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THE NATURE OF TEACHER-PUPTL INTERACTION IN
INFORMAL AND TRADITIONAL CLASSROOMS

DISSERTATION
Presented in Partial Fulfillment of the Requirements
for the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By
Virginia Ann Arnold, B.S., M.A.
The Ohio State University
1972

Approved by
Advisor
College of Education
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CHAPTER ONE

THE NATURE OF THE PROBLEM

Background of the Problem: Historical and Social Background of Informal Education

Current unrest with educational practices in the United States has been reflected in the growing body of literature typified by such publications as Silberman's Crisis in the Classroom,\textsuperscript{1} Holt's, How Children Fail,\textsuperscript{2} and Goodlad's Study, Behind Classroom Doors.\textsuperscript{3} Such publications indicate a growing disenchantment in the educational community with traditional education programs. Perusal of such literature reflects the general fear that education in American schools has become dehumanized, that in the process of developing educational programs to educate great numbers of children, the individual and his needs has been sacrificed to the necessity for efficiency through emphasis on large group instruction.

\textsuperscript{1}Charles Silberman, Crisis in the Classroom. (New York: Random House, 1970).  


\textsuperscript{3}John Goodlad and Frances Klein, Behind the Classroom Door. (Worthington, Ohio: Charles A. Jones Publishing Co., 1971).
Such criticism is not new to education. A review of the history of education in Western civilization reveals that the giants of education, namely, Pestalozzi, Rousseau, Froebel and Montessori, had focused their work on attempting to develop programs that would center on the individual child. In American education, John Dewey, through his leadership of the Progressive movement, reflected the same concern for the individual.

Progressive education had focused attention on the child, recognized the fundamental importance of the interest of the learner, propounded the thesis that the root of all true education lay in activity, conceived of learning in terms of the growth of character, and championed the right of children as free personalities.

This focus of Progressive education upon the individual child was accepted in both theory and literature, but unfortunately the translation into practice in the average American classroom was less than desired by its proponents. Actually, Progressive education was practiced on a very small scale in a few communities in the late twenties, thirties and early forties.

The advent of the Sputnik triggered a desire to update the curriculum of American schools in view of the "knowledge explosion." Re-emphasis on the disciplines of various subject-matter resulted in development of many programs, sequentially designed in terms of

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preconceived body of knowledge in which the student could proceed to acquire not only facts but process. True, the individual was still a concern, but a concern manifested primarily by what knowledge and processes he could acquire in the intellectual sense, what level of development would be best for introduction and what level mastery could be attained.

As technology became more commonplace and Americans became reassured that their educational superiority was once more secure, a growing dissatisfaction with other facets of life became apparent. The social unrest of the sixties led to a renewed concern with the value of the individual in a technological society. Such concern manifested itself in education with a growing awareness that the affective development of the child was integrally related to his cognitive development. As Cremin stated at the close of his volume concerning Progressive education,

Perhaps it (progressive vision) only awaited the reformation and resuscitation that would ultimately derive from a larger resurgence of reform in American life and thought.5

From this ferment of reform grew the body of criticism mentioned in the opening of this chapter concerning the dehumanizing effect of educational practices in use in traditional classrooms.

A growing desire to humanize education, to somehow refocus educational practices on the "whole child" led to the search for new programs. The search led some educators to Great Britain where a program of child-centered education had been gradually evolving over a twenty year period. What they observed in some of the British infant schools spurred them to return to the United States with a commitment to attempt to place these practices into use in American elementary classrooms. Such practices were variously identified as open classrooms, informal classrooms, integrated days, British Primary Schools, etc.

American experiments with these educational programs are becoming widespread. North Dakota, New Mexico, Arizona and New York City are a few of the places that are implementing informal education according to Silberman in his review.6

Definition of Informal Education

Developing an understanding of any educational program or set of practices must begin with an attempt to define terminology used to label it. One source of definition might emerge from consideration of opposite meanings created by the labels. Open education may be considered to be the opposite of closed education; informal education, the reverse of formal education. Such labeling may be tempting in

6Silberman, Crisis in the Classroom, pp. 265-322.
terms of forming slogans but not too helpful in reaching precise definitions. 7

Weber attempts to move beyond mere labeling to a definition of informal education:

informal, as I understand it, refers to the settings, arrangements, the teacher-child and child-child relationships that maintain, restimulate if necessary, and extend what is considered to be the most intense form of learning, the already existing child's way of learning through play and through the experience he seeks out for himself. 8

Expatiation of several points in this definition may help to form an even clearer description of informal education.

Informal education is child-centered in the sense that the child's interests are viewed as the focal point for the development of educational experiences. The child is viewed as a seeking organism striving to relate what he finds in the environment surrounding him to his own personal experiences. Such a view of the child is rooted in child development theories, most nearly reflective of the work of Jean Piaget.

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7 For the purpose of this study, the set of educational practices under consideration will henceforth be referred to as informal education. Informal classrooms will be considered to reflect informal education as defined in the following section. In this study, open education will be used synonymously with informal education and open classrooms will be considered synonymous to informal classrooms.

If the interaction of the child and his environment constitutes the primary source of his learning, then a definition of environment becomes mandatory. In a global sense, environment constitutes not only the physical manifestations of his home, community and school background but also the human interrelationships such as parent and child; child and child, teacher and child. Such human interrelationships are permeated by the child's perception of them in terms of his personal cognitive, affective and social response.

In informal education, the source of learning is viewed as the totality of the child's interaction with the environment that surrounds him. Weber states,

_The active force of such learning is considered to be curiosity, interest, and the needs of the child's own search for definition and relevance._

In summary, the description of informal education given above sets the stage for attempting to describe the implementation of informal education in a school setting.

**Informal Education in the Classroom**

If learning is an individualistic search by the child for definition and relevance, then the classroom setting must provide ample opportunities for such personalized exploration. Weber suggests,

_The school setting or environment must be rich enough to foster and maintain this curiosity; it must be free enough to allow and even to help each individual follow the path indicated by his own curiosity._

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the experience gained through a child's own use of the school environment is the learning of skills, because skills are needed in the process. How a child would learn in the school setting was also individual - he would learn in his own way, at his own pace, exploring his own interests for his own purpose.10

The informal classroom environment thus is rich in materials including such materials as manipulative objects for math, library books and 'junk' materials for creative expression. Such an environment is then organized into interest centers such as creative living or housekeeping corners, math center, a library, an art center, a science center, etc.

If the child's interests are primary, then he must be permitted choices of experiences which encourage him to pursue his own way of learning. In this context the role of the teacher in the informal classroom becomes one of facilitating such choices by constantly enriching the environment and encouraging and permitting such choice making by the child. The role of the teacher is a demanding one, for she must be cognizant of each child's total developmental pattern; be aware of the structure of the various disciplines; and be skilled in knowing when to intervene and when not to intervene with the child to promote his optimum growth. Seen in this perspective, the teacher in an informal classroom becomes a highly active participant in the learning process of the individual child.

10 Ibid.
The teacher in the informal classroom must also be aware of the importance of her role in interaction with each child. From birth the child is born into the human relationship. Weber comments on the implications for this human relationship.

From the very beginning his unique development both emotional and intellectual, is affected by the reality of his environment and the reality of his relationships with the people in that environment.\(^1\)

As the young child searches to define the reality of his world, his play becomes a source of resolving the discrepancies he may encounter. He acts out the relationships in play that he is constantly confronting in reality. His initial egocentricity is modified and corrected through his companionship with other children and from this companionship, he gains perspective about adults. The adult's role in this relationship becomes one of correcting the discrepancies the child may encounter. Weber says:

... the adult's obligation to provide and to extend the environment as necessary for each child's learning and in the adult's obligation to offer the correctives of reality and discussion of additional and alternative possibilities that might encourage and support a child's own restructurings of his first reference frame.\(^2\)

As the adult in the informal classroom, the teacher becomes an active participant in the child's restructuring of the experiences that he finds in his environment.

\(^1\) Ibid., pp. 174-175.

\(^2\) Ibid., p. 177.
The content of this section was designed to develop a historical and social framework for understanding the current influx of informal education programs. A second purpose was to develop a theoretical statement concerning why the teacher's contact with the child is such a vital component of informal education. In developing the statement of the problem for this research, the investigator has been primarily concerned with relating theory to practice. What behaviors are demonstrated by teachers and pupils during the personalized interactions in the informal classroom? Recognizing the importance of such interactions, how frequently do they occur in actual practice in the classroom? These and other questions concerning individual interactions remain to be fully explored by research. At this point in time, descriptive studies are needed which can relate the body of theory in informal education with the actual practices in informal classrooms. This study is an attempt to provide such descriptive data concerning one facet of the teacher and pupil behavior in the informal classroom.

Statement of the Problem: Development of the Problem

The study of the nature of individual interactions between teacher and child would appear to be a fruitful source of data for describing teacher behavior in informal classrooms; however little research on the topic is available. In order to determine the feasibility of such a study, a pilot study was instituted based on observation of five informal classrooms. The two basic purposes of the pilot study were:
1. To develop an overall view of teacher and child behavior in an attempt to isolate possible factors for study.

2. To develop a structure for a study based on these factors which would be observable, replicable and feasible.

Data from the pilot study confirmed the writer's hypothesis that individual interactions between teachers and children did occupy a major portion of the activity in the informal classroom. Such individual interactions were observed to occur in two types of settings which could be classified as periods of on-going individual activity and periods of on-going group activity. Other individual interactions occurred which seemed to interrupt on-going activity. Additional evidence seemed to indicate that the frequency of individual interactions in these settings tended to differ among teachers in the pilot study. This evidence from the pilot study led to the conclusion that a study of the frequency of individual interactions in specified settings would be helpful in developing a description of teacher and child behaviors in informal classrooms.

The theory of informal education as stated earlier indicated the importance of the child as the focal point of the educational program. The child's questions, his interest, his active seeking, characterize the child-centeredness of the activity in the informal classroom. Translating this theory into classroom practice, it would seem apparent that many of the individual interactions occurring in the classroom might be initiated by the child. On the other hand, the role of the teacher had also been defined as a
highly active one. Thus, it seemed equally plausible that the teacher might initiate many individual interactions also. Evidence obtained from identification of the initiator of individual interactions might also aid in describing the nature of individual interactions between teacher and child in informal classrooms. A study of the frequency of such interactions initiated by either the teacher and child in different settings of on-going group and individual activity might further describe the role of the teacher and child in the classroom. Evidence thus obtained from the study of the frequency of individual interactions in informal classrooms, as well as the identification and frequency of initiator of such individual interactions would provide for a quantitative description of teacher-child behavior in informal classrooms.

In addition to this quantitative analysis, a study of the content of such interactions might provide a qualitative source of description. Individual interactions in informal classrooms are most often characterized by the use of language. The vital move from experience to expression of that experience in language is aided by spontaneous conversing among children. However, the role of the teacher is equally important. Weber commented on the English view of this vital role.

The English verdict, then, is that the catalytic agent that turns a child's experience into language is the fostering presence of adults discussing that experience with him.\(^{13}\)

\(^{13}\)Ibid., p. 224.
Results of the pilot study indicated that any qualitative analysis of the content of individual interactions would have to deal with a description of the language used by teacher and child.

While the verbal nature of such interactions was considered to be of primary importance, evidence from the pilot study demonstrated that nonverbal behavior characterized an important factor in communication between teacher and child also. Galloway suggested,

> Among many pupils the nonverbal is heavily relied upon to reveal the authenticity, truth and genuineness of a message communicated by a teacher.\(^{14}\)

Nonverbal behaviors include such common acts as gestures, displays of physical contact such as putting one's arm around someone, and establishing eye contacts when speaking to someone. Another facet of nonverbal behavior concerns the use of space. Does the teacher or child operate from fixed positions or do they evidence free movement? One other facet of nonverbal behavior concerns the use of time in the classroom. Is the classroom activity so tightly scheduled that the teacher and child feel pressured by time, or is the activity more flexibly scheduled so that time becomes a servant instead of a master.

From this brief summary concerning nonverbal behavior it would appear that any attempt to describe the nature of interaction between teachers and children must also include some reference to nonverbal behavior.

In summary, the analysis of verbal and nonverbal content of individual interactions would provide a source of qualitative data for the study.

The major purpose of this study was to describe the nature of the individual interactions between teacher and children in informal classrooms. It has been proposed that such a study would add to the growing body of knowledge concerning informal education. However, one nagging question remained in the mind of the researcher: do teachers and children in informal classrooms perform any differently than their counterparts in traditional classrooms? This question seemed particularly appropriate when attempting to describe a new program of education. Based on the problem proposed in the study for the description of one facet of informal education, would it be possible to likewise obtain a description of a similar facet of traditional education?

In terms of the background of this study, the teacher is an active participant in the learning process. Undoubtedly the traditional teacher fits into this role too. Does the traditional teacher participate in individual interactions with children? One need not observe too long in traditional classrooms to realize that the teacher actively participates in individual interactions with individual children as well as groups of children. Observation would also lead to the conclusion that such interactions in traditional classrooms are characterized by verbal and nonverbal behaviors. If individual interactions occur in informal and traditional classrooms,
would an investigation of the nature of such interactions be one source for developing understanding of the differences between the role of the teacher and the child in the informal and traditional classrooms? Would such an investigation also add depth to the description of the role of the teacher in the informal classroom? It was the opinion of this researcher that the answer to both these questions was affirmative.

Statement of the Problem

The purpose of this study was to describe the nature of individual interactions between teachers and children which occur during individual and group activity in informal and traditional classrooms. The study was designed to provide quantitative and qualitative information which could be used to describe the nature of such individual interactions.

The following null hypotheses served as the basis for the investigation of quantitative data.

1. There will be no significant difference between the frequency of interaction which occurs during periods of on-going group and on-going individual activity in traditional and informal classrooms.

2. There will be no significant difference between the frequency of interactions excluding interactions classified as interruptions which occurs during periods of on-going group and on-going individual activity in traditional and informal classrooms.
3. There will be no significant difference between the frequency of interactions excluding interruptions initiated by the teacher which occurs during periods of on-going group and on-going individual activity in traditional and informal classrooms.

4. There will be no significant difference between the frequency of interactions excluding interruptions initiated by the child which occurs during periods of on-going group and on-going individual activity in traditional and informal classrooms.

5. There will be no significant difference between the frequency of interactions classified as interruptions which occurs during periods of on-going group and on-going individual activity in traditional and informal classrooms.

6. There will be no significant difference between the frequency of interactions classified as interruptions initiated by the teacher which occurs during on-going group and on-going individual activity in traditional and informal classrooms.

7. There will be no significant difference between the frequency of interactions classified as interruptions initiated by the child which occurs during on-going group and on-going individual activity in traditional and informal classrooms.
The following assumptions served as the basis for the investigation of the qualitative data. This set of assumptions represents a synthesis of several points of view derived from a review of literature and research concerning educational practices in informal classrooms. The assumptions related possible uses of individual interactions in the classroom to these accepted informal education practices. The researcher does not propose that the list of assumptions is inclusive of all activity in informal classrooms or all points of view.

**General Assumptions**

1. The content of individual interactions between teachers and children will be primarily verbal in nature.

2. The nonverbal behavior exhibited by teachers and children in individual interactions will primarily serve to supplement and reinforce verbal behavior.

**Assumptions Related to Setting of Interactions**

Within informal classrooms:

3. Individual interactions between teacher and child occurring during periods of on-going individual activity will be longer in duration and more frequent than interactions occurring during on-going group activity.

4. Individual interactions between teacher and child during periods of on-going individual activity will provide a richer source for description of the nature
of the informal classroom than individual interactions which occur during periods of on-going group activity.

**Assumptions Related to Substantive Function**

Within informal classrooms:

5. Individual interactions between teacher and child will provide a rich resource for the teacher's use in diagnosis of the child's interests, his choice of classroom activities and his level of achievement.

5a. Interactions of this nature are characterized by use of such verbal behaviors as questions which seek information or statements that request specific responses.

6. Individual interactions between teacher and child will provide opportunities for the teacher to guide and extend the learning of the child on the basis of his personal level of development.

6a. Interactions of this nature will be characterized by use of such verbal behaviors as open-ended questions and divergent responses as well as statements which volunteer information.

7. Individual interactions between teacher and child will provide opportunities for mutual exploration of the uses of the wide variety of materials available in the classroom.
7a. Interactions of this nature will be characterized by use of such verbal behavior as statements which suggest various alternatives or questions that seek information.

8. Individual interactions occurring between teacher and child during periods of on-going individual activity, which are concerned with substantive content will be of longer duration than those interactions devoted to management of classroom activities.

**Assumptions Related to Managerial Function**

Within informal classrooms:

9. The teacher's use of time will be governed primarily by the need for individual interactions with children during periods of on-going individual activity and to a lesser extent, by the need for such interactions during on-going group activity.

10. The teacher and the child will use individual interactions to schedule activities during periods of on-going group and on-going individual activity.

11. Individual interactions will provide opportunities for the teacher and child to manage routine classroom activity such as movement inside and outside the classroom, use of time, regulation of behavior, etc., as such activity pertains to an individual child.
12. Teachers will use individual interactions to formulate groups for instruction based on her assessment of a common need demonstrated by specific children at a particular time; therefore instructional groups will vary in terms of purpose, membership and duration of organization.

13. Individual interactions classified as interruptions will be related to managerial activity within the classroom rather than substantive content.

Assumptions Related to Affective Function

Within informal classrooms:

14. Individual interactions between teacher and child will provide opportunities for the mutual expression of their personal concern for each other.

15. Individual interactions between teacher and child will provide a private situation in which the teacher can administer disciplinary restraint.

16. Individual interactions between teacher and child will reflect the teacher's consistent use of verbal and non-verbal behaviors which demonstrate the use of positive rather than negative declarations of reinforcement.

Procedure of the Study

The purpose of the study was to describe the nature of the individual interactions between teachers and children in informal and traditional classrooms. The study sample consisted of four
first grade classrooms chosen from an upper socio-economic school district. Two of the classrooms were involved in informal education and two were classified as traditional classrooms. The two teachers in informal classrooms were selected on the basis of their high quality of performance observed during the pilot study; the recommendation of the researcher's university advisor who had visited primary schools in Great Britain; and their willingness to participate in the study. The teachers in traditional classrooms were identified by the director of elementary education in the school district on the basis of their high quality of performance and their willingness to participate in the research.

Classroom observations were conducted over a three week period in late February and early March. Each classroom was visited for at least ten, thirty minute periods of observation. Audio-tape recording equipment consisting of a wireless microphone worn by the teacher and an F.M. receiver cassette tape recorder was used to record the verbal output of teacher and children. The observer recorded the nonverbal behavior and frequency of interactions in different settings, using an instrument designed by the researcher.

Evidence obtained from the study was divided into two categories: data for quantitative analysis and data for qualitative analysis. For the quantitative analysis, data concerning the frequency of interactions in different settings in traditional and informal classrooms and source of initiation of such interactions was submitted to statistical treatment using the chi-square to test the null hypotheses.
For the qualitative analysis, verbal descriptions of verbal and nonverbal content of the individual interactions between teachers and children in traditional and informal classrooms were compared to the set of assumptions derived from a review of the literature.

Definition of Terms

1. Individual interactions were defined as situations in which the teacher and student manifest verbal or nonverbal behavior in a one-to-one relationship. Such a one-to-one relationship in a group setting was evidenced by verbal or nonverbal behaviors directed toward a specific member of the group. Such direction can be noted by the naming of a person, pointing to a person, nodding, or any other behavior which tends to seek response from a specific individual.

2. Initiator of interaction was considered to be the person who instigates individual interaction through verbal or nonverbal behavior.

3. On-going individual activity referred to a setting in which children are involved in independent pursuits chosen by them or suggested by the teacher.

4. On-going group activity referred to a setting in which two or more children are involved in an activity, either under the guidance of the teacher or by reason of their own choice of working partner or partners.

5. Interruptions were considered to be interactions interjected by a teacher or child during an interaction already in progress, tending to temporarily suspend the original interaction.
6. Substantive function referred to those interactions related to the development of subject matter or cognitive process. Such interactions reflected the intellectual content of the behaviors of teachers and children.

7. Managerial function referred to those interactions related to the development and implementation of routine within classroom activity. Such interactions are concerned with such behaviors as giving directions, seeking permission, etc.

8. Affective function referred to those interactions related to demonstration of humaneness, regulation of behavior through discipline and use of positive or negative forms of reinforcement.

Scope and Limitations of the Study

The sample of this study was restricted to four first grade classrooms in an upper socio-economic community in one geographic area. As such, caution must be exercised in attempting to relate these findings to teachers and children in classrooms representing any other socio-economic community in any other geographic area.

The selection of informal teachers was based on a somewhat arbitrary condition. An available population of teachers in informal education programs was severely limited due to the newness of such programs in the area of the study. Teachers who constituted the sample were experienced first grade teachers; however they were engaged in their first year of informal teaching. As such, the evidence obtained from the data concerns an emerging program of informal education rather than an established one.
The procedure for selecting traditional teachers was based on somewhat arbitrary conditions also. The researcher requested the director of elementary education in the district to recommend two highly qualified teachers who would be willing to participate in the study. While the teachers chosen were experienced first grade teachers, the criteria of selection precluded representing them as typical or superior to any other teachers in traditional classrooms in the district.

The limitation of classrooms to first grade informal classrooms was a decision based on the judgment of the researcher concerning the quality of their performance. It was believed that the teachers chosen for study reflected most closely the best practices of informal education available in the geographic area. Another factor in the choice of first grade classrooms was based on the fact that much of the available literature on informal education is based on practices of the British infant schools which includes children from five to seven years of age.

Due to the exploratory nature of the study, the researcher was the only observer recording data in the classrooms. This condition was accepted for four reasons. First, the observer had spent time in observation in informal classrooms during the pilot study and felt qualified to record data fairly objectively. Second, the researcher was involved in a project at the university dealing with the training of teachers in informal education. Third, the use of audio-recording equipment provided a source of objective representation which could serve to some extent to offset the subjective nature of
the observer's recording of data. Fourth, another consideration was
the financial situation of the researcher which precluded extensive
use and training of other observers.

The reproduction quality of the tapes proved to be a limitation
of this study which affected the quality of the data to some extent.
The microphone employed for taping teachers permitted only reception
of the child's comments when in direct proximity to the teacher.
Such limited reception was adequate for individual interactions
during on-going individual activity but proved to be a problem for
recording pupil responses during on-going group activity. When
possible the observer tried to record such verbal responses, but this
procedure was not always possible due to the rapid exchange of verbal
comments or the inability of the observer to hear the child. Since
the researcher was primarily concerned with the teacher's verbal
behavior, this problem was not considered a major issue in assuming
validity of the data, but it did present a limitation in recording
of pupil behavior which should be acknowledged as a limitation in
the study.

Although individual interactions provide a rich source of
interaction between teachers and children, they are not the only
source. At times in both types of classrooms, teachers will interact
with the entire group of children. Examples of such interactions
might include reading a story to all the children, giving directions
for a class project or even taking lunch count. These incidents were
not included in the analysis of this data, but their occurrence
indicated that the description of individual interactions provided only a part of the total picture of classroom interaction.

Only interactions between teachers and children were recorded. While such interactions constituted a significant portion of classroom interaction, the remaining portion of classroom interaction devoted to interactions between children without the teacher present was not recorded. Such a procedure was completely in keeping with the objective of the study to study only those interactions between teachers and children; however the description of the nature of individual interactions between teacher and child should be viewed as representative of only a part of the total classroom interaction.

Summary

The renewed concern for the individual and his life within a highly technological society has generated a desire for reform of some of the major institutions in American society. Such urge for reform has led some educators and laymen to decry what they consider to be the dehumanizing practices employed in traditional classrooms in American schools. One response to such criticism has been the growing interest in establishing programs of informal education similar to those programs in practice in English infant schools.

The philosophy of informal education emphasizes the importance of the total child as an active agent in his own learning. Informal classrooms reflect this concentration on the individual through providing a rich environment of experience and materials and encouraging and permitting a freer choice of direction by each child.
The role of the teacher is a highly active one. Of particular interest to this study was the importance placed on the interactions which occur between the teacher and child in informal classrooms.

The purpose of this study was to describe the nature of such individual interactions in informal and traditional first grade classrooms. Through an observational study of two informal and two traditional classrooms in one upper socio-economic school system data was recorded representing the frequency of such interactions and the verbal and nonverbal behaviors of teachers and children.

Chapter Two of this study will review the research and literature related to the proposed study. This review will serve as the theoretical basis for the assumptions proposed in the statement of the problem.

Subjects, instruments and procedures used in the study will be described in Chapter Three. The data will be presented and interpreted in Chapter Four. Chapter Five will include a summary of findings, conclusions, implications and recommendations for further research.
CHAPTER TWO

REVIEW OF THE LITERATURE

In the continuing search for more accurate descriptions of teaching, researchers have attempted to identify the significant variables involved in this complex process. The variable most commonly agreed upon as highly significant by researchers and practitioners alike has been the teacher. Studies which attempted to describe the teacher: her characteristics, her effectiveness and her interactions with children have been classified as teacher behavior research. Since the stated purpose of this study was to define and describe the nature of individual interactions between teachers and pupils in informal and traditional classrooms, it can be classified in this same field of inquiry.

The objectives of this chapter can be stated as follows:

1. To present a brief review of the research in teacher behavior in order to provide a perspective for this study.

2. To specifically review studies and literature which relate to teacher and pupil behavior in informal classrooms.

3. To present a review of selected studies and literature concerning teacher behavior in traditional classrooms most closely related to the objectives of this study.
An Overview of Teacher Behavior Research

From its inception, the major focus of the research in teacher behavior has been aimed at the study of what constitutes effectiveness in teaching. Early studies identified measures of effectiveness which seem unsophisticated today. Morrison suggested that measures of student attention in class might be a source of criteria for identifying quality performance. He suggested that 100% attention was the goal of efficient teachers. Barr repudiated the evidence obtained from such studies since he stated that observable signs of overt attention might not necessarily be representative of a state of mind or learning on the part of the student, thus negating the use of attention measures as indications of effectiveness in teaching. From this early research factors such as direct observation in classroom and development of observation instruments were adapted for use in the designs of later studies.

In the last two decades teacher behavior research has proceeded along three lines of inquiry. Ornstein defined these categories:

Methods for organizing teacher behavior research generally fall into one of three categories:
1) model systems, 2) instructional process, and
3) teacher behavior characteristics.

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The voluminous research on teacher characteristics has produced contradictory and inconclusive results. Such studies attempt to define characteristics of "good" teachers through the use of rating scales and psychological tests. Getzels and Jackson point out the major problems of this kind of research in such areas as:

a. Definitions of traits or characteristics,

b. Instrumentation used to identify characteristics,

c. Acceptance of universal criterion for defining effective behavior.  

Model systems attempt to include every variable in operation in the classroom and wield them into a system which effectively describes the teaching process. Ryan's communication of information model and Biddle's study of seven cause and effect factors for teacher effectiveness are representative of research falling into this category. Various criticisms of model systems have been compiled by Ornstein. Some of the most often mentioned include:

1. Number of variables make model approach unmanageable.

2. Teacher-student interactions are too complex to simplify into a model.

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3. Teacher behavior may be too spontaneous and uncontrollable to be processed into a model.\textsuperscript{21}

Studies of instructional process are designed to describe the process of teaching as it takes place in the classroom. Such research can be classified into two categories.

1. Studies which tend to be descriptive and based on non-systematic observation. Jackson's description of life in an elementary classroom is representative of this category.\textsuperscript{22} An observer in the classroom takes notes and develops descriptions. Smith and Geoffrey follow this approach although their study was aimed at developing a theory of teaching in urban classrooms.\textsuperscript{23} One problem with this type of study is inherent in the freedom given to the researcher to analyze the data without the constraints of preconceived hypotheses. Such freedom could well lead to descriptions of teaching based on the bias of the researcher.

2. Studies which are analytical, based on systematic observation in which the observer tests preconceived hypotheses, teacher-student interactions, and/or teacher behavior characteristics. Greensberg's review of studies of teacher behavior reports a common belief held by most researchers in this group.

\textsuperscript{21}Ornstein, "Teacher Behavior," p. 552.


That aspects of the classroom enterprise exhibit observable regularities and can, therefore be systematically and reliably identified, categorized and tabulated is the assumption that is central to all research in curriculum and teaching.... That the verbal behavior of the classroom is either one central aspect of classroom behavior that warrants investigation, as Beliack suggests, or that verbal behavior is a reliable measure of total behavior, as Flanders suggests are two alternative assumptions of these studies.24

Out of the myriad of studies available in this group, the following two have been chosen as representative of this group due to their replication and adaptation in other studies.

Flanders studied the language of teachers as it reflected patterns of direct-indirect influence on teacher-student interaction.25 The theoretical background of Flander's studies drew heavily upon the earlier work of Anderson and Brewer's study of dominative and integrative teacher behavior as well as Withall's basic concepts of "learner-centeredness and teacher-centered patterns of classroom interactions."26 Flanders utilized a nine point interaction scale categorizing statements by teachers and pupils. Combinations of these statements resulted in classification of teachers as direct or indirect. By relating the findings derived from using this scale


with scores of pupil achievement, Flanders asserted that indirect teachers tend to influence superior achievement in their students.

Contrary to Flanders' affective view of teacher-pupil interaction, Bellack's analytical system treated interaction from a cognitive viewpoint. Interactive behaviors were categorized as pedagogical moves, labelled as structuring, soliciting, responding and reacting.27 Such pedagogical moves operated in sequences identified as pedagogical cycles. The content of the moves was classified into categories termed substantive, substantive-logical, instructional and instructional-logical. Within Bellack's study, the same content was used by all the subjects in the secondary classroom of the sample. In terms of methodology, Bellack developed his classification system from analysis of verbatim protocols derived from audio-tape recordings of the language of teachers and students in the classroom. Measures of achievement based on content as well as attitude scales were administered to the students.

Like other teacher behavior research, these and other studies of instructional process provided a vast array of somewhat conflicting evidence. Such studies do focus on certain behaviors which are observable, recordable and congruent with the theoretical base assumed by the researcher. In attempting to compare results, problems have arisen in terms of differentiating definitions of behaviors, assignment of significance to some behaviors over others and differing origins for assumptions of theoretical bases.

Consideration of certain issues gleaned from a review of teacher behavior studies exerted influence on the design of this study in relation to the following points:

1. A category system such as Flanders permitted categorizing behaviors of students and teachers but it also tended to isolate these behaviors apart from the context of the teacher-student interaction.

2. Reliance on pre-set categories might eliminate from consideration other behaviors not defined by categories. Although inclusiveness was purported as a goal for category systems, such a goal was hard to obtain when dealing with the complexity of teacher-pupil behaviors evidenced in the classroom.

3. Using a system such as Bellack's would enable the researcher to categorize substantive behaviors but the equally important affective or managerial behaviors might be ignored. While such an intricate system of categorization might be highly effective with the subject content of the conventional setting of the secondary classroom, it seemed inappropriate for the content and the high level of activity at primary grades.

4. Most teacher behavior research has been carried out in conventional classrooms, primarily at the upper-elementary and high school levels. In such conventional classroom settings, the teacher operated within a fairly well-defined structure of authority and control of movement and response of groups of children. In these settings, the teacher is easily observable in terms of physical presence and level of verbal and nonverbal activity. Students
generally respond one or two at a time, also easing the burden for the observer. Thus procedures highly useful in these kinds of situations would have to be adapted or even discarded in settings where teachers and students moved frequently and verbal and nonverbal interaction was constantly changing focus and direction.

Based on the consideration of these problems and this general review of teacher behavior research, it seemed evident that a study purporting to describe behaviors of teachers and children should utilize some category system which would systematize the collection of data. Such data should be quantifiable and tested against hypotheses when possible. However, such a study should also provide for the collection of data which would clarify the context as well as the content of the teacher-student interactions as they occurred in natural classroom settings. This type of data would provide a source of description which should generate testable hypotheses for experimental studies in relating teacher behavior to pupil achievement.

The following portions of this chapter will deal with a review of research and literature underlying the assumptions and design for this study.

Teacher Behavior in Informal and Traditional Classrooms

The teacher plays an essential role in the informal classroom. Weber emphasizes this importance as she says,
The educator... is responsible for ensuring the quality of the environment and he takes the primary process of interaction as guide.28

Featherstone relates the role of the active teacher in the informal setting as follows:

Plainly the child's experience is the starting point of all good informal teaching. But passive teaching has no more place in a good informal setting than have passive children. Active teaching is essential.29

Further evidence of this need for active teaching comes from the report of the Plowden committee on informal education in England.

From the start there must be teaching as well as learning; children are not "free" to develop interests or skills of which they have no knowledge. They must have guidance from their teachers.30

Silberman suggests that one major difference between the schools in the Progressive era and the schools in the current informal education movement is the dedication to the active role of the teacher. The teacher is in charge.31

Within traditional classrooms, it has long been accepted that the teacher occupies a place of central importance. Universally accepted is the saying that the teacher makes the difference in the


31Ibid., p. 208.
learning and experiences of children in the classroom. Undoubtedly, the teacher is in charge in traditional classrooms also. If the teacher occupies a central role in both informal and traditional classrooms; if she is "in charge" in both settings, then one must search for evidence that will ascertain what are the behaviors that differentiate the teacher's role when she is in charge in these two different settings.

As the individualism of the child is considered inviolate in informal education so is the individualism of the teacher. Teachers are encouraged to react to the needs of the child and the needs of the environment in a highly personalized fashion. Bott suggests,

Each teacher virtually builds his own role and there should be scope for each to play his best part and for that part to be, in itself, a developing one.32

While such an individualized approach is highly acceptable, it is not too descriptive. In an attempt to identify the role of the teacher, labels are frequently employed. Brown and Precious suggest that the teacher's role is one of advisor and guide.33 In a report in a national journal, the teacher's role is considered one of facilitator and guide to learning on an individualized or small group base.34


34"Open Education: Can British School Reforms Work Here?" A Special Report, Nation's Schools. 87 (May, 1971), 47.
The definitions of such labels vary by interpretation. What is a facilitator? What does it mean to be an advisor and guide?

**Teacher Characteristics and Functions**

In an attempt to describe the role of the teacher in informal classrooms, research has dealt with identification of characteristics of teachers and functions teachers may perform. Walberg, in his study of characteristics of open education, reviewed the literature in a search for characteristics which could attempt to set parameters of open education. Themes were identified as the basis for development of a conceptual framework for delineation of pedagogical characteristics of open education teachers at primary level. These themes were:

1. Instruction: guidance and extension of learning.
2. Diagnosis of learning events.
3. Humaneness—respect, openness, and warmth.
5. Assumptions: ideas related to children and the process of learning.
6. Seeking activity to promote continuing personal growth.
8. Self-perception of the teacher.

The research staff developed 106 statements believed to be descriptive of the specific characteristics involved in these themes. Using a

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36 Ibid., pp. 11-18.
three point rating scale, the characteristics were submitted to forty-three experts for verification. Based on the return of twenty-one forms, a revised list of 100 characteristics was designed. While a detailed description of each of the characteristics is impractical in this review, a related study does indicate some pertinent evidence for developing background for this research.

Evans and associates developed a fifty item rating scale based on the 100 characteristics. This rating scale was used in tandem with a teacher questionnaire in an attempt to see if the scale would differentiate open classrooms from traditional classrooms. Half the items on the fifty item scale were drawn from the provisioning theme while the other items were derived from the other themes. The provisioning theme dealt extensively with developing and organizing materials in the physical environment and providing for learning interactions within the environment in terms of group instruction and individual instruction. The use of the provisioning theme for the larger amount of items was consistent with the literature in informal education which emphasizes the cruciality of a diverse and stimulating environment in the classroom.

Trained observers visited twenty-one traditional classrooms and twenty-one open classrooms in the United States and twenty open

classrooms in Great Britain. Only teachers with at least one year of experience in open classrooms were chosen. Classrooms were chosen from middle, upper middle and lower and working class socio-economic settings.  

Findings indicated the scale did differentiate between open and traditional classrooms. In terms of the teacher's role, the open classroom teacher concentrated his time in intensive diagnostic help with a child rather than giving whole group instruction. In terms of provisioning, the open classroom teachers demonstrated more variety in use of materials and activities as well as more flexibility in grouping and scheduling procedures.

While the Evans research found that it is possible to identify characteristics of open classroom teachers, another researcher has attempted to identify functions that are performed by teachers in informal classrooms. Gardner and Cass undertook a longitudinal study of teacher behavior of eighteen nursery school teachers and thirty infant school teachers in Great Britain. Data obtained from their observation of verbal and nonverbal behaviors of teachers was used to delineate seventy-nine significant behaviors in nine categories.

38 Ibid., pp. 10-12.

39 Ibid., pp. 16-26.

These nine categories included:

1. Actions of the teacher which show concern with the provision of intellectual stimulus or the imparting of information.

2. Actions of the teacher where the material environment is used to assist in giving knowledge and experience.

3. Actions of rendering physical care, protection and comfort.

4. Personal friendly advances from teacher to child.

5. Actions of the teacher which show concern with promoting social attitudes, (1) by direct means and (2) by example.

6. Observation of the children.

7. Praise and encouragement.

8. Actions of the teacher which are concerned with maintaining discipline and control of the children's behavior.

9. Actions of teachers when not in direct contact with children of their own classes.  

By tabulating the frequency of occurrence of these behaviors, descriptions of excellent classroom performance by teachers were presented. The category which reflected the highest number of contacts was number one: Provision of intellectual stimulus. The two items in this category which received the highest number of contacts were:

1. Questions child (or children's actions or activities) to obtain information which the teacher wishes to know in order to understand a situation and thus know what help if any may be needed or to check that the child is getting correct information or using appropriate aids.

2. Helps by giving information or explanation spontaneously.

41 Ibid., pp. 35-38.

42 Ibid., p. 35.
Another category revealed a high number of contacts in praise and encouragement, namely items:

1. Assents by word or gesture.
2. Praises child's performance, word or action.43

A third category was also high in number of contacts observed:

Group IIIIC: Actions of the teacher which are concerned with discipline and control. Again, two items carried the weight of the contact.

1. Suggests or advises appropriate action or behavior.
2. Gives a positive command.44

Supporting Gardner and Cass' evidence concerning the emphasis of teacher behavior in stimulating intellectual development, Yardley quoted a study done by C. L. Baird concerning the role of the teacher of six and seven year old children.45 Baird reported that 90% of his sample of teachers in informal classrooms spent a major part of time and effort in catering for intellectual development. Other emphases in descending order were attention to emotional development, fostering social attitude and maintaining control and discipline.

While these studies are related to informal classroom teachers, Gardner and Cass indicated there was a similarity in purpose in their study and that of Hughes in the United States. Hughes recorded

43Ibid., p. 37.
44Ibid.
the verbal and nonverbal behaviors of forty-one elementary teachers
in traditional classrooms. From the verbatim records of these
observations, she attempted to classify teacher behavior in terms of
the functions that teachers performed for children in classrooms.
Hughes believed:

... that the superior-subordinate relationship in the
teacher-learner situation with its culturally bestowed
power position over the child makes it impossible for
the teacher to act in the classroom without performing
a function for some child group or the entire class as
recipients.

Functions revealed through analysis of data were identified as
controlling, imposition, facilitating, content, response and positive
and negative affectivity. Sixty-eight per cent of the teachers had
one or more of their records with fifty per cent categorized as
controlling. Controlling was defined as goal setting for children
by teachers. This function also included control of specific
response and processes of working. Control also was regulated in
terms of who got to do what. Hughes suggested that regulation was
more acceptable to children when they understood that such regulation
was based on publicly stated needs and desires of the group. Hughes
called this method of procedure the use of public criteria.
Content was the second highest function demonstrated by the teachers studied by Hughes. Seventy-four per cent of all records had twenty per cent or less of teaching acts falling within this category.\(^{50}\) This category stemmed from the response of the teacher to data placed in the situation by children. Teacher behaviors in this category included serving as a resource person, stimulating, clarifying content, evaluation (in terms of content) and turning questions back to class.

Hughes suggested further that teacher-pupil interaction consisted primarily of question-recitation with emphasis on specific answers. Hughes indicated her concern for the heavy emphasis on teacher control at the expense of utilizing children's needs, interests and responses as she defined good teaching.

The measure then of good teaching is the quality of response the teacher makes to the child or group with whom he is interacting. It is the child who is reaching out, seeking, raising the questions, trying out his ideas.\(^{51}\)

In line with Gardner and Cass' findings of positive praise, Hughes indicated that generally more acts of positive affectivity by teachers were recorded than those of negative affectivity.

A comparison of the results of these studies of informal and traditional classrooms revealed a common objective held by teachers for stimulating the intellectual development of children. While the goal was the same, the method utilized to reach it revealed differences

\(^{50}\)ibid., p. 279.

\(^{51}\)Hughes, Assessment of Teaching, p. 215.
in emphasis. The informal teacher sought information from the child concerning his interests and his line of inquiry in order to provide materials, activities and group and individual experiences to broaden his scope of intellectual endeavor at his individual level of development. The traditional teacher gave information to the child and expected responses indicative of pre-set goals determined by a curriculum prescribed for all children at that level. Materials, activities and individual and group experiences were designed to implement the goals of the curriculum.

In terms of affective development of children, both types of teachers dealt more in terms of the positive reenforcement. One might assume from this that both types of teachers evidenced warmth and humaneness toward children under their care.

Verbal and Nonverbal Behavior of Teachers

These two studies were likewise important because of their emphasis on the language of the teacher. Analysis of language has served as the basis for many teacher behavior studies in traditional classrooms. As stated earlier, both Bellack and Flanders utilized language as the primary source of data in their studies.

In reference to informal education, Brown and Precious suggested the value of teacher talk by quoting Piaget.

According to Piaget, the teacher sees and seizes opportunities for talking to the children.52

They also emphasized the necessity for the teacher to pose questions. They stressed the importance of the child's language by asserting that teachers should help children verbalize and formulate their ideas and thoughts. There is a need for children to question and try to explain, for such use of language helps in classifying and organizing their thinking.53

Another factor in this research concerned the attempt to do some analysis of nonverbal behavior. Galloway suggested a definition of nonverbal communication.

Nonverbal communication is behavior that conveys meaning without words. It can be symbolic or non-symbolic, spontaneous or managed. It can be expressive, transmitting emotionality; or it can be informative, transmitting data. It can be as specific as a gesture or as general as the atmosphere of a room. It can be dynamic or static.54

Based on this definition, nonverbal behavior represents a significant portion of the overall picture of a teacher's performance in the classroom.

Goffman suggested in his study of strategic interaction that both parties in an interaction act in a state of "mutually assessed mutual assessment."55 Such identification of the meaning conveyed by the

53Ibid., pp. 25-35.
members of an interaction must consist of an assessment of not only what is said but also what is conveyed by the nonverbal behavior that accompanies the verbal output. Such nonverbal behavior can be characterized not only as gestures, facial expressions and intonation, but also as use of time, space and location displayed by members of the interaction.

In a recent study, Grant and Hennings reported that nonverbal behavior of teachers not only compliments their verbal behavior but also occasionally serves as a substitute for verbal behavior.\textsuperscript{56} Undoubtedly, teachers and students are constantly reading the non-verbal as well as the verbal meaning conveyed during their individual interactions.

It may be conjectured that the use of gestures, intonation and facial expressions are a factor of individual experience, in other words, idiosyncratic behavior, not particularly dependent upon educational setting. However, the use of space and time by the teacher may be closely related to the educational setting. For example, the teacher in the informal classroom may move around the classroom in order to interact with children in interest centers. Biddle and Adams suggested that the traditional teacher often operated from a central point in the front of the classroom with only

occasional excursions around the outward edge. The teacher in the informal classroom may be less preoccupied with time since students schedule many of their own activities. The teacher in the traditional classroom may organize the class time in terms of subject matter areas and the pressure to complete activities in order to progress to the next level may influence her use of time.

While studies in nonverbal behavior are of a limited nature, any description of classroom behavior in informal and traditional classrooms would undoubtedly deal with the nonverbal characteristics displayed by teachers and children.

Teacher Management of Classroom Activity

Although research in teacher behavior in informal classrooms is limited, one other study has significance in developing background for this study. While the studies of functions and characteristics served to describe the behavior of the teacher, the question of how the teacher manages to do what she does remains unanswered. Resnick's study of teacher behavior in four open classrooms in Scotland attempted to describe the teacher's performance in terms of interactions with children. Resnick classified interactions on the basis of


duration as brief or extended and described the nature of these interactions according to content and source of initiation. She categorized the teacher behavior in terms of questions, directions, information, praise and other actions performed by the teacher for and with her students. Results of the study revealed a general pattern of teacher behavior for all teachers in the sample.

This pattern consists of extended substantive conversations with one or a small group of children interspersed with very brief interactions, frequently initiated by children. These brief interactions often constituted interruptions of extended conversations.  

Resnick suggested that there are about two interactions per minute which leads to the conclusion that frequency of contact with children operates at a high rate. The teacher initiated more of the extended interactions which may account for her ability to maintain organization and guidance in a setting in which children have many choices and work on a variety of activities.  

According to Resnick, these extended interactions were a dominant feature of teacher behavior and indeed, accounted for major opportunities for direct instruction in informal classrooms. The data related that a high percentage of the verbal output of these extended interactions consisted of the teacher's questions to a child concerning what he is working on at that time. A much

59 ibid., p. 11.

60 ibid., p. 5.
smaller percentage of questions were of a personal nature, while another group of questions dealt with management, for example, choice of materials and places to work.

Brief interactions constituted eighty to ninety per cent of the total number of classroom interactions and were generally child-initiated. The nature of these interactions revealed fewer questions and more directive statements. Generally, these brief interactions seemed to carry the weight of management as opposed to substantive nature of extended interactions.

Data revealed that many of the brief interactions could be classified as interruptions of extended substantive interactions. While all teachers allowed a substantial amount of such interruptions, there was a difference for individual teachers. The interruptions were almost all child-initiated and the nature of them indicated requests for permission, etc., which would seem to show that such interruptions carry part of the load of management in the classroom.

The traditional teacher was likewise extremely active. Jackson related research which indicated that teachers engaged in as many as 1000 interpersonal interchanges each day. Given an average six hour school day, it could be estimated that teachers in traditional classrooms average about three interactions per minute as opposed to the two per minute in the informal classrooms of Resnick's study.

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61 Ibid., p. 12.

62 Jackson, Life in the Classroom, p. 11.
Jackson also discussed the place of interruptions in traditional classrooms. The content of these interruptions consisted of such distractions as irrelevant comments, misbehavior and outside visitors. Adherence to a time schedule also constituted interference with on-going activity. Recess, gym time, music, etc., occur at intervals which must be heeded in terms of efficient management of the classroom day, even though they also may interrupt the class work of the children and the teacher.

These studies were helpful in determining how teachers effected management functions in traditional and informal classrooms. With equally high rates of interactions, such management may often become as important as instruction in both types of classrooms. In informal classrooms, duration of individual interactions may be an indicator of the purpose of the teacher; extended interactions being a source of intellectual stimulation. Shorter interactions may be more related to management functions such as giving directions or permission. While no evidence of the nature of interactions in traditional classrooms was available, the evidence of a high rate of interaction might lead to the assumption that the traditional teacher's use of such management functions might be similar to that of the informal teacher in terms of duration of contact with an individual child.

63 Ibid., p. 16.
Settings for Teacher-Child Interactions

Since both types of classroom settings evidenced a high rate of teacher-child interaction, it seemed reasonable to examine the setting in which such interactions took place.

Review of the literature indicated that the informal teacher should operate in a highly individualized setting. Blackie suggested the cruciality of the individual interaction between teacher and child as follows.

The one essential point in the whole educational system is the point of contact between teacher and child.64

While this point of contact is essential, it would seem important to clarify the setting for this contact even further. Horth described the point of contact in terms of teacher-pupil relationship.

He (the teacher) is of necessity in a one-to-one relationship with the child and is able to ask, 'Is this child being stretched? Or is this child developing at a rate commensurate with his ability?'65

Entwistle substantiated Horth's statement about the face-to-face nature of the contact.

... the skilled practitioner must be in continuous face-to-face relationship with the learner. Committed to the task of helping him toward personal knowledge and skill be pointing its relevance and meaning in terms of his own powers and limitations.66


In contrast, Goodlad's study of classroom practices in the United States indicated little evidence of individualized contact. Much of what might be interpreted as individualizing instruction was a random process of calling on children for a response or following up on a child's comment or observation as a kind of digression from the usual telling or questioning and answering kinds of class activity. Very often, the individualization was a quantitative thing, with the alternative task being more of the same rather than a differentiation in kind of work undertaken.67

While this statement presented a severe indictment of individualization practices in the schools of this sample, it would seem only fair to indicate that teachers in traditional classrooms do give much credence to individual differences. Lewis reported in her survey of what teachers say about teaching as follows:

The teacher must provide for individual differences so that every child will feel a sense of growth and accomplishment.68

The problem becomes then not one of questioning the intent of teachers in traditional classrooms to treat children individually but one of their translation of this intent into practice. Undoubtedly, this translation would vary based on the ability of the teacher to capitalize on her commitment to individualization.


By such definitions the teacher in an informal classroom is probably expected to meet the individual child in a one-to-one relationship more frequently than might be seen in traditional classrooms. Do such individualized interactions preclude the use of grouping in an informal classroom?

Weber indicated that she observed small grouping in all schools. The first difference she observed seemed to come from the needs of children and the teacher's desire to meet them.

Small grouping was one of the ways in which the teachers responded to the great variation in children, planning differentially for special interests and needs.69

The second difference she observed concerned the fluid nature of grouping and gradualism with which they were formed.

Gradual formation of the group with some respect for and some interest in what a child was engaged in at that moment would allow for relaxed transition, an atmosphere of interaction and back and forth flow of ideas even at the time when the teacher was leading the group.70

Hertzberg and Stone described one of the characteristics of the teacher's role in informal classrooms as follows:

The teacher works with individual children, with small groups, with large groups and with the entire group in a variety of ways and for a variety of purposes.71

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70 Ibid., p. 35.
Some conclusions based on a review of the literature concerning grouping in informal classrooms indicated:

1. The teacher does work with the whole group, particularly in planning.

2. The teacher does call some children into a group for a specific purpose based on her diagnosis of their individual needs.

3. The nature of the groups is fluid; there are few established groups with fixed membership.

4. Groups of children often form spontaneously because of interests and the teacher may or may not join depending on her analysis of their need.

Goodlad and Klein in their study of classroom practices in the United States suggested that the incidence of intraclass grouping at grades one through three is higher than at upper levels of the school.

With very few exceptions, first grade classes were grouped for reading, usually employing from two to four groups. The second grade classes had an even higher incidence than the first grade classes, with grouping, extended from reading into other subjects.72

It was interesting to note that this study suggested that grouping in kindergarten tended to be flexible according to interests rather

72 Goodlad, *Behind the Classroom Door*, p. 55.
than ability or achievement and organized around an assortment of activities proceeding simultaneously. Goodlad continued:

In the higher grades however, the groups were "set", organized around achievement and confined to one subject at a time.73

Some conclusions based on a review of the literature concerning grouping in traditional classrooms indicated the following.

1. The teacher does work with the whole group.
2. Groups are most frequently used in reading although other subjects likewise form the basis for some grouping.
3. Grouping is generally based on achievement and/or ability.
4. Membership in groups for instruction tends to be static; most groups evidence a fixed membership.
5. Spontaneous groupings most often occur during activity periods at kindergarten and grade one; these groupings may or may not be teacher inspired.

This review of research has revealed the studies of researchers attempting to describe characteristics and functions of teachers in informal and traditional classrooms. The growing body of literature currently available in informal education deals with description of practices in use in informal classrooms. A major consideration of this review has been to try to integrate the small quantity of available research with the larger body of literature. A similar

73 ibid.
review of research and literature concerning behaviors of teachers in traditional classrooms has been presented to provide a contrasting viewpoint.

THE CHILD'S BEHAVIOR IN INFORMAL AND TRADITIONAL CLASSROOMS

The philosophy of informal education is child-centered. Weber commented on English educators' perspective of the child.

The students of child development in England see each child as unique and active in all aspects of his individual development. No one of these aspects can be separated, they reason, because development rests within the whole that is a child. 74

In essence, this view of a child as an active, unique individual organism constantly seeking to interact and relate his own experience to the new experience in the environment that surrounds him lays the groundwork for his life in the classroom. An acceptance of this viewpoint seems essential for teachers in informal classrooms. The child's own natural curiosity underlies his constant attempts to construct and reconstruct his own learning. Inherent in planning for a child's school experiences then are two basic assumptions.

1. The child's own question arising through his own experiences is what will forward the next step in learning. 75

75 Ibid., p. 183.
2. A rich environment including not just materials but also experiences with adults and his peers is mandatory for the child to freely take advantage of his natural urge to know.

While the foregoing description is greatly oversimplified, it does serve to point to some child behaviors related to his activity in the informal classroom. Again, at the risk of oversimplification, some of these behaviors will be listed as they were derived from a search of the literature.

1. The child must be free to make choices about what experiences he will pursue.76
2. The child must be immersed in a classroom environment which is rich and diversified.
3. The child must be encouraged and permitted to interact freely on a verbal and nonverbal basis with his peers as well as his teacher.77

These behaviors influence the child's classroom practices. Some of these classroom practices may include.

1. Free and active movement within and without the classroom.
2. Freedom to converse as necessary with due respect for the needs of others.


77 Entwistle, *Child-Centered Education*, p. 185.
3. Planning and scheduling of his own daily activities with the assistance of the teacher.

4. Choice of his own working partners with occasional consultation with the teacher.\textsuperscript{78}

The philosophy of traditional education in current practice in America shares with informal education the common emphasis of child-centeredness. While proponents of both schools of thought share an interest in the child as the focal point for developing educational programs, practices employed in the two types of classrooms are quite different.

In traditional classrooms, education is viewed as preparation for future endeavors, thus leading to the development of a structured curriculum, sequentially planned, enabling the child to prepare himself for his next series of life experiences. In contrast to education as preparation for future experiences, education in informal classrooms is oriented to the value of immediate experiences. While learning based on the child's experience is considered important in traditional American educational philosophy, too often these educational experiences are unrelated to the child's interests. In discussing formal education in British schools, Weber indicated that while the necessity for integrating educational experiences was considered vital, too often learning experiences were fragmented into subject

\textsuperscript{78}Hertzberg and Stone, \textit{Schools Are For Children}, pp. 6-36.
matter areas with too little emphasis on either encouraging or indeed even permitting integration.79 Such criticism seems highly applicable to similar practices in traditional American classrooms. While various techniques of grouping, non-grading and individualization of instruction have been put into practice with varying degrees of success, the emphasis has still remained on pre-set goals and unrelated learning experiences. With emphases such as the above foremost in consideration, then methods of testing such learning must be provided in order to move the child to the next level of performance. Given an orientation of various measures of achievement, the materials within the classroom often reflect these purposes of achievement. While textbooks serve as a base for instructional materials, there has been growing emphasis on providing additional trade books and some manipulative materials.80

In line with this review of traditional education, some of the following child behaviors may manifest themselves in the classroom.

1. The child follows a structured program of learning experiences based on a sequentially developed curriculum.
2. The child's major involvement with the classroom environment will be with books and exercises which follow the curriculum.

80 Goodlad, Behind Classroom Doors, p. 81.
3. The child's interaction with the teacher will often be one of response to questions, and interactions with his peers in the classroom will occur at the discretion of the teacher.\(^1\)

4. The child's choices may be limited to activities thought to be important by the teacher or as a part of the structured program.

Such behaviors will influence the child's classroom practices. For example,

1. Movement within and without the classroom as permitted by the teacher.
2. Verbal intercourse with peers and teachers restricted by regulations of the classroom.
3. Involvement in mostly scheduled activities.
4. Working relationships established by instructional groups.

In a further consideration of the viewpoint of the whole child in informal education, it seems important, although perhaps redundant, to state that such wholeness includes the child's affective, social and physical growth as well as his intellectual development. Silberman stated his opinion that children in informal settings revealed a happiness and spontaneity often not seen in traditional classrooms.\(^2\) This opinion of the affective life of the child in

\(^1\)Ibid., p. 79.

\(^2\)Silberman, Crisis in the Classroom, p. 230.
informal settings is subjective in nature and adequate evidence is not available; however, it seems fair to comment that the emphasis on affective response as part of the commitment to the growth of the total child in informal classrooms may indeed foster such positive affective response. Moreover, such a statement does not negate the fact that there may also be many "happy" children in traditional classrooms.

SUMMARY

The persistent interest in defining and describing the role of the teacher has generated a vast amount of literature as well as research. Teacher behavior studies have pursued various avenues of inquiry including descriptions of teacher characteristics, development of model systems of teaching and exploration of instructional processes in the classroom. In proposing to describe the nature of the individual interactions of teachers and children in informal and traditional classrooms through the use of observational procedures, this study can be classified as a part of such teacher behavior research. In view of the search of the literature presented in this chapter, it can be assumed that the informal and traditional teacher are highly active participants in individual interactions with children. The frequency of such interactions in various settings should aid in distinguishing differences in these two types of classrooms. The content of these interactions, recorded through the verbal and nonverbal behaviors of teachers and children may reveal how teachers stimulate intellectual development, perform
managerial functions and provide affective reinforcement. Description of these interactions in these contrasting environments should lead to more accurate descriptions of the teaching process in informal and traditional classrooms.
CHAPTER THREE

METHODS OF PROCEDURE

The purpose of this study was to describe the nature of individual interactions between teachers and children during on-going individual and group activities in both traditional and informal first grade classrooms. The objectives of the study were to be achieved by recording data during a series of classroom observations. The following sections of this chapter will discuss the results of a preliminary pilot study related to the development of the problem for this study, subjects of the study, methods of procedure, instruments for recording data and treatment of the data.

The Pilot Study

Due to the small amount of available research in teacher behavior in informal classrooms, a pilot study was designed to aid in formulation of the problem for this study. The pilot study had two main objectives:

1. To develop an overall view of teacher and child behavior in informal classrooms in an attempt to isolate possible factors for study.
2. To develop a structure for a study based on these factors which would be observable, replicable and feasible.
Several informal classrooms in the area were identified for visits by the researcher. Having obtained permission for visitation from principals and teachers, data was recorded based on observation in two first grade and one third grade classrooms in an upper socio-economic school district and two first grades in a lower socio-economic school district in a large metropolitan school system. Three other classrooms were visited but observations were not recorded. Approximately two hours were spent in each classroom.

The procedure for recording data was relatively simple. A general description of the classroom environment preceded the recording of teacher and child behaviors during individual interactions. An attempt was made to record as much of the verbal and nonverbal content of these interactions as possible. Related information concerning the setting of the interaction was recorded; that is, whether it occurred during on-going group or on-going individual activity, where it occurred in the classroom and what subject was involved. The source of initiation of such interaction, teacher or child, was also noted.

Data was closely examined to search for factors which might prove significant for future study. Significance was assumed if the factor or factors occurred in all observations frequently enough to demonstrate patterns of behavior common to all teachers in the sample.
Some conclusions derived from this analysis are listed below.

1. Children and teachers were almost constantly in some kind of interaction with each other.

2. Interactions between children, without teachers present, also occurred.

3. Such interactions appeared to fall into two categories: those which occurred during individual activity and those which occurred during group activity.

4. The content of most of the interactions was characterized by verbal behavior.

5. Nonverbal behavior not only accompanied but also supplanted verbal behaviors. For example, the teacher might turn off lights to get attention; point to a child in a group discussion instead of naming, etc.

6. Teachers manifested various ways of managing the high level of activity in informal classrooms.

7. The verbal behavior occurred at such a rapid rate and in such varied places in the classroom, that written recording was very difficult for an observer.

8. Some attention was given to identifying the persistence with which a child pursued a task. This relationship appeared to be based in part on whether the child chose the task or whether he was assigned to it, but it was concluded by the researcher that many other variables might be related to this behavior that could not be properly identified through a study based primarily on classroom observation.
9. The analysis of the quality of verbal behavior revealed a persistent use of questions by teachers. Fewer questions were asked by children than expected by the researcher.

10. Affective verbal behavior on the part of the teachers was characterized by more instances of positive than negative connotation.

This pilot study was helpful in delineating areas of behavior whose description might provide a picture of the teacher in the informal classroom. Individual interactions between teachers and children constituted the major part of the activity in informal classrooms and occurred during periods devoted to individual and group activity. Such interactions were characterized by verbal and nonverbal behavior, and analysis of such behavior might be helpful in describing the role of the teacher and child in the informal classroom.

The pilot study was useful to the researcher in identifying problems concerning observations in informal classrooms. If language of the teacher and child was to provide a source of data, some mechanical means of recording had to be devised. The use of only written records would mean following the teacher around the classroom, creating an unnatural situation, or settling for only that language which could be overheard when the teacher and child were close to the observer. Since interactions occurred so rapidly, some instrument had to be devised to quickly, easily and accurately record their occurrence. Provision for recording nonverbal behavior must be included in the development of such an instrument.
Another important value derived from the pilot study was that it enabled the researcher to become more familiar with the activity of teachers and children in informal classrooms. Such familiarity led to the conclusion that she could undertake the proposed study with some measure of confidence.

Thus the results of the pilot study led to the formulation of the problem as stated in Chapter One of this study.

Subjects of the Study

The subjects of this investigation were four first grade teachers. Two were teaching in informal classrooms, and two were teaching in traditional classrooms.

Selection of informal teachers. The number of informal first grade classrooms available for study was limited to three school districts within easy access to the researcher. Following visits to the teachers in these districts, two first grade teachers in two different schools in an upper socio-economic suburban school system were chosen. These teachers were selected because their performance in implementing informal education seemed to compare favorably with the practices presented in the literature. The teachers were also recommended by the researcher's university advisor who had visited informal classrooms in the United States and Great Britain. These two teachers had been observed during the pilot study. Another consideration was the willingness of these teachers to participate in such a study.
Selection of traditional teachers. Following the selection of informal classroom teachers, the director of elementary instruction in their district was approached concerning the choice of two excellent teachers who were engaged in traditional classroom instruction. Based upon her recommendation of their high quality of performance and their willingness to cooperate, two first grade teachers from two different buildings were asked to participate. Thus all four teachers were from the same suburban school system but housed in different schools.

Experience of the teachers. The selection of the teachers was based on estimations of their high quality of performance in the classroom. All the subjects were experienced teachers as indicated in Table 1.

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Total Years</th>
<th>Total years at Grade 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informal Teacher D</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Informal Teacher R</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Traditional Teacher C</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>Traditional Teacher G</td>
<td>17</td>
<td>3</td>
</tr>
</tbody>
</table>

The two informal classroom teachers were engaged in their first year in informal education. Both teachers had studied informal education during a summer workshop. Both had masters' degrees in education.
Both traditional teachers had participated in workshops and university work beyond their bachelor's degree. Neither teacher had a master's degree.

**Children in the classes.** The number of pupils per classroom was very uniform. Informal teacher D had twenty-one children; informal teacher R, twenty-one; traditional teacher C, twenty-four and traditional teacher G, twenty-two. Since the major emphasis of the study was concerned with teacher behavior, no extensive background data was gathered concerning the children. The children were all Caucasian. Their behavior both verbally and nonverbally seemed to reflect their upper socioeconomic background. In the vernacular of today, they would be considered advantaged children. The parents' occupations in all four schools were considered by school personnel to be professional or semi-professional in nature.

**Description of schools.** The schools were not unusual in architecture and although they varied in age, they were extremely well-kept and generally colorful. The surrounding suburban environment of the schools was very similar, generally one family residences with surrounding lawns, trees, etc. The size and age of the homes were somewhat similar although the school of traditional teacher C was located in a section of the community described by school personnel as the gateway to the more affluent sections. The houses were smaller although still one-family dwellings.

The classrooms used for observation were conventional self-contained units of approximately the same size. Each classroom had an abundance of materials including textbooks, library books, games,
listening centers, and art supplies. The informal classrooms, due to the requirements for development of a more varied environment, also had a wide variety of other resources such as clothes and equipment for creative living or housekeeping corners, junk material; and in general, more concrete manipulative resources. One informal classroom had a full work bench. Three classrooms had a sink in the room. All classes had to go out of the classroom for bathroom facilities.

Each school had a library with an adult in charge. The children had open access to libraries as well as scheduled visits. Special teachers were available for art, music and physical education. These activities plus recess and lunch periods established comparable frameworks for timing of activities in all four classrooms.

Adult personnel responsible for instruction consisted of one teacher per class in traditional classrooms. Informal classrooms did have access to students from the university who were engaged in a teacher training program in informal education.

Observational Procedures

This section will deal with the length of observations, scheduling procedures and a description of procedures during actual observations.

Length of observations. A review of observational studies revealed that the amount of time spent in observation seemed to vary from study to study. Gardner and Cass quoted evidence from Anderson and Brewer citing that records of 300 to 400 minutes of observation
gave reliable pictures of an individual's personality. For the purposes of this study, observation time was set at ten periods of thirty minutes duration which constituted a total of 300 minutes per teacher.

**Scheduling observations.** Scheduling observations was a complex task. At an initial meeting with teachers, a three week time period was set for observation in late February and early March. The researcher planned to visit each classroom ten consecutive days. Since the schools were close together, it was relatively easy to visit the four schools in one day. Almost immediately, problems arose due to holidays, inservice days and field trips. Eventually the researcher did visit each class ten times but these visits were not on consecutive days.

The observations for each teacher were scheduled to avoid times when children would be out of the room participating in special activities such as art or music. The teachers and researcher established schedules for observation during each week of the study. Since one teacher was only able to engage in informal education in the afternoon, it was tentatively planned to visit the other informal classroom teacher only in the morning. Toward the end of the study, it became possible to reverse the observation of the two teachers for one period. Visits to traditional classrooms were alternated according to their schedules. While the observation periods were not

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as efficiently planned as possible, the data obtained did seem to be representative of typical classroom activity for each teacher. Observation schedules for each teacher can be found in Appendix A of this study.

**Procedures for observation.** Preceding the recording of data, the researcher noted a general description of the activity and environment within the classroom. Another preliminary activity included checking the recording equipment for proper reception. After the microphone was placed around the teacher's neck, the equipment was turned on and the observer simultaneously began recording data with the instrument described in the following section. Following each thirty minute observation, the researcher rewound the tape and checked for sound quality.

**Instruments Used in the Study**

**Observers.** Due to the exploratory nature of the study, the researcher chose to do all the observations. The preliminary pilot study had allowed her to become immersed in the activities of informal classrooms. Due to the complex and rapid interaction which occurred in informal classrooms, training of other observers would have been difficult. With the acquisition of audio-tape equipment which permitted fairly free movement of the teacher, the observer had only to record the frequency of interaction and the nonverbal behavior. Some evidence of reliability for observation was obtained by comparing audio-tape records with written records.
Recording equipment. Audio-tape recording equipment was used to record verbal behavior of the teacher. The teacher wore a remote microphone with a cord antenna. A Craig audio-tape recorder with F.M. radio permitted reception of the teacher's voice as well as students in close proximity to her. Thirty-minute cassette tapes were used to record each period of observation.

Written records. Written records noting frequency of interaction as well as nonverbal behavior were obtained using an instrument designed by the researcher. Data from the pilot study had revealed that most individual interactions in the classrooms occurred during on-going group activities or during on-going individual activities. Thus two categories were established. Further analysis of the results of the pilot study revealed that other individual interactions which occurred apart from these settings might be classified as interactions which interrupted on-going activity. Two other categories were added. A final division of categories was based on the necessity to identify the initiator of each interaction as teacher or student. The final instrument was designed as shown in Appendix B. The columns were made wide enough to permit recording of nonverbal behavior by the observer. Each interaction was numbered as it was recorded in sequence. Such numbering facilitated possible examination of patterns of sequence of the activity in the classroom.

Prior to the observation in the classrooms of the study, the instrument was tested in three informal classrooms in another school district. Data from two periods of thirty minute observation for each classroom was recorded using the instrument. Based on this
testing, the researcher decided that the instrument was appropriate for recording data in the actual study.

Interview data. Another source was used to obtain data for the study. Conversations with teachers were held frequently concerning the activity in the classroom, specific children, teaching practices and problems concerning use of recording equipment. The teachers were extremely interested and willing to answer any questions. The content of these conversations was most helpful in interpreting the recorded data. Some conversations were held with children prior to and following recording; however, children were instructed that the observer was a special visitor with special work to do and should not be interrupted until recording was finished.

Treatment of the Data

The data was divided into two categories: quantitative and qualitative data. Quantitative data was defined as frequency of interactions for informal and traditional teachers in on-going group and on-going individual activity, frequency of interruptions and frequency of source of initiation in the same categories. Frequency data was obtained from the written record instrument described in the previous section. Compilation of total scores for each category was displayed in tabular form. Total scores in every category for each type of classroom were obtained by combining data for informal teachers and traditional teachers. This data was displayed in contingency tables and submitted to chi square analysis to ascertain levels of significance for the testing of the null hypotheses of this section of the study.
Qualitative data was defined as verbal and nonverbal evidence obtained from audio-tape recordings and the written record instrument. Incidents extracted from the audio-tape recordings provided verbal descriptions of the interactions between teachers and children. These incidents were typescripted and served as the basis for comparison of such interactions in informal and traditional classrooms. The typescript of one complete tape will be found in Appendix C. Nonverbal behaviors were extracted from the written records and presented in similar fashion. Based on a review of the available literature and research in informal education, a set of assumptions was developed relating the possible uses of individual interactions between teachers and children in informal classrooms to the objectives and behaviors suggested by experts as those which typify the performance of teachers and children in informal classrooms. The comparison of functions drawn from the data with this set of assumptions served as the framework for the qualitative analysis of the interactions between children and teachers in traditional and informal classrooms.

Summary

Pursuant to the objective of this investigation, observational procedures were utilized to develop descriptions of the nature of individual interactions in informal and traditional first grade classrooms. Teachers in four classrooms in four schools in one upper socioeconomic suburban school district were chosen on the basis of their high level of performance in the two types of classroom settings.
Utilizing audio-tape equipment to record verbal behavior and an instrument designed by the researcher to record frequency of individual interactions and nonverbal behavior, the researcher observed each classroom for a total of 300 minutes over a period of three weeks in late February and early March. Data from these observations was submitted to analysis and provided both quantitative and qualitative evidence required to meet the stated purpose of this study.
The purpose of this study was to describe the nature of individual interactions between teachers and children in informal and traditional first grade classrooms. Evidence of a quantitative and qualitative nature was obtained from classroom observations to accomplish the objectives of the study. In this chapter, display and interpretation of quantitative and qualitative data will be presented in two separate sections. Discussion of quantitative data will be integrated with the discussion of qualitative data according to its relevance to the assumptions derived from the literature.

PRESENTATION AND INTERPRETATION OF QUANTITATIVE DATA

Quantitative evidence from each of the four classrooms of the sample was obtained for frequency of interactions between teachers and children as recorded on a written record form designed by the researcher. The four major categories of interaction were on-going group activity, interruption of on-going group activity, on-going individual activity and interruption of on-going individual activity. Each of these categories was subdivided into two categories for identification of the initiator of each type of interaction, namely, teacher or student.
From the original ten observation records for each teacher, nine were chosen for compilation of final data. The elimination of one record for each teacher was done on the basis of the poor quality of production on the accompanying audio-tapes which were to be used for qualitative analysis of data. A summary of the total frequencies in each category were compiled for each teacher based on these nine observations. Since the purpose of this study was to compare quantitative data for informal and traditional classrooms, data was combined for the two informal classrooms and the two traditional classrooms. (Some information concerning an analysis of raw data for individual teachers can be found in Appendix D.) Hypotheses for this section of the study were stated in null form, and the data was submitted to statistical treatment using chi-square analysis.

**Presentation of Quantitative Data**

The discussion and interpretation of each of the seven null hypotheses related to the quantitative data will be presented in the following section.

1. There will be no significant difference between the frequency of interaction which occurs during periods of on-going group and on-going individual activity in traditional and informal classrooms.

Table II represents a display of the total frequency of interactions in on-going group and on-going individual activity in traditional and informal classrooms.
### TABLE II

#### TOTAL INTERACTIONS DURING INDIVIDUAL AND GROUP ACTIVITY IN INFORMAL AND TRADITIONAL CLASSROOMS

<table>
<thead>
<tr>
<th>Classroom</th>
<th>Individual</th>
<th>Group</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional</td>
<td>316</td>
<td>551</td>
<td>867</td>
</tr>
<tr>
<td>Informal</td>
<td>709</td>
<td>202</td>
<td>911</td>
</tr>
<tr>
<td>Total</td>
<td>1025</td>
<td>753</td>
<td>1778</td>
</tr>
</tbody>
</table>

\[ \chi^2 = 311.47 \text{ with } 1 \text{ df} \quad p < .001 \]

An examination of the nominal data indicates that the total number of interactions for both types of classrooms was similar. Submission of category frequencies to chi square resulted in a chi square of 311.47 with one degree of freedom indicating significance beyond the .001 level of confidence. Thus the null hypothesis can be rejected indicating there was a significant difference between total interactions during on-going individual and on-going group activity in traditional and informal first grade classrooms. An examination of the data for the observations of this sample revealed that teachers and children in informal classrooms were more involved in individual on-going activity while teachers and children in traditional classrooms participated more frequently in group oriented activity.

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84 J. B. Guilford, *Fundamental Statistics in Psychology and Education* (New York: McGraw-Hill Inc., 1965), p. 582. This reference was used for determining levels of significance for chi-square analysis.
2. There will be no significant difference between the frequency of interactions excluding interactions classified as interruptions which occurs during periods of on-going group and on-going individual activity in traditional and informal classrooms.

Table III displayed the data concerning total interactions excluding interruptions which occurred in the two types of classrooms.

<table>
<thead>
<tr>
<th>Classroom</th>
<th>Individual</th>
<th>Group</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional</td>
<td>265</td>
<td>500</td>
<td>765</td>
</tr>
<tr>
<td>Informal</td>
<td>445</td>
<td>122</td>
<td>567</td>
</tr>
<tr>
<td>Total</td>
<td>710</td>
<td>622</td>
<td>1332</td>
</tr>
</tbody>
</table>

$x^2 = 250.58$ with 1 df $p \leq .001$

The chi square was 250.58 with one degree of freedom indicating significance beyond the .001 level of confidence. The rejection of this null hypothesis supports the evidence of significant difference between interactions during on-going group and on-going individual activity in informal and traditional classrooms. As in the first hypothesis of the study, evidence supported the conclusion that teachers and students in informal classrooms of this sample do operate more frequently in terms of individual activity than in terms of group activity.

3. There will be no significant difference between the frequency of interactions excluding interruptions initiated by the teacher which occur during periods of on-going group and on-going individual activity in traditional and informal classrooms.
The data concerning the frequency of interactions initiated by the teacher in the various categories is shown in Table IV.

**TABLE IV**

<table>
<thead>
<tr>
<th></th>
<th>Individual</th>
<th>Group</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional</td>
<td>109</td>
<td>397</td>
<td>506</td>
</tr>
<tr>
<td>Informal</td>
<td>215</td>
<td>76</td>
<td>291</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>324</strong></td>
<td><strong>473</strong></td>
<td><strong>797</strong></td>
</tr>
</tbody>
</table>

$x^2 = 209.79$ with 1 df $p = .001$

The analysis indicated a chi square of 209.79 with one degree of freedom, indicating significance beyond the .001 level of confidence. The null hypothesis was rejected. Examination of the frequency data demonstrated that teachers in informal classrooms did initiate more interactions during on-going individual activity. The acceptance of this data was related to the previous finding concerning the emphasis within informal classrooms on interaction during on-going individual activity. A similar pattern of teacher initiation of interactions in group activity can be seen in the data representing the traditional classroom.

4. There will be no significant difference between the frequency of interactions excluding interruptions initiated by the child which occur during periods of on-going group and on-going individual activity in traditional and informal classrooms.

The frequency data in Table V revealed that the child acted as an initiator in both kinds of classroom setting.
TABLE V

TOTAL INTERACTIONS EXCLUDING INTERRUPTIONS INITIATED BY CHILD DURING INDIVIDUAL AND GROUP ACTIVITY IN INFORMAL AND TRADITIONAL CLASSROOMS

<table>
<thead>
<tr>
<th>Classroom</th>
<th>Individual</th>
<th>Group</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional</td>
<td>156</td>
<td>103</td>
<td>259</td>
</tr>
<tr>
<td>Informal</td>
<td>230</td>
<td>46</td>
<td>276</td>
</tr>
<tr>
<td>Total</td>
<td>386</td>
<td>149</td>
<td>535</td>
</tr>
</tbody>
</table>

\[ x^2 = 35.57 \text{ with } 1 \text{ df } p < .001 \]

Unlike the teachers who operated more actively in two categories, in the group for traditional teachers and individually for informal teachers, the data of this table indicated that the children in both types of classrooms operated as initiators more frequently in individual activity. In terms of this sample, it would appear that in traditional classrooms with the emphasis on group interaction and teacher initiation in group settings, the child may have less opportunity to initiate in group activities. The comparison of the categories for depicting differences in classrooms and settings indicated a chi square of 35.57 with one degree of freedom. This score was significant beyond the .001 level of confidence. The null hypotheses was rejected. There was a significant difference demonstrated between the frequency of activities initiated by the child in the two types of activity in the two classrooms.

5. There will be no significant difference between the frequency of interactions classified as interruptions which occurs during periods of on-going group and on-going individual activity in traditional and informal classrooms.
Table VI shows the frequency data associated with this hypothesis. It may be helpful to recall that interruptions were defined as those interactions which were interjected by the child or teacher during other on-going interactions already in progress.

### TABLE VI

<table>
<thead>
<tr>
<th>Classroom</th>
<th>Individual</th>
<th>Group</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional</td>
<td>51</td>
<td>51</td>
<td>102</td>
</tr>
<tr>
<td>Informal</td>
<td>264</td>
<td>80</td>
<td>344</td>
</tr>
<tr>
<td>Total</td>
<td>315</td>
<td>131</td>
<td>446</td>
</tr>
</tbody>
</table>

$x^2 = 27.01$ with 1 df $p < .001$

The results of the chi square analysis was 27.01 with one degree of freedom which was significant beyond the .001 level of confidence. The null hypothesis was rejected indicating that there was a significant difference between interactions classified as interruptions which occur during periods of on-going group and on-going individual activity in traditional and informal classrooms. An examination of the data in Table VI revealed that interactions classified as interruptions occurred more frequently in informal classrooms of this sample, and within these settings, they occurred more often during periods of on-going individual activity.

6. There will be no significant difference between the frequency of interactions classified as interruptions initiated by the teacher which occurs during on-going group and on-going individual activity in traditional and informal classrooms.
Table VII displayed the data concerning interruptions of activity which are initiated by the teacher.

**TABLE VII**

**TOTAL INTERRUPTIONS INITIATED BY TEACHER DURING INDIVIDUAL AND GROUP ACTIVITY IN INFORMAL AND TRADITIONAL CLASSROOMS**

<table>
<thead>
<tr>
<th>Classroom</th>
<th>Individual</th>
<th>Group</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional</td>
<td>2</td>
<td>15</td>
<td>17</td>
</tr>
<tr>
<td>Informal</td>
<td>39</td>
<td>17</td>
<td>56</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>41</strong></td>
<td><strong>32</strong></td>
<td><strong>73</strong></td>
</tr>
</tbody>
</table>

\[ x^2 = 17.51 \text{ with } 1 \text{ df } \quad p < .001 \]

The resulting chi square analysis was 17.51 with one degree of freedom which was significant beyond the .001 level of confidence. Thus the null hypothesis was rejected. Examination of frequency data indicated that teachers in informal classrooms did interrupt on-going interactions more often during periods of on-going individual activity while traditional teachers did so during on-going group activity. The total frequency column revealed that teachers in informal classrooms in this sample initiated interruptions three times more frequently than traditional teachers.

7. There will be no significant difference between the frequency of interactions classified as interruptions initiated by the child which occurs during on-going group and on-going individual activity in traditional and informal classrooms.

Looking at the data in Table VIII, it was observed that child-initiated interruptions occurred more in informal classrooms than traditional classrooms of this sample.
TABLE VIII
TOTAL INTERRUPTIONS INITIATED BY CHILD DURING INDIVIDUAL AND GROUP ACTIVITY IN TRADITIONAL AND INFORMAL CLASSROOMS

<table>
<thead>
<tr>
<th>Classroom</th>
<th>Individual</th>
<th>Group</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional</td>
<td>49</td>
<td>36</td>
<td>85</td>
</tr>
<tr>
<td>Informal</td>
<td>225</td>
<td>63</td>
<td>288</td>
</tr>
<tr>
<td>Total</td>
<td>274</td>
<td>99</td>
<td>373</td>
</tr>
</tbody>
</table>

\[ \chi^2 = 14.03 \text{ with } 1 \text{ df } p < .001 \]

In keeping with the previous pattern of emphasis on individual activity in informal classrooms, the child initiated interruptions occurred more frequently in this category. The chi square of 14.03 with one degree of freedom was significant beyond the .001 level of confidence. The null hypothesis can be rejected indicating that there is a significant difference between child initiated interruptions during on-going group and on-going individual activity in traditional and informal classrooms.

Discussion of Quantitative Data

A review of the evidence presented in this section indicated significant differences in the informal and traditional classrooms of this sample. Based on an examination of the nominal data, it was apparent that interactions between teachers and children in traditional classrooms took place more frequently during on-going group activity, while such interactions in informal classrooms occurred more frequently during on-going individual activity. Supporting this evidence, teachers in traditional classrooms initiated interactions more
frequently during group activities, while informal teachers initiated more often during individual activities. In terms of total teacher-initiated interactions, traditional teachers initiated interactions more frequently than informal teachers. The data concerning child-initiated interactions also demonstrated that differences were evident in the two types of classrooms in the sample. Examination of nominal data indicated that children initiated interactions more frequently during on-going individual activity in both types of classrooms. A comparison of the data for teacher-initiated interactions and child-initiated interactions demonstrated that teachers were generally more active than children in initiation of total number of interactions excluding interruptions.

This evidence of significant differences in the informal and traditional classrooms of the sample was considered particularly interesting in light of the fact that the informal classrooms were in their first year of participation in informal education. Since no evidence is available concerning the informal classrooms of the sample for the previous year, it was impossible to determine how informal or traditional their classrooms had been prior to this study.

The significant differences in informal and traditional classrooms of the sample was further confirmed through the data concerning interactions classified as interruptions. Examination of the nominal data in Tables V, VI, and VII demonstrated that such interruptions occurred more frequently in informal classrooms than in traditional classrooms and their occurrence in informal classrooms occurred more often during periods of on-going individual activity. This finding
is in line with the overall picture of emphasis on individual activity in informal classrooms. The data concerning initiation of interruptions showed that children initiated such interactions more frequently than teachers in both kinds of classrooms. Teachers in informal classrooms interrupted more during periods of on-going individual activity, a finding in line with the amount of this kind of activity present in this type of classroom. Children in informal classrooms initiated such interactions three times more than children in traditional classrooms. Such child-initiated interruptions occurred more frequently in times of on-going individual activity in informal classrooms. Child-initiated interruptions, although less frequent, also occurred slightly more often in times of individual activity in traditional classrooms. It was possible to conjecture that teachers of informal classrooms demonstrated a tolerance for interruptions by children not evidenced in traditional classrooms. The content of such interruptions will be discussed in the following section of this chapter; however it would appear that informal and traditional classrooms of this sample differed in terms of interruptions in periods of on-going individual and on-going group activity.

The purpose of this study was to describe the nature of individual interactions in traditional and informal classrooms. The quantitative data has demonstrated significant differences in the two types of classrooms in terms of emphasis on individual activity versus group activity as well as the role of the teacher and child in initiating such individual interactions.
DEVELOPMENT OF PROCEDURES FOR ANALYSIS
OF QUALITATIVE DATA

The purpose of the qualitative analysis of the data was to describe the nature of the content of the individual interactions between teachers and children in traditional and informal classrooms.

Data for the qualitative analysis was obtained from audio-tape recordings of the teacher and child's verbal behavior and records of nonverbal behavior noted by the observer on the written record instrument.

The quality of the data was impaired by two problems. First, the microphone worn by the teacher permitted reception of the child's voice only when he was in close proximity to her. Since the emphasis of the study was placed primarily on the teacher's verbal behavior, this problem was not considered a major deterrent; however, it did account for the notation of "inaudible" for some of the children's verbal behaviors in the following descriptions.

The second problem concerned the recording of nonverbal behavior. The rapidity of occurrence of nonverbal behavior made it difficult for the observer to record all of them. At other times, the observer did not have a clear view of the child. In the light of these problems of recording, the nonverbal behaviors included in the following descriptions do not possess the same degree of reliability as the verbal behaviors.

The procedures for obtaining a description of the content of individual interactions in traditional and informal classrooms have
been listed in Chapter Three but are repeated here in abbreviated form for the reader's convenience.

1. The content of audio-tapes was compared to written records for all observations in the four classrooms.

2. Individual interactions were selected and typescripted on the basis of the functions they performed in the classrooms in relation to the assumptions derived from the literature.

Before writing descriptions of classroom behaviors, a preliminary study of the content of all interactions was undertaken to search for answers to the following questions.

1. Do teachers and children participate in interactions to perform certain functions in the classrooms?

2. Can the functions performed by the interactions be identified by the verbal and/or nonverbal behavior of the participants?

3. Would a study of the content of the verbal and nonverbal behaviors of the participants in the interaction demonstrate possible differences within interactions that perform the same function?

An examination of the content of interactions provided the following answers to these questions.

An interaction is initiated by the child or teacher with some purpose in mind. The verbal content of the interaction reveals that purpose.

C. May I change my seat?
T. Sure you may so you can see the board.
The verbal content of the child states his purpose for initiating the interaction. The purpose is to seek permission from the teacher. A study of the content of the response indicates that not only is permission granted, but also the reason behind the initiation is given. Like the example, many of the interactions between teachers and children demonstrate similar purposes related to seeking permission for various reasons, scheduling activities, regulating behavior and grouping for instruction. Such purposes can be classified as managerial since they provide for management of activities or movement within the classroom.

The content of some interactions demonstrates mutual concern of the teacher and child for each other, positive or negative reinforcement or disciplinary restraint. The following interaction is an example of this type of interactions.

T. What are you doing?
C. I just want to stay with you.
T. Come on. It's work time. I'm not going to be very far away.

In this interaction, the purpose is not revealed in the verbal content of the initiation but rather in the content of the response. Interactions with similar content are related to affective functions performed by teacher and children in classrooms.

The content of other interactions reveals a concern for the intellectual development of the child. The content of such interactions may reveal the teacher's attempts to diagnose the child's interests or level of achievement, her methods of guiding and extending learning, or the teacher and child's use of materials. Such interactions
are related to substantive functions performed by the teacher and child in the classroom.

C. Mrs. R, can I measure the long hallway?
T. Sure, what are you going to measure it with?
C. Ruler.
T. Oh, all the long measures are over in the blue wastebasket. You want to try with the yardstick?
C. O.K.
T. Do you want someone to help you?
C. No.
C2. I could help her.
T. It would be much easier to do with two people. Why don't the two of you go. You better take, listen, paper and pencil. Are you going to start at the stairway or at the line?
C. The line.
T. O.K. Keep your voices down. They're having school. We don't want to bother them.

The content of this interaction represents a combination of purposes related to substantive function. The child's request is for permission to undertake a measurement task. The content of the subsequent responses demonstrates the teacher's concern for process, direction to materials and use of procedures. The interaction is also interesting because the last statement represents a managerial function concerning the regulation of behavior. Interactions often demonstrate such combinations of functions.

These examples provide evidence that children and teachers do participate in interactions to perform certain functions in the classroom. The functions performed by interactions can be identified by the verbal and nonverbal content. This preliminary analysis also revealed that identification of function was dependent on examining not only the content of the initiating behavior but also the content
of the subsequent responses. The three major categories of function were identified as substantive, managerial and affective.

The differentiation between interactions displaying the same function presented a more complex task. Below are two interactions related to substantive function.

**Traditional Classroom:**

C. Once upon a time...
T. No, you're not going to do that kind of story. You're going to say: 'I made a ...' whatever you made.
C. House.
T. Where's your paper you're writing on? ... Is that yours right there?
C. (Nods head affirmatively)

**Informal Classroom:**

T. Instead of using these, why don't you use the counters. (Holds child's fingers lightly in her hands) Do you think it's easier to use your fingers than the counters?
C. Sometimes.
T. Sometimes. Well, all right, you decide.

An examination of the content of both interactions reveals that the child initiated in both interactions by asking for help, the first child in writing, the second in math. The response from the traditional teacher indicated that the child was not pursuing the correct objective; so she redirected the child to achieve what she considered to be the proper response. The request for help was honored, but the child's behavior was channeled in the direction the teacher wished to be pursued. The response of the informal teacher reflected a desire to redirect the behavior of the child, but was stated in terms of a suggestion. The final response not only gave the child a choice but reenforced his right to make it.
The analysis of the content of these two interactions reveals possible differences in the teacher's attitude toward the child's method of procedure, the objectives for learning, and her methods of implementing direction of the child in substantive encounters. Such analysis of the content of interactions necessitates an examination of not only initiating behaviors but also subsequent responses. Such methods of analysis demand a high level of inference by the researcher. While subject to bias of the observer, such methods still seem justified in exploratory studies in which possible differences in behavior are being sought to serve as the basis for development of hypotheses for experimental studies.

PRESENTATION AND INTERPRETATION OF QUALITATIVE DATA

The presentation of qualitative data will take the following form.

1. Description of the context for interaction.
2. Presentation and description of interactions as related to each set of assumptions derived from the literature.

Description of the Context for Interaction

The content of individual interactions between teachers and children should be viewed in the context of the situation in which they occurred. The individual interactions in this study took place in the context of two informal and two traditional first grade classrooms. To develop a background for the reader which may aid in the understanding of the interactions, a description of the physical
appearance of the classrooms which served as the context for the interactions might be helpful.

The informal classrooms of the sample were very similar in size and appearance. A prominent feature of informal classrooms was the interest centers. Each classroom had a library corner, carpeted, containing an easy chair or small hardback chairs. Bookcases contained trade books and textbooks on various topics at various levels of difficulty. The science center contained conventional science apparatus as well as specimens collected and displayed by the children. Each classroom had an animal or animals to be studied and cared for by the children and occasionally, by the teacher. The math center contained all kinds of objects for counting, from buckeyes to more conventional rods, play money, scales and measuring devices, graph paper and other similar materials. The writing center always had tables and chairs and was located in the center of the room or near the chalkboard. The art center was supplied with conventional paints and paper, but junk materials for sundry uses was included in the supplies. The sewing center displayed a variety of fabrics, needles, buttons and scissors, the last article disappearing frequently to the art center, science center or the teacher's desk. The creative living corner or housekeeping corner contained play furniture as well as a varied assortment of clothes and other apparatus of daily living. One informal classroom possessed a complete workbench with vise, hammers, saws and other paraphernalia for construction. Cooking corners were improvised with ovens and skillets brought by teachers.
and pots and pans as well as measuring devices confiscated from the art and math centers as the activity demanded.

The centers were arranged according to the teacher's and children's ideas of utility. For example, the library center was almost always in a corner, secluded from the rest of the room by boxes or bookcases. The teacher's desk was wherever space could be found. An open area center for convocation, covered by a large rug and big enough to hold all the children, was a feature of both of these rooms. The bulletin boards and walls contained primarily work done by the children. In one building where several teachers were engaged in informal education, the activity in the classroom often spilled out into the halls. In the other building, there was only one informal classroom so the teacher generally contained the activity to the classroom.

Interactions between teachers and children in these informal classrooms occurred in either the interest centers or at the teacher's home base. The home base of Teacher R shifted from the rug in the convocation center to tables adjoining this open space. Informal Teacher D's home base was located in the same general area, but her desk was also in this area. On-going individual activity could occur in centers or at the teacher's home base. The place of on-going group activities guided by the teacher was regulated by the size of the group or available space not in use for other activities. On-going group activity in which children chose their own partners more often occurred in the interest centers.
In physical appearance, the two traditional classrooms differed more from each other than the informal classrooms did. One traditional classroom had desks and chairs organized in groups. The teacher's desk was in the front of the room next to the chalkboard, near a rug where children met for opening sessions and reading groups. Materials in the room were of a commercial variety with emphasis on games of different types, particularly related to reading. The bulletin boards reflected teacher preparation rather than children's work. The other traditional classroom was similar in terms of bulletin boards but did not have the variety of materials or the library corner. The desks and chairs were in conventional rows facing the chalkboard. One corner in the back of the room had a table and chairs for reading while the other corner, used for opening sessions, provided an open space where children sat on the bare floor or brought chairs from their desks.

Interactions between children and teachers occurred in specified areas of the classroom. On-going group activity directed by the teachers always occurred in open space areas or at the children's seats. Group activity during activity period occurred in areas designated by the teacher. On-going individual activity occurred either at the child's desk or at the home base of the teacher. Traditional Teacher G's home base was near her desk which adjoined the open space. This home base was a chair within the open space adjacent to the chalkboard. Traditional Teacher C's home base
was her desk located in the front of the room, facing the children's desks although this teacher moved so constantly, she rarely touched home base.

From this description of the physical appearance of the informal and traditional classrooms of the sample, it can be ascertained that differences were apparent in variety of materials, allocation of space and location of teachers and children. In comparison, the informal classrooms appeared truly informal while the traditional classrooms reflected a more formal atmosphere.

Presentation and Description of the Content of Individual Interactions

The assumptions derived from the literature were based on the educational practices in informal classrooms. Descriptions of the content of individual interactions based on their verbal and nonverbal content of children and teachers in informal and traditional classrooms will be presented in relation to each assumption. These descriptions should provide evidence concerning the potential applicability of the assumptions to informal or traditional classrooms as well as evidence concerning the differences or similarities in the behavior of teachers and children in the two types of classrooms.

General Assumptions

Assumption 1. The content of individual interactions between teachers and children will be primarily verbal in nature.

Individual interactions in both types of classrooms were essentially verbal. This fact is substantiated by the examples of
interactions in the following section. No attempt was made to quantitatively assess the amount of talk for teachers and children in either type of classroom. The data presented in Table II in the first section of this chapter indicated that both type of classrooms evidenced a similar number of total interactions. Therefore, one could surmise that if verbal behavior was characteristic of interactions, and the total number of interactions were similar in frequency, then teachers and children in both types of classrooms relied equally on verbal behavior as a primary vehicle for the content of individual interactions.

Reference to the quantitative data presented in Table IV showed that traditional teachers initiated more interactions than informal teachers which would lead one to conclude that traditional teachers may talk more than informal teachers; however an actual word or sentence count was not made. The information in Table V suggested that the total number of interactions initiated by children in both classrooms is similar; however if one adds the frequency of interruption initiated by children as depicted in Table VIII, one can see that children in informal classrooms initiated interactions including interruptions about one and a half times more than children in traditional classrooms. Again, a quantitative assessment of words or sentence count was not pursued. Observation in both types of classrooms revealed that children in informal classrooms are permitted and encouraged to talk to each other more than children in traditional classrooms. When the frequency data concerning initiation of interactions is added to the amount of conversation observed between
children, it would appear that children in informal classrooms do exhibit more instances of verbal behavior than do their counterparts in traditional classrooms. It must be kept in mind that this description of the amount of verbal behavior is not based on any quantitative assessment of word count or time spent by children or teachers in verbal behaviors. However, such a description does point to a source of difference between informal and traditional classrooms.

Assumption 2. Nonverbal behavior will primarily serve to supplement and reenforce verbal behavior within such interactions.

Nonverbal behavior was observed to primarily supplement and reenforce verbal behaviors in both kinds of classrooms. The three observed instances of interactions using totally nonverbal behavior were related to the following situations: control of total class, observation of total class and regulation of interruptions. These instances of nonverbal behavior will be discussed in another section of this chapter. Instances of nonverbal behavior related to time and movement will be within the set of assumptions concerned with managerial function.

Due to the small number of observed instances in which nonverbal behavior occurred independent of verbal behavior in both types of classrooms, the content of assumption two can be accepted as an accurate representation of the role of nonverbal behavior in individual interactions between teachers and children.
Assumptions Concerning Setting of Interactions

Assumption 3. Within informal classrooms, individual interactions between teacher and child occurring during periods of on-going individual activity will be longer in duration and more frequent in number than interactions occurring during on-going group activity.

The quantitative evidence in the first section of this chapter indicated a significant difference in the settings of individual interactions in the two types of classrooms. Individual interactions occurred more frequently during periods of on-going individual activity in informal classrooms while interactions in traditional classrooms were more apt to occur during on-going group activity.

The assessment of duration of such individual interactions was based on the sample of incidents chosen for qualitative analysis. Duration was defined as the number of utterances by children and teachers during the interactions. An utterance was defined as a word, a phrase, or a sentence separated by a pause from the next utterance. Duration of interaction in the two types of classroom varied by setting. In informal classrooms, the average duration of an interaction during on-going individual activity was 10.6 utterances while in on-going group activity, the average interaction consisted of 7.2 utterances. For traditional classrooms, the duration ranged from an average of 8.2 utterances per interaction during on-going individual activity to an average of 11.0 utterances per interaction during on-going group activity. It must be remembered that these figures for duration of interaction were based on a sample of incidents and not the total number of interactions.
Based on the significant differences shown in the frequency of interactions for setting and the differences evidenced in duration of a sample of interactions, assumption three concerning the emphasis within informal classrooms on individual interaction during on-going individual activity can be accepted as true for this sample. Based on a comparison of traditional and informal classrooms of the sample, it would appear the differences in emphasis on group and individual activity present a viable factor for determining differences in the two types of classrooms.

Assumption 4. Individual interactions between teacher and child during periods of on-going individual activity will provide a richer source for developing a description of the nature of the informal classroom than individual interactions which occur during periods of on-going group activity.

This assumption could be accepted as true of the sample in this study based on the frequency of interactions during on-going group and on-going individual activity as displayed in Table II of the quantitative data. Individual interactions occur 3.5 times more during on-going individual activity than during on-going group activity in informal classrooms. Thus it could be assumed that this larger available number of interactions might provide a richer source of description for the activity in informal classrooms. Conversely, the greater frequency of interactions in group activity would provide a richer source for description of the typical activity in traditional classrooms. Assumption four can only be considered applicable to
the classrooms of the sample in terms of frequency, not in terms of the quality of the content of the interactions in either setting.

Assumptions Related to Substantive Function

The interactions between teachers and children which pertain to substantive function are related to the three following assumptions. While examples of interactions related to each assumption are given separately, examination of their content revealed that just as one interaction may demonstrate different functions, such as substantive with affective, one interaction may provide example of several substantive behaviors. Further examination revealed similar combinations of verbal behaviors used interchangeably to express substantive behaviors.

Assumption 5. Individual interactions between teacher and child will provide a rich resource for the teacher's use in diagnosis of the child's interests, his choice of classroom activities and his level of achievement.

5a. Interactions of this nature are characterized by use of such verbal behaviors as questions which seek information or statements that request specific responses.

The following two interactions are examples of the teacher seeking information about what the child is doing and his level of achievement with the task. The interaction in the informal classroom took place during on-going individual activity while the traditional interaction was a part of on-going group activity. Both interactions are teacher initiated; both are of similar duration.
Informal

T. (Goes to paint table and watches child.)
C. I'm trying to make purple.
T. You're trying to make purple.
C. Yeah, when I get all these pots.
T. Tell me what have you discovered about how you make purple.
C. You put a coat of blue and then you put a coat of red.
T. You put a coat of red over the blue and that makes purple.
C. Yes.
T. Do you suppose that it would make purple if you put a coat of blue over the red?
C. (laughs) No.
T. You don't think so. How come you don't think it would work the other way?
C. (doesn't answer)
T. You just don't think it would work, uh? I think that's very interesting.

This interaction opens with a nonverbal query from the teacher. The subsequent responses probe the method of inquiry and level of cognitive development evidence by the child. The teacher's closing comment connotes positive reenforcement. The closing response of the child was nonverbal also, for he contemplated the paint jars and finally shook his head. One could almost surmise that he contemplated reversing his procedure as the teacher suggested but decided it would not produce the desired result.

Traditional

T. Craig, how about this one?
C. The girl is ...
T. I haven't asked you yet. I was waiting for them to get finished with their conversation. On which side of the bed is the girl standing?
C. The girl is standing on the side of the bed.
T. The right side or the left side?
C. The left.
T. You sure ... Which is your right hand?
C. This is my right hand! (holds up right hand)
T. Which side is the girl standing on?
C. You see if she faces this way the bed is on this side.
T. I want you to tell me the way from where you are sitting.
C. Then she's on my left.
T. Straight ahead of you. Is that the right or the left?
C. It's on the right.
T. She's on the right side there.
C. (talking to himself)
T. But you have to answer from the way you are sitting.
C. She's on the right.

The interaction opens with a question from the teacher. The child attempts to respond, but the teacher interjects an affective reaction concerning the group and then reiterates the request. The child responds and the teacher's responding question indicates to him that the response is incorrect. The child tries to explain his response from his point of view, but the teacher ignores that point of view and reiterates the request for the correct answer as she wants it. The closing response by the child is evidently the desired one for the teacher then she directs her attention to another child. The completion of this interaction left the child muttering to himself for three or four minutes concerning the fact that he could have been right while the group work proceeded on around him.

These incidents are compared for four reasons.

1. Both teachers were attempting to diagnose level of achievement, but the definition of achievement differed in terms of acceptance of response. In the traditional class, the teacher found it impossible to accept the answer given because it was not correct as she saw it. The informal teacher accepted the response of the child for what he conceived to be correct. These differing definitions of achievement may be characteristic of two different definitions of learning. If
evidence of learning is to be obtained through the delivery of correct responses to meet prescribed goals, then the teacher can not be satisfied until that goal is reached. If evidence of learning can be obtained through examination of the process of problem solving, then the informal teacher could be satisfied with the child's process although he did not follow her suggestion.

2. These interactions also reflect a difference in awareness of the child's level of cognitive development. Craig's behavior seemed to reflect a sophisticated understanding of point of view concerning left and right. His statements provided evidence that he was in the transition stage between egocentricity and decentralization, unusual for a child of six. The teacher missed this evidence of higher level of thinking because of her preoccupation with the right response. The paint mixing child evidenced a particular level of cognitive development concerning reversibility. While the teacher attempted to refocus the child's thinking, she did not push the issue when the child discarded the suggestion.

3. These interactions revealed a difference in the feelings exhibited by the child at the end of the interaction. Craig was left frustrated by the encounter, muttering to himself about the injustice of the situation. He may have learned not to question authority, but that feeling of the observer was dispelled by his constant attempts throughout the remaining observations to pursue his own thing. The paint pot boy was left satisfied but curious. As the observer watched him eye the paints, she could almost see the wheels turning in his head.
These interactions demonstrated how avenues for exploration could be left closed or open by the response of the teacher to the individual child's substantive efforts.

4. These interactions are examples of choice within the classroom. Children in the traditional classrooms of the sample were given choices only during activity time and then were directed to a choice on the basis of teacher response to their requests for participation. Within informal classrooms, children consistently chose their own activities with direction or suggestion given only to individual children on the basis of observation by the teacher. Thus diagnosis about choice of activities was rarely necessary in traditional classrooms since activities were prescribed. This may explain the lack of any instance of the use of the question, "What are you doing?" by traditional teachers. They already knew.

The following two interactions are presented to further support the above descriptions. These two incidents pertained to the same activity, making a flag. Both occurred during individual on-going activity. The informal interaction is initiated by the teacher; the traditional one, by the child. The activity in the traditional classroom was required of all children.

**Traditional**

C. I can arrange it the circle way. (refers to the blue field and stars and stripes on the flag) I can rearrange it the circle way. (teacher is preoccupied for a moment)
T. Well, how can you do that?
C. Easy, you just make it in a circle.
T. Can you put fifty in a circle?
C. (inaudible)
T. Is that how our flag looks today, with fifty in a circle?
C. Nope.
T. Well, we're making our flag the way it looks today, Craig.
C. I want to make mine ... (inaudible)
T. How many stars were in the circle in the original flag?
C. Twenty-four.
T. You sure? How many, Haki?
C2. Thirteen.
T. Thirteen, but we have how many?
C. (inaudible ... child does make flag to conform to teacher's direction.)

Informal

T. Donna, I'm curious. What have you been doing? What did you do with that wallpaper?
C. I made some stars.
T. You made the flag.
C. I'm making it.
T. You're making a flag. Tell me about the flag.
C. It's our flag.
T. Tell me about our flag. What colors are in the flag?
C. Red, white and blue.
T. Red, white and blue. What's red and white?
C. The stripes.
T. The stripes, do you know how many stripes there are in the flag?
C. Red and white.
T. How many? Do you know?
C. (shakes head no)
T. Hippety hop over to the display table. The flag fell down and that's not too good. Get it and let's check it and see.
(The child goes for the flag.)

T. Donna, bring it here, dear. Let's look at it. Did you count them?
C. Yes, there's seven red and six white.
T. Now how many stripes would that be all together?
C. (shakes head)
T. Well, you can count. (points to stripes)
C. Thirteen (does point to stripes as she counts)
T. So you found that seven plus six is how many?
C. Thirteen.
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T. Thirteen. Why do you suppose that there are thirteen stripes on a flag?
(The interaction continues for a period of time discussing the history of the flag. The problem was that the child had put the blue field in the wrong place. The teacher discussed making a flag.)

T. As you make your flag, what color is going to be on top?
C. Red.
T. What color is going to be on the bottom?
C. Red.
T. Now maybe the next easiest way is to make a stripe right out from the blue field and that one is what color (points to real flag)
C. Uh, red.
T. Yeah, I don't want you to have to do this one over. Now let me tell you something. When the flag hangs either this way or this way, (teacher demonstrates) the blue field is always in the top left hand corner. You see putting this on here we'd have it backwards but that's all right because we know it... (demonstrates another way... Think you can remember that? Which corner do you have your blue field in?
C. (points)
T. Is that left or right?
C. Right.
T. Right, that's kinda of interesting. What made you think you wanted to do a flag this afternoon? Where did you get the idea?
C. I just thought of it.
T. Just thought of it. That's a good thing to think about isn't it? Well, you do that one and if some day you want to make one of colored paper, we'll see if we can cut some stripes and you can make a big one if you like. I love the way you are putting it on a mat.

These interactions confirm differences in traditional and informal classrooms concerning acceptable evidence of achievement, the child's process of inquiry, choice of activity, direction by the teacher, and the affective connotation left with the child.

Therefore, assumption five concerning use of interactions for diagnosis of the child's substantive development can be accepted for both types of classrooms, but the examination of the content of these interactions provided evidence of possible differences between the two
types of classrooms. These differences were related to the teachers' objectives and procedures for diagnosis of the child's interests, his choice of classroom activity and his level of achievement. Verbal behaviors, related to assumption 5a, were generally limited to questions or statements that requested a specific response in the traditional classrooms while questions or statements requesting divergent response could be identified more frequently in the informal classrooms.

Assumption 6. Individual interactions between teacher and child will provide opportunities for the teacher to guide and extend the learning of the child on the basis of his personal level of development.

6a. Interactions of this nature will be characterized by use of such verbal behaviors as open-ended questions and divergent responses as well as statements which volunteer information.

Teachers in both types of classrooms utilized individual interactions in on-going group activity to guide learning; however traditional teachers of the sample used on-going group activity for such substantive encounters almost exclusively while informal teachers concentrated such encounters during periods of on-going Individual activity. Differences in the formation and membership of groups will be discussed later in this section, but in examining the interactions below, two differences should be noted. The children in the informal classroom had chosen to work together while children in the traditional classroom had been assigned to this group for this activity. Second, the children in the informal classroom had chosen the activity, and the teacher had joined the group. The children in the traditional
classroom had been assigned the task by the teacher who directed the activity. The teacher initiated the interaction in both situations. The examples actually consist of a series of individual interactions with two children. Both encounters represent a manipulation of concrete materials for math.

**Traditional**

T. How fast do you think you could make a staircase? (children are working with Cuesnaire rods)
C. In one minute, watch.
C2. Is the minute over yet?
C. No
C2. The minute isn't over, but I'm done.
T. How does my staircase differ from yours?
C. It goes by twos.
T. All the way? Look at mine. What's the matter with my staircase made with twos.
C. It doesn't go all the way.
C2. The first three only go by twos.
T. Right, which one should not be there?
C. The six.
T. You don't think the six should be there? How can I tell if mine is exactly right? What rod would I need to prove that mine is exactly right now?
C. A two rod.
T. Right, if I take a two ... (inaudible)

The objective of the interaction as related by the teacher to the observer was to examine likenesses and differences for perceptual development and math review. The guidance of the teacher is evidenced through the use of questions to refocus the attention of the children to the differences she designed. One could question how much extension of learning is involved since the children's staircases were evaluated in relation to the teacher's in a subsequent interaction. The advantage of the open-ended question, "How does my staircase differ from yours?", is negated somewhat when the response of the child is
redirected toward the teacher's original purpose. Closure of the interaction is reached when right solution is obtained.

**Informal**

(Children are working with geoboard. Teacher approaches and makes a shape with a rubber band)

T. What would this be? (points to one already on) May I put one on?
Children: Yeah.
(interruption of interaction by teacher) ... 
T. Can you see it? What did I make?
C. A square.
T. How do you know it's a square.
C2. No, it's not a square.
T. How come it isn't a rectangle?
C. It isn't long one way.
T. It isn't long one way so how's a square different than a rectangle.
C2. They're both the same I think.
T. Square and rectangle the same?
C2. Yeah.
T. Think that's right, Joe?
C. No.
T. How are they different?
C. They're not both the same size. Two on the rectangle are longer than the others.
T. Two sides on the rectangle are longer than the others? (children shake heads affirmatively)
T. Are the two long sides on the rectangle side by side?
C. Yeah.
T. Where are they?
C. (points) They're opposite each other.
T. They're opposite each other. That's a pretty neat word.
C2. I have a shape of a kite.
T. What else is opposite of each other, Joe? Can you tell me something else that is opposite? That's a very good word you chose to use.
C. (inaudible)
T. Can you tell me something else opposite?
C. A triangle... (inaudible)
(teacher is called away but children continue the activity)

The informal interaction also demonstrates an objective based on comparison of likenesses and differences in math. This teacher also designed the object for comparison. In this interaction, the teacher
refocuses the interaction by questions based on the response of the children. Extension of learning is provided for the one child through trying to get him to relate opposite to another object. Closure is open-ended since children persisted with the geoboard and conversed among themselves after the teacher departed.

Three differences between the traditional and informal interactions seem evident.

1. In the traditional interaction, closure is assessed as the achievement of the solution the teacher had in mind; with the informal situation, closure is open-ended with further experimentation of the children the inferred objective.

2. The difference in guidance of learning is revealed through the teacher's response to the child's response. In the traditional encounter, the teacher accomplishes direction toward her objective by indicating correct responses with confirmation and incorrect response by further directed questioning. Within the informal encounter, the teacher accepts all answers but continues to probe with questions or statements based on the varied responses. This teacher did praise the child for use of the word, "opposite", and encouraged him to use it again.

3. Extension of learning is evidenced in informal classrooms through an attempt to relate vocabulary to another situation and leaving the group to discover other shapes using the geoboard. No evidence of extension of learning is available in the traditional encounter. The subsequent interactions recording during this activity
were similarly teacher-directed with the same resulting patterns of response.

Opportunities to guide learning can be similar in both types of classrooms. The following interactions demonstrate two individual interactions, initiated by children. One is initiated by a direct question while the other one is initiated nonverbally with the child's hand raised in the air.

**Informal**

C. What comes after "w" in with?
T. (No response since she is busy with other children)
C. What comes after "w" in with?
T. After "w"? What says "h"? (short i sound) wh...
C. Do you need an "h" or an "i"?
T. It's wh... so it's just...
C. Wh... okay, now.
T. Look at the end of it.
C. "th"
T. You know how to spell it.

**Traditional**

C. (raises hand)
T. What word did you want, Doug?
C. House.
T. House, how do you think that starts?
C. "H".
T. Do you know what else comes?
C. "U".
T. There's a "u"... "hou"... What else?
C. (no response)
T. Houssss (s sound)
C. Oh, "s".

It was concluded, albeit facetiously, by this observer that spelling must be taught the same way all over the world. The one difference between the informal and traditional encounter is that the
informal child comes with a purposeful question, indicating some evidence of willingness to try on his own. The other child may figure that spelling "house" is the teacher's task although he complied with her question to try to figure it out.

Within informal classrooms, a consistent effort is made to develop oral language. This interaction not only demonstrated this effort but also showed how free experimentation of the child can be profitably used by the teacher to assess and extend learning.

**Informal**

(Child has tuning fork. Another child is watching him bouncing money with the fork after hitting it on the side of the table.)

T. (Approaches table and watches child) C. It's bouncing quarters and dimes.
T. You mean the tuning fork will make the quarter bounce? C. (shows teacher) Here.
T. What makes it bounce?
C. Here, I really made it bounce.
T. What makes it bounce, Jim?
C. It vibrates.
T. What is vibration? What does that mean when you say it vibrates? What does it do?
C. It goes back and forth.

Within traditional classrooms, teachers provide a wealth of verbal information as input. The informal teacher also volunteers information within an interaction. This interaction reflects input of verbal information to extend the thinking of a child related to his own current activity.
Informal

(Child is working with geoboard)

T. What are you doing, Tom? Have you ever seen anything that looked like that before?
C. In New York, the lights look like it.
T. In New York, the lights look like it. Where? Do you mean at night time?
C. (nods affirmatively)
T. Yeah, I guess that's a pretty good description. How about that! I never would have thought of that. You know what that makes me think of?
C. (shakes head negatively)
T. Have you ever looked at the back of a television set or the underneath side of a radio where all those little wires are all crisscrossed, and I can never figure how it works out. Can you? I bet you can.

The difference in verbal input by the traditional teacher and informal teacher is related to differences in setting. The traditional teacher, operating so frequently in a group, must propel her information like a shotgun, hoping it relates to some or all of the children. The informal teacher, operating more frequently in individual settings, can tailor make her input to the child with whom she is conversing.

Learning in an informal classroom is stimulated by participation in many types of interest centers. The creative living center provides opportunities for the children to imitate adult situations. The following interactions not only demonstrates this type of activity but also shows the use of language in this situation. Such participation provides opportunities for the child or children to extend their own learning by sharing with other children. The teacher's intervention not only provides her an opportunity to find out how the situation reflects real life, but also reenforces for the children that such activity is acceptable in a school environment.
Informal

T. (Approaches a "patient" stretched out on floor with doctors and nurses hovering around him.)
Are you sick?
C. Uh huh. (Yes)
T. Is this your nurse?
C. Uh huh. (Yes)
T. Nurse, what's wrong with your patient?
Nurse: Well, (nurse looks at patient)
T. Well, what?
Nurse: Well, you see. (turns to child) What happened to you?
C. I don't know.
(comments from others in background)
Nurse: (to teacher) I don't know.
T. Oh, I see, you're finding out, O.K.
(interruption from child causes teacher to turn away for a minute.)
Nurse: Hey, (to teacher), he fell off the roof of the house!
T. Oh, I thought that you wrote down he had tonsillitis.
Nurse: No, you see. I'm writing all these things down. I'm giving the answers.
T. Oh, you're giving the answers. (to patient) What happened to you when you fell off the roof? How did you hurt yourself?
Nurse: He broke his arm; I mean, his leg.
C2. I'm the main doctor.
T. You're the main doctor. O.K. What are you, Jeff?
C. A doctor.
T. Oh, you're a doctor too. (This play continued for most of the observation period with this conclusion after the patient had been extensively bandaged.)
Nurse: He (referring to the patient) doesn't know how to sit down. (points to splints)
T. Well, it is hard to do with a broken leg. Oh, it's a broken arm.

The differences between informal and traditional classrooms based on this interaction were evident since there was no creative living corner in the traditional first grades. Opportunities for role-playing adult situations had been left behind at kindergarten. This incident depicted a difference in what constituted acceptable activity in informal and traditional first grade classrooms.
Assumption six stated that individual interactions will provide opportunities for teachers to guide and extend learning of the child. The analysis of the interactions related to this assumption indicated that teachers do use individual interactions to guide and extend the learning of the child in both types of classrooms but the content of such interactions exhibited differences in the direction of such guidance, and the extension related to the personal development of the individual child. Within the traditional interactions, the guidance and extension was directed toward achievement of the children related to prescribed objectives designed for his group by the teacher. Within the informal interactions, the guidance and extension was directed toward achievement of the child's objective or objectives prescribed for the child in terms of his personal level of development.

The use of verbal behaviors proposed in assumption 6a demonstrated differences between teachers in the two types of classrooms. The initial use of open-ended questions by traditional teachers in the sample was counteracted by the refocusing and reenforcement of the child's potentially divergent response to ultimately achieve a convergent response. Teachers' verbal behavior in informal interactions revealed a use of open-ended questions and acceptance of divergent response. Teachers in both settings volunteered information, but such input was related to groups in traditional and individuals in informal classrooms.
Assumption 7. Individual interactions between teacher and child will provide opportunities for mutual exploration of the uses of the wide variety of materials available in the classroom.

7a. Interactions of this nature will be characterized by the use of such verbal behavior as statements which suggest various alternatives or questions that seek information.

Materials within the traditional classrooms of the sample consisted of a wide array of commercially prepared materials. The following interaction demonstrates some references to materials in a traditional class.

Traditional

T. I know that you have mentioned that you like horse stories. This is one I gave Carol this morning that, uh, you might test it if you would like to. Have you ever tried this one? (another book)
C. I've never even seen it before.
T. Well, you might try it because I'm sure you could read it and it is a cute story about dolls, and she loves them so much and I thought you might enjoy that, and maybe you and Carol could get together and talk about something that you could tell about it that would maybe make someone else want to read it. Do you think so?
C. I don't know.
T. Does it look interesting to you? If it doesn't, I don't want you to take it.
C. It looks like it's hard.
T. It does. Why? What makes it look hard?
C. Because, it has ... (inaudible)
T. Why don't you try it and see?
C. (reads but has trouble with four words)
T. That's a dilly. (pointing to word) Maybe this one is one we should wait for, shall we?
C. Yes.
(Interaction continues and child goes away with another book.)

The teacher was involved in an individualized reading program, and during her conferences with children, she would talk with them about their choice of books. The child was always encouraged to test
himself on the book to see if he could read it independently. This teacher was particularly adept at stimulating children to read widely. Positive acceptance of the child’s decision about a book is demonstrated in the above interaction.

**Traditional**

T. ... When you’re finished, the new Match and Set, Level Three are very interesting. (reading) You’ll have to be sure and read the titles on each one and work on them. Unless you have done all the blue ones, I’d be sure and check the blue ones first. And then you may get any game that you would like to. I put Racko down and the rest you can get off the shelves.

This statement from the same teacher reveals her interest in reading materials. A wide variety of books and games were available for the children. Children were directed to use of materials in order to accomplish the objectives of the day’s work. After such objectives were met, the children could freely choose games or other materials.

**Traditional**

T. When I give you a paper, you may go back to your seat if you are sitting down waiting for the paper. On this paper, I want you to arrange the stripes and blue field the way you think the flag looks. Don’t get your paste yet until I check to see if you have it right. The paper is up here so you will have to wait until I get it. (Hands out paper to children)

This interaction is presented because it represents a rather typical behavior pattern for this teacher. The use of materials was almost always prescribed in terms of activity and process. Even during activity time when the children were involved in different
games, she usually selected children for participation in an activity. An interesting illustration of this prescription operating in connection with free choice concerned little storybooks the children had written. Although the stories were all different, each child had to make the same kind of cover for his book. Due to her preoccupation with prescription, the teacher had to spend a great deal of her time, stimulating the children to achieve conformity.

The content of this interaction points to another difference between traditional and informal classrooms concerning the availability of materials. The children's access to materials in this classroom was dependent upon the teacher's distribution; therefore the child had to wait to begin an activity until such distribution was effected. This waiting period often led to confusion in the classroom and the resulting clamor led to the teacher becoming more and more concerned with regulation of behavior. In contrast, the children in informal classrooms of the sample had free access to material in the interest centers and could proceed to work on their activities without waiting for the approval and help of the teacher.

Available materials in informal classrooms ranged from books to junk collections. A rich environment is the core of the informal classroom. Within the previous informal interactions references to materials have been noted. The purple paint interaction demonstrated the experimentation with materials encouraged in these informal classrooms. The following interaction further demonstrates the use of varied materials.
Informal

C. (Shows bird house and makes Inaudible comment)
T. Oh, Bryan, let me see. How about that?
C. It can be a seat or a birdhouse.
T. It can be a seat or a birdhouse. What size birdie could use that birdhouse?
C. I don't know.
T. Where is he going to go in?
C. My dad's going to drill a hole.
T. Oh, Daddy's going to put a hole in it for you. What did you do with that fancy kind of a nail you brought from home at noon? Did you use it?
C. No, it's too thin.
T. Wouldn't it work? Was it too small?
C. Uh huh. (Yes)
T. I wondered if it might be. Where are you going to have Daddy put the hole?
C. Right here, maybe. (points)
T. You have worked so hard on that today. Doesn't it make you feel good when you have worked so hard on some thing and it turns out nicely. I'm so proud of you. Good for you!

This interaction referred to Bryan's earlier activity at the workbench. It is interesting to note the comment about the nail, for even though the teacher suspected it might not work, she was willing to let the child find out for himself. The closing affective statement sounds a little preachy, but if one heard the intonation in the teacher's voice and had seen the huge smile on the child's face, one would have better understood the positive effect this statement conveyed.

Informal

T. (Refers to midget racing cars on track being timed by child) How could you record that?
(Interruption)
T. Could you record it on something so you could remember what each time took?
(Interruption)
T. Maybe you could use the graph paper some way.
(Interruption)

C. I'm going to time it now.
T. Why don't you find how many times it will go around in a minute, or you could see how many seconds it takes to go around once?
C. Twenty-one laps.
T. Twenty-one laps in a minute.
C. Uh huh. (Yes)
T. Why don't you try the other car and see if they're the same. Or I wonder if it would come out the same the next time you tried it.
C2. It won't.
T. Chris thinks it won't.
C. Hey, Mrs. D... I decided twelve laps...(Inaudible) and it went around four times and here is where it was. (points to place on stop watch)
T. That's half way around so it would be four, in what?
C. Four and a half.
T. Do you know how many seconds are half a minute? What do you think?
C. Thirty.
T. Thirty. Uh huh, good. Why don't you write some of those things down in a certain way?

Three references to materials were of interest in this interaction. The first was concerned with recording. Children in the informal classrooms were consistently urged by the teachers to write. Each child had his own log. The second reference pertained to the teacher's suggestion of using graph paper to record the time frequencies for the cars. The third reference pertained to the use of the stop watch by the child for timing.

Informal

C. We're going to make a volcano, John and me. We're going to make a volcano. I mean put it on there, (points to picture) Put it on there and make the stuff coming out of it.
T. What are you going to use to make stuff coming out of it?
C. We're going to use a little bit of red paint.
C2. We're going to stuff it with red paper.
C. We're going to stuff it with the red paper and then we're going to...
C2. And then put paper on the outside.
C. Yeah, orange paper on and outside 'n.
T. (inaudible)
C. No, orange paper.
T. What kind of paper do you think would be best to make your volcano look like it was erupting?
C. Red, orange, so we can hook it on the side and it looks like it's really blasting out.
T. That's going to be neat when you get that finished. Why not get to work on it right now.
C. Yeah!

This incident indicated the children's discussion of the use of materials for making a volcano. Not only does this interaction relate to materials, but it demonstrated exceptionally well the teacher's encouragement of problem-solving by the children. This interaction also was a good reference for the use of verbal behavior suggested in assumption 7a. The teacher did use questions to seek information.

The differences between traditional and informal classrooms are most clearly demonstrated in interactions pertaining to materials. The language of these interactions was similar for the informal teachers and traditional teachers of the previous reading interaction. Statements that seek information or suggest alternatives are demonstrated in the interactions of these teachers.

Relating these interactions to assumption seven demonstrated that interactions referring to materials are used in both types of classrooms but the difference lay in the accepted definition of the words, uses, and materials. Uses in traditional classrooms referred to specific material related to specific activities while in informal classrooms,
uses connotes experimentation with all kinds of materials relating to any activity. In traditional classrooms, materials are defined more often in terms of commercially prepared conventional materials for academic learning while in informal classrooms materials are defined as anything from everyday junk to the more conventional books and games.

One other example of substantive function not mentioned in assumptions concerned the recording procedures of teachers. The following interactions demonstrate the use of recording by Traditional Teacher B in her individualized reading program. This interaction also is a beautiful example of affective interchange with a child.

**Traditional**

C. What is that there? (points to notebook by teacher)
T. (Laughs) Those are notes to me. O.K.?
C. What's that one?
T. Well, that tells me how nicely you read. You made it sound just like people were talking.
C. What's that mean?
T. That's what it's for.
C. Do you check me on that one?
T. Oh, yes. Some of them I put down afterward and then I have to put that Leap Year is here.
C. The date ... (inaudible)
T. How about that!
C. What did you put for the date?
T. Two, you know that's the short cut for writing date.
C. What about that one?
T. Well, we didn't particularly talk about sounds today. Sometimes when we talk, I'll put in there what sounds I think you particularly worked on. But you are working on all your sounds so well, I didn't have to help you with any of them, did I? How does that make you feel?
C. (Smiles ... inaudible)
T. (Laughs)
Recording is particularly important for the teacher in an individualized program. The beauty of this interaction is how the teacher lets the child know what she has recorded about her performance. No instance of recording such as this was available in the sample of the other traditional teacher.

**Informal**

C. This is my book of math, and I did this, and it shows that it's math. (points to things on page)
T. Very good. Now, how do you know that this is true? (points to problem) How do you know that five and five is ten?
C. I just do.
T. You just do. How could you show me?
C. (Breaks in on teacher) I counted on ...
T. You counted on what?
C. Beans, and you could count on fingers.
T. I think it's better to use beans.
C. Tomorrow, I'm going to do some more.
T. Oh, you're going to keep adding to this. Very good, Patty. Let me mark it down so I've got it.
C. And then I'm going to do some other math because this wasn't very much.
T. O.K. Don't forget the other things.

This interaction in the informal class of Teacher R demonstrated not only recording but also like many other interactions was a combination of several behaviors. Before the teacher recorded the information, she checked to see how the child reached her objective. She also commented about the value of materials, beans over fingers. The last comment was particularly interesting because it serves as an example of how an informal teacher may encourage a child to take advantage of other activities in the room. Informal Teacher D recorded her comments and used a checklist attached to a clipboard. She often carried this clipboard with her as she moved around the room.
Assumption 8. Individual interactions, occurring between teacher and child during periods of on-going individual activity, which are concerned with substantive content will be of longer duration than those interactions devoted to management of classroom activities.

The duration of interactions related to substantive function was longer than the duration of interactions related to managerial function in both types of classrooms. The duration of interactions based on the sample of incidents selected for use in the study revealed that duration of substantive interactions in traditional classrooms during on-going individual activity was 11.2 utterances per interaction while management interaction during individual activity averaged 5.5 utterances per interaction. Within informal classrooms, the duration of substantive interactions during individual activity was 13.8 utterances per interaction while management interactions averaged 6.3 utterances per interaction. The duration for substantive interactions in group activity in traditional classrooms was 12.0 utterances per interaction with the duration of management interactions averaging 8.8 utterances per interaction. Within the informal classrooms, the duration substantive interactions during group activity averaged 19.0 utterances per interaction while management interactions averaged 5.0 during group activity. The differences between the types of classroom in length of average interaction related to substantive function occurring during individual and group activity seemed to indicate that informal teachers are involved in longer interactions than traditional teachers although no statistical treatment was used to test for significant differences.
Assumption eight therefore is true of both types of classrooms in the sample. Further examination of figures for average duration revealed slight differences between informal and traditional classrooms in length of interactions related to substantive and managerial functions during on-going individual and on-going group activity.

The discussion of assumptions related to substantive function in the classrooms of the sample did not purport to cover all the activities present in the classroom. Writing and reading were heavily emphasized in all the classrooms although the approach was different. Informal Teacher R had been using ITA, and her children were involved in the transition phase of that program. Informal Teacher R, Informal Teacher D, and Traditional Teacher G used individualized reading programs with emphases on trade books. Informal Teacher D, Traditional Teacher G and Traditional Teacher C also used basal books in reading groups although Informal Teacher D used the basal readers in an individual style with the children in the group. Creative and practical writing experiences were observed in all the rooms, although again, informal teachers handled this on a more individualized basis.

Summary: Substantive Assumptions

A summary of the information gleaned from this analysis of the individual interactions related to substantive functions revealed sources of potential difference between traditional and informal classrooms. The emphasis on intellectual concern was evident in all four classrooms. Differences were evidenced in setting for substantive interactions with informal teachers and children operating more
frequently in a setting of on-going individual activity while their counterparts in traditional classes operated more frequently in group settings.

As stated in the assumptions related to substantive interactions, teachers did use individual interactions for diagnosis of the child's interests, activities and level of achievement; guidance and extension of learning and exploration of materials with children. However, an analysis of the content of these interactions revealed differences between informal and traditional classrooms concerning:

1. Acceptable evidence of achievement for the child,
2. Acceptable methods of inquiry by the child,
3. Choice of activities and procedures by the child,
4. Teacher's awareness of cognitive level of the child,
5. Use and choice of available materials by the child,
6. Difference in effect of teacher's verbal input in relation to individual or group,
7. Use of teacher response to restrict or stimulate child's response and,
8. Verbal output of children.

Differences among teachers in the four classrooms were less pronounced than differences between teachers in the two types of classrooms.

Assumptions Related to Managerial Function

The management of classroom was a concern of teachers in both types of classrooms. In this study, classroom management is related to the use of time, scheduling procedures and establishing regulations
for routine classroom activity. While substantive content is the major concern of teachers and children, managerial procedures provide the framework within the classroom through which substantive content can develop. The following set of assumptions provide a basis for the investigation of the content of interactions related to management functions in informal and traditional classrooms.

**Assumption 9.** The teacher’s use of time will be governed primarily by the need for individual interactions with children during periods of ongoing individual and to a lesser extent by the need for such interactions during ongoing group activity.

The quantitative data displayed in Tables II and III in the first section of this chapter indicated the emphasis on interactions during ongoing individual activity in informal classrooms. The data in Table IV showed that teachers in informal classrooms initiated more interactions during periods of ongoing individual activity. Table V revealed that children in informal classrooms also initiated more interactions during ongoing individual activity. The opposite pattern with emphasis on interactions during ongoing group activity was true of traditional classrooms with the exception of children in traditional classrooms initiating more interactions during ongoing individual activity. Therefore, in relation to assumption nine, this emphasis on individual activity in informal classrooms would seem to indicate that the teacher’s use of time would be controlled by the participation in such individual interactions during ongoing individual activities. Likewise the traditional teacher would plan her time in terms of the need for interactions during ongoing group activity.
Assumption 10. The teacher and child will use individual interactions to schedule activities for periods of on-going group and on-going individual activity.

Scheduling procedures are similar in some areas and quite different in others within traditional and informal classrooms. Both types of classrooms in the sample observed scheduled time for recess, lunch and special areas including art, music, physical education and library. The scheduling of the balance of classroom activity was quite different in the two types of classrooms. Traditional teachers had a pre-scheduled plan for the day. Mornings were generally spent in reading groups, sharing times, and possibly, math. Afternoons might be devoted to math, science and social studies or more reading. Each classroom had a scheduled activity period where children selected activities from a planned program of activities. Individual activity occurred during the activity period in both classrooms. Considerable individual activity devoted to direction for seatwork occurred before the onset of reading groups in the classroom of Traditional Teacher C. Individual activity in the form of reading conferences occurred frequently in Traditional Teacher G's classroom.

Scheduling in the traditional classroom was a teacher function, occasionally, scheduling was explained to the child in these terms, in the class of Traditional Teacher C.

Traditional

C. I'm done with all that.
T. Yes, I know, but I'll help you with it, but you didn't do these, John. When you get stuck, you should just work on this.
The child had gotten "stuck" so his reaction was to wait for more direction. In the meantime, he had started poking the boy in front of him until confronted by the teacher in a disciplinary interaction following the one above.

**Traditional**

C. How do you explain this?
T. Well, I said that we'd explain that together, Shawn. If you wait until we are done with reading, I'll explain it. I'll help you with this, but I want your reading group to come back now. Can you save that?

Here the emphasis is placed on the approaching time for reading so the current activity of the child had to be postponed.

Scheduling for group activity was a function of the teacher. The next interaction demonstrates this function in the classroom of Teacher G.

**Traditional**

T. Now, we have several things to do. Some people have not finished their alphabet words. If you have not finished your arithmetic, be sure that you get it finished and before activity period is over. At the end of it, we will check those papers. Three people have a story to read. How many are finished with their alphabet?
C. (Response by hands)
T. Not very many. Kim, Matt and Debby, shall we wait about ten minutes and then invite them to come hear you read. If you have all this finished, and are ready, you can get your paper and make what you would like to do for the Mardi Gras.

Note that the suggestions concerning what the child chooses occurred after the completion of regularly scheduled activities. One may conjecture that some children never got to that point although this teacher was more adept than Teacher C in assuring children of some time for their choices.
Within informal classrooms, scheduling was rather spontaneous. Both classes had group time for sharing and planning in the morning and afternoon. Area time, time spent in centers, occupied the rest of the day. Teachers joined or formed groups for instruction during area time. An interview with Teacher R revealed some information about how the teacher plans her time. Teacher R had only been involved in informal education in the afternoon due to the experimental program in ITA; however at the time of this interview, she had moved into an entire informal day. Based on her records for individual children and her observations, she came to school knowing there were certain children she wanted to check some time. She also had in mind a few children with whom she might form a group. She alternated time in interest centers. The rest of the day was scheduled for her by the contacts children initiate. Children within these informal classrooms chose the interest centers for work during group planning time. Both teachers also scheduled activities for children occasionally to redirect their attention or to stimulate the completion of work. The following interactions demonstrate some of the ways teachers and children schedule activities in informal classrooms.

Informal

T. Missy, you done any math?
C. Uh huh (No)
T. Better check the clock. Now let's not wait till the last minute today. I hate to interrupt what you're doing because you're doing a fabulous job, but remember what your responsibility is.

Note the teacher did not say when the child should do math. She did remind her of the necessity for doing it before the day ended.
Informal

T. Lester, what are you doing for math today?
C. I already did math.
T. Where is it? (child shows paper which is unfinished)
C. Am I done now?
T. Think all those squares have been done? Come on now.
(teacher sits on floor with child)

In this interaction, the teacher joins with the child to help him complete his activity.

T. Why don't you go get that story written in that plant book you were going to write?
C. (Inaudible although student indicates something about the fact that he is currently occupied.)
T. O.K. Then you'll do it later?
C. (Nods yes)

Informal teachers in the sample were considerate of the child's involvement in an activity; nevertheless, they were also firm about directing the child to other activities he should complete. Children often had a hand in scheduling as this brief comment by the teacher indicates.

T. Would you freeze, please. We only have a few minutes if we want to have time for sharing. You can choose. How many of you want sharing?
C. (Response by hands)
T. How many of you want more area time?
C. (Response by hands)
(Children voted for area time and the teacher abided by their decision although the tone of her voice indicated that she wished that they might have chosen sharing.)

Assumption ten is particularly applicable to the informal class. 

Teachers and children do use interactions to schedule activities for periods of on-going group and individual activity. This assumption is not applicable to traditional classrooms since scheduling was observed to be primarily a teacher function.
Assumption 11. Individual interactions will provide opportunities for the teacher and child to manage routine classroom activity such as movement inside and outside the classrooms, use of time and regulations of behavior, as such activity pertains to an individual child.

Routine procedures are established in classrooms to provide an atmosphere which enables the "work" of the participants to continue in relatively coherent fashion. Routine procedures can be determined by the teacher or by the agreement of the teacher and children. Such routine procedures are usually developed at the beginning of the school year. Since the observation for this study came around the middle of the school year, these procedures were already in operation. The interactions concerning routine reflected these already established behaviors.

Movement of children differed within the two types of classrooms. In informal classrooms, children moved in fairly unrestricted fashion. The child in Teacher D's classroom could go to the hall or other classrooms involved in informal education, often without permission; however the children in Teacher R's room were more restricted since she had the only informal classroom in the building. Free access to bathrooms and drinking fountains during the day was allowed although the children in both classrooms generally let teachers know that they were going. Bathroom breaks also accompanied lunch and recess times. Within the classroom, children moved freely although they were not allowed to disrupt on-going activity without a reason. Such interruptions will be discussed in connection with Assumption Thirteen.
The movement of children in traditional classrooms was restricted according to the established schedules. Bathroom and drink breaks occurred at recess and children were encouraged to go then because such movement was frowned upon at other times. Such movement was more apt to be permitted if considerable time had elapsed since recess or lunch, or if activity period was underway. Such movement was also influenced by the activity which was about to occur as evidenced by this interaction.

**Traditional**

C. May I get a drink?
T. All right, if you really need one, but hurry, we need to get our reading started.

Movement within classrooms was controlled by the on-going group activity. The amount of acceptable movement during this time varied by teacher, but conditions were generally established by assignments of work tasks.

**Traditional**

T. We'll wait until everyone is ready to work. If anyone wants to come and get his SRA, will you come now so you won't have to come and bother us?

Generally, children were expected to remain in their seats or at their assigned tasks while teachers were engaged with groups.

**Traditional**

T. Now, we'll wait until everyone at their seat is working. During activity periods, movement was much less restricted although, as in informal classes, children could not disrupt the on-going activity of other children.
The movement of teachers varied also. The earlier presentation concerning the context of the classroom in the first part of this section discussed the establishment of home base by the informal and traditional teachers. Both informal teachers moved from their home bases to interest centers. Individual children moved to teachers wherever they happened to be. The traditional teachers evidenced remarkable difference in their pattern of movement. Traditional Teacher G operated at her home base. Teacher C moved constantly up and down the rows of children unless she was at a reading group. The difference in these two teachers might have been caused by several factors. Both teachers may have defined the role of movement differently. Teacher C might have believed that teachers should always move to children to keep control of the situation; Teacher G might have believed that once procedures for children's movement are established, the teacher needs to worry less about her movement to them. This possible difference is based solely on conjecture of the observer. The movement of the teachers was restricted somewhat by the recording equipment. Technical difficulties made it important for them to stay in range of the receiver. The above observations concerning movement were made at times when equipment was not being used.

It was evident from the movement and conversations with Teacher C that she was preoccupied with control of children's movement and their persistence to assigned tasks. The following interactions from her classroom lend support to this conjecture.
Traditional

T. Steph, aren't you ready to get to work now?
C. No.
T. Well, let's do. Where's your paper and your pencil and let's get to work.

or

C. Can I put my name here? (points to back of flag)
T. Anywhere you want, just don't follow me around.

or

C. (inaudible)
T. What do you think?
C. Yes.
T. Yes, ma'am, but you have to find out by yourself. Can't come ask me for everything.

Such examples of consistent regulation of behavior were not evident in the other traditional classroom or the informal classrooms. Within these three classrooms, it can be surmised that children evidently not only knew what they were to do and did it but also that teachers expected them to pursue their tasks. This is not to say that children never asked permission or those teachers never regulated behavior, but the difference observed between the three classrooms and the other traditional one were so pronounced that it provided evidence of difference concerning the implementation of managerial routine.

Time is a taskmaster within most traditional classrooms. Note the teacher's reference to time in these interactions.

Traditional

C. (Response had been given before by another child)
T. We already said that. Listen when people give words so that we don't waste time giving them twice.

or
C. I had one. (wished to give another answer in the group)
T. I suspect that each one of you would have one, but I don't think we will have time for it. Maybe this afternoon, if we get our work finished, we'll have time to write more doing words. O.K.?

Even children are interested in time.

T. (to class) I think you could start right now. Is there a question about the morning work before we start our reading groups? Anyone have a question? Stephanie, do you have a question?
C. How long does it take?
T. As long as it takes you to do it. And if you keep at it, it won't take long at all, but if you get up and do some artistic pursuits before you finish, you'll take a long time.

This preoccupation with time may be related to the schedule of events which the teacher has planned for the day. Such a schedule, although flexible, may influence the teacher to be concerned with moving affairs along. This emphasis on time may curtail children's response and interrupt their on-going activity. Occasionally, one gets the impression that a motto in such situations for children might be, "Hurry up and wait!" Stephanie's concern for time may be related to her dislike of the assigned task. She also was the child in a previous interaction who was not ready to go to work. In terms of her assignment, she may have decided that if you don't like something but you know it won't take long, at least you've got one outlet for your dissatisfaction. The teacher's response indicated the view that persistence to task was important and such persistence will bring rewards. In short, don't mess around.

Within informal classrooms, the use of time is less of a concern, since children and teachers are not so regulated by scheduled activities. The only reference to time in the samples of informal classrooms
reflected the need to conform to assigned periods within the established school schedule.

Informal

T. Would you listen please. We have ten minutes. (some confusion) I'm sorry. I'll wait ... We have ten minutes till w... (waits until she has attention) Miss G__ would you listen, please. Ten minutes till we go to gym. Would you get the picking up done, please.

These considerations of time and movement can be identified as examples of nonverbal behavior. While verbal references may be used to articulate these managerial functions, their influence on classroom activity is often felt nonverbally. An observer cannot escape the relevance of these nonverbal behaviors to the atmosphere of the classroom in terms of the affective function. Traditional and informal classrooms did appear to differ on the basis of these nonverbal behaviors. The two traditional classrooms varied more from each other than the two informal classrooms did.

Assumption eleven stated that individual interactions provided opportunities for teacher and child to manage routine classroom activity such as movement inside and outside the classroom, use of time and regulation of behavior in reference to an individual child. The use of interactions to manage routine classroom activity as stated in assumption eleven is relevant to both types of classrooms, but the verbal and nonverbal content of these interactions reflected differences between informal and traditional classrooms in terms of scheduling activity and movement of children. The use of interactions for
regulation of behavior seemed more related to the performance of the individual teacher than her placement in a particular type of classroom.

Assumption 12. The teacher will use individual interactions to formulate groups for instruction based on her assessment of a common need demonstrated by specific children at a particular time; therefore instructional groups will vary in terms of purpose, membership and duration of organization.

Grouping procedures concerned with the purpose for formation, participation and duration of existence differed in traditional and informal classrooms. In this study, groups consisted of two or more people.

In traditional classes, groups are formed on the basis of the content of the activity, for example, for instruction in reading and math. Criteria for participation in these groups was based on achievement level of the children. Other groups are formed on the basis of participation in a common activity. The teacher directed the formation of both kinds of groups. This interaction demonstrated the formation of subgroups within an established reading group.

Traditional

C. (inaudible)
T. Good, well, you can do another one, but I want to be sure that you are down about to the end of one section. The Rolling Along people, some of you are working with buddies so get your story ready for tomorrow. When you are finished, get the game you need to work on. O.K.?

The formation of groups for common activity is also directed by the teacher through her response to children's requests.
Traditional

T. How many people still have some work they want to finish on their sculpture?
C. (Raise hands)
T. You may do that. Don't do it yet. Don't go anywhere yet. Those people do that. What people told me they wanted to hear Too Much Noise? (a record)
C. (Many verbal responses and hands waving)
T. Haki, can you bring your chair and sit right here. Doug, bring your chair and sit right here. Dean, bring your chair and Amy, can you sit over here in the corner, careful of the cord, and let's have Missy, right here, (etc. setting up children at listening post)

As evidenced in the previous interactions, participation in instructional groups was directed by the teacher although Teacher G did try to give a child an opportunity to try another group as shown in the next interaction.

Traditional

T. Do you want me to test you on that book?
C. Yes.
T. I won't tell you that you can't. I'll tell you this. I have a very very special book that Six in a Mix kinda ...
C. (inaudible)
T. I'll try that.
C. Uh, I think you'd like it. Why don't we wait until Monday so you get a chance to look at these books. After you look at them, Greg, if you decide that you would work better in the Programmed Reading, I will be glad to give you a book. I'll also give you one if you would like to work on it during activity period and then you could still be in the other group with us. Would you like that?
C. Yes.

No evidence was available concerning child-initiated formation of groups in traditional classrooms.

Within informal classrooms, groups were formed on the basis of a common interest evidenced by the children.
C. Would you help me write?
T. Certainly, I'll help you write. Let's go over to the writing area.
C2. (approaches teacher)
T. O.K., let's try it, Jennie.
C. What do you mean, Jennie?
T. Jennie, come over here. I will help one of you on one side and one on the other.

The child's choice of participation in interest centers precipitated the formation of groups. The membership in these groups was regulated by the size of the center. Such decisions were the result of teacher and pupil planning.

Informal

T. Now, how many people are in the housekeeping corner?
C. (inaudible response; confusion among children)
T. How many people are in the housekeeping corner?
C. (children count) Eight.
T. How many people are supposed to be there?
C. Five.
T. All right, the first five that were there stay and the rest of you skidoodle, please.

Teachers did record the children's choice of centers and occasionally directed a child to a center, but the direction was in terms of the individual not as the basis for formation of a group.

Groups were also formed on the teacher's estimate of the needs of specific children.

Informal

T. I'm sorry to bother you right here, but I want to talk to Karen, Kim and everyone in your group.
C. I'm not finished with Worlds of Wonder.
T. That's you and you. (pointing to children) I just want to talk to you, okay?

No evidence of permanently established groups in informal classrooms was available although both teachers indicated they had some groups
established in reading. The intervention of teacher direction in the formation groups depended on her assessment of need or requests of children.

Informal teachers expected children to work in interest centers, and the teacher's intervention was governed by her flexible scheduling of her participation or occasionally by the need to regulate behavior as demonstrated by the discussion of membership in the previous interaction.

Children in informal classrooms were also expected to help each other which led to the formation of groups.

Informal

C. How do you spell school?
T. School, now let's see.
C2. I know how to spell school.
T. Well, then you help Karen please.

This helping was not always viewed in the same way in traditional classrooms as evidenced from the interaction from the room of Traditional Teacher C.

Traditional

(Within reading group in progress)

T. (Giving out cards) Don't look at your neighbor's if you have the same color. This is your game.

It must be noted that again, the difference in the traditional teachers was pronounced. Teacher G encouraged helping by utilizing the buddy system suggested in the interactions stated previously. Teacher C's preoccupation with control and independent achievement probably influenced her feelings about children helping each other.
The duration of the existence of groups varied according to purpose in informal and traditional classrooms. Participation in instructional groups in reading in traditional classrooms generally persisted for the entire year although some flexibility was noted in the class of Teacher G. Groups formed during activity time only existed for that period. Within informal classrooms, duration of the group's existence was determined by the voluntary participation of children or the teacher's assessment of the accomplishment of the objectives for which the group was formed.

The application of assumption twelve to traditional and informal classrooms revealed that teachers in both types of classrooms used interactions to form groups, but that the use of grouping procedures in informal classrooms demonstrated flexibility and was related more consistently to the needs of individual children. It must also be noted that the two traditional teachers varied in the flexibility with which they implemented the grouping procedures identified with traditional classrooms.

Assumption 13. Individual interactions classified as interruptions will be related to management activity within the classroom rather than substantive content.

Interruptions have been viewed differently in the literature concerned with traditional and informal education. The consideration of interruptions in this assumption was based on Resnick's study of

Resnick, Teacher Behavior in British Informal School.
informal classrooms. An interaction was classified as an interruption if it was interjected by teacher or child during on-going interaction. An analysis of the content of interruptions evidenced in the interactions of this study led to the examination of these three factors: first, the content of interruptions; second, the pattern of occurrence for a teacher, and third, the regulation of such interruptions.

Reference to the quantitative data displayed in Table VI led to the assumption that interruptions are tolerated or permitted more in informal classrooms than in traditional ones. The data in Tables VII and VIII demonstrated that children initiated interruptions more than teachers in both kinds of classrooms and that such interactions occurred more frequently during periods of on-going individual activity.

The content of interruptions differed somewhat in traditional and informal classrooms. Interruptions in informal classrooms may be concerned with substantive content.

Informal

T. Partition, that means that you divide. Do you see things that are alike there, Jodie?
C. No, like you take four away and cross a line right here.
T. Is it right there Chris, look. Take these four that are alike and these five that are alike. Where do you think the partition should ...
C. (breaks in) Look, but look, it, (child points to page)
T. But this is wrong. Which way should the partition go?
C. Here.
T. Where should the partition be?
C. Like this.
T. But look Jodie. These are all alike and these are all alike. (points) So which way should the part...
C. (breaks in) So this...
T. How should the partition go?
C. Oh, I know.
T. That's it.
This interaction is particularly interesting because its content served as the theme for several other interruptions. Evidently, partition was a source of some confusion to the children in this class.

**Informal**

C. I don't know that word.

T. Where?

C. Right there. (points to word on filmstrip)

T. Thaws. Do you know what thaws means? When the ground thaws?

C. Dries up?

T. No. Thaws out. What does thaw out mean? Not freezes, just the opposite.

C. It unfreezes.

T. It unfreezes. That's a good way to put it. The ground is frozen, and then as it warms up, it unfreezes or thaws it the word that they use.

The duration of the interruption was determined by its content. Such substantive interruptions as the one above were longer than those related to management and affective behaviors. No evidence of such substantive interruptions was available in traditional classrooms.

Interruptions concerned managerial functions, particularly those related to regulation of behavior, as evidenced in these interactions, the first from an informal classroom.

**Informal**

T. Dana, come here. Where is that survey you started this morning? The one you did with the timer?

C. (inaudible response)

T. (puts arm around child) Now, I want that finished, and if it's not finished today, I want you and Tom to finish it in the morning. Where can you put it so you will know where it is?

C. (inaudible response)

(Interaction continues with the teacher talking to the child about where to put his materials, etc.)
The second interaction is typical of management interruptions in traditional classrooms.

**Traditional**

C. May I have a drink?
T. No, we just went for a drink. Will you please get busy?

The affective nature of interruptions reflected the need to solve problems between children in informal classrooms.

**Informal**

(Children have been having argument about checker game)

T. Are you supposed to play with two hands.
C. (all talk at once) (bystanders as well as players)
T. See. I think maybe he is somewhat confused a little bit. Maybe, oops, out of staples, (had been making hat for child) Is there a way you could solve your problem?
C. We could start all over again.
T. Why don't you establish your rules if you are going to start over about whether you can use one hand or two, maybe that would help.
C2. (interjects what to do, having just approached)
T. Who's playing the game?
C2. Me.
T. Oh, really? (child laughs and watches players quietly)

Such affective interruptions also dealt with the individual child.

**Informal**

C. (Waves paper in front of teacher and child engaged in an interaction)
T. Sorry, honey, just a minute.
C. (inaudible comment)
T. I want to see it, but I don't want you to put it in front of her when she's trying to talk to me.

Affective interruptions in traditional classrooms were associated with control.
Traditional

T. Gavin, I wonder if we could use inside voices.
C. (shakes head yes)
T. Let's try real hard.

Children in informal classrooms appeared to initiate interruptions related to substantive, managerial and affective functions while children in traditional classrooms generally initiated interruptions of a managerial nature. Teachers in both kinds of classrooms rarely initiated interruptions.

Patterns of interruptions could not be clearly ascertained since initiation of such interactions seemed to be spontaneous. The toleration of interruptions varied by teacher. Data presented in Table 3 of Appendix D showed that Informal Teacher D permitted or tolerated far more interruptions than the other informal teacher. An examination of a typescript of an individual interaction with one child in reading for this teacher showed that seven interruptions occurred during an approximately ten minute interaction. These interruptions varied in duration from two to seventeen utterances. This pattern of interruption was not unusual for this teacher. The child participating in the interaction being interrupted waited patiently although comments such as the following led to the conjecture that she might have lost her train of thought.

C. What did you say again?

The observer was led to believe that this teacher did not view such interjected interactions as interruptions since no evidence of regulating their initiation could be identified. On the other hand,
the other teachers of the sample evidently did consider interruptions disturbing enough to establish regulations concerning their occurrence.

Within traditional classrooms, interruptions were discouraged and reasons for the discouragement are evidenced in these interactions.

Traditional

C. (approaches teacher during reading group)
T. John, do you know the routine when we are having a reading group?
C. (nods yes)
T. What is it?
C. (stands and thinks, at least doesn't say anything)
T. What do you do if you want to go to the bathroom while we are having a reading group?
C. (inaudible)
T. Well, why don't you go take care of that.

While this interaction concerned interruption of group activity, the same process was applicable to individual activity.

Traditional

C. What does this ... (inaudible)
T. When I'm having a conference I'm very sorry you don't disturb me.
C. (inaudible)
T. There were three dear; so you'll have to go take care of it. I'm in a conference. Sorry about that.

The evidence of regulation in the informal class of Teacher R was also found in these interactions. The teacher often explained why the interruption was disturbing as noted in the previous interaction about the child waving paper in front of another child at work. In this following interaction, criteria is established for potentially acceptable interruption.

C. Can I read it to you? (This interaction had been in progress for over fifteen minutes and the teacher had asked the child if she wanted to read the book)
T. You want to start. You can read it to me unless somebody else comes up and asks me a question. Then you don't mind if I stop, do you?
C. (nods head indicating she understands)
T. Okay.
C. (begins to read)

The evidence within these interactions revealed that regulation concerning interruptions had been established earlier in the year. In conversation with Traditional Teacher D and Informal Teacher R both had indicated that regulations were established as a matter of displaying courtesy to children. They also believed that a child or children deserved their uninterrupted attention during individual or group activity.

One final observation about interruptions was relevant to all the classrooms. Many interruptions were initiated nonverbally by children. Evidence of this was found in the interaction where the child waved the paper in front of the teacher. Other nonverbal behaviors of children consisted of standing and waiting near the teacher while looking at her. Teachers exhibited nonverbal behavior in forestalling initiation of interruption by stretching the arm out with the flat of the hand toward the child. In cases where interruption was going to be dealt with in a few seconds, Teacher R would put her arm around the child while he waited, evidently to assure him that he would be taken care of very shortly.

Therefore, assumption thirteen concerning the relation of interruptions to management rather than substantive content applies only to traditional classrooms and then presents only a partial picture since interruptions in these classrooms also related to affective
behavior. Differences do exist in the content of interruptions since interruptions in informal classrooms related to substantive content while no evidence of this type of interruption is available in traditional classes. Toleration and regulation of interruptions varied more among individual teachers than between the two types of classrooms.

Summary: Managerial Assumptions

An analysis of the content of individual interactions produced evidence of difference among all four teachers as well as differences between types of classrooms in managerial function. Differences between the two types of classrooms were less pronounced than those differences related to substantive function. Analysis of the content of interactions related to managerial functions revealed the following differences between informal and traditional classrooms.

1. The use of time by traditional teachers was governed by their participation in on-going group activity while informal teachers devoted more of their time to on-going individual activity.

2. Within informal classrooms, teachers used interactions to schedule activities with children while in traditional classrooms, scheduling was the function of the teacher.

3. Free movement of children was typical of the informal classrooms while the movement of children in traditional classrooms was more restricted.

4. The emphasis on preplanned schedules and completion of activities for the day often controlled the use of time and influenced
its effect on teachers and children in traditional classrooms. Free choice and scheduling of activities by individual children and teachers lessened the influence of time in informal classrooms.

5. Grouping procedures differed in terms of objectives flexibility of organization, source of initiation and duration of existence.

6. Within informal classrooms, the content of interruptions was related to substantive, managerial and affective functions while in traditional classrooms the content of interruptions was related to managerial and affective functions.

7. The movement of teachers within the classrooms and their use of procedures for regulation of interruptions seemed to be more related to the performance of individual teachers than the type of classroom in which they functioned.

Assumptions Related to Affective Function

Interactions related to affective function are concerned with expressions of mutual concern between teachers and children, administering of disciplinary restraint, and use of positive or negative forms or reenforcement. The following section presents the evidence obtained from analysis of the content of such interactions.

Assumption 14. Individual interactions between teacher and child will provide opportunities for the mutual expression of their personal concern for each other.

Individual interactions in which teachers and children expressed mutual concern for each other could be identified in each classroom. Such interactions occurred most often during periods of on-going individual activity. This setting of the interactions during individual activity
might have been influenced by the fact that traditional teachers were not preoccupied by instructional or managerial responsibilities with other children in a group so they felt that they could take the time for such aside from the usual business of the classroom. Within informal classrooms, the preponderance of interactions during individual activity made the occurrence of these affective interactions a natural part of this segment of on-going classroom activity.

**Traditional**

C. When I was three months old, do you know what I had to do?  
T. What did you have to do?  
C. I went from to the California desert over to, over to where Thomas was and then Columbus.  
T. That was a very long trip. Do you remember doing that?  
C. And when I was about six, I moved to Columbus.  
T. That you remember probably.  
C. (nods head yes)

**Informal**

C. Do you know my middle name?  
T. Seems to me that it was Jane. Is that right?  
C. Yes.  
T. Rebecca Jane, that's a pretty name.

The content of the teacher's response reflected the warmth and personal concern that teachers of the sample evidenced for the children in their classrooms. These incidents seemed to provide opportunities for social interchange in which both teacher and child could operate as equals, unrestricted by the usual identity as teacher and student. In some ways, they seemed to provide opportunities for practice of the type of small talk that typifies social dialogue between adults.

Such interactions can also be teacher-initiated. The following interactions also depict the humor that permeated the classrooms.
Children of the sample surely loved riddles and jokes, and teachers were great straight men for these comic interludes.

**Traditional**

T. Are you glad to be back at school?
C. Yes.
T. Did you read a lot while you were home sick?
C. Yes.
T. What did you read?
C. I read lots. I read some riddles. I read a riddle to my mommy and she couldn't and she didn't know the answer.
T. She couldn't think of the answer?
C. Could you?
T. I probably can't either, but I would love to hear it.
C. Why did the boy put the saddle on the horse backwards?
T. Why did the boy, oh my soul, I can't imagine.
C. Cause he wanted to see where he had been.
T. (laughs) How about that? Do you like riddles?
C. Yes. (giggles with teacher)

This particular incident was part of a prelude to a conference with the child about his personal reading. It can be noted that this teacher initiated such a learning experience by evidencing personal concern and then used the information she had gained to further investigate the child's interest in reading. Thus this interaction provided not only a source of affective function but substantive as well.

Another evidence of mutual concern between teachers and pupils was reflected in the verbal behavior which expressed social courtesies. Numerous comments such as "Thank you", or "I'm sorry for interrupting," are examples of this emphasis on courtesy. It was interesting to note that children reciprocated in like fashion. These comments were generally accompanied by a smile or a gesture of affection. Such comments set an atmosphere of consideration within the classroom which
was reflected in the verbal and nonverbal behaviors of teachers and children.

Mutual concern is evident in the content of the following interactions from traditional and informal classrooms.

Traditional

T. (Gives the wrong question and the children look very confused since it doesn't relate to the story. The teacher laughs.) Oh, isn't that terrible. I used the wrong story. I got my stories mixed. I really goofed, didn't I?

C. (The children giggle but it is a sympathetic giggle) I, well, it doesn't really matter.

Informal

C. Did you get the colors of paper?

T. No I didn't. Go ahead with what you're doing. Put it on a background. I'm sorry. That's my fault.

These two incidents demonstrate the teacher's admission of human vulnerability. By reading the pupil's sympathetic response in the first interaction, one might surmise that children appreciated mistakes when freely admitted and perhaps felt less guilty about making some of their own. The occurrence of these incidents in both types of classroom appeared to indicate that such interactions are related to the teacher's personal style rather than the type of classroom. These interactions indicated that teachers and children in traditional and informal classrooms do express mutual concern for each other in individual interactions; thus assumption fourteen is applicable to the traditional as well as informal classrooms of the sample.
Assumption 15. Individual interactions between teacher and child will provide a private situation in which the teacher can administer disciplinary restraint.

Interactions concerning disciplinary restraint differed according to the type of classroom. In informal classrooms instances of group discipline were rare and those that did occur were related to the teacher's concern for undue level of noise.

**Informal**

T. Boys and girls, will you listen for a moment, please. We talked about this before recess. You know what I'm going to say, don't you? What am I going to say?

C. I don't know.

T. Jane?

C. It's too loud.

T. It's too loud. Yes. Area time is fun, but it can't be that loud. Now, come on.

On other occasions, the restraint was exhibited by a suggestion.

**Informal**

T. Will you remember what you are responsible to do?

Disturbances between children were handled by reference to regulations developed cooperatively by teacher and children.

**Informal**

T. How many people are here?

C. (count) 1, 2, 3, 4, 5, 6... I asked Dana if he could play because those two were leaving. (several children talk simultaneously)

T. I beg your pardon. I don't know how many people you can hear at once, but I can't understand. (This interchange goes on for a short time and then teacher brings closure to the event.)

Now, would you look at me? I'll give you two minutes to figure out what to do and who's going to do what or we'll just stop. Fair enough? Now if you are one who has come in and there were five people here, would you please
think what your responsibility is. And if you are one who has been in here for a long, long time, might it be fair to give someone else a turn. You think about those things. I'll let the big hand go around two times and then you decide.

Instances of correction of one child in front of the group were not found in the observation data of informal classrooms. No instances of personal confrontation were available in this type of classroom.

Within the traditional classrooms, interactions related to group discipline were found in the classroom of Teacher C.

Traditional

T. (Sharing period is in progress.) Now, I have something to say before we read any more stories. Nelson, you're not being a very good listener and I want you to scoot way back where you can't bother people. Mark, you're being a very poor listener. If you're not interested, go back to your seat and put your head down. Are you interested in staying to hear the stories?

C. (nods head yes)
T. You'll have to prove it.

This direction in the interaction was responded to immediately by the appropriate action or no comment. The only incident of group control for the other traditional teacher, Teacher G, consisted of the following.

Traditional

T. We'll wait to begin till everyone is ready.

Within this traditional classroom, no evidence of personal confrontation was available, but Teacher C resorted to such an interaction occasionally.
Traditional

T. You're disturbing the children around you, John. Can you work without disturbing them or shall I send you outside, cause you're really disturbing them... Think you could really work without disturbing them, John?
C. I don't know.
T. Do you think you could try, to work without disturbing them?
C. What?
T. John?
C. WHAT!
T. Could you try to work without disturbing them?
C. If I can ...(inaudible)
T. I'm expecting you to try and not disturb them.
(This interchange was conducted by the teacher in a very quiet voice but the child kept getting louder and louder.

Teacher C also attempted to solve personal problems between children through private interactions.

Traditional

T. Mark.
C. He took them all.
T. Sit right up here a minute.
C. Took them all.
T. Sit right up in that chair a minute. Look at me, Mark. Two different games you interfered with today. You know what that means to me?
C. He let me play. (defiant tone)
T. Mark, look at me. You caused some trouble in two different games.
The interchange continued for a time with the child getting very hostile but finally going back and sitting down in his own chair. The other child continued with his game.

In conversation with Teacher C she indicated that she felt that she had five children who presented a disruptive influence on the class.
Within this classroom, almost all disciplinary interactions were involved with these five children.

The use of individual interactions for disciplinary restraint in a private situation was limited to one teacher in one traditional
classroom. Within informal classrooms, the only available data indicated that teachers may use such interactions addressed to groups of children to control noise level. It must be pointed out that these instances were rare within both informal classrooms. Within traditional classrooms, exhortations to children related to control was evidenced by both teachers, but was a consistent pattern of behavior for Teacher C.

One potential source of difference concerned settling of disturbances between children. Both informal teachers tended to only intervene between children on the basis of regulations that had been established by mutual agreement of teachers and children, not in terms of assessing blame to individual children. One traditional teacher in the sample exhibited a tendency to intervene immediately in child-to-child confrontations and separate the children, assigning blame to some one in the process.

**Insufficient evidence negated application of assumption fifteen to traditional or informal classrooms.** The occurrence of interactions pertaining to disciplinary restraint for an individual was restricted to one teacher. Conversations with the other three teachers revealed that such interactions do occur but did not during the taping. Content of the other interactions gave evidence that there may be a difference in how disputes between children are handled, however this evidence was considered insufficient for making any generalization. The description derived from these interactions may merely indicate that methods of administering discipline vary according to teacher rather than type of classroom.
Assumption 16. Individual interactions between teacher and child will reflect the teacher's consistent use of verbal and nonverbal behavior which demonstrates the use of positive rather than negative reinforcement.

Teachers in all four classrooms consistently demonstrated the use of positive reinforcement such as praise or positive acceptance. Such positive reinforcement was related to interaction concerned with managerial and substantive functions and has been discussed in connection with prior assumptions in this section. Based on the evidence derived from these interactions, it can be stated that assumption sixteen can be considered applicable to both traditional and informal classrooms.

Summary: Affective Assumptions

Analysis of content of interactions related to affective functions revealed less differences between type of classrooms than among teachers. The only possible difference concerned the method of intervention in children's disputes. The four teachers seemed to differ in the methods used for disciplinary restraint. Interactions from all four classrooms demonstrated the mutual concern of teachers and children for each other as well as the teachers' consistent use of positive rather than negative reinforcement.

Nonverbal behavior

The discussion of nonverbal behavior has been somewhat limited; therefore this section will relate some evidence of nonverbal behaviors derived from the observations.
Nonverbal behavior evidenced in relation to movement, location, use of time and regulation of interruptions has been presented in prior sections of this analysis of qualitative data. Other nonverbal behaviors related to intonation, touch, eye movements and gesture have not been described. These behaviors were evidenced in interactions of all teachers regardless of the type of classroom.

The use of nonverbal behavior related to voice such as pitch and loudness was remarkably consistent among these four teachers. The observer had no record of the use of loud, high-pitched voices. Intonation in terms of stress and pitch conveyed a great deal of positive affectivity that can be missed in reading the written transcripts.

The use of physical gestures involving touch could be scaled on a continuum ranging from persistent use to no evidence of such behavior. For example, Teacher R hugged, patted and embraced children frequently. Traditional Teacher D was demonstrative less frequently, but more than Traditional Teacher C who touched children only during periods of disciplinary restraint. Informal Teacher D rarely touched children in any situation. The appearance of smiles as opposed to neutral expression of frowns could likewise be placed on a continuum. Teacher R and Teacher G smiled more frequently than Teacher D, and she smiled more than Teacher C.

The use of gestures and eye movements varied among teachers. Teachers persistently scanned classrooms to ascertain where activity was occurring. Traditional Teacher G often identified children for participation in the group by nodding at them or looking directly at
them. Other behaviors in this classification occurred so naturally as a part of the total behavior of the teacher that the observer found herself missing opportunities to record them.

It did seem apparent to the observer, initially, that the nonverbal behavior of teachers conveyed a message to children and indeed, might have been a factor in setting the atmosphere within the classroom. The children in the classroom responded to such behavior in like fashion. For example, Teacher C was restrained, often unsmiling and tense, preoccupied with control. The children in this classroom seemed tense, fidgety and often, unsmiling. Informal Teacher D presented a more reserved facade to children than Teacher A or Teacher G, but the children in her classroom responded with warmth and gaiety. It appeared to the observer that the nonverbal behavior of the teacher was not always reflected in the nonverbal behavior of the children.

**Summary of Quantitative and Qualitative Data**

The presentation of data from the study was divided into two sections. Results of the quantitative data revealed significant differences in setting of activity between informal and traditional classrooms. In informal classrooms, individual interactions occurred more frequently during on-going individual activity while individual interactions in traditional classrooms occurred more frequently during on-going group activity. Conforming to this pattern, traditional teachers initiated more interactions during group activity while informal teachers initiated interactions more frequently during
individual activity. Children in informal classes were more active in terms of initiation than children in traditional classrooms.

Descriptions comprising the qualitative analysis of the content of individual interactions between teachers and children were structured according to assumptions derived from the literature. These assumptions related the use of interactions to substantive, managerial, and affective functions reflecting the educational practices thought typical of informal classrooms.

Evidence presented in these descriptions indicated that individual interactions were related to differences of setting of activity within the two types of classroom as found in the quantitative analysis of the data. The use of individual interactions was found to be related to substantive, managerial and affective functions in both types of classrooms. Examples of the content of interactions revealed sources of differences between the two types of classrooms related to substantive and managerial function. Differences in substantive function pertained to definition of achievement; method of inquiry; choice of materials; activities and procedures by children; awareness of cognitive level by teacher; pattern of teachers' verbal response and their influence on children's substantive and affective development; and amount of verbal output of children.

Differences in managerial function between types of classrooms referred to use of time and its influence on scheduling, scheduling procedures, grouping practices, and content of interruptions. The four teachers differed among themselves in terms of their movement and regulation of interruptions.
Differences in affective function were more evident among teachers than between type of classrooms. One potential source of difference between types of classroom concerned teacher's intervention in children's disputes.

The analysis of the content of the individual interactions was based on high level inference by the observer; however the evidence derived concerning differences was considered reliable enough to serve as the source of further investigation.
CHAPTER FIVE

SUMMARY AND CONCLUSIONS

Summary

The purpose of this study was to describe the nature of individual interactions between teachers and children which occur during individual and group activity in both informal and traditional classrooms. The study was designed to provide quantitative and qualitative evidence, derived from classroom observations, which could be used to describe the nature of such interactions. Seven hypotheses were proposed to determine significant differences between informal and traditional classrooms in terms of frequency of occurrence of individual interactions during on-going individual and on-going group activity, frequency of initiation of interaction by teacher and child, and frequency of occurrence of interactions classified as interruptions during on-going individual and group activity. This comparison of frequency data served as the quantitative evidence for description of individual interactions.

Qualitative evidence was derived from analysis of the verbal and nonverbal content of the individual interactions. This analysis of content was compared to a set of assumptions derived from the literature concerning educational practices within informal classrooms. These assumptions related the use of interactions to the substantive,
managerial and affective functions performed by teachers and children within the classroom. The content of individual interactions related to the same function was further analyzed to provide more accurate descriptions of the possible differences between traditional and informal classrooms.

Summary of Procedures

Two informal and two traditional first grade classrooms chosen from four different schools in one upper socioeconomic district served as the sample for the study. Teachers were selected on the basis of their high quality of performance and their willingness to participate. Ten observations, thirty minutes in length, were carried out in each classroom. The verbal behavior of teachers and children who were in close proximity to them was recorded using a remote microphone and audio-tape cassette recorder. Nonverbal behavior and frequency data was recorded on a written record instrument designed by the researcher.

The seven hypotheses related to frequency of interaction were stated in null form and data was submitted to statistical treatment using chi-square analysis. The content of selected interactions, derived from the tape recordings of nine observations combined with the nonverbal behaviors from the written record instrument were typescripted and served as the source of qualitative data for the study. The content of interactions was compared to assumptions derived from the literature. This comparison provided the description of the verbal and nonverbal behavior of individual interactions between teacher and child in traditional and informal classrooms of the sample.
Findings of the Study: Quantitative

The quantitative evidence secured concerning frequency data for traditional and informal classrooms indicated significant differences for all comparisons beyond the .001 level of confidence.

1. Significant differences in setting of individual interactions were found in the two types of classrooms. Individual interactions occurred more frequently during periods of on-going individual activity in informal classrooms while such interactions in traditional classes were found more frequently during periods of on-going group activity.

2. Teachers in both classrooms were active initiators of interactions but the setting for their initiation differed with informal teachers initiating more frequently during on-going individual activity and traditional teachers during on-going group activity.

3. Children in informal classrooms initiated more interactions than children in traditional classes, with children in both types of classrooms initiating more frequently during periods of on-going individual activity.

4. Interactions classified as interruptions occurred more frequently in informal classrooms during periods of on-going individual activity. Interruptions were more apt to be initiated by children in both types of classrooms with such interruptions occurring during on-going individual activity.

Findings of the Study: Qualitative

5. Analysis of qualitative data revealed that teachers and children did use individual interactions to perform substantive, managerial and affective functions in both types of classrooms.
Differences between informal and traditional classrooms revealed through the analysis of the content of interactions related to substantive function can be described as follows.

6. Traditional teachers appeared to strive consistently to obtain correct responses based on prescribed questions, often encouraging the child to use prescribed procedures to attain the results desired by the teacher or required by the curriculum. Informal teachers appeared to place more emphasis on experimentation and divergence in the child's method of inquiry than on his correct response to prescribed questions.

7. Within traditional classrooms, the child's activities were prescribed by the teacher, even during activity period when selection was determined by the teacher's selection of participants. Activities were prescribed more frequently in terms of the group than the individual child. Children in informal classrooms chose their own activities, and direction by the teacher, when given, was provided in terms of the needs of the individual child rather than the needs of the total group.

8. Self-selection and experimentation with a wide variety of materials including everyday junk as well as commercially prepared material was encouraged by informal classes. Prescribed use of commercially prepared materials with assigned specific purposes seemed more typical of traditional classrooms.

9. Children were more verbal in informal classrooms, particularly in contact with other children. Such verbal behavior was more restricted in traditional classrooms.
Differences between informal and traditional classrooms revealed through the analysis of the content of interactions related to managerial function can be described as follows.

10. Informal teachers devoted most of their interaction time to on-going individual activity while traditional teachers were more occupied with interactions during on-going group activity.

11. The scheduling of activities in the informal classrooms was based primarily on choices made by the children although pre-scheduled school events such as recess did influence the use of time in the classroom. Scheduling of activities in traditional classrooms was primarily a teacher function, dependent on the lessons or activities planned for that day.

12. Children's movement within informal classrooms was unrestricted provided they did not interrupt other children. Within traditional classrooms, the movement of the children was restricted to assigned areas.

13. Groups for instruction were formed on the basis of the teacher's assessment of the need of the individual child in the informal classroom. Groups were also formed voluntarily by the child in various interest centers. Within traditional classrooms, groups were established by content area on the basis of the child's achievement. Membership tended to be permanent in instructional groups. Selection of children for activity groups was often influenced by teacher selection of children who wished to participate.

14. The content of interruptions in informal classrooms was related to substantive, managerial and affective functions. Within
traditional classrooms, the content of interruptions was more consistently related to managerial and affective functions.

15. While these differences were evident between the two types of classrooms in terms of managerial functions, the four teachers differed among themselves in terms of their movement and the procedures they employed for regulation of the occurrence of interruptions.

16. In interactions relating to affective function, teachers tended to differ more as individuals than according to type of classroom. All teachers evidenced mutual concern for children and used positive rather than negative expressions of reinforcement. Teachers differed in methods of administering disciplinary restraint.

17. The only difference evidenced between the two types of classrooms in affective function concerned the teacher's intervention in children's disputes, but this difference was not considered to be as pronounced as those manifested in managerial and substantive functions.

Findings Related to Other Research

The relationship of the findings of this study to the studies presented in Chapter Two will be presented in this section.

The finding of this study that interactions of teachers and children are characterized by the use of verbal behavior is related to other teacher behavior studies such as those of Bellack and Flanders.

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86Bellack, Language of the Classroom.

87Flanders, Studies in Interaction Analysis.
Those studies also identified verbal behavior as a major vehicle for communication within traditional classrooms. The evidence that non-verbal behavior did supplement and reinforce verbal behavior agreed with the findings of Grant and Hennings in their study of nonverbal behavior.\textsuperscript{88}

The significant difference between the frequency of occurrence of interactions during on-going individual activity in informal classrooms as compared to the occurrence of such interactions during on-going group activity in traditional classrooms was related to the findings in the Evans' study.\textsuperscript{89} Evans suggested that informal teachers emphasized intensive diagnosis with individual children while traditional teachers concentrated on group instruction. The finding of this study concerning the emphasis on individual interactions between teacher and child during periods of on-going group activity in informal classrooms agreed with the suggestion in the literature related to informal education concerning the need for a one-to-one relationship between teacher and child.

Gardner and Cass as well as Baird emphasized the preoccupation of informal teachers with intellectual concerns.\textsuperscript{90} This study reenforced their findings. The teacher's use of questioning to seek information,

\textsuperscript{88}Grant and Hennings, \textit{Analysis of Non-verbal Behavior}.  
\textsuperscript{89}Evans, \textit{Characteristics of Open Education: Classroom Rating Scale}.  
\textsuperscript{90}Gardner and Cass, \textit{Teacher in Infant School}. 
a predominately used behavior in Gardner's study was also found in this study although no attempt was made to determine the frequency of its occurrence. Indeed, evidence of all of Gardner's nine categories of behavior was found in this study. Although the use of diagnostic help given by the teacher in Evans' study is not precisely defined, it seemed to compare with findings in this study related to the teacher's behavior in seeking information from the child to ascertain his level of achievement, his interest and his choice of activities. Certainly, the differences between informal and traditional teachers in the Evans' study concerning the variety in use of materials and activities corresponded to the findings in this study.91

The findings of Hughes related to the traditional teacher's use of the function of controlling, defined as goal-setting for children, was directly related to the findings of this study concerning the use of prescribed activities and methods in substantive functions by traditional teachers of the sample.92 The use of the function labeled content, defined as acting on the responses of children, was less pronounced than the use of control in both this study and the research of Hughes.

The evidence in this study concerning the pattern of the verbal behaviors used by teachers and children during interactions can be related to Bellack's study.93 Bellack identified verbal behaviors in

91 Evans, Characteristics of Open Education: Classroom Rating Scale.
92 Hughes, Assessment of Teaching.
93 Bellack, Language of the Classroom.
terms of the functions that they expressed in interactions; that is, a teacher or child's question could be labeled a solicitation, etc. These behaviors occurred in patterns labeled pedagogical cycles. The cycle involving the behaviors of solicitation and response as initiated by the teacher was identified as most typical of the interactions during group activity in the secondary classrooms of the sample. The findings in this study indicated that a similar pattern of verbal behavior was used by teachers and children in individual interactions during on-going group activity, particularly in the traditional classrooms of the sample. Individual substantive interactions in informal classrooms during on-going individual activity tended to be less predictable in terms of patterns of verbal behavior; however Bellack's study did not discuss individual interactions during periods of on-going individual activity.

The frequency of initiation by children during on-going group activity was very similar to Bellack's students in both types of classrooms. This seemed to indicate that group instruction does tend to be teacher-directed in terms of initiation of interactions within the group. The pattern of initiation in individual activity was reversed, but as stated, Bellack did not present evidence concerning interactions in individual settings.

In line with Resnick's findings concerning the comparison of duration of substantive and managerial activities, the findings of this
study agreed that substantive interactions were longer. Resnick's reference to the predominance of brief managerial interactions in informal classrooms was not numerically checked in this study, but the management interactions in the classrooms of the sample did not appear to outweigh the substantive encounters.

Interruptions in Resnick's study were related primarily to management while the findings of this study indicated that they were related to substantive and affective functions as well. Jackson's interpretation of interruptions in traditional classrooms consisting of irrelevant comments, misbehavior and appearance of visitors is not confirmed by this study. Interruptions in traditional classrooms were concerned with permission and other managerial tasks; however it may be that Jackson would consider these tasks to be irrelevant comments.

The flexibility in group procedures within informal classrooms described by Evans was evident in the informal classrooms of this study. Weber's conception of gradualism in the formation of children's groups in informal classrooms was also observed. A group of two or three children would be working with or without the teacher and another child might join to observe, then participate and finally join the group.

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94 Resnick, Teacher Behavior in British Informal School.

95 Jackson, Life in Classrooms.

The display of positive reinforcement behaviors by teachers in the sample agreed with the findings of Gardner and Cass in informal classrooms as well as the study by Hughes in traditional classrooms. The theme of humaneness defined as openness, respect and warmth in Walberg's study of the characteristics of informal teachers seemed to be related particularly to the performance of the two informal teachers and one traditional teacher of this sample.97

In general, the findings of this study reenforce the results of that small body of research in teacher behavior in informal education. The purpose of this exploratory study was to describe evident differences in informal and traditional classrooms. The confirming nature of the results of this study in relation to other studies in informal education may justify the suggestion that it is now time to pursue studies of a more experimental nature based on this common body of knowledge.

Conclusions

The over-riding question within this descriptive study became, "What do these findings mean?" This section will attempt to draw some conclusions about the meaning of the results.

1. The most surprising finding of the study, to the researcher was that there really were significant differences between the informal

97 Walberg, Characteristics of Open Education: An Operational Definition.
and traditional classrooms of the sample. This surprise was generated by the fact that the informal teachers were in their first year of implementation of informal education which led to the inference that perhaps the informal teachers were rather informal when they were traditional teachers. Informal Teacher R confirmed this suspicion when she indicated that she had always allowed children to make choices and move freely about the room, but she hastened to add that she had changed in terms of the use of materials and emphasis on the development of individual children. The high degree of agreement between suggested performance in the literature about informal education and these teachers' performance in the classroom indicated that they had read widely and studied intensively. Their conversations with the observer also indicated that they were susceptible initially to this change in behavior and willing to constantly strive to meet the requirements demanded of informal teaching. The researcher inferred that this willingness to study and receptivity to change may be a prerequisite for success for teachers who wish to implement informal education.

2. The second conclusion concerned the similarity in performance of the informal teachers. The only major difference in their behavior concerned regulation of interruptions. The traditional teachers did vary in their execution of some aspects of substantive, managerial and affective functions, but the evidence of their overall performance indicated a high degree of similarity also. This similarity of performance in the two types of classrooms led the observer to believe that the teachers behaved in the manner that reflected their conception
of the process of teaching. The informal teachers showed their understanding of informal teaching by concentrating on individual children, use of diverse materials, etc., in their performance, just as traditional teachers reflected their understanding of teaching in terms of their emphasis on group instruction, use of prescribed materials, etc. While one may not approve of the practices of one or the other type of teaching, it is interesting to note the consistency of belief about teaching and learning that permeated the performance of these teachers in their particular type of classroom. This remarkable consistency may reflect a deep conviction on the part of the teacher concerning the correctness of her interpretation of a definition of teaching and learning. This mark of conviction is undoubtedly an important variable to consider when attempting to implement any educational change.

3. Some conclusions concerning the findings of this study are related to the substantive interactions in the classroom. The differences in definition of learning were pronounced in the two types of classrooms. The continued emphasis in educational literature on the necessity to stimulate the development of process rather than the acquisition of unrelated facts came to fruition in these informal classrooms. The freedom of the children to explore and experiment based on their own curiosity was a constant theme evidenced in the informal classrooms. The emphasis in traditional classrooms on prescription of process as well as solution was in evident contrast. One could not help but infer that the children in informal classrooms seemed better prepared to tackle substantive problems on their
own and perhaps best of all, these children were not shackled by the threat of failure to conform to established lines of inquiry. These children seemed as equally well-equipped to perform basic skills such as reading and math as their counterparts in traditional classrooms although this conclusion was based only on the teaching experience of the observer.

4. The emphasis on individual contacts in informal classrooms led to the conclusion that these teachers took advantage of the many opportunities to become more aware of the stage of the cognitive development exhibited by an individual child. Undoubtedly, the substantive interactions with individual children emphasizing free inquiry provided opportunities for the teacher to diagnose the child's level of development by questioning and listening to the child's responses. In contrast, the preoccupation of the traditional teacher with the necessity for correct responses from the child often prevented her from recognizing other divergent responses which might have indicated a higher or lower level of cognitive development for the individual child. The emphasis on group instruction also prevented her from paying too much attention to individual response for that might deprive other children in the group of their opportunity to respond. This difference in the traditional teacher's awareness of cognitive level of development seemed to doom some children to failure and others to frustration or boredom.

5. One is also led to the conclusion that the definition of diagnosis is influenced by the teacher's understanding of the goal to be reached as well as her awareness of the child's level of cognitive
development. If she believes that achievement is based on assigned objectives for a group of children, then she will have to diagnose the child's performance in terms of those objectives rather than his performance at his current level of cognitive development. Conversely, if the teacher is primarily concerned with the child's performance as an indication of his current level of cognitive development, she will diagnose his performance in terms of his personal achievement rather than his performance in comparison with a group of children.

6. The patterns of response in the interactions related to substantive function were particularly interesting. The study of the teacher's response to the initiating behaviors of the child and her subsequent response to his response provided an interesting picture of how a child's thinking can be directed in channels the teacher desires or can be directed in channels of further discovery by the child. The informal teachers were particularly adept at accepting the response of the child and using it to stimulate or refocus his thinking. The traditional teachers evidenced the consistent use of a pattern that reenforced only correct responses and questioned incorrect response until the desired goal was reached. A warranted inference may be that these patterns of response are related to the particular theory of learning accepted by the teacher. The use of positive reinforcement for correct answers evidenced by traditional teachers is related to the stimulus-response theory of learning.

7. Another conclusion related to these patterns of response concerned the connotation they developed for the child about what performance constitutes learning. The child who is constantly
exposed to responses that channel him to one right answer very quickly learns that success in school depends on the right answer delivered promptly. Therefore, he learns to play the game, or if he doesn't know the answer, he doesn't say anything. One might infer that many children who don't respond would rather be considered rebellious than stupid. Conversely, the child whose responses are accepted for what they are, evidence of his personal understanding, may continue to question and comment, and in the process, learn that learning can take many directions and many forms, and no one, even the teacher is omnipotent.

8. The differences in variety of materials and their diverse usage in informal classrooms led to the conclusion that such experimentation is related to extending thinking on the part of children. Such experimentation may be related to the development of creativity in children.

9. One final conclusion concerning substantive content seemed warranted. The wealth of materials in the interest centers, participation in field trips and sharing of other resources brought from home by teachers and children provided a rich environment for learning in informal classrooms. It appears that the informal teacher considers all of the child's experiences to be an important part of learning. Play was considered equally important as evidenced by the presence and use of creative living corners in these classrooms. In contrast, the environment of the traditional classrooms seemed rather sterile and dedicated to the provision of academically oriented materials. The traditional classrooms did differ in their environments since the
one classroom was rich in games and books devoted to reading; however no provision had been made for diversity of materials in other areas. It appeared that in traditional classrooms, play was play, and the child engaged in it at prescribed times; but school was work and that, more often than not, meant involvement of the child in strictly academic pursuits.

10. Teachers in both types of classrooms were very active, particularly in interactions related to substantive learning. Regardless of their differing methods and beliefs, it can be concluded that teachers were "in charge" in both types of classrooms. This conclusion is particularly important in the face of recurring criticism of some teachers, parents, and principals that teachers let the kids in informal classrooms do anything they want. The teachers in these informal classrooms did provide for freedom of choice by children, but it occurred within a carefully structured environment which enabled the child to make choices that were meaningful in terms of his own learning needs. The informal teachers also did not hesitate to direct children to activities they felt were necessary for their continued substantive development.

11. The teachers in this sample presented distinctly different personalities; however two factors they all shared were concern and respect for children as evidenced by their expressions of courtesy and consideration toward children. These first grade classrooms were remarkably similar in the evidence of mutual concern displayed by teachers and children for each other. Humor permeated every classroom, and even the traditional teacher who appeared most tense and harried
evidenced smiles more often than frowns. The children in the one traditional classroom seemed less carefree, a reflection of the rather tense atmosphere created by the teacher's concern for control. In the other three classrooms, children were buoyant and smiling, a reflection of the warmth conveyed by the teachers. The researcher concluded that the affective atmosphere in the classroom depended in large part on the warmth, concern and respect the teacher evidenced toward the children.

12. Grouping procedures differed according to types of classroom. Flexible grouping procedures based on the child's needs or interests were practiced by teachers in informal classrooms. Children never were "stuck" in the "low" group, a factor considered by the researcher to be related to their self-concept. Within traditional classrooms, the one teacher made a real effort to provide flexibility for children in terms of movement in and out of reading groups. The children in this classroom also had opportunities for participation in an individualized reading program along with their participation in established groups. The other traditional teacher operated consistently with established groups. In comparing the two types of grouping practices, the researcher concluded that flexible grouping procedures based on the teacher's assessment of a child's need or his request for help may be more closely related to improved learning conditions for the child. However, if the teacher wished to persist in the use of established groups, she should provide some outlet for the child to change groups if his achievement or desires warrant such movement. She should also provide opportunities for the child to participate in a variety of
small skills groups whose membership and objectives would reflect the needs of a cross-section of children from her established groups.

13. One other factor related to grouping practices and the child's affective state was considered important. When children consistently work in the same groups, they constantly face the prospect of exposure to ridicule by other children for incorrect responses. This ridicule may take the form of groans, or hands waving in the air, or laughter; but it is obvious that the child who has had this kind of experience may shrink from another such encounter. Teachers try to handle this problem in various ways, but the conclusion seemed evident that when the teacher places value on the correct response as the only acceptable response, she reenforces this practice of ridiculing among children. This researcher would not presume to claim that such behavior was intentional on the part of the teacher, but even unwittingly done, it could be inferred that such situations have an effect on the child's self-concept as well as his motivation to participate in other group experiences.

14. It appeared that the child's selection and scheduling of his own activities in the informal classroom was related to his growth in independence and responsibility. If one has the opportunity to plan for himself and live with the consequences, he may be more apt to become responsible for his own behavior. On the other hand, if activities are always assigned and scheduled for him, he may be more apt to become dependent on the system rather than on himself.

15. Another conclusion concerned with the development of responsibility and independence is related to the movement of children within
the classroom. The free movement of children within informal classrooms necessitated an acceptance of responsibility by the child for his personal behavior, but restricted movement in traditional classrooms rarely gave the child that opportunity to practice such responsible behavior.

16. Consideration of the evidence of movement within the two types of classroom led to the conclusion that the free movement of children in informal classrooms may be related to the lessening of tension and relieve the teacher of a burden of control necessary when children are expected to constantly restrict their physical movement.

17. These conclusions are related to another one concerning the noise level of the classroom. Informal classrooms do exhibit a higher level of verbal and physical activity than traditional classrooms, but the teachers were adept at distinguishing "busy" noise from "raucous" behavior. Raucous behavior was not permitted. "Busy" noise was highly acceptable. The four teachers evidenced a difference in their definition of acceptable and unacceptable noise levels which led to the conclusion that tolerance for noise may be related to the individual teacher's conception of acceptable conditions for learning or his emotional and physical tolerance for noise.

18. The evidence concerning nonverbal behavior led to the inferred that personal expression of nonverbal behaviors such as gestures, intonation and touch may be considered to be evidence of idiosyncratic behavior by an individual teacher, evidently unrelated to the type of classroom in which she works.
19. The descriptions gleaned from the consideration of the use of time and its effect on teachers and children fascinated the researcher. There seemed to be a possibility that use of time was related to the affective state of children and teachers. It can also be conjectured that restrictions and pressures caused by undue emphasis on time may be related to the persistence or lack of persistence of a child for his task.

20. Five conclusions are related to the procedures of the study. The first conclusion related to the danger of extracting interactions out of context for analysis. The observer realized the danger of misinterpreting or overreacting to the data; therefore in the descriptions of interactions, she attempted to add explanations related to the original context that would avoid any gross misconception. She concluded that even having taken these precautions, her objectivity was always subject to her bias.

21. The second conclusion related to procedures of the study concerned the possibility that the teachers might be putting on a performance for the observer. The researcher had this feeling initially about one traditional teacher, but a return visit without the recording equipment helped to negate this concern. The researcher concluded that the length of observation time and the number of observations helped to prevent the teachers from performing any differently than they would have under normal conditions.

22. The third conclusion related to the procedure of study concerned the reliability of the data. Did the researcher get a true picture of the total activity within the classrooms? The extra visits
to the informal classrooms during the pilot study plus the observations during the study convinced her that the data was fairly reliable for informal classrooms. She was less certain about traditional classrooms, but she finally was led to conclude that it was as accurate a picture as she was apt to get on the basis of the available observation time.

23. Another conclusion about procedure related to the use of interactions as a structure for analysis. On the basis of the data obtained for this study, the researcher concluded that the interaction was a viable structure for deriving patterns of verbal and nonverbal response of teachers and children within a limited context. The use of isolated behaviors in other similar studies often precluded the thorough analysis of behavior possible with the interaction.

24. The last conclusion about procedures concerned the experimental use of audio-recording equipment with a remote microphone. The remote microphone proved to be a real asset within informal classrooms where the teacher moved to individual interactions with children in different locations. The constant movement of one of the traditional teachers would have made recording of her behavior impossible without such a device. The rapid occurrence of interactions would have caused loss of much of the verbal behavior without the use of the tape recorder. The researcher concluded that such equipment provided greater validity in recording verbal data.

25. One conclusion cannot be honestly reached based on the data presented in the study. It was not possible to resolve the problem concerning whether there is a particular type of child who functions best in informal classrooms. Although this had not been a major
objective of the study, the researcher had hoped to gain definite information about it. The children in this study were all from an upper-socioeconomic community. Their verbal behaviors revealed a wide range of experiences often unavailable to children in other economic groups. The teacher sample was restricted to four teachers judged to be above average in performance, thus limiting the applicability of the findings to other teachers of lesser ability. While it was inappropriate to generalize these findings too widely due to the background of the children, the quality of the teachers, and the size of the sample, it was possible for the researcher to conclude that informal education presented a viable alternative to traditional practices and was worthy of continued study and experimentation by teachers in all types of schools with all types of children.

Implications of the Study

The results of the study provided implications related to two major areas: first, implementation of change in educational practices and second, teacher training practices.

Implementation of change involving human behavior is difficult under the best of conditions. The study of the informal teachers in this study who had made a change in teaching revealed some factors which have implications for any teacher or school system attempting to accomplish a transition to informal education. These factors are listed in the following section.

1. The teachers were convinced of the values of informal education which made them open to change in their behavior.
2. The practices in informal education were related in some measure to their previous practices. In other words, they had always performed somewhat informally in their classrooms.

3. These teachers chose to make the change themselves. The idea was their own.

4. The teachers, even while in different buildings, supported each other through sharing ideas and often mutually commiserating about their problems. The factor was considered extremely important since they had limited administrative support from the school system. One teacher felt that she had no backing from her principal while the other felt that she had considerable support.

5. Both teachers had sought information from other sources such as the university. They willingly participated in university workshops and were extremely open and receptive to suggestions and help.

6. These teachers were willing to try informal education even when it meant jeopardizing their relations with other teachers.

These factors imply that change in educational practices is more apt to be successful if it is self-initiated, based on personal conviction, developed with the aid of professional help such as study at the university, and related in some measure to past experiences that were successful.

The findings of this study have implications for teacher training, particularly for the training of informal teachers. The performance of the informal teachers displayed some factors believed to be related to the development of teacher training programs. These factors are listed in the following section. Although these factors are considered
to be important in the training of informal teachers, they may prove
to be equally important for the training of traditional teachers.

1. The necessity for awareness of levels of cognitive development
of the individual child implied a necessity for improvement in the
training of preservice and inservice teachers in child development.
This factor is particularly related to the development of understanding
of the procedures involved in diagnosis of the child's performance in
substantive learning tasks.

2. The patterns of verbal behavior displayed in the interactions
revealed a need to provide opportunities for interactions with
children which will permit teachers to become adept at accepting and
using the child's response to guide and extend learning based on the
child's needs and interests.

3. The practices of flexible grouping employed by the informal
teachers implied a necessity to incorporate a more intensive study of
such practices in teacher training programs. The use of such
procedures must be grounded in knowledge of the structure of the
disciplines as well as the diagnostic procedures related earlier.

4. The provision of a rich environment was an important feature
in the informal classrooms of the sample. To develop an understanding
of the values and procedures for developing a rich environment,
personal experiences and experimentation by the teacher with a wide
variety of materials should be related to practical experiences with
children.

5. The need for understanding of the structure of all the
disciplines discussed in factor three implied the need for a strong
program of academic learning. The informal teachers of the sample were bright, intelligent, resourceful teachers who were well-versed in the intellectual content of the disciplines. They also possessed a variety of personal experiences which made them resourceful and interesting in the encounters with their children. Therefore, teacher training programs should not only provide time but also encourage the teacher to develop a rich personal life.

6. Unfortunately, the final factor displayed by these teachers may not be teachable. All of the teachers of the sample truly respected children and believed that they could succeed. Informal teachers respected the child's right to pursue learning in his own style. While such a factor may not be teachable, it is undoubtedly crucial to the success of teachers working in any type of classroom.

Recommendations for Research

One of the major objectives in pursuing this study was to identify factors which might prove fruitful for further study. This section will suggest several areas for potential study extracted from the descriptions of differences between traditional and informal classrooms.

1. Replication of this type of study involving children from different socioeconomic groups would be helpful in defining similarities and differences between teacher performance in traditional and informal classrooms in a different type of community in comparison with the findings of this study.

2. Replication of this type of study involving teachers with more experience in informal education might illustrate other differences and similarities in traditional and informal teachers.
3. This descriptive study concentrated primarily on the verbal behavior of teachers and children in individual interactions. A great amount of verbal behavior is displayed among children in informal classrooms when the teacher is engaged with other children. A descriptive study similar to this one, based on the verbal behaviors of children should be helpful in identifying factors to illustrate the relationship of these verbal behaviors to the child's performance.

4. A longitudinal study of the relationship between a child's performance in a traditional and an informal classroom not only in measures of achievement but also in terms of measures related to problem solving should help to identify possible advantages and disadvantages of the two types of educational practices.

5. Investigation of a child's level of persistence in activities requiring use of various procedures and materials might be helpful in identifying ways to improve the selection of materials and activities within the environment of the informal classroom in terms of the needs of the individual child.

6. The informal teachers of this sample proved adept at intervening with the child when he needed help as well as not intervening when he didn't. It can be hypothesized that this factor of intervention may be related to the teacher's awareness of the child's cognitive level of development and/or his affective state. Descriptive studies which search for further examples of this relationship may prove fruitful in improving teaching practices in terms of the individual child.
7. Identification of the patterns of response utilized by teachers in individual interactions which appear to stimulate inquiry as opposed to those that negate it should provide information related to the achievement of children in problem-solving as well as methods of improving teacher performance.

8. A comparison of a child's selection of materials and activities in informal classrooms in comparison to the child's assigned tasks and materials in traditional classrooms might illustrate the deficiencies of a prescribed curriculum or at least provide justification for the use of self-selection.

9. This study only provided a cursory overview of the type of questions used by teachers in the various interactions. Two studies dealing with types of questions might be helpful. The first study would attempt to categorize the questions asked by informal teachers in comparison to a taxonomy of behaviors related to cognitive and affective development. A corollary to this study might involve a comparison of the type of questions and responses employed in individual interactions in relationship to the substantive functions identified in this study.

The second study would compare the performance of teachers in traditional and informal classrooms based on the evidence of type and patterns of questioning procedures suggested above.

10. The consideration of the difference related to the affective states of children was not clearly developed in this study; however the observed instances of positive affectivity in both kinds of
classroom provided enough information to indicate that studies relating to affective states and the self-concept of the child would be of great interest.
APPENDIX
APPENDIX A

SCHEDULE FOR OBSERVATION

Some teachers were visited eleven times because of poor quality of previous audio-tapes.

<table>
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<th>Teacher</th>
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<th>1/16</th>
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<th>2/18</th>
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APPENDIX B

WRITTEN RECORD FORMS
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<th>On-going Group</th>
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<th>On-going Individual</th>
<th>On-going Individ.:Interrup</th>
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<tbody>
<tr>
<td>Teacher</td>
<td>Student</td>
<td>Teacher</td>
<td>Student</td>
</tr>
<tr>
<td>&quot;Janice moved around today a great deal. Rest all with avid. When children don't approach, she goes to investigate. Seems children seem to be in room.&quot;</td>
<td></td>
<td>1. (interruption)</td>
<td></td>
</tr>
<tr>
<td>2. (writing)</td>
<td>3. (talking)</td>
<td>4. (plant bed)</td>
<td>5. (story)</td>
</tr>
<tr>
<td>6. (math)</td>
<td>7. (drawing)</td>
<td>8. (Puzzle)</td>
<td>9. (finish)</td>
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<tr>
<td>10. (looking)</td>
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Although instruction is denied at one child, other clay watches & listens in to help.
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<th>On-going Group: Interrup.</th>
<th>On-going Individual</th>
<th>On-going Indiv.: Interrup</th>
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<td>Student</td>
<td>Teacher</td>
<td>Student</td>
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<tr>
<td></td>
<td></td>
<td>1. read book</td>
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<td></td>
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<td>2. P. 10</td>
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<td></td>
<td></td>
<td>3. write for math</td>
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<tr>
<td></td>
<td></td>
<td>4. look for book</td>
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<tr>
<td></td>
<td></td>
<td>5. estimate</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>6. write</td>
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1-10: Continue
10-12: Continue
12-13: Proceed
13-15: Proceed
15-17: Proceed
17-19: Proceed
19-20: Proceed
20-21: Proceed
21-22: Proceed
22-23: Proceed
23-24: Proceed
24-25: Proceed
25-26: Proceed
26-27: Proceed
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94-95: Proceed
95-96: Proceed
96-97: Proceed
97-98: Proceed
98-99: Proceed
99-100: Proceed

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School 6 - Track B  Date: 3/17/72  Time: 12:30 - 1:30  Classification: Inf.
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<td>G. - Tea. D.</td>
<td>Date: 3/1/72</td>
<td>Time: 12:55 - 1:30</td>
<td>Classification: Informal</td>
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</table>

1. **On-going Group**
   - Teacher
   - Student

2. **On-going Group: Interrup.**
   - Teacher
   - Student

3. **On-going Individual**
   - Teacher
   - Student

4. **On-going Individual: Interrup.**
   - Teacher
   - Student

- **Notes:**
  - 1. "Hi, nice to share puppet"
  - 2. "I didn't weigh anything"
  - 3. " Handout: Science" (no information)
  - 4. diff.
  - 5. "He now has the puppet"
  - 6. "Small group forms to look"
  - 7. "Pete D"
  - 8. "Pete D - (permission)
  - 9. "Write story for child - set of tasks"
  - 10. "Help with math"
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APPENDIX C

TYPESCRIPT OF AUDIO-TAPE

(Looking at rocket book pictures)

T. That's when they're splashing down. Do you know what they call the bottom of that capsule that, uh looks all hot. I think that's called a heat shield.

C. Asks ... inaudible ...

T. If you bring it here, I'll read it to you. We can do it together. O.K. let's check. (child brings material) Before we do this, would you go close the door for me please. We're making a lot of noise for other rooms.

T. (Back to original rocket) ... Oooh, what do you call that?

C. Smoke.

T. Smoke? What's another name for it?

C. (looks)

C2. I know, exhaust.

T. Exhaust. Do you know what some people say exhaust contributes to? Dirk could tell you. It's a favorite word of his. Do you know what pollution is? Have you ever heard of pollution?

(Back to reading child)

T. O.K. Dana let's see what it says.

C2. Mrs. R.

T. Excuse me just a moment. (holds child off)

On reentering the C M separates from the service module separates and turns blunt...that means this side down. (points) Blunt heat shield toward the atmosphere. This is the heat shield (points) and somehow or other this is built to prevent the astronauts from burning up, otherwise, they'd burn up. O.K.?

T. Now what is it that you wanted Amy?

C. One time I burned my leg on a tail pipe.

T. Yes, that does get hot, doesn't it?

*************************************************
T. (Returns to child) ... See that is the service module and that services the space capsule while it is in space and uh, then they, uh, separate from that just before they land in the ocean. They no longer need it. That is my understanding that that is still orbiting around the earth although I'm not sure I'm right. It stays in orbit. (Child continues to look)

T. Do you know what this thing is called that they put around it after it falls into the water?
C. No.

T. Well, it's kinda like, what do you call this? (points)
C. A collar.

T. A collar. They call this a flotation collar and that keeps it from sinking because the second Mercury capsule that went into space, that was before you were born, sank. They didn't have anything around it to help keep it up and the astronaut got out, but they didn't save the capsule. It went to the bottom of the ocean.
C. Wow! Did they spend some time trying to find it?
T. They did try to find it and they didn't want to lose it because it had all the film and cameras he had taken pictures with but they lost it. After that, they put this on ... It's kinda like a big swim raft you use in the summertime, one you use at the beach or at the pools.
C. Last year, we went to my dad's friend house and we stayed there and my sister and I ... (inaudible) and at the diving board we dived off right into the rubber raft.
T. Did you fall off or stay on it?
C. Fell off.

T. It's pretty hard to stay on them when you jump on them. Peg and Ann and I do that. (her daughters)

-----------------------------------------

C. What does 15 and 15 make?
T. What does 15 and 15 make?
C. Yeah.
T. I don't know. What do you think?
C. Uh, 21.
T. Why are you asking?
C. Cause I want to know when the plaster of Paris dries.
T. Did you say 15 and 15 or 15 and 50?
C. 15 and 15.
T. 15 ... O.K. let's see what we can do here.
C. (inaudible, something about working the problem)
T. That's fifteen, right (writes on paper)
C. (nods head)
T. That's fifteen, right ...
C. Yeah.
T. Fifteen is how many tens and how many ones?
C. Two ones.
T. Fifteen, how many tens?
C. Five.
T. Whoops! That's ones. How many tens?
C. One
t. You have one ten and you got five ones. You have one ten and one ten and you have five ones and five ones. How much is five and five?
C. Ten.
T. O.K. Now you have three tens and that's how much fifteen and fifteen is
C. Thirty.
T. That's right.

(Another who was listening) I know that fifteen and fifteen are thirty.
T. But you listened, which is all right but he figured it out... that makes a difference, but you learned something. Think you can remember that now?

T. Is Mindy still busy? I want to finish... Yeah
C. My cousin... (inaudible)
T. O.K. I saw movies of Lake Tahoe last night. Are you going to go to Lake Tahoe?
C. I'm not busy no more.
T. You're not busy no more... When you are through Mrs. B. has the book I was looking for yesterday. I want to share it with you when you have a few minutes. Will you tell me when you're ready.
C. I've got a few minutes right now.
T. O.K.
C. It's all done.
T. All righty. Then I'll go borrow the book.
(teacher goes to look for book from student)

T. Where did you get this book, Dana? (stops along way) It's really neat.
C. My grandma.
T. Your grandma got it for you, very good.
C. She got it at a Gulf station.
T. She what?
C. A Gulf station.
T. Oh, I thought you said golf station.
C. Gulf.
T. Yes, Gulf, that's right.
T. Amy, Amy, Dana, do you want to put this back under the table? When you leave that out like that, honey, someone is really going to hurt themselves.

T. Mrs. B. (Student Teacher), where is that storm book?
ST. I didn't bring it back today. I had it with my stuff and didn't pick it up.
T. That's O.K. We'll work with it tomorrow.
ST. I'm sorry.
T. That's fine. I just thought it was here and I wanted to share it with her. We'll do it on Friday. That's all right. As long as we get it done, it's O.K.

T. Mindy ...
ST. Where are the cheerios?
T. They're in the cupboard.
ST. (inaudible)
T. Mindy, you go ahead and do your writing because the book isn't here. She's going to bring it on Friday. Sorry about that. I goofed on that one.

T. Look what you made! How neat.
C. (inaudible)
T. What? I'm sorry, Patty, I can't hear you honey.
C. (inaudible)
T. What would could first? (writing for child)
C. I don't know.
T. Do you want to write it in T.O.? All right, then you put an "o" here that you don't hear. "u", "ch" You should really write the word, touch down here. Why don't you cross that out?

(Another child ... asks something as waves paper in front of teacher)
T. Sorry honey, ... just a minute
C. (Says something about her paper)
T. I want to see it but I don't want you to put it in front of her when she's trying to talk to me.

T. Can you make a small h? You really wouldn't put a capital in the middle of the word. (laughs)
T. (in response to another child) ... yes
ST. (Still asking about cheerios)
T. Are they gone? Where did you get those?
ST. I used them in my project yesterday and I thought I would use these if they're aren't any left.
T. Well, the box is in there somewhere ...
(Teacher gets up to look in closet for cheerios)

*****************************************************************************

T. What did you decide to make? (to child at workbench)
C. I'm making something to put ... (Inaudible) ... in.

*****************************************************************************

(Teacher continues to cupboard)
(Sounds of workbench in background)
(Teacher rustles in cupboard and hums to self)
T. I haven't the slightest idea where they are. I didn't take them out or anything.
ST. I just thought that it would be silly to open if we still had some.
T. O.K. I can't imagine what happened to them.
ST. O.K.
T. There in that mess somewhere. I haven't cleaned them out.

*****************************************************************************

C. I want to show to you.
T. What does that say? Can you read that in T.O., Matt, Go ahead.
C. (Inaudible)
T. (helping) some mothers ...
C. drive taxi ...
T. taxies, uh huh ...
C. a bus or a car. Some mothers (pause) (inaudible)
T. Near and far, see and so it rhymes doesn't it? What two words rhyme?
C. Far and (inaudible)
T. Far with (pause) car, sure. So some mothers drive taxies. Did you ever see a taxi driven by a woman?
C. Yes.
T. A bus or a car and you know some of the women drove our school bus, remember when we went to the farm ...
C. (shakes head)
T. Sure. Some mothers drive airplanes and trucks near farms. Some mothers are what? (pause) Can you figure out that word?
C. (Inaudible)
T. Well, maybe Dana or Ann can help you.
(Together the children work on word)
C. Waitresses.
C. Some mothers are good cooks.
T. Boy, your mommy is, isn't she? Some...
C. mothers are...
T. sounds like e
C. teachers
T. You better get that one right. (laughs)
C. (inaudible; keeps on reading)
T. What would you call a mother that worked with books?
C. A librarian.
T. A librarian, yes. Go ahead. You're doing fine!
C. (continues, inaudible)
T. That word is they. It's kinda of a hard one. That one is there.
C. (continues, other child helps)
T. Bankers and...
C. Plumbers.
T. Plumbers.
C. They work in the (pause)
T. Sounds like e.
C. They work (pause)
T. They work in the sea.
C. They (pause)
T. There.
C. (inaudible)
T. Singers and (pause)
C. Dancers and (pause)
T. Talk.
C. Talk on TV.
T. You're doing beautifully. You're going to do it all or are you ready to stop.
C. (indicates that is going to go on)

********************************************************************************

C. (approaches)
T. Why don't you go get my glue that is so much easier to use?
While I'm reading with Matt, I don't want to have to stop, please.
Thank you.

********************************************************************************

T. Come on Ann, you can help.
C. (continues to try)
T. Mothers are, now what does that say?
C. Housekeepers.
T. Housekeepers, sure.
C. (reads)
T. What would that say? What do you think, Ann?
C2. (shakes head negatively)
T. Salesladies. They're salesladies.
C. They're salesladies too. (pause)
T. I, sound like i.
C. (tries word)
T. Say it.
C. mi...
T. Might.
C. Might ... (inaudible)
T. Sounds like a
C2. Paint.
C. (continues)
T. The last sound on that word is ooh.
C. Glue.
T. Paint, paper and glue. Very good.
C. (continues, inaudible)
T. Circuses. Some work with circuses.
C. Ch .. (pause)
T. Churches or zoos.
C2. Churches or zoos, farms (pause) f...
T. Factories.
C2. Factories or ...
T. Stores.
C. (inaudible)
T. Ooh
C. Shoes.
T. Let's sit down here on the floor. It's a little hard to hear.
C. Some mothers are far ... farmers, empty trash. Some mothers ex...
T. Ex..plore.
C. Explore and some work with caaaa.
T. Cash .... What's cash? It says that some mothers work with cash. What do they work with?
C. Money.
T. What would a mother be that would work with money? Where would she work?
C. A store.
T. A store could be a cash register or a bank, O.K.
C. (reads, inaudible)
T. That's where a g sounds like a j... juh sound ... age. That's the end of the page.
C. (continues reading)
T. Other
C. Mother can do?
T. Can you think of some other things a mother can do besides all these things? It names pretty many of them, didn't it? There's a T0 book over in the reading center called Mommies at Work that we got this year too. Maybe it would be fun to compare the two and see how many things are there. O.K. Ann he read about mothers. What does this say?
C2. Fathers work too. Fathers ..
T. What are they? Can a father be a dancer?
C2. Yes.
T. Sure ... go ahead.
C2. Can fathers be ...
T. What do you suppose that would be? What do you think, Matt? What do we call Mrs. H. up in the office?
C. Secretary.
T. A secretary! Can fathers be secretaries?
C. Yes.
T. Sure can.
C2. Can fathers be (reads)
T. Can they?
C2. Yes ... Can fathers be ...
T. What do you suppose that would be?
C. (inaudible)
T. Well, here he's cleaning, here he's baking, here he's (children
chime in on what the picture shows man doing)
C2. Taking care of baby.
T. Does your father ever help take care of your little baby brother?
C2. Yes.
T. Sure. Daddies help do all that, don't they? Does your daddy help
Matt?
C. Yes.
T. And he's not home very often to help. When you're a doctor you're
not home very often.
C2. What else do fathers do?
T. That word is draw.
C2. Draw a father doing ...
T. At work.
C2. Draw a father at work.
T. What does your daddy do, Ann. What kind of work does your daddy
do? Do you know? (no response) Do you know where he works?
C2. No.
C. I know where my daddy works.
T. Where does your daddy work?
C. Riverside and St. Anthony's.
T. Is he at St. Anthony's too? O.K.
C2. I think that my daddy works in Findlay.
T. You think what?
C2. I think he goes to Findlay.
T. Findlay, oh ... does he have an office?
C2. Yes.
T. Can you call him on the telephone?
C2. I don't know.
T. Have you ever talked to Daddy at work on the telephone?
C2. Yes.
T. Well, then can you talk to him on the telephone ...
C2. (giggles) yes.
T. What do you mean you don't know... O.K. Science for February ...
we're a little late. What does this say?
C. Clouds
T. Clouds ... you read the first sentence and let her read the second.
C. Clouds are ... wuh ...
T. Name of a color.
C. White.
T. Ann.
C2. The clouds are dark.
T. Matt.
C. Some clouds may have a (Ann interrupts)
T. His turn.
C. Lot of w ...
T. Water ... now why did I say it was still his turn even though he went down a line, Ann? What hadn't we come to yet?
C2. A period.
T. We hadn't come to a period. Now we're at a period. It's your turn.
C2. When the water gets too heavy, it falls ...
T. as
C2. as rain.
T. Yeah, did you ever think of dark clouds having a lot more water in them than real white ones?
C2. (shakes head no)
T. I really hadn't, but I guess that's true .. (points to next page) Isn't that neat? Look here.

(Child screams ... Teacher looks up)
T. Hey, hey, hey, Carla. What Is the problem?
C. We're playing like we're the burglars, see. We're stealing their money.
T. But where do we play in the housekeeping area?
C. (returns to area)

T. Cloud what?
C. Cloud shapes.
T. O.K. You read the first one.
C. Look for clouds.
T. Ann
C2. You may see them up ...
T. Many clouds what?
C2. Shapes
T. Shapes, very good. Matt.
C. (inaudible)
T. Last sound is ah...
C. (no response)
T. What do you think it says, Ann?
C2. Draw.
C. Draw the cloud shapes that you see.
T. Have you ever laid on your back on a day when the clouds are all white on a blue sky and the clouds keep moving and you see all different kinds of shapes... What do you think that one looks like?
C. Fish.
T. That one?
C. (inaudible)
T. What do you think?
C2. Turtle
T. Turtle, yeah ... (turns the page) Some of you people have already done that. Did you do that one?
C2. Yes.
T. O.K. You're doing so well in TO. Have you been reading in TO at home?
C2. No.
T. You?
C. Yeah, I read the book...
T. Which one did you read?
C. Curious George Goes to the Hospital.
T. Did you buy Curious George Goes to the Hospital? It's kind of a long one to read. Pretty hard?
C. No.
T. No... but you didn't think Snowy Day was very hard. Huh?
C3. (approaches) I can read Snowy Day.
T. I bet you can read Snowy Day.
C3. (inaudible, about book liked)
T. Which one did you like best? Craig.
T. Why?
C3. I don't know.
T. What did you like about it... What did you like about that book?
C3. (no response)
T. Don't know?
C3. Liked the story.
T. You just liked the story. What (another child)
C. (inaudible)

(Play area)
C. (Some problem about number of people in play area)
T. Oh, who's Dana.
C. Himself.
T. Who is he pretending he is?
C. I don't know.
T. Don't know.
C. (inaudible)
T. Well, how many people are there?
C. There was four when I came and I made five.
T. You made five.
C. (two children speak at once)
T. Well, then I think you better go.
C. Well then, (inaudible) wanted to get out so that leaves three ...
Teacher walks over to housekeeping corner.
T. How many people are here?
C. Counts 1, 2, 3, 4, 5, 6.
I asked Dana if he could play cause those two were leaving...
Several start to talk.
T. I beg your pardon... I don't know how many people you can hear at once, but I can't understand.
C. Dana, was here before Amy.
T. That isn't what Amy said.
(Children start to talk again at once.)
T. (Listens and says) ...
C. (Request for bathroom)
T. Sure.
T. (Resumes listening)
T. Now, would you look at me? I'll give you two minutes to figure out what to do and who's going to do what or we'll just stop, O.K.? Fair enough? Now if you are one who has come in and there were 5 people here, would you please think what your responsibility is? And if you are one who has been in here for a long long time might it be fair to give someone else a turn? You think about those things. I'll let the big hand go around two times and then you decide. (looks at clock)

***********************

C. (Shows bird house and says something)
T. Oh, Bryan, let me see ... how about that.
C. It can be a seat or a birdhouse.
T. It can be a seat or a birdhouse. What size birdie could use that birdhouse?
C. I don't know.
T. Where is he going to go in?
C. My dad's going to drill a hole.
T. Oh, Daddy's going to put a hole in it for you. What did you do with that fancy kind of a nail you brought from home at noon? Did you use it?
C. No, it's too thin.
T. Wouldn't it work? Was it too small?
C. Uh huh.
T. I wondered if it might be. Where are you going to have daddy put the hole?
C. Right here, maybe. (points)
T. You have worked so hard on that today. Doesn't it make you feel good when you have worked so hard on something and it turns out nicely. I'm so proud of you...good for you.

***********************

C. Can I put this away? (looks at sweater)
T. I would, I think you would be roasting by now.

***********************
Child brings math paper.
T. Well, did I catch you Mr. Tom?
C. (inaudible)
T. O.K. Thank you.

T. Donna, I am curious. What have you been doing? What did you do with that wall paper?
C. I made some stars.
T. You made the flag
C. I'm making it.
T. You're making a flag. What did you do with the wall paper this morning? I saw you working with the prettiest wall paper. What did you do with it?
C. I made a calendar.
T. Oh, that's right. You did tell me that. I'm sorry. Now this is a flag. Now tell me about the flag.
C. It's our flag.
T. Tell me about our flag. What colors are in the flag?
C. Red, white and blue.
T. Red, white and blue. What's red and white?
C. The stripes.
T. The stripes, do you know how many stripes there are in the flag?
C. Red and white.
T. How many? Do you know?
C. (shakes head no)
T. Hippety hop over to the display table. The flag fell down and that's not too good. Get it and let's check it and see.
C. (goes for flag)

C. May I look at the viewer? (filmstrip)
T. Honey, the bulb is burned out.
C. Oh.
T. I have to go down after school and ask Mrs. ___ if we can have one.
C. O.K.

C. (Approaches with book on nurses and doctors)
T. That's a neat word. Do you know what the doctor calls that thing?
C. No.
T. Stethascope ... steth ...
C. steth ...
T. Look at me. steth...a..scope... Say it.
C. stetha..cope
T. stethascope
C. (walks away)
T. Donna, bring it here dear. Let's look at it. Did you count them?
C. Yes, there's seven red and six white.
T. Now how many stripes would that be all together? Well, you can count.
C. (counts) Thirteen.
T. So you found out that 7 plus 6 is how many?
C. Thirteen.
T. Thirteen. Why do you suppose that there are thirteen stripes on a flag?
C. Cause they're thirteen states.
T. When were there thirteen states.
C. Uh....
T. How many states are there now?
C. Fifty
T. Fifty and that's what those fifty stars are for but the thirteen stripes stand for the thirteen states they're were when the country first began. There were thirteen states when there was first a United States. And so one of those stripes is for each one of those states. O.K. As you make your flag, what color is going to be on the top?
C. Red
T. What color is going to be on the bottom?
C. Red
T. Now maybe the next easiest way is to make a stripe right out from the blue field, and that one is what color...
C. Uh...red.
T. Yeah, I don't want you to have to do this one over. Now let Mrs. R tell you something. When the flag hangs either this way or this way (teacher demonstrates and pokes girl in passing..."excuse me!") the blue field is always in the top left hand corner. So see putting this on here we'd have it backwards but that's all right because I know it but another time if it were hanging this way, this would be up here and it would be fine. But see if it is hanging this way the flag is always in the top left hand corner. (The child has placed her blue field in the wrong position) Think you can remember that? Which corner do you have your blue field in?
C. (points)
T. Is that left or right?
C. Right
T. Right... that's kinda interesting. What made you think you wanted to do a flag this afternoon? Where did you get that idea?
C. I just thought of it.
T. Just thought of it... that's a good thing to think about isn't it? Well you do that one and if some day you want to make one of colored paper, we'll see if we can cut some stripes and you can make a big one...if you'd like. I love the way you are putting it on a mat.

**************************
C. (Brings paper)
T. How many tens are there all together up there, Tom?
C. Sixty
T. How many tens?
C. (no response)
T. Sixty is right but how many tens is that?
C. Six.
T. O.K. So instead of making this four tens, let's make it six. O.K.? Six tens what?
C. Minus 20
T. Equals...if you take these two away, what do you have left?
C. Forty.
T. So you want this to say forty. Now there is another way we can do that same problem. Let's start with the same number which was what?
C. Sixty
T. Sixty minus forty equals how many?
C. Twenty.
T. Get the idea. O.K.

**************

(Child comes with reading)
T. E and a sound like e
C. (puzzled)
T. Breathe
C. Breathe
T. Breathe in...breathe out (reading from book)
C. "Breathe in, breathe out," says the doctor.
T. Says the doctor.
C. Breathe in and out...
T. Where did this come...
C. It's a library book.
T. Who got this book with us having a card in it?
C. (inaudible)
T. Do you know who brought it back? Did you?
C. No.
T. Would you take this down to Mrs. _____ (librarian) and tell her we have the book. She likes to keep (inaudible)
C. Can I keep
T. Yes, you can keep the book. Why don't you put a marker in it?
C. (puts a pencil)
T. No, no, not a pencil...there's a piece of paper right there you can use. Please don't ever use a pencil for a book marker.

**************
T. Do you want it stretched out so you can see it?
C. Mindy wanted to see it.

T. Bryan, I'm not sure there's enough room in here to do that with people walking through there. (balance board)

T. Mindy wanted to see it.
C. Yeah, she wanted to see which was her left hand.
T. (laughs) Did she discover which was her left hand?
C. Not yet, she's checking it.
T. Mindy, what's your left hand?
C. (Holds up her hand)
T. Sure yours is easy to remember, it's the one you write with. Right!
APPENDIX D

An Examination of Quantitative Data for Individual Teachers

The quantitative data displayed in this study dealt with comparisons of interactions in traditional and informal classrooms; therefore the data from observations was combined for the two informal and two traditional teachers. The researcher was also interested in an examination of the nominal data for individual teachers. Such an examination revealed results consistent with the data displayed in Chapter Four; however three areas of consideration revealed differences between teachers which might be worthy of future study into the classroom styles of organization of different teachers.

The quantitative data presented in the first section of Chapter Four showed that teachers in traditional classrooms initiated more interactions during on-going groups activity while informal teachers initiated more interactions during on-going individual activity.

The data in Table 1 indicated total interactions initiated by each teacher including interruptions during periods of individual and group activity. These totals were expressed in percentages of interactions for each teacher in the two categories.
TABLE I

PERCENTAGE OF INTERACTIONS INITIATED BY TEACHERS DURING INDIVIDUAL AND GROUP ACTIVITY

<table>
<thead>
<tr>
<th>Activity</th>
<th>Traditional Teach. G (Raw) (%)</th>
<th>Traditional Teach. C (Raw) (%)</th>
<th>Informal Teach. D (Raw) (%)</th>
<th>Informal Teach. R (Raw) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>14 (6)</td>
<td>97 (35)</td>
<td>115 (61)</td>
<td>139 (88)</td>
</tr>
<tr>
<td>Group</td>
<td>229 (94)</td>
<td>183 (65)</td>
<td>74 (29)</td>
<td>19 (12)</td>
</tr>
<tr>
<td>Total</td>
<td>243 (100)</td>
<td>280 (100)</td>
<td>189 (100)</td>
<td>158 (100)</td>
</tr>
</tbody>
</table>

A comparison of this data for the two traditional teachers revealed that while both teachers initiated more interactions during on-going group activity, Traditional Teacher G adhered to this pattern of emphasis much more than Teacher C. The data for the two informal teachers indicated that Informal Teacher R reflected the typical pattern of emphasis on individual activity in informal classrooms more consistently than Teacher D. The conclusion could be reached that the performance of Informal Teacher R and Traditional Teacher G may reflect a strong commitment to their particular style of teaching and/or a clearer understanding of the organizational practices involved in the specific type of classroom in which they function.

Table 2 showed total interactions including interruptions divided by percentages of initiation by teacher and child in each classroom of the sample.
<table>
<thead>
<tr>
<th></th>
<th>Traditional</th>
<th></th>
<th>Informal</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Teach. G</td>
<td>Teach C.</td>
<td>Teach D.</td>
<td>Teach. R</td>
</tr>
<tr>
<td>(Raw) (% )</td>
<td>(Raw) (%)</td>
<td>(Raw) (%)</td>
<td>(Raw) (%)</td>
<td>(Raw) (%)</td>
</tr>
<tr>
<td>Teacher</td>
<td>243 74</td>
<td>280 52</td>
<td>189 38</td>
<td>158 40</td>
</tr>
<tr>
<td>Child</td>
<td>86 26</td>
<td>258 48</td>
<td>323 62</td>
<td>241 60</td>
</tr>
<tr>
<td>Total</td>
<td>329 100</td>
<td>538 100</td>
<td>522 100</td>
<td>399 100</td>
</tr>
</tbody>
</table>

Both traditional teachers dominated the initiation of interactions in their classrooms; however Teacher G was more pronouncedly in the driver's seat. Children in informal classrooms dominated the initiation of interactions. An interesting observation revealed the difference in total amount of interactions in the four classrooms. Traditional Teacher G and Informal Teacher R were similar. This finding was determined to be related to the duration of an interaction in the classroom; however in this study, duration of interaction was studied only in relation to the qualitative analysis as discussed in Chapter Four.

Table 3 displayed data in percentage of total interruptions for each teacher in comparison to the total number of interactions per classroom.
TABLE 3
PERCENTAGE OF INTERACTIONS CLASSIFIED AS
INTERRUPTIONS FOR INDIVIDUAL TEACHERS
IN TRADITIONAL AND INFORMAL CLASSROOMS

<table>
<thead>
<tr>
<th>Interaction</th>
<th>Teach. G (Tot)</th>
<th>Teach. G (%)</th>
<th>Teach. C (Tot)</th>
<th>Teach. C (%)</th>
<th>Teach. D (Tot)</th>
<th>Teach. D (%)</th>
<th>Teach. R (Tot)</th>
<th>Teach. R (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interaction</td>
<td>329</td>
<td>538</td>
<td>512</td>
<td>399</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interruption</td>
<td>30</td>
<td>9</td>
<td>72</td>
<td>13</td>
<td>241</td>
<td>47</td>
<td>103</td>
<td>26</td>
</tr>
</tbody>
</table>

This data is particularly interesting when one viewed the data for the two informal teachers. For Informal Teacher D, forty-seven percent of all interactions could be classified as interruptions. In light of this finding, two statements can be made. First, Informal Teacher D might not consider such interactions as interruptions, or if she did, she might conclude that such interactions are permissible and even necessary when one deals consistently with individual children. Secondly, Teacher R considers interruptions permissible, but has developed some form of regulation for their occurrence.

The data for the analysis presented in this section was treated only descriptively and no claim for significance was proposed. As stated earlier, it was believed the data was interesting in relationship to the curiosity often evidenced concerning differences in teaching style and classroom management.
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