represented less than 3.00 % of the total lessons. With the major verbal patterns being so similar and the differences in patterns so small it would have been almost impossible to develop a conceptual model of verbal interaction analysis that could have been considered the psychological ownership of the experienced teachers.

CONCLUSIONS

The major goal of this project was to determine if a difference existed in the verbal interaction patterns between beginning teachers and teachers identified as above-average classroom reading teachers by their building administrators. If there was a significant difference between the groups and if the experienced teacher had similar verbal behaviors, then a conceptual model of these verbal interactions would be developed. The data collected on the teachers in this study indicated that there was no significant differences between these two groups. For this reason it is not possible to construct a conceptual model related to the experienced teacher group.

This lack of significance may be due to a number of different reasons. Possibly, as many previous studies have shown, there is no one conceptual model related to the teaching process even on a fairly limiting learning situation as the "story review" phase of the Guided Reading Activity. It could be the selection and size of the two sample groups was not sophisticated enough to identify the two groups to be studied. Perhaps the level of socio-economic community and school district in this study was too high and that this district's personnel and hiring practices net a higher quality of beginning teachers than most districts would have.

Even though the two groups as a whole did not differ significantly there were some trends which emerged from the study.

Two categories showed slight trends in separating the two groups of teachers. The beginning teachers had a higher percentage of category 4, Asking Narrow Question than the experienced teachers. The experienced teachers allowed the students more freedom of expression as indicated by the slightly larger percentage of Student Talk-Initiated, category 9.

The above-average teachers in general had more student talk, 52.71% in the reading sessions than the beginning teachers, 46.26%. When the teachers were engaged in Teacher Talk activities, the beginning teachers used a slightly higher percentage of Indirect Teacher Talk, 30.88%, than the experienced teachers, 23.77%. These patterns reaffirmed themselves when some of the other variables were analyzed; greater S/T Ratio for the experienced teachers; differences in I.D. and Revised I.D. Ratios favoring the beginning teachers, and a larger Extended Indirect area for the beginning teachers.

When a within group analysis was made of the two groups of teachers, it was found that the experienced teachers were more alike within their group than the beginning teachers were within their group. This seems to indicate that beginning teachers start with or try a variety of verbal patterns during the reading lesson and that as time passes and they become experienced teachers, a single more common verbal behavior is used during this teaching time.

This pattern that the experienced teachers use includes a greater variety of types of interactions. This was demonstrated by the analysis of Flexibility Factors, a count of the total number of cells used in a matrix, in which the experienced teachers used a consistently greater number of types of interactions than did the beginning teachers.

The most common cell pattern used by both groups of teachers was: 40 - 9 → 9 - 9 → 22 - 9 → 9 - 22 → 9 - 2 or 9 - 3. In terms of specific verbal behavior, this represents: Teacher asks broad questions which allow students freedom of expression or higher thought level responses (40); then the student responds with an indepth response and continues to talk for an extended period of time exceeding three seconds in length (9-9); then another student talks without having to be prompted by the teacher; thus producing a free interchange of ideas and a student centered discussion (9-22, 22-9); then the teacher either praises the students for their responses (2) or accepts their ideas and uses them in the reading lesson.(3)

The second most common pattern found in these teacher's verbal patterns (4 - 8 → 8 - 2 → 2 - 4) is one which is often found in the elementary classrooms in the district in which the study was carried out.

Even though the results of this project did not achieve the desired objectives, it did discover some trends related to the "story review" phase of the Guided Reading Activity in grades three through six. It is hoped that this is not the end of this quest for a conceptual model approach to improve the teaching of reading in the elementary schools.

RECOMMENDATIONS

Recommendations for Further Research

This study should be duplicated with the following changes:

- A. Increase the number of teachers in each of the sample sizes.
- B. Select a school district of a different socio-economic level.
- C. Determine a different approach or criteria for selection of teachers for the above-average group. Some other techniques for selection of teachers for this group are:
 1. Peer nomination and selection. Other teachers or professional educators that are familiar with possible candidates could determine a common set of criteria for appointment to this group.
 2. Trend line analysis of student achievement. A trend line data analysis study could be carried out on a large group of teachers. The students' reading achievement score gains could be determined over a period of years for individual teachers, and those teachers who demonstrate that their students are gaining significantly more than an expected or anticipated amount could be selected.
 3. Selected Measurement Instruments. There are several instruments that measure select teacher performance levels which might be used to determine this type of teachers. Some instruments that might be used are: I.O.T.A., "Teaching Tasks in Reading"(Turner, 1960) or Teacher Characteristics Schedule (Turner, 1967).

Another possible study might be to borrow Dwight Allen's micro-teaching technique or Stanford's Center for Research and Development in Teaching Technical Skill program and use this avenue to teach reading lessons using theoretically developed conceptual models. This could be done by selecting a group of students, pre-testing the students as to their achievement level on a particular lesson, teach these students using the micro-teaching or technical skills teaching techniques of control and observation and performing the lesson using a predetermined verbal interaction conceptual model, and then post-testing the students to determine their levels of gains in achievement. This process could be repeated using different verbal interaction conceptual models until a particular one can be shown to produce significant gains in student achievement in reading.

APPENDIXES


```

S.0017 C READ DETAIL DATA CARD
S.0018 C
S.0019 200 READ (CARD, 102) (FLD(I), I = 1, 35), LINENO, KEY
S.0020 102 FORMAT (35I2, 4X, 12, 14)
S.0021 C
S.0022 4 IF (KEY - BTCHNO) 4, 5, 4
S.0023 4 WRITE (PRNTR, 301) BTCHNO, LINENO, KEY
S.0024 301 FORMAT('1 INVALID CARD IN DATA SET '15'. CHECK LINE NUMBER '13' WH
S.0025 1ICH IS IDENTIFIED AS DATA FOR ANALYSIS'15'.')
S.0026 GO TO 1
S.0027 C
S.0028 5 IF (LINENO - LINE) 6, 7, 6
S.0029 6 WRITE (PRNTR, 302) KEY, LINENO
S.0030 302 FORMAT ('1 IMPROPER CARD SEQUENCE IN DATA SET FOR ANALYSIS NUMBER '
S.0031 1I5'. CHECK CARD IDENTIFIED WITH LINE NUMBER'13'.')
S.0032 GO TO 1
S.0033 C
S.0034 C CHECK DATA AND CONVERT FROM VIA CATEGORY DESIGNATION TO INTEGER
S.0035 C
S.0036 7 LINE = LINE + 1
S.0037 L = 1
S.0038 I = 1
S.0039 9 IF (FLD(L) - IDCAT(I) 10, 11, 10
S.0040 10 IF (I - IMAX) 12, 13, 13
S.0041 12 I = I + 1
S.0042 GO TO 9
S.0043 13 IF (FLD(L) - 99) 14, 16, 14
S.0044 14 WRITE (PRNTR, 303) L, LINENO, KEY, FLD(L)
S.0045 303 FORMAT ('1 INVALID ENTRY IS ITEM '13' ONE LINE NUMBER '13' OF DATA S
S.0046 1ET FOR ANALYSIS NUMBER '15'. '/0 THE ENTRY HAS BEEN READ AS '13'.)
S.0047 GO TO 1
S.0048 C
S.0049 11 ITEM(N) = I
S.0050 N = N + 1
S.0051 IF (N - 1400) 20, 20, 30

```


VIANAL01
VIANAL01
VIANAL01
VIANAL01

VIANAL01
VIANAL01

```
S.0059 305 FORMAT (' '15X,13,2X,2015)  
S.0060 DO 70 K2 = 1, IMAX, 1  
S.0061 70 PRCNT(K2) = ARRAY(K,K2)*100.0/NUM  
S.0062 75 WRITE (PRNTR, 306) (PRCNT(K1), K1 = 1, IMAX)  
S.0063 306 FORMAT (8X,'PERCENTAGES '20F5.2)  
C  
C  
C  
C THIS SECTION COMPUTES COLUMN TOTALS  
C  
S.0064 DO 490 I = 1, 20  
S.0065 490 TOTAL (I) = 0  
C  
S.0066 DO 500 L4 = 1, IMAX  
S.0067 DO 501 L5 = 1, IMAX  
S.0068 501 TOTAL(L4) = TOTAL(L4) + ARRAY(L5,L4)  
S.0069 500 PRCNT(L4) = TOTAL(L4) * 100.0 / NUM  
S.0070 WRITE (PRNTR, 307) NUM, (TOTAL(L5), L5 = 1, IMAX)  
S.0071 307 FORMAT (' ' TOTALS ARE '16,2X,20I5)  
S.0072 WRITE (PRNTR, 306) (PRCNT(K1), K1 = 1, IMAX)  
C
```

C*****

C THE FOLLOWING CODING PRODUCES SUMMARY DATA

```
S.0073 DO 505 I = 2, 6  
S.0074 505 PRCNT(1) = PRCNT(1) + PRCNT(I)  
S.0075 PRCNT(2) = 0  
S.0076 CO 506 I = 7, 11  
S.0077 506 PRCNT(2) = PRCNT(2) + PRCNT(I)  
S.0078 PRCNT(3) = PRCNT(1) + PRCNT(2)  
S.0079 PRCNT(4) = 0  
S.0080 DO 507 I = 12, 14  
S.0081 507 PRCNT(4) = PRCNT(4) + PRCNT(I)
```



```

S.0082      PRCNT(5) = 0
S.0083      DO 508 I = 15, 17
S.0084      PRCNT(5) = PRCNT(5) + PRCNT(I)
S.0085      WRITE (PRNTR, 308) (PRCNT(I), I = 1, 5)
S.0086      FORMAT('0 INDIRECT TEACHER TALK 'F6.2%'/' DIRECT TEACHER TALK
              1'F6.2%'/' TOTAL TEACHER TALK 'F6.2%'/'0 STUDENT TALK'10XF6.2
              2'%'/'0 NO TALK'15X F6.2'%' )
S.0087      SOVERT = PRCNT(4) / PRCNT(3)
S.0088      WRITE (PRNTR, 309) SOVERT
S.0089      FORMAT ('0 STUDENT/TEACHER RATIO ' F7.3)
C
C*****
C
S.0090      GO TO 1
S.0091      END
              SIZE OF COMMON 00000      PROGRAM 11340
END OF COMPILATION MAIN

```

```

VIANAL01
VIANAL01
VIANAL01

```



APPENDIX B
ANALYSIS VARIABLES

| Variable Number | Name - Code Name | Interpretation |
|--------------------|---------------------------------------|--|
| 1 | COL 1 | Total column one |
| 2 | COL 2 | Total column two |
| 3 | COL 3 | Total column three |
| 4 | COL 4 | Total column four |
| 5 | COL 5 | Total column five |
| 6 | COL 6 | Total column six |
| 7 | COL 7 | Total column seven |
| 8 | COL 8 | Total column eight |
| 9 | COL 9 | Total column nine |
| 10 | No Talk - Total | Total of cols. 22 + 33 + 44 percentages |
| 11 | COL 11 | Total column 11 |
| 12 | Teacher Talk- Indirect TTI | Cols. 11 + 1 + 2 + 3 + 4 + 40 |
| 13 | Teacher Talk- Direct TTD | Cols. 5 + 6 + 60 + 7 + 70 |
| 14 | Teacher Talk TT | Percent teacher talk, Cols. 11 + 1 + 2 + 3 + 4 + 40 + 5 + 6 + 60 + 7 + 70 |
| 15 | Student Talk ST | Percent student talk, Cols. 8 + 80 + 9 |
| 16 | Matrix Cells | a. Raw score (# of tallies) b. Percentage in each cell |
| 17 | S/T Ratio | $\frac{\text{Student talk - total \%}}{\text{Teacher talk - total \%}}$ |
| 18 | Flexibility Factor ¹ | Number of cells in matrix with tallies |
| 19 | Big Indirect- Direct Ratio BID | $\frac{\text{Cols. 11 + 1 + 2 + 3 + 4 + 40}}{\text{Cols. 5 + 6 + 7 + 60 + 70}}$ |
| 20 | Revised Indirect- Direct Ratio RID | $\frac{\text{Cols. 11 + 1 + 2 + 3 (Indirect)}}{\text{Cols. 6 + 7 + 60 + 70 (Direct)}}$ |

| Variable Number | Name - Code Name | Interpretation |
|-----------------|---|--|
| 21 | Indirect-Direct Ratio - Row 9 | $\frac{\text{Cols. } 11 + 1 + 2 + 3 + 4 + 40}{\text{Cols. } 5 + 6 + 7 + 60 + 70}$ |
| 22 | COL 22 | Total column 22 |
| 23 | Extended Indirect Area XIN | Cells 1-1 + 1-2 + 1-3 + 2-1 + 2-2 + 2-3 + 3-1 + 3-2 + 3-3 + 11-11 + 11-1 + 11-2 + 11-3 + 1-11 + 2-11 + 3-11 |
| 24 | Extended Direct Area XDI | Cells 6-6 + 6-7 + 7-6 + 7-7 + 6-60 + 6-70 + 60-6 + 60-60 + 60-7 + 60-70 + 7-60 + 7-70 + 70-6 + 70-60 + 70-7 + 70-70 |
| 25 | XINDI | $\frac{\text{XIN}}{\text{XDI}}$ |
| 26 | Steady State Cells S11-40 | Cells 1-1 + 2-2 + 3-3 + 4-4 + 11-11 + 40-40 |
| 27 | Steady State Cells S5-70 | Cells 5-5 + 6-6 + 60-60 + 7-7 + 70-70 |
| 28 | Extended Student Talk EXTST | Cells 8-8 + 8-9 + 9-8 + 9-9 + 8-80 + 80-8 + 80-80 + 80-9 + 9-80 |
| 29 | Flexibility Factor ² IN Revised Indirect | Number of cells in cols. 11 + 1 + 2 + 3 with tallies |
| 30 | Flexibility Factor ³ DI Revised Direct | Number of cells in cols. 6 + 60 + 7 + 70 with tallies |
| 31 | Flexibility Factor ⁴ ST Student Talk | Number of cells in cols. 8 + 80 + 9 with tallies |
| 32 | Ranking of Cells | Rank cells as to the frequency (Hi to Lo) |
| 33 | COL 33 | Total column 33 |
| 34 | G Model Ratio | Total in Cells 2-40 + 3-40 + 3-60 + 40-40 + 40-9 + 40-3 + 60-80 + 60-33 + 80-9 + 9-2 + 9-3 + 9-9 + 9-22 + 22-9 + 33-80 + 33-9 + 2-60 + 3-3 + 2-3 + 3-2 + 2-2 |
| 35 | G Model Ratio + | G model ratic + cols 40 + 9 |

| Variable Number | Name - Code Name | Interpretation |
|-----------------|---------------------------------------|--|
| 36 | B Model | Total in cells 4-4 + 4-8 + 4-33 + 4-44 + 5-4 + 5-5 + 5-6 + 6-6 + 6-80 + 7-4 + 7-5 + 7-6 + 7-7 + 8-4 + 8-5 + 8-6 + 8-7 + 8-70 + 8-44 + 80-5 + 80-7 + 80-70 + 8-8 + 80-44 + 9-7 + 44-7 |
| 37 | B Model + | B model ratio + cols. 5 + 7 |
| 38 | ID 8 + 80 + 9 | $\frac{\text{Cols. } 11 + 1 + 2 + 3 + 4 + 40}{\text{Cols. } 5 + 6 + 7 + 60 + 70}$ (For rows 8 + 80 + 9) |
| 39 | MID | $\frac{\text{Cols. } 2 + 3 + 40 + 60 + 80 + 9 + 22 + 33}{\text{Cols. } 4 + 5 + 6 + 7 + 70 + 8 + 80 + 33 + 44}$ |
| 40 | COL 40 | Total column 40 |
| 41 | Student Talk followed by Teacher Talk | Total % in cells $\begin{array}{l} 8-11 \leftarrow \text{to} \rightarrow 8-70 \\ 80-11 \leftarrow \rightarrow 80-70 \\ 9-11 \leftarrow \rightarrow 9-70 \end{array}$ |
| 42 | Student talk after teacher talk | Total in cells $\begin{array}{l} 11-8 \leftarrow \text{to} \rightarrow 11-9 \\ 1-8 \leftarrow \rightarrow 1-9 \\ 2 \leftarrow \rightarrow \\ 3 \leftarrow \rightarrow \\ 4 \leftarrow \rightarrow \\ 40 \leftarrow \rightarrow \\ 5 \leftarrow \rightarrow \\ 6 \leftarrow \rightarrow \\ 60 \leftarrow \rightarrow \\ 7 \leftarrow \rightarrow \\ 70-8 \leftarrow \rightarrow 70-9 \end{array}$ |
| 43 | KS Test 1 | The column category ratios for each of 11 matrices will be compared with the Kolmogorov-Smirnov test for significant differences. |
| 44 | COL 44 | Total column 44 |
| 45 | MWU Test | Mann Whitney U test for each of 17 categories of two groups of teachers |
| 46 | KS Test 2 | The Kolmogorov-Smirnov test will be used to compare the two master composite matrices |
| 60 | COL 60 | Total column 60 |
| 70 | COL 70 | Total column 70 |
| 80 | COL 80 | Total column 80 |

APPENDIX C

TOTAL PERCENTAGES FOR EACH SEPARATE CATEGORY
FOR INDIVIDUAL BEGINNING TEACHER

| Category | Teachers Code Numbers | | | | |
|------------------------------|-----------------------|--------------|--------------|--------------|--------------|
| | 110 % | 120 % | 130 % | 140 % | 150 % |
| 11 | 5.33 | 5.40 | 1.41 | 3.27 | .14 |
| 1 | .30 | .17 | .63 | .20 | .07 |
| 2 | 12.14 | 6.60 | 5.97 | 10.58 | 4.40 |
| 3 | 2.64 | 5.57 | 4.04 | 5.33 | 2.10 |
| 4 | 10.33 | 9.03 | 8.70 | 13.19 | 8.87 |
| 40 | 5.43 | 8.83 | 3.54 | 4.15 | 6.30 |
| 5 | 7.07 | 7.24 | 7.81 | 5.74 | 14.04 |
| 6 | 4.93 | 3.61 | 1.24 | 7.10 | 2.90 |
| 60 | .34 | 0.00 | .10 | 0.00 | 0.00 |
| 7 | 1.14 | .68 | 1.17 | 0.00 | .07 |
| 70 | 0.00 | 1.26 | 1.60 | .97 | .07 |
| 8 | 11.29 | 12.19 | 8.73 | 13.64 | 10.54 |
| 80 | .77 | 2.87 | 8.10 | 15.24 | 3.08 |
| 9 | 31.20 | 29.83 | 33.41 | 14.07 | 36.71 |
| 22 | 4.10 | 2.24 | 10.37 | 4.04 | 8.47 |
| 33 | 2.83 | 4.67 | 2.14 | 2.98 | .84 |
| 44 | .20 | .07 | .40 | 0.00 | 0.00 |
| Indirect Teacher Talk | 36.17 | 35.60 | 24.25 | 36.72 | 21.88 |
| Direct Teacher Talk | 13.48 | 12.79 | 11.92 | 13.81 | 17.44 |
| Total Teacher Talk | 49.65 | 48.39 | 36.17 | 50.53 | 39.32 |
| Total Student Talk | 43.26 | 44.89 | 50.24 | 42.95 | 50.33 |

APPENDIX D

TOTAL PERCENTAGES FOR EACH SEPARATE CATEGORY
FOR INDIVIDUAL EXPERIENCED TEACHER

| Category | Teacher Code Numbers | | | | | |
|-----------------------|----------------------|----------|----------|----------|----------|----------|
| | 520 % | 530 % | 540 % | 550 % | 560 % | 570 % |
| 11 | 1.26 | 2.04 | 1.11 | 1.73 | 2.90 | .50 |
| 1 | .56 | .70 | .30 | 0.00 | 0.00 | 0.00 |
| 2 | 7.17 | 2.34 | 3.06 | 8.67 | 4.54 | 7.96 |
| 3 | 4.06 | 4.43 | 1.87 | 2.74 | 3.40 | 2.92 |
| 4 | 5.90 | 4.02 | 7.39 | 8.76 | 7.64 | 9.57 |
| 40 | 11.39 | 9.88 | 4.21 | 4.48 | 7.01 | 3.59 |
| 5 | 6.73 | 13.86 | 4.51 | 13.21 | 7.32 | 5.50 |
| 6 | 1.81 | 3.02 | 6.41 | 5.81 | 1.74 | 6.13 |
| 60 | .35 | .49 | .70 | 0.00 | .14 | 0.00 |
| 7 | 1.26 | .33 | .40 | .07 | .07 | 1.34 |
| 70 | .17 | .87 | .40 | 1.54 | .63 | .43 |
| 8 | 6.46 | 4.36 | 12.00 | 9.43 | 6.98 | 11.39 |
| 80 | .16 | 2.85 | 16.97 | 14.80 | 8.54 | 5.48 |
| 9 | 44.67 | 42.36 | 26.01 | 24.24 | 48.99 | 32.27 |
| 22 | 6.34 | 6.54 | 6.13 | 1.74 | 1.24 | 3.67 |
| 33 | 1.24 | 1.23 | 9.10 | .77 | .81 | 8.53 |
| 44 | 0.00 | .10 | .10 | .14 | 0.00 | 0.00 |
| Indirect Teacher Talk | 30.34 | 23.41 | 17.94 | 26.38 | 25.49 | 24.94 |
| Direct Teacher Talk | 10.32 | 18.57 | 12.42 | 20.63 | 9.90 | 13.40 |
| Total Teacher Talk | 40.66 | 41.98 | 30.36 | 47.01 | 35.39 | 38.34 |
| Total Student Talk | 51.29 | 49.57 | 54.98 | 48.47 | 64.51 | 49.14 |

REFERENCES

- Amidon, E.J., and N.A. Flanders, 1963. The Role of the Teacher in the Classroom. Minneapolis: Amidon and Associates.
- Amidon, Edmund and Michael Giammattea. "The Verbal Behavior of Superior Teachers." Elementary School Journal, 65:5 February, 1965, pp. 283-285.
- Amidon, E.J., and J. B. Hough. Interaction Analysis: Research, Theory and Application. Boston: Addison-Wesley, 1967.
- Amidon, Edmund and E. Hunter, 1967. "Interaction Analysis: Recent Development," Chapter 13 in Edmund Amidon and John Hough Interaction Analysis: Theory, Research and Application. Boston: Addison-Wesley Publishing Company.
- Amidon, E.J., and E. Hunter, 1966. Improving teaching: analyzing verbal interaction in the classroom. New York: Holt, Rinehart, and Winston.
- Amidon, Edmund and Evan Powell. "Interaction Analysis as a Feedback System in Teacher Preparation." From James Rath The Supervisor: Agent for Change in Teaching. Washington, D.C.: ASCD Publication, 1966.
- Amidon, Edmund J. and Barak Rosenshine, 1968. "Interaction Analysis and Microteaching in an Urban Teacher Education Program - A Model for Skill Development in Teaching." This paper was delivered at the American Educational Research Association Convention, February 1968, in Chicago, Illinois.
- Anderson, Vera Dieckman, 1968. Reading and Young Children. The Macmillan Company: New York.
- Artley, A. Sterl, 1969. "The Teacher Variable in the Teaching of Reading," The Reading Teacher. 23:3 December, 1969, pp. 239-248.
- Bogener, Jerry Dean, 1967. "The application of the Verbal Interaction Analysis to Seven Independent Approaches to Teaching Reading in the Elementary School." Unpublished doctoral dissertation, University of Kansas.
- Bond, G. L., and R. Dykstra, 1967. "The Cooperative Research Program in First Grade Reading," Reading Research Quarterly, 1967.
- Flanders, N.A., 1964. "Some relationships between teacher influence, pupil attitudes, and achievement." In E. J. Biddle and W. J. Ellena (ed.) Contemporary Research on Teacher Effectiveness. New York: Holt, Rinehart, and Winston.

- Flanders, N. A., 1965. Teacher influence, pupil attitudes and achievement. Cooperative Research Monograph No. 12 OE-25040 OE. Washington, D.C.: U.S. Government Printing Office, Document #FS5.225:25040.
- Fine, Marvin J., Charles A. Allen, and Arnold M. Medvene, 1967. "Verbal Interaction Patterns in Regular and Special Classrooms." Paper presented at AAMD Annual Meeting, Denver, May 18, 1967.
- Furst, Norma and Edmund Amidon, 1962. "Teacher-pupil Interaction Patterns in the Elementary School." Paper presented at Schoolmen's Week, University of Pennsylvania, Philadelphia, October.
- Furst, Norma and Edmund Amidon, 1965. "Teacher-pupil Interaction Patterns in the Teaching of Reading in the Elementary School." The Reading Teacher, January 1965.
- Garrard, Judy, 1966. Classroom Interaction-Review of the Literature. Research and Development Center for Teacher Education, University of Texas, July, 1966. ERIC ED 013 988.
- Guzak, Frank J. "Teachers' Questions and Levels of Reading Comprehension," Chapter 8 in Thomas C. Barrett's The Evaluation of Children's Reading Achievement. Newark: IRA.
- Haffner, Herbert M. and June J. Slobodian, 1967. "An Analysis of ~~Teacher-Pupil Interaction Patterns~~," in I.R.A.'s Reading and Realism. Newark: IRA.
- Hamachek, D. 1969. "Characteristics of Good teachers and implications for teacher education." Phi Delta Kappan, 50:6 February 1969, pp 341-344.
- Harris, Albert J. 1969. "The effective teacher of reading." The Reading Teacher, 23:3, December 1969, pp 195-204.
- Harris, A. J. and C. Morrison, 1969. "The CRAFT project; a final report." The Reading Teacher, 22:4, January 1969, pp 335-340.
- Heilman, Arthur, 1961. Principles and Practices of Teaching Reading. Columbus: Merrill.
- Jenkinson, Marion D., 1968. Research Pertinent to the Training of Reading Teachers. Report Resume, Ontario Institute for Studies in Education University of Toronto ERIC ED 020 872,
- La Shier, W. S. 1967. "The use of interaction analysis in SCS Laboratory Block Classrooms." Journal of Teacher Education 18:4 Winter 1967, pp. 439-446.

- Morrison, Virginia B. 1968. "Teacher-pupil interaction in three types of elementary classroom reading situation." The Reading Teacher 22:3 December 1968, pp 271-275.
- Ramsey, W. S. 1962. "An evaluation of three methods of teaching reading." in I.R.A. International Reading Association Conference Proceedings, No. 7 1962, pp 153.
- Schneyer, J. Wesley, 1970. "Research: Classroom Verbal Interaction and Pupil Learning." The Reading Teacher, 23:4 January, 1970, pp. 369-371.
- Stiegel, Lawrence, 1967. Instruction: Some Contemporary Viewpoints San Francisco; Candler Publishing Company.
- Simon, Antia, Thomas Samph, Robert S. Soar, and Edmund Amidon, 1966. "Programming teacher-pupil interaction patterns." Paper presented at the AERA conference, February 1966.
- Tinker, Miles and C. M. McCulloch, 1962. Teaching Elementary Reading. New York: Appleton-Century-Crofts.
- Turner, R. L. 1967. "Some predictors of problems of beginning teachers." Elementary School Journal, 67, 1967, pp 251-256.
- Turner, R. L. and N. A. Fattu, 1960. "Skills in teaching: a reappraisal of the concepts and strategies in teaching effectiveness research." Bulletin of the School of Education, Indiana University 36, pp. 1-40.
- Zahorik, John A., 1968. "Classroom Feedback Behavior of Teachers." Journal of Educational Research 62:4 December 1968, pp. 147-150.