SECONDARY LABORATORY TEACHERS' STUDENT GROUPING DECISIONS: A DESCRIPTIVE STUDY

DISSERTATION

Presented to the Graduate Council of the North Texas State University in Partial Fulfillment of the Requirements

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By

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The problem:

Teachers use student grouping to reduce the complexities of the classroom. Grouping has been credited with making behavior more predictable, improving interpersonal skills, and making instruction easier by increasing homogeneity. Research suggests that teachers' grouping decisions are influenced by characteristics of the student, the teacher, the task, and the environment.

Research on grouping has centered on elementary classes, with little investigation of secondary classes. The purpose of this study was to describe the influences on secondary laboratory teachers' grouping decisions in a naturally occurring secondary school setting.

Methods:

A naturalistic approach was taken for this study with stimulated recall and ethnography serving as tools for data collection. Two homemaking foods teachers and two biology teachers were the subjects of the study. Audiotaped recordings of homemaking classes and field notes recorded in
the biology labs served as stimuli for unstructured interviews with the subjects. Additional structured interviews of the subjects plus teachers from other academic areas provided comparisons and contrasts of grouping practices. Analysis of data produced a set of categories and factors from which tentative explanations were drawn.

Findings:

The analysis process suggested that six factors were most influential on teachers' grouping decisions. These factors were labeled as task demands, management demands, student task approach, work habits, student ability, and social interaction skills. Biology teachers' decisions appear to be driven by task demands, followed by management demands, task approach, work habits, ability, and social interaction. A tentative explanation is that departmental standards and the traditional image of science created the importance of task demands with the other factors being necessary to achieve them.

Homemaking labs were found to be so complex that management demands were the driving force behind grouping decisions, followed by task demands and the other factors in the same order as for the biology teachers. An examination of the factors influencing academic teachers suggested
student ability was most important. This difference between laboratory and academic teachers' decisions may be related to the nature of the tasks involved and the established images of the two subjects.
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CHAPTER 1

INTRODUCTION

Grouping of students has long been used by teachers as a technique that allows greater versatility in the teaching process. Teachers group students for many different reasons. Some of the more important are to make instruction easier by creating homogeneous groups, to minimize behavior problems, and to achieve social-interaction goals (Shavelson, 1982).

Recent research indicates that all teachers do not look at the same kinds of information when making grouping decisions. This may be attributed to the need to fit groups to specific ecological contexts, to the differences in task structures, or to the differences in teachers' beliefs and training. Teachers may use students' ability as a guide to forming groups (Shavelson, 1982), or they may use achievement (Borko, 1982) as well as sex, class participation, or behavior (Russo, 1978). Other variables found to influence grouping decisions are environmental factors and teachers' conceptions of the instructional task (Shavelson, Cadwell, & Izu, 1977; Borko, Shavelson, & Stern, 1981). Shavelson (1982) suggests further that teachers use typifications of groups (abstractions of the characteristics of the students
in the group), which permit them to adjust the instruction to group characteristics rather than to individual needs.

Most studies of grouping have taken place in elementary reading and math classes (Barr, 1975; Bossert, 1977; Borko, Shavelson, & Stern, 1981; Shavelson, 1982). Little has been done on grouping practices on the secondary level. Since ecological contexts and task structures are different on the secondary level, it is important to investigate the differences, if any, in teachers' grouping decisions at this level.

**Statement of the Problem**

The problem for this study was secondary laboratory teachers' student grouping decisions and the effects of group typifications on teachers' expectations for the groups.

**Purpose of the Study**

The purpose of this study was to describe the influences on teachers' grouping decisions in a naturally occurring secondary school setting. Grouping decisions and teachers' responses to the groups and expectations for them were described for a six-weeks grading period, and inferences related to grouping practices were developed. Specifically, the grouping practices of two Homemaking I Foods teachers and two Biology I teachers were studied during the planning and
implementation of six actual class laboratory sessions by each teacher.

Research Questions

The following research questions were addressed through this study.

1) In what ways are secondary laboratory subject teachers' grouping decisions influenced by student characteristics such as ability, achievement, behavior, sex, and class participation?

2) In what ways are these teachers' grouping decisions influenced by factors such as specific ecological contexts or academic task structures?

3) In what ways are teachers' responses to and expectations for groups influenced by the typified characteristics of the group?

Assumptions

The major assumptions underlying this study were as follows.

1) The teacher is a rational and intelligent professional who uses decisions as an important tool of teaching (Shavelson & Stern, 1981).

2) Observable teaching behaviors and the thought processes behind them are closely related (McNair & Joyce, 1978-1979).
3) Understanding teachers' behavior can be enhanced by tracing the mental processes that direct their decisions (Shavelson & Stern, 1981).

4) "Human behavior is complexly influenced by the context in which it occurs" (Wilson, 1977).

Limitations

This study provided detailed descriptions of teachers' grouping decisions in one school. Careful examination of the ecological context and its influence upon teachers' decisions in this setting makes it impractical to make broad generalizations from this study to other contexts. Data were collected through documents (e.g., lesson plans, seating charts, and curriculum guides), interviews, field notes, and stimulated recall using audiotape recordings of pre-lab planning sessions. The analysis of data was qualitative and thus has the potential for researcher bias. With this consideration plus the fact that it is risky to expect exact self-reports of actual mental processes, the conclusions of this study should be treated as tentative hypotheses and explanations subject to further study and not as tested generalizations.

Unless a participant observer is accepted into the research setting, his or her presence may affect the behavior of those being observed and inaccurate data may result (Brandt, 1972). By conducting the study in the school where
she is employed, the researcher hoped to lessen this problem. In the course of her job responsibilities, she is in every class frequently and students tend to take her for granted. For this reason it was believed that the students and teacher would behave almost as if she were not there so that accurate data could be collected.

Because of the necessary timing of the study, the biology classes were not new classes, but were classes that formed at the beginning of the first semester of the 1982-83 school year. The teachers' familiarity with these students may have influenced their grouping decisions in a way not possible in new classes such as the homemaking foods classes. This factor could provide a comparison of grouping practices based on familiarity and non-familiarity with the students. In addition, the elective nature of the homemaking classes means that the classes may have differed in student composition. Finally, the descriptions of classroom activities as they occur in a naturalistic setting should not be considered as models for ideal classroom practices.

**Definition of Terms**

1) **Stimulated recall** - A technique in which the subject listens or views a pre-recorded audio-tape or video-tape of an activity that occurred previously, then is asked to verbally report what he or she can recall of his or her thoughts during the activity.
2) **Biology I course** - A laboratory oriented course for the study of cellular and organismal structures and their functions. This is a required course in the curriculum.

3) **Homemaking Foods I course** - A laboratory oriented course consisting of the study of basic food preparation techniques through planning, preparation, and serving of simple meals. This is an elective course in the curriculum.

4) **Academic task structure** - A term used to describe an academic goal and a set of operations to achieve that goal (Doyle, 1979).

5) **Grounded theory** - Theory that is developed and refined as data are collected, thereby minimizing preconceived hypotheses.

6) **Naturalistic Approach** - An investigation of phenomena within and in relation to their naturally occurring contexts (Willems & Rausch, 1969).

**Background and Significance of the Study**

**Teacher Decision Making**

Decisions made by teachers form the core of schooling. Teaching has been defined as "the process of making and implementing decisions, before, during, and after instruction, to increase the probability of learning" (Hunter, 1979). Preactive decisions, made before or after instruction, are an important facet of the teacher's planning activity. In making preactive decisions, the teacher may
consider the nature of the instructional task (Zahorik, 1975), selection of content to build tasks (Clark, 1978-1979), environmental constraints, individual student abilities, needs, and wants, and curricular demands (Morine-Dershimer, 1978-1979; Borko, Cone, Russo, & Shavelson, 1979).

When tasks are selected to fit students' abilities, the teacher frequently uses grouping as a tool for making planning and instruction easier. Planning can then be focused on the group and not individuals (Barr, 1975; Shavelson, 1982). Several studies have reported that classroom management is a primary concern in planning (Smith & Sendelbach, 1979), especially in grouping students (Mintz, 1979).

Interactive teaching includes everything that goes on during actual class time (Yinger, 1979). Research suggests that teachers' preactive decisions and the resulting routinized mental images serve as a guide for interactive decisions, or may even minimize conscious decision making during interactive teaching (Clark & Yinger, 1979; Joyce, 1978-1979; Morine-Dershimer, 1978-1979). Teachers use routines to make classroom activities and student behavior predictable (Shavelson & Stern, 1981) so they have time to concentrate on helping particular students (Morine-Dershimer, 1978-1979) and to observe and react to non-routine behavior (Clark & Yinger, 1979; Joyce, 1978-1979).
Teachers strive to maintain established routines (Morine-Dershimer, 1978-1979). They are aware that changing a routine creates information-processing overload for them and behavior problems from the students (Shavelson & Stern, 1981). Thus, the impetus is to fine-tune the activity and continue with the routine when possible.

**Grouping Decisions**

Because of the range and variety of the characteristics of pupils in a class, grouping can reduce considerably the load on the teacher. Teachers frequently group on the basis of ability and are often reasonably accurate in their estimates of the students' general ability (Shavelson, 1982). Barr (1975) found that teachers categorized students into low, medium, or high ability groups for reading. A number of studies indicate that teachers consider achievement as well as ability when grouping for reading and math classes (Russo, 1978; Borko, 1982; Shavelson, 1982) and many teachers also pay attention to sex, class participation, and behavior (Russo, 1978). Four studies of grouping concluded that teachers also may be influenced by school environmental factors and teachers' conceptions of the instructional task (Shavelson, Cadwell, & Izu, 1977; Borko, Shavelson, & Stern, 1981).
Task Structures

Although all classrooms have similar physical characteristics such as blackboards, desks, teachers, pupils, and an organized curriculum, the task structures are very different from classroom to classroom. The basic properties of classroom tasks are organized around the size of the work group, the number of different tasks active at one time, the amount of pupil choice concerning the task, and the type of evaluation for the task (Bossert, 1977). Each task structure consists of a goal and a set of operations to achieve that goal. What students learn is a function of the task structures they select, their perceptions of them, and their ability to achieve them (Doyle, 1979b).

Doyle explained task structures as "an exchange of performance for grades." This exchange is filled with ambiguity and risk for the student as a result of not knowing what the teacher expects nor his or her ability to perform to the teacher's expectations. Therefore, students develop strategies to reduce the ambiguity and risk involved (Brophy & Good, 1974; Mehan, 1974; Nolan & Nolan, 1976). These strategies influence the students' classroom behaviors (Doyle, 1979a) and thus are a consideration in teachers' interactive and preactive classroom decisions (Shavelson et al., 1977; Borko et al., 1981).
Methodology

Current theory posits that the visible behaviors of teaching and the cognitive activities which accompany them are inextricably woven together (McNair & Joyce, 1978-1979). Thus, research into teachers' decision making processes requires a look into teachers' minds to see what thought processes are taking place to direct their decisions. This type of research is based upon the assumption that an "inner understanding" assists in studying human behavior more deeply than is possible merely from a study of overt behavior (Rist, 1979).

The naturalistic procedures used for this type of research are based on ethnography, a form of research widely accepted in the field of anthropology. The principal difference between ethnography and traditional experimental research lies in the development and use of hypotheses. Experimental research begins with specific hypotheses which the researcher attempts to test. Conversely, ethnographic researchers collect data and attempt to generate hypotheses from the patterns and anomalies present in the data (Overholt & Stallings, 1976). Among methods used for this type of research are the stimulated recall technique and the practice of collecting rich descriptive data (field notes). Stimulated recall is based on the assumption that teachers are capable of articulating their thought processes and that they are willing to do so. To use stimulated recall, the
researcher audio-tapes or video-tapes the teacher in actual classroom situations. As soon as is practical after the lesson, the tape is played back to the teacher to stimulate recall of the mental activities that occurred during specific incidents. The teacher's recall of his or her thought processes is then analyzed by counting specific cue items or by developing a flow chart to be used for computer simulations (Shavelson & Stern, 1981). With care in planning, the stimulated recall technique can provide successful results (Morine-Dershimer & Vallance, 1975; McNair, 1978-1979).

Collecting field notes provides rich narrative descriptions of classroom processes and events as they occur without interrupting the natural flow of activities (Ponder & Hinely, 1982). Field notes may be analyzed by searching for patterns of behavior and for anomalies that may occur (Doyle, 1977), or they may be used as the basis for stimulated recall interviews in order to trace teachers' thought processes (Brandt, 1972).

**Summary**

Teachers' grouping decisions are an important part of their preactive and interactive decisions, yet virtually no research has concentrated on the grouping practices of secondary teachers. This study investigated teachers' grouping decisions in Biology I laboratories and Homemaking
Foods I laboratory classes. The methods of interview, ethnography, and stimulated recall were used, as they appeared to be the most effective methods of studying teachers' decision making processes.

Research Approach

The naturalistic approach was chosen for this study for the following reasons.

1) The goal of this study was description of the grouping decisions made by a small sample of teachers of science and homemaking foods courses. The intent was to add to the pool of knowledge about the cognitive decision-making processes of teachers.

2) A naturalistic approach was used because it can provide detailed information on numerous interrelated factors such as pupil characteristics, task structures, and teacher beliefs.

Behavioral Setting

This study was conducted in a large suburban school district in North Central Texas. The phenomena of interest in this study are the relationships that exist between environment and behavior (ecology of behavior). In order to provide a basis for examining these relationships, it is necessary to describe the physical setting for the study and other
contextual factors which may influence grouping decisions made by teachers.

The school in which this study was conducted is one of four high schools in the district. The seven-year-old high school is the newest in the district and had a student enrollment for the 1982-1983 school year of approximately 1,900 students. Socioeconomic status of the students ranges from lower middle class to upper middle class. There were 105 full-time teachers and four part-time teachers on the staff.

The homemaking department consisted of three regular homemaking teachers and two occupational homemaking teachers. Five sections of Homemaking Foods I were taught in the spring, 1983, semester with an average enrollment in those sections of twenty. All three regular homemaking teachers taught Homemaking Foods I during the spring semester.

The homemaking department is located on the second floor of the school building and is arranged in a semi-open concept (Appendix A). The foods laboratories are separated by a demonstration area and free-standing, moveable bulletin boards. Each laboratory consists of six kitchen units that have a sink with garbage disposal, a countertop range, wall oven, and wall-mounted storage cabinets. One kitchen contains a dishwasher and a refrigerator, and a second refrigerator is in another kitchen. These large appliances
are used by all six kitchen units. The kitchen units are arranged around the outer wall of the laboratory so that the center floor area serves as a dining room. Six round tables, each seating four, comprise the dining area.

The science department had six biology teachers who taught a total of twenty-three sections of regular Biology I. Biology is a two-semester course that requires completion of both semesters for credit. Enrollment in Biology I for the 1982-83 school year was 529 students with an average of twenty-three students per class. Students remained with the same teacher for the second semester unless scheduling problems occurred.

The science department is in the same second-floor wing where the homemaking department is located. There are five laboratories in which Biology I is taught. The laboratories are arranged in a back-to-back manner with a partial wall separating two classrooms (Appendix B). Each room has an outside entry and a locked storage closet for supplies. The classroom area has a demonstration table/desk for the teacher and seating for twenty-four students. Two chalk boards are on the wall behind the teacher's desk.

The laboratory area in each science classroom has two free-standing lab tables around which twelve students can work. The center of the lab table has a sink, and there are individual storage drawers for student materials below the
table top. Extra storage drawers and a supply room are on the periphery of the laboratory.

Population

The subjects for this study were two Biology I teachers and two Homemaking Foods I teachers from one of the four high schools in the district (N=4). These teachers are white females with experience ranging from first-year teacher to twenty-four years experience, and their ages range from the mid-twenties to the mid-forties.

Data Collection

This study is naturalistic and descriptive in nature and was conducted during the second semester of the 1982-1983 school year. The variables of interest were the internal (e.g., teacher beliefs and organizational preferences) and external (e.g., student characteristics and task structures) factors influencing the teachers' decisions concerning preactive grouping of students, as well as their reactions to the student groups during the interactive teaching phase.

Data collection proceeded as follows: First, audio-tape recordings were made of the Homemaking Foods I laboratory planning sessions. During these sessions, student groups were given the requirements and restrictions for the forthcoming lab and then each group was permitted to select a
recipe and finalize plans for the lab. While planning proceeded, the teacher went from group to group to check on progress and guide the groups in the desired direction. Each homemaking teacher was studied while planning three different labs for two different sections of foods classes (2 teachers x 2 classes x 3 labs = 12 recorded sessions). Field notes were made in at least one foods preparation lab for each homemaking foods class for the purpose of gaining a visual feel for the class and adding richness to the illustrative data.

Second, a stimulated recall interview was conducted with each Foods I lab teacher as soon after each recorded session as possible. The interviews focused on the teachers' decisions with regard to assignment of students to groups, tasks that were specified for each group, and interaction with the groups by the teacher. Interview questions included in-depth questions to probe the teacher's responses to student groups during the laboratory planning session (see Appendix C). Stimulated recall interviews were, however, designed to include enough questions on topics other than grouping decisions to prevent the teachers from discerning the major focus of the study.

Third, narrative descriptions (field notes) of Biology I labs were made of the same number of labs as the recorded planning sessions for Homemaking Foods I labs (2 teachers x 2
classes x 3 labs = 12 sets of field notes). Field notes focused on the teachers' instructions to groups and interaction with them and to any modification of grouping that was observed. The field notes provided the basis for a stimulated recall interview of each teacher as soon after the observed laboratory session as possible.

Fourth, a document collection from homemaking and biology teachers was made to ascertain the nature of tasks, range of possible group arrangements, and curricular constraints. Documents consisted of lesson plans, seating charts, and curriculum guides.

Finally, structured interviews to determine self-reports of grouping practices and rationale for practices were conducted with teachers of Homemaking Foods I, Biology I, Language Arts, Social Studies, and Fine Arts (see Appendix D). These interviews were conducted after the data were collected in foods lab and biology lab classes so that teachers were not aware of the focus of the study during the audio-recording and field note sessions.

**Data Analysis**

Transcripts of interviews, stimulated recall sessions, and narrative descriptions (field notes) were analyzed for references to factors which influenced grouping decisions and teacher expectations of groups. Trial interviews and their
analyses were conducted prior to the actual study for the purposes of uncovering possible errors in planning the research procedures and to gain experience in the interview technique. To gain experience in taking field notes, the researcher and a colleague recorded activities in the same classroom on several occasions, following field note procedures recommended by Brandt (1972), Erickson (1979), and Doyle (1977).

Field note collection proceeded in the following manner. The observer was seated in an out-of-the-way place in the laboratory before the tardy bell rang. Only a notepad, pencil, watch, and diagram of the room were used for note taking. When the tardy bell rang, the observer began to record events as they occurred, marking the time and indicating the location of events in the room. Notes were taken in a combination of shorthand and longhand. Only observable behaviors were recorded; if inferences were made, they were recorded in brackets to indicate their status.

To be effective, the naturalistic researcher must take precautions to lessen the possibility of observer bias and the intrusiveness of the observer on the setting to be described. Care must be taken to record comprehensive, objective descriptions of the activities being observed without attempting interpretation of the events as they occur. Frequent observer visits to the setting being studied tend to lessen observer intrusiveness.
The field notes that were recorded by the researcher and a colleague for the purpose of gaining experience were taken in the biology labs that were included in this study. Thus, observer intrusiveness in those laboratory classes may have been lessened prior to the beginning of the study. Comparison of the two sets of notes increased the descriptive adequacy and accuracy of the accounts of classroom activities. Specifically, the data analysis was accomplished as described in the following paragraphs.

Transcriptions were made of all interviews and audio-taped planning sessions. The validity of transcriptions were verified by two individuals who were not involved in the study, but have extensive background in research. Those two are the evaluators from the research department of the school district. When transcribing, irrelevant conversational items were eliminated and redundancy was summarized for the sake of brevity. Data for each teacher was compiled, examined, and coded for references to grouping decisions. A coding system consisting of categories drawn from the data was developed to aggregate and reduce the data (Glaser & Strauss, 1967). For example, if a teacher mentioned the ability of a specific student in a group, this comment was coded under the category of "Student - ability" (see Appendix E). Through an iterative analysis process, grouping patterns were developed. The same process was used to examine teachers' expectations of groups.
Documents collected from the teachers were analyzed to determine such things as the teachers' understandings of the task structures, possible constraints on grouping and the like. Results of the analysis were used during the stimulated recall interviews in the data collection phase, and they were also used to supplement information gathered from other phases of data collection.

After these procedures were completed for each teacher, the individual grouping patterns and expectation standards were compared and contrasted for similarities and differences. The interviews of teachers in other academic areas were also examined for common characteristics. Tentative explanations and hypotheses were developed from an examination of the factors that were identified as common teacher decision-making processes.
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Chapter II

Review of Literature

Teachers have been characterized as practitioners who function through the process of decision-making (Borko, Cone, Russo, & Shavelson, 1979). During a routine day a teacher may make decisions about the selection of goals, specific activities and materials to reach those goals, student evaluations, room arrangements, grouping of students, classroom management, parent conferences, and many others. A repertoire of varied alternatives for decision-making is developed by each teacher from his or her own presuppositions, teaching experience, abilities, attitude, values, and personality (Moore, 1979).

The classroom is a collection of individuals who all have different needs and beliefs as well as varied learning abilities and personalities. The teacher is faced daily with the task of creating an effective learning environment out of a complex situation (Doyle, 1980a). One strategy that teachers use to reduce the complexity of the classroom is grouping (Borko, Shavelson, & Stern, 1981; Shavelson, 1982). A number of things may influence the teacher's grouping ploys, including the knowledge the teacher has of the students, the students' behavior in class, the
limitations of the physical environment, local and governmental requirements, and the task structure of the curricular materials (Shavelson, Cadwell, & Izu, 1977; Russo, 1978; Shavelson & Stern, 1981; & Borko, 1982).

This review summarizes the general area of research on teacher decision making and the specific area of teacher decisions related to grouping of students. An investigation of management demands and task structures and their relationship to teachers' grouping of students will be included as further insight into the influences on teachers' grouping practices. Finally, this review of literature will summarize the methodology used in the collection and analysis of data related to teachers' decision making processes, and examine cautions with this type of research.

Research on Teacher Decision Making

Research in the area of teacher thinking and behavior has shifted from an early behavioral model to one that is currently described as an information processing model (Joyce, 1978-1979b). Early behavioral models examined the visual behaviors of teachers and students and related them directly to outside stimuli with which they were in contact. Later studies of teaching behaviors related teaching effectiveness to personality traits or characteristics of the teacher (Peterson & Walberg, 1979). Then effectiveness was believed to be a function of teaching
methods. Later studies related teacher behavior to student achievement, and the resulting process-product studies became the first really effective measures of teacher effectiveness (Medley, 1979).

In addition to showing that patterns of teacher behavior could be related to pupil learning (Rosenshine, 1971), process-product research introduced the theory that effective teachers functioned through the use of a repertoire of competencies. A competency-based teacher education model led educational researchers to realize that teachers not only must have a repertoire of competencies, but also must know when and how to use it. From this realization, today's research on teacher effectiveness centers on teacher decision-making (Medley, 1979). Proponents for this type of research argue that strictly behavioral models were conceptually incomplete because they did not allow for teachers' values, goals, and beliefs to enter into their behaviors in any way (Shavelson & Stern, 1981).

Studies of teacher decision-making are based on the assumptions that teachers make reasonable decisions in view of the conditions they face, and that their behaviors are guided by their thoughts, judgments, and decisions. Conditions of immediacy and complexity (Doyle, 1980b) may temper the decisions made, but it is believed that rationality prevails in spite of these characteristics of the classroom (Shavelson & Stern, 1981). Dettre (1970) suggests
that more of teachers' decisions are unconscious than conscious.

Much of the current research on teacher decision-making likens teachers' thoughts, judgments, and decisions to the information-processing of computers (Joyce, 1978-1979b; Shavelson & Stern, 1981). As described by Newell and Simon (1972) the human brain functions like a computer. An individual collects information sequentially and processes it in a limited capacity storage similar to a computer's short-term memory. If the information is predictable, it can be processed in "chunks," thereby speeding up its transfer to a longer term memory. Information is stored in long-term memory in a network fashion that links new information to previously stored information. Recall of stored information is accomplished by a series of connecting links that permit the desired information to be remembered.

In 1978 Joyce (1978-1979b) reported that the study of information processing in teaching, and specifically in teacher's decision making, was still in the exploratory stages. At that time he suggested four basic elements of information processing that related to educational research. They were: 1) the flow of cues from students, 2) perception of the cues by the teacher, 3) interpretation of the cues with some distortion likely, and 4) processing of the cues to the teacher's field of concern. Joyce explained that the processing of information resulted in behavior by
the teacher, but that seldom were the four elements clearly discernable for study. He recommended further research to "put the pieces together in a preliminary framework."

Shavelson and Stern (1981) have since proposed a model of teacher decision making that utilizes the concept of information processing by recognizing that a teacher's previously stored knowledge is combined with other factors that influence decisions (Figure 1).

![Figure 1. Model of Teacher Decision Making](from Shavelson & Stern, 1981)
This model describes a teacher's decisions as dependent upon four basic factors: 1) information about students, 2) individual teacher characteristics, 3) nature of the instructional tasks, and 4) the classroom and school environment. The model is circular in order to show that the factors that influence a decision are likely to change somewhat as a result of the teacher's behavior. For example, when the instructional task for a classroom involves group work, knowledge about the students may influence the teacher's decisions about placement of the students into groups. If a student with low self-confidence is placed in a group where he or she achieves success, that student may make a positive gain in self-confidence, and thus change one factor involved in the teacher's decision process.

Decisions made by teachers are frequently classified as either preactive decisions or interactive decisions. Preactive decisions encompass all those made before students enter the classroom and after they leave, while interactive decisions are those made during actual classtime (Jackson, 1968; Yinger, 1979). Research has indicated that content decisions and instructional activities are the first considerations in most preactive planning (Shavelson & Stern, 1981). Results of several studies suggest that teachers' preactive decisions and the resulting routinized mental images serve as a guide for interactive decisions, or may even minimize conscious decision making during interactive

Information About Students

Teachers attend to a variety of information about students in making both preactive and interactive decisions. The student brings with him or her special abilities, needs, and wants that must be considered and the teacher has available many instructional aids to help the student reach specific educational goals (Morine-Dershimer, 1978-1979b; Borko, et al., 1979). To make choices among these aids, teachers use the information they have available about students and combine it with their own beliefs and goals, the nature of the instructional task, and environmental constraints (Shavelson et al., 1981).

Information about students may come from school records, anecdotal accounts of other teachers, standardized test scores, parents, the students themselves, and observations made by the teacher (Belli, 1979; Borko et al., 1979). In order to control this large amount of information, teachers make judgments about the students' cognitive, affective, and behavioral states (Shavelson et al., 1977; Morine-Dershimer, 1978-1979a). These judgments about students are the basis for teachers' decisions instead of the original information the teachers had about the students (Shavelson, 1976;

Shavelson et al. (1981) posit that teachers make their judgments about students by using a few heuristics and their own attributions for the causes of events. Thus, if a teacher attributes student ability, effort, and classroom behavior (Borko & Shavelson, 1978; Borko, 1982) to be causes of achievement, the teacher may tend to use these same attributes as a basis for judging students (Nisbett & Ross, 1980), and ignore all other knowledge available about that student (Borko, 1978; Cone, 1978; Russo, 1978, Shavelson & Borko, 1979; Shavelson et al., 1977). Heuristics are used due to information-processing limitations. When used to classify students, they have often been found to be successful (Morine-Dershimer, 1978-1979a), but not always (Shavelson, et al., 1977; Nisbett & Ross, 1980). For example, if a student is popular, polite, and well dressed, the teacher may classify that student as a good student academically, with no other information for that judgment, which may or may not be accurate.

Teachers use an anchoring heuristic to make initial estimates about students and then revise the initial judgment when necessary (Shavelson et al., 1981). Research indicates that the adjustments to initial opinions are typically inadequate (Dusek, 1975) and the initial opinion is difficult to overcome (Shavelson et al., 1977). Marx and Peterson
(1979) studied teachers' perceptions of students and found that the types of cues used to make judgments about students vary considerably and that teachers differ quite a bit in their accuracy.

In the South Bay Study, Morine-Dershimer (1978-1979c) found that teachers' conceptions of pupils were influenced by the time of year, the observational setting, and the curriculum-management system used by the teacher. The individual student characteristics that teachers considered were: 1) ability/achievement, 2) involvement and instruction, 3) personality, 4) peer relationships, 5) activity orientation, and 6) growth/progress.

While Morine-Dershimer found that teachers do consider their students while planning, Peterson, Marx, and Clark (1978) found little evidence to support this. A "think aloud" study of teacher planning found that, generally, the greatest portion of planning statements concerned the subject matter and not the student. It has been suggested by other researchers, however, that Peterson's findings may be a result of the methods used. Students were randomly assigned to teachers and the teachers did not have access to student information (Shavelson et al., 1981).

As teachers plan, they develop routines that serve to reduce the load on the teacher by making classroom activities and student behavior predictable (MacKay & Marland, 1978; Joyce, 1978-1979; Morine-Dershimer, 1978-1979b; Clark &
Yinger, 1979). This permits classroom activities to "flow," leaving the teacher free to concentrate on particular students (MacKay & Marland, 1978; Morine-Dershimer, 1978-1979b) and on unexpected changes in the planned routine. Specific routines are developed for the purpose of interaction with students (Morine-Dershimer & Vallance, 1975; Morine-Dershimer 1978-1979b) and these routines may be based on student personality, ability, or need (Shavelson et al., 1981). For example, a teacher may use the principle of "compensation" by selecting a shy or low ability student to answer a question. A student with the need for attention may become the recipient of "strategic leniency" while "progressive checking" is used to check on students with low ability (MacKay et al., 1978; Shavelson et al., 1981).

Student ability/achievement is listed by many researchers as an important factor in teachers' pedagogical decisions (Albro & Haller, 1972; Cone, 1978; Borko, 1978; Borko et al., 1979; Clark & Elmore, 1979; Everhart, 1979; MacKay et al., 1978; McNair, 1978-1979). Brophy and Good (1970) found that teachers' interactions with students are influenced by their estimates of student ability. Shavelson (1976) reports that teachers use knowledge of student ability or entry level when making planning decisions and also when making interactive decisions to change the course or direction of instruction. When making judgments about student ability, teachers are sensitive to the reliability of
information available to them and will revise their estimates in the appropriate direction when given more information (Shavelson et al., 1977). A study related to the selection of anchoring heuristics provided evidence that teachers select their heuristics on the one factor most relevant to the estimate or heuristic (Borko et al., 1979). Estimates of the likelihood that a student would complete mathematics and reading curriculum on schedule were based upon past mathematics and reading achievement. Estimates that a student would be a behavior problem were based on past classroom behavior.

Numerous studies have identified student behavior as an important dimension that influences teachers' decisions. A teacher's concern about a student's behavior may be based on the student's reputation for behaving or misbehaving, or it may be based on the reality at the time (McNair, 1978-1979). Kounin (1970) identified "acceptable student behavior" as one of seven features that characterized instructional activities and teachers' corresponding decisions. In a study of teachers' decisions related to grouping for reading instruction, Russo (1978) found that, among other things, teachers pay attention to problematic behavior.

In a Beginning Teacher Evaluation Study (BTES) conducted by Morine-Dershimer (1975), teacher decision making was examined in a semi-controlled laboratory setting. That study showed that pupil behavior, in a disciplinary sense, received
strong emphasis by teachers in the study. In a later study of relationships between the teaching styles of teachers and the types of information they seek and use for teaching, however, Morine-Dershimer (1979) found infrequent mention of pupil behavior as an important type of pupil information. This difference was explained as a result of teacher familiarity with research techniques in the later study which made teachers less concerned about the impression made by student behavior. Conversely, teachers in the BTES study were not used to having research conducted in their classrooms and thus were more concerned about pupil behavior.

Behavior problems are one of the factors most likely to interrupt a teacher's routines (Peterson & Clark, 1978). Yinger (1979) found that teachers adjusted their parameters of acceptable behavior from activity to activity in terms of the amount of talking, overall noise, and student movement that was acceptable. Student behavior has been found to be quite important to teachers making grouping decisions. This aspect of behavior will be investigated in a later section on grouping decisions.

**Instructional Tasks**

Instructional tasks are the focus of much of the planning that teachers do, and their implementation forms the basis for successful or unsuccessful teaching (Joyce, 1978-1979a; Morine-Dershimer, 1978-1979b). Doyle (1980) has
defined instructional tasks as consisting of a set of goals, a set of givens such as student characteristics or facilities, and a set of operations to reach those goals. To most teachers, however, tasks consist of content, materials, and activities (Zahorik, 1975; Morine-Dershimer, 1978-1979b; Peterson et al., 1978), all requiring decisions.

Content, the subject matter to be taught, requires teachers to make decisions about how the textbook and curriculum can be correlated. It also requires teachers to determine how many other sources, if any, are used (Clark, 1978-1979; Clark & Yinger, 1979). Another element of tasks that teachers must consider is what materials to select for students to manipulate and use (Zahorik, 1975; Peterson et al., 1978; Morine-Dershimer, 1978-1979b). A third element, activities, requires the teacher to make decisions about sequencing, pacing, and timing the elements of content and materials (Carnahan, 1979; Mintz, 1979). While making decisions about the selection of content, materials, and activities, teachers must also consider the curricular goals (Clark & Yinger, 1979), the student's abilities, needs, and interests (Borko, et al., 1979; Mintz, 1979; Morine-Dershimer, 1978-1979b), and the social context of the class (Florio, 1979; Janesick, 1978).

Borko et al. (1979) posit that the nature of the instructional task may influence teachers' decisions in several ways. The nature of the subject matter and the goals
of a particular class can cause great variance in the restrictions imposed upon a teacher. For example, a science laboratory and a world history class will each impose unique limitations on the teacher that will require different decisions about materials and activities. Teachers may, because of the nature of the instructional task, select different cues about students when planning classroom activities. For example, a teacher may decide to group slow students with those of greater ability when the science lab is a complicated one requiring a high level of skill performance.

Tasks are translated by the teacher into a mental image or plan (Shavelson, 1973; Morine-Dershimer, 1978-1979b) that serves to guide the teacher's behavior during classtime. The plan is routinized and is conducted as scheduled unless something goes wrong (Yinger, 1979; Joyce, 1978-1979a; Morine-Dershimer, 1978-1979b) and causes the teacher to consider other alternatives (Clark & Yinger, 1979; Joyce, 1978-1979b; Peterson & Clark, 1978).

When routines go awry, usually due to student behavior, teachers can choose to continue the lesson or make changes (Snow, 1972; Joyce, 1978-1979a; Peterson & Clark, 1978). Morine-Dershimer (1978-1979b) described this situation as a discrepancy between teacher plan and classroom reality and found that the amount of discrepancy was a critical variable in the information-processing and decision making of
teachers. Research studies suggest that most teachers do not change the lesson (Peterson & Clark, 1978; Joyce, 1978-1979a; Clark & Yinger, 1979), but may resolve to make changes in the future. Goodlad, Klein, and Associates (1970) observed this reluctance to make changes and suggested that teachers tend to adjust the acceptable range of student behavior so that behaviors will fit into their parameters and they will not have to make on-the-spot changes. This reluctance to make changes may be because teachers know that changes can cause behavior problems.

While studying the organization of instructional tasks in elementary school classrooms, Bossert (1977) found that the task organization greatly influenced the types of control exercised by teachers. This study identified three distinctive patterns of classroom task organizations: recitation, class-tasks, and multi-tasks. Recitation is a task that involves the entire class in a single task -- that of answering oral questions asked by the teacher. Class-tasks are comprised of tasks that every student must complete independently, such as a worksheet or a test. Multi-tasks involve more than one task being worked on simultaneously; for example, small group work, arts, and crafts. Bossert concluded that the control exercised by teachers ranged in a continuum from strong control over recitation to less control over class-tasks, and loose control over multi-tasks. He suggests that the basic properties of classroom tasks are
organized around the size of the work group, the number of different tasks active at one time, the amount of pupil choice concerning the task, and the type of evaluation for the task. Current descriptions of secondary science classes support Bossert’s elementary school findings on the secondary level. Cessna (1973), Lunetta and Tamir (1979), and Sanford (1983) describe science classes as having great complexity and multiple management demands because of the requisite labs and small group work.

While teachers view classroom tasks as being the basis for their preactive planning (Zahorik, 1975; Yinger, 1977; Clark & Yinger, 1979), students' perceptions of tasks are decidedly different. To a student, the formal structure of a classroom task is defined as "an exchange of performance for grades" (Doyle, 1979). Tasks provide the student with an organizing reference for interpreting classroom events and actions on one of two levels. The first level is an informal one in which a student may choose to participate in discussions, answer questions, or complete routine seatwork. He or she will receive evaluative feedback on these activities at regular intervals. The second level, a more formal one, does not give a student any choice about participation -- it is required. At this level, tests that require specific answers are common, and evaluations are usually recorded.
To survive in the complex classroom environment, therefore, the student must develop strategies to help him or her cope with the performance-grade exchange of classroom tasks. This exchange is filled with ambiguity and risk for the student as a result of not knowing what the teacher expects nor his or her ability to perform to the teacher's expectations. The results of recent studies suggest that students use strategies to control the number and type of response opportunities they have in class (Nolan & Nolan, 1976), and to regulate their own levels of participation in classroom recitations (Brophy & Good, 1974).

Classroom tasks are the most important consideration in most teachers' planning activities (Joyce, 1978-1979a; Morine-Dershimer, 1978-1979b), and they also play a leading role in the students' perceptions of school (Doyle, 1979). Teachers use tasks to maintain a smooth flow of activities by routinizing them (Yinger, 1977; Joyce, 1978-1979a; Morine-Dershimer 1978-1979b), and they make changes reluctantly (Peterson et al., 1978; Joyce, 1978-1979a; Yinger, 1977). The nature of the instructional task influences teachers' decisions both directly and indirectly (Borko et al., 1979) by affecting management strategies (Bossert; 1977) and the selection of materials and activities (Borko et al., 1979). What students learn is a function of the task structures they select, their perceptions of them, and their ability to achieve them (Doyle, 1979).
The Classroom and School Environment

The classroom environment is the social and physical context of the classroom (Joyce, 1978-1979a), while the school environment is comprised of all the things, such as school policies, that set boundaries on teachers' pedagogical decisions (Barr, 1980). The combination of the classroom and school environments creates a social context that influences classroom events (Cohen, 1979). Classroom environment is essentially under the control of the teachers who continually negotiate classroom goals with the students (Janesick, 1978; Everhart, 1979; Cohen, 1980). This creates a cyclical process causing the classroom environment to influence teachers' judgments and decisions which in turn influence the classroom environment (Shavelson et al., 1981).

Research studies have indicated that teachers attempt to establish a sense of community in their classrooms from the beginning of the school year (Janesick, 1978; Florio, 1979). Students learn to evaluate the reward structure of their community by either observing or experiencing frequent teacher evaluations (Sieber, 1976; Cohen, 1979; Doyle, 1980), and then use their acquired insight to negotiate for academic rewards (Cohen, 1980; Doyle, 1980).

Cohen (1980) suggests that the social order of the classroom is a function of the negotiations between teacher and students over the use of the classroom time and space. A
study by Everhart (1979) would seem to support this theory. Everhart found that teachers focused on the instructional goals with the knowledge of their students influencing their decisions while students tended to focus on the social interactions of the classroom more than the instructional goals. In further support of Cohen's theory, McNeil (1980) found that fears of management problems caused teachers to reduce their instructional goals to a level that guaranteed teacher control. Tom (1973) concluded that teachers recognize the influence of students on the classroom environment and are particularly careful to consider student reactions when selecting a curriculum.

In a three year study designed to sample the "texture" of the classroom, Doyle (1977) identified several characteristics or realities that further explain the influences a classroom and school environment have on a teacher's pedagogical decisions. These characteristics are described as multi-dimensionality, simultaneity, immediacy, unpredictability, and history. Doyle explains these terms as meaning that many activities take place daily in the classroom and often occur at the same time; a teacher frequently has to make on-the-spot decisions with little or no time to plan or expect events; and these activities continue over a period of time so that decisions made at one time may have consequences for action in the future.
In order to function within the distinctive characteristics of the classroom, Kounin (1970) believes that teachers develop strategies to help them manage the environmental demands they face daily. These strategies are identified as withitness, overlap, group focus, and movement management. A teacher with withitness is aware of classroom events as they occur and is able to communicate this awareness to the students. Overlap indicates the ability to handle more than one activity or event at a time, while group focus is the ability to involve as many students as possible into each activity. Movement management describes the control of activities and the change from one activity to another.

There is some indication that differences in teacher philosophies and organizational patterns do not necessarily change the ways teachers control students (Bossert, 1977). Several different studies produced evidence that the type of activity (Gump, 1969), and the way activities were scheduled (Kounin & Gump, 1974; Kounin & Doyle, 1975), influenced teachers' decisions about the amount of pupil involvement, and thus behavior. Personal philosophies and organizational patterns for teaching did not appear to enter into the realm of influences at all.
Individual Teacher Characteristics

There are conflicting reports about the influence of teachers' personal characteristics on their pedagogical decisions. Most research lists one or more influential characteristics, but Shavelson et al. (1977) found indications that if a teacher has relevant information available to guide decisions, he or she will use that information. However, in the absence of relevant information, teachers tend to fall back on their beliefs about education and teaching to guide their decisions. Three studies (Borko, 1978; Russo, 1978; Cone, 1978) examined the effects of teachers' beliefs on their decisions; some similarities and differences were found. Russo (1978) argued that teachers' beliefs were not related to their decisions about lesson plans, nor for grouping students in reading and math. Cone (1978) reported no evident relationship between decisions about behavior management and teachers' beliefs. Conversely, Borko (1978) found evidence of some connection between beliefs and teacher behavior. The strength of traditional beliefs appears to have a relationship to teachers' task and activity plans. For example, teachers with stronger traditional beliefs were more likely than those with weak traditional beliefs to use peer tutors, refer weak students for testing and special placement, judge social competence and emotional growth goals as important for
students, and give students less responsibility for developing their own instructional plans. All three studies found that teachers agree that basic academic skills are important.

The way teachers view subject matter also influences their decisions (Barr, 1975; Bawden, Burke, & Duffy, 1979; Duffy & Metheny, 1979; Metheny, 1980). A study of informal reading models (Pearson & Kamil, 1978) found that teachers ascribed to a specific model and then made their instructional decisions to fit their selected model. They may also make their instructional judgments and decisions based on factors such as their experience in teaching a specific subject and their conceptions of how that subject should be taught (Bawden et al., 1979). A replication of the Bawden et al. (1979) study indicated that teachers categorized students into either high socioeconomic status or low socioeconomic status and then geared their instructional strategies to their conceptions of these two groups (Methany, 1980).

The cognitive styles of teachers are believed to be another cause of differences in the way teachers make decisions (Hunt & Sullivan, 1974; Morine & Vallance, 1975; Peterson et al., 1978). For example, Peterson et al. (1978) posit that teachers either have a low conceptual level (CL) or a high conceptual level. Those with low CL tend to be more productive and plan more factual subject matter while
teachers with high CL develop more abstract lessons. This supports the findings of Hunt et al. (1974) that a person with high CL perceives the environment as differentiated and integrated, and consequently plans more differentiated lessons.

Teachers have one of two planning styles, according to Clark and Yinger (1979). In a study of teaching effectiveness they identified teachers as incremental planners or comprehensive planners. Incremental planners tend to make short-term plans, concentrating on day-to-day activities. Comprehensive planners focus on the overall picture for a longer period of time.

Some individual characteristics and beliefs of teachers are believed to have an influence on their pedagogical decisions. Teachers' beliefs do not appear to be a strong influence if they have relevant information available to guide their decisions, but in the absence of relevant information they tend to fall back on their educational beliefs (Shavelson et al., 1977). Other individual characteristics that appear to influence pedagogical decisions have been identified as cognitive style (Hunt & Sullivan, 1974; Morine & Vallance, 1975; Peterson et al., 1978), traditional beliefs (Borko, 1978), perceptions of subject matter (Barr, 1975; Bowden et al., 1979; Duffy et al., 1979; Methany, 1980), perceptions of students'
socioeconomic status (Methany, 1980), and planning styles (Clark & Yinger, 1979).

**Grouping of Students**

Every day teachers face a classroom of unique individuals and must attempt to teach them all in compliance with district and state curricular demands. The problem of student diversity is a continual challenge to educators who often resort to grouping (Rosenbaum, 1980) to reduce the complexity of teaching (Shavelson, 1982). A classroom group can be viewed as a cooperative setting in which students work together to complete learning tasks (Webb, 1982).

Grouping is frequently based on a status variable such as ability (Barr 1975; Russo, 1978; Shavelson, 1982; Borko, 1982), and Shavelson (1982) reports that teachers are especially likely to use ability when grouping students for reading and math classes. Barr (1975) reported that teachers form a global estimate of students' abilities and then place them into low, medium, or high groups for reading. Russo (1978) gave second grade teachers five pieces of information about students and asked them to estimate the likelihood that each student would achieve mastery of the second grade reading curriculum. It was observed that teachers based their estimates primarily on the information about reading achievement while virtually ignoring the other variables of math achievement, sex, class participation, and behavior.
Other studies (Shavelson, et al., 1977; Shavelson & Atwood, 1977) support the belief that teachers form a global estimate of students' ability when forming reading groups, and that they are reasonably accurate in their estimates.

Variables other than ability are used by some teachers when making grouping decisions. In Russo's (1978) study, about half of the teachers used ability alone, but the other half also considered math achievement. This suggests that a more general estimate of ability may be used by some teachers. While conducting an ethnographic study of a fifth-sixth grade class, Shavelson and Stern (1981) asked the teacher to list the variables she consciously considered when making grouping decisions. The teacher listed the following variables: comprehension, work habits, decoding, responsibility, handwriting, legibility, spelling, and library skills. The teacher also mentioned social development, home environment, and rapport with others when she described each of her students. Other variables found to influence grouping decisions are school environment factors, teachers' conceptions of reading (Barr, 1975; Borko, et al., 1981; Shavelson et al., 1977), effort, personal-social characteristics (Everhart, 1979), work habits, motivation, disruptiveness (Albro & Holler, 1972), and growth/progress (Morine-Dershimer, 1979).

Shavelson (1982) warned that there are limitations to grouping on a status variable such as ability. One
limitation is that once a student is grouped, he or she tends to be "anchored" in that group in the teacher's mind. A second limitation is that grouping on one characteristic overlooks other individual characteristics and produces a tendency to see the entire group as alike individuals. Third, once a group is formed, it is limited to a prescription for instruction that makes no allowances for improvement. Thus, even though most members in a group may advance and need a higher level of instructional material, they are limited to the prescribed materials (Shavelson, 1982).

That teachers tend to see the entire group as alike individuals was found in a number of studies (Russo, 1978; Shavelson & Borko, 1979; Shavelson & Stern, 1981). Russo (1978) found that teachers choose more abstract materials and less structured lessons for high ability groups while low ability groups receive opposite treatment. The pace of the lesson is also tied to the teachers' estimates of group ability (Barr, 1973-1974). Barr found that when classes were grouped for instruction, the pace for each group was determined by the teacher's estimate of group ability, but when whole class instruction was used, the pace was geared to the slower students. This finding tends to lend support to Dahllof's (1971) suggestion that a "steering group" of low ability students controls the pace of instruction.
Shavelson (1982) explained that teachers group students not only to make instruction easier by creating homogeneous groups, but also to minimize behavior problems and to achieve social interaction goals as well. Groups serve as abstractions of the characteristics of the students in the group and tend to make the environment more predictable for the teachers, thus making it easier for the teacher to address management problems. However, the fact that a class is divided into small groups that are working independently and interacting within the groups can also create management problems for the teacher.

A number of studies designed to examine the effects of classrooms on teachers reveal that classroom effects are a function of the ways in which classroom activities are organized (Gump, 1969; Kounin & Gump, 1974; Kounin & Doyle, 1975). Bossert (1977) found that teachers use similar management techniques when students are organized in the same ways; for example, in large or small groups. These studies suggest that successful classroom management depends on the activity being carried out, the involvement of the students in the activity, and the ability of the students to perform the activity. Dividing a class into small groups increases the number of activities going on at one time and places special demands on the teacher who must monitor all groups at once and be able to direct several activities at once (Doyle,
1979). This requires a teacher who is a skilled manager (Doyle & Ponder, 1975).

Chamberlin (1981) believes that teachers should understand the principles of participatory management because the way that students learn to work together in groups is through the process of working together. The teacher must be an instructional leader who can manipulate the groups in order to achieve positive participation. Kafer (1978) posits that teachers should understand the normative actions of student groups in order to use them effectively.

Schmuck and Schmuck (1975) identified four stages of group development and ways in which teachers can facilitate each stage. During Stage I, students try to find a secure notch within a group and the teacher must condition the group for the relationships that will occur. Stage II is involved with students testing the power of the teacher and establishing a pecking order within the group. Once leadership is established, students are ready for Stage III in which they are ready to perform to reach personal and academic goals. Stage IV is a self-renewal stage in which students can set up new purposes and procedures based on the maturity developed in the earlier stages. Although most studies of grouping and related management demands have been conducted in elementary reading and math classes, Sanford (1983) examined secondary science classes and reported that
the complexity of task demands and grouping challenges the classroom management skills of many teachers.

Studies of classroom grouping practices concluded that teachers group students to reduce the complexities of teaching. Groups serve as abstractions of the characteristics of students in the group and permit the teacher to adjust the instruction to group characteristics rather than to individual needs (Shavelson, 1982). Teachers often group students on the basis of ability and are reasonably accurate in their estimates of student ability (Shavelson et al., 1977). Other variables that teachers consider when making grouping decisions are math achievement, sex, class participation, behavior (Russo, 1978), comprehension, work habits, decoding, handwriting, spelling, library skills (Shavelson et al., 1981), school environment, teachers' conceptions of the subject matter (Barr, 1975; Borko et al., 1981; Shavelson et al., 1977), effort, personal-social characteristics (Everhart, 1979), motivation, disruptiveness (Albro et al., 1972), and growth/progress (Morine-Dershimer, 1979c).

Methodology

Research on teaching has traditionally comprised the study of the visible events in the classroom and in other places where teaching occurs (Joyce, 1978-1979a). Only recently have teachers' intentions, goals, judgments, and
decisions been considered as legitimate research on teaching (Shavelson & Borko, 1979). The early studies of visible acts consisted primarily of empirical studies while today's studies of the inner teacher must, by their very nature, be qualitative studies. The change from strict empirical evaluations to descriptive, qualitative studies has been a gradual evolution during this century (Medley, 1979).

The history of empirical research on teacher effectiveness can be broken into four general areas on which the research was concentrated (Peterson & Walberg, 1979). In the first phase, researchers examined the personality traits or characteristics of the teacher. As early as 1896, this was accomplished by asking students to describe effective teachers they had known (Katz, 1896). The characteristics named by the students were collected, compared, and published in list form. Later studies, such as the Commonwealth Teacher-Training Study (Charters & Waples, 1929), asked expert judges to list characteristics of effective teachers. Teacher rating scales were developed by 1930, but they still only provided lists of what educational leaders regarded as characteristics of effective teachers (Medley, 1979).

The research that followed was designed to look at the methods used for teaching. To accomplish this, two or more classes were taught using different methods and then the mean gains in knowledge in the classes were compared to determine
the most effective methods of teaching. Since this type of research looked at the student instead of the teacher as the unit of analysis, no valid generalizations to other teachers could be made. As it became evident that teacher effectiveness studies should focus on what the teacher does, as well as the student achievement, a type of research known as "process-product research" evolved (Medley, 1979).

Process-product research became the first teacher effectiveness research to produce evidence that teacher behavior and student learning are related (Rosenshine, 1971). Flanders (1960) led researchers in the development of a measure of "Interaction Analysis" for the purpose of examining the verbal interaction between teachers and students, and process-product studies mushroomed. From process-product research, teacher educators moved to competency-based teacher education. The focus in this research has been not on what the teacher does, but when and why the teacher behaves as he or she does (Medley, 1979). For example, when and why does a teacher choose to group students for a specific lesson?

From the early studies until today, researchers have examined teacher characteristics, teaching methods, teacher behaviors and student learning, and teacher competencies in their search for the secrets to teacher effectiveness. Only recently have teachers' intentions, goals, judgments, and decisions been considered as legitimate research on teaching
(Shavelson & Borko, 1979). Current theory posits the belief that the visible behavior of teaching and the cognitive activities which accompany them are inextricably woven together (McNair & Joyce, 1978). Thus, research into teachers' decision making requires a look into teachers' minds to see what thought processes are taking place to direct their decisions (Rist, 1979).

The collection of data for the study of teachers' inner thoughts frequently utilizes naturalistic methodology which has its roots in the ethnographic techniques employed by anthropologists for many years. The primary difference between ethnography and the experimental methods normally used in educational research lies in the generation of hypotheses. Experimental researchers are guided by previously selected hypotheses while ethnographers collect data first and then generate hypotheses from the findings in the data (Overholt & Stallings, 1976). A characteristic set of techniques is used to collect data for ethnographic research. These include policy capturing, lens modeling, process tracing, stimulated recall, and case study and ethnography (Shavelson et al., 1981).

This review concentrates on the methods used in this study: stimulated recall and ethnography with their accompanying interviews, field notes, and analyses. Finally, this section concludes with an examination of the cautions attributed to qualitative research.
Case Study and Ethnography

A case study is a descriptive record of a bounded system such as a classroom, school, or school district (Stake, 1978), while ethnography is a descriptive study of a bounded system in its cultural context (Shavelson et al., 1981). Ethnographers seek to study the meaning structures of individuals in order to discover what the structures are, how they develop, and how they influence behavior (Wilson, 1977). This type of study has been used by cultural anthropologists in their investigations of community life, the work world, and other organizations for many years (Brandt, 1972).

Only recently has ethnography been applied to the study of teachers and their behaviors in the classroom (Wilson, 1977). Earlier process-product research collected data through the use of interaction analysis categories, but it became obvious that the data provided by category measures can be limited in value, and may preclude behaviors that do not fit in any of the established categories. Research began to move, therefore, to the recording of nonverbal acts in narrative descriptions (Galloway, 1973).

Narrative descriptions of this type consist of detailed notes on events observed by the researchers. Also known as field notes, these notes serve to preserve the sequence of action and interaction as it occurs. Emphasis is placed on
describing and interpreting those features of the observed action that are of interest to the observer.

Since the collection of narrative descriptions requires the researcher to be in the classroom to record events as they occur, care must be taken to avoid disruption of the normal flow of events. The primary goal of the participant observer is to be able to enter the group being studied and to be taken for granted so that the subjects will behave almost as if he or she is not there (Brandt, 1972: Ponder & Hinely, 1982).

The collection of detailed narrative descriptions, or field notes, is usually combined with other data collection methods such as interviews and/or measurement instruments. Stern and Shavelson (1980), for example, studied reading instruction at a university school by collecting field notes during a six month period. In addition, formal and informal interviews with the teachers were conducted. Detailed notes were recorded for each observation and interview session, and the resulting narratives became the data to be analyzed. In a study of science classrooms, Sanford (1983) collected data by observing and making narrative accounts of events as they occurred and then combined the observational reports with data obtained from a Student Engagement Rating form and a Component Rating scale.
Process Tracing and Stimulated Recall

Process tracing studies require that a subject think aloud while performing a task, solving a problem, or making a decision. This technique was used in an investigation of teachers' short-term planning at Stanford (Clark & Joyce, 1979). The teacher subjects were asked to think aloud as they planned. Their thoughts were tape recorded and later coded for analysis. Yinger (1977) and Peterson et al. (1978) used process tracing also for a study of teachers' planning decisions. Process tracing works quite well in studies of planning because it does not interfere with a teacher's planning process.

If thinking aloud interferes with the subject's performance of a task, or is impractical in any other way, the researcher may opt to use stimulated recall. This works better for a study of interactive teaching since a teacher can hardly be expected to think aloud while conducting a lesson. To do this, the researcher audiotapes or videotapes the lesson and then, as soon after the lesson as possible, plays the tape back to the teacher. The playback serves to stimulate the teacher's recall of mental activities during the classroom lesson (Shavelson et al., 1981).

The researcher may probe as recall is stimulated and use planned interview questions to guide the recall in a desired direction. Successful interviewing requires careful
preparation because the interviewee should not be led into giving responses that he or she thinks are expected. Key questions to guide the interview should be planned in advance. Three types of questions that are effective in stimulated recall interviews are: recall-of-past-event questions, "why" questions, and leading questions. Recall-of-past-event questions are used to obtain what the subject remembers about a specific event. For example, "When did you first realize this student had a low self-concept?" A "why" question is most often used to probe for more detail than the subject has given. For example, "Why do you think that is the cause for his inappropriate behavior?" Leading questions may be used to guide the direction of the interview by introducing an area the researcher wishes discussed. For example, "What do you think is the hardest lab activity that your students perform?"

The stimulated recall technique has been used in a number of studies on teacher's thoughts, judgments, and decisions (Joyce, 1978-1979a; McNair & Joyce, 1978-1979, McNair, 1978-1979, Morine-Dershimer, 1978-1979a, Shavelson et al., 1981). The South Bay Study, conducted by Morine-Dershimer, Joyce, and McNair is a good example of studies that utilized "think aloud" and stimulated recall techniques. In the South Bay Study, teachers planned and taught reading classes, using the curriculum they normally used. Their thought processes while teaching were examined
through the use of stimulated recall techniques. This technique was also used by Morine and Vallance (1975) to study teacher and pupil perceptions of classroom interactions.

Analysis

Ethnographic studies, because of the use of narrative descriptions, produce a large amount of data that must be analyzed. While collecting the data, the researcher enters into the environmental framework of the study as a participant observer. He attempts to understand how all those who are in the study interpret behavior in addition to the way he or she as a scientist interprets it from an objective outside perspective. There must be a balance between the roles of participant and observer so that neither dominates (Wilson 1977). Since the goal of this type study is description rather than prediction or explanation, the researcher does not enter the study with preconceived hypotheses. Instead, any preconceived ideas are suspended so that the data will provide meaning as it is collected.

Glaser and Strauss (1967) developed a technique by which data collected in this manner can be analyzed and still maintain its objectivity. They use the tension between participant data and observer analysis as the basis for analysis and thus avoid trying to force data to fit preconceived theories. The researcher allows substantive concepts and hypotheses to emerge from the data and then
tests them against the reality as he observes it, and goes on to generate his own theories. Through "constant comparison" the generated theories may change as analysis continues. Wilson (1977) describes participant observations as "a series of studies that follow each other daily and build on each other in a cybernetic fashion."

Though the ethnographic researcher attempts to suspend any preconceived ideas, he or she does study prior research and theory for the help it can provide. A study of earlier research can help the researcher to determine the initial focus and setting he or she wishes to study. It can also be used to corroborate or contradict the findings of his or her study and can help to explain events observed in the data collection phase (Wilson, 1977). For example, a participant observer may record an incident in a classroom in which one student deliberately defies the teacher's instructions. This may be recorded by the participant observer as inappropriate behavior, but the teacher's reaction to the student's behavior may not follow expected patterns. The study of previous research may suggest reasons for the teacher's behavior, or it may offer contradictory findings that suggest further probes and investigation of the incident. In this case, the researcher may decide to suspend any final analysis of the incident and continue to refine and develop his or her theories as data are collected.
Cautions About Qualitative Research

Qualitative research has, in the past few years, been developed and used by well-known educational researchers who have imposed rigorous rules upon the methodology employed (Filstead, 1970; Wilson, 1977; Erickson 1979a, 1979b; Cohen, 1980). In spite of these rules, there are frequent misuses of ethnography (Rist, 1980). Erickson (1979b), Shavelson et al. (1981), and LeCompte et al. (1982) have pointed out some of the potential problem areas in ethnography.

One of the most crucial issues is that of descriptive validity. Erickson (1979b) argues that one of the strengths of narrative description is its potential for high validity, but explains that several factors may weaken this. Researcher bias may occur if ethnographers are not fully prepared for the task before them. They may not be intensive enough, or may provide "thin" descriptive data. Descriptions may be superficial and not reveal the multi-layered events accurately. Another factor may be attributed to the informant, who may not be able to articulate thoughts or who may not provide complete or accurate reports for personal reasons. If the ethnographer does not have an adequate understanding of the environmental context, he may report findings from his own experiential view rather than from the view of the participants. In actual classroom settings, events happen very quickly and often simultaneously (Doyle,
Verbal action is accompanied frequently by non-verbal action (e.g., body language, expression, eye contact or lack of it), and the task of capturing all this in a narrative is virtually insurmountable. Thus, the educational ethnographer must select the most important details to report and, in doing so, may impose his personal values into the narrative description (Erickson, 1979b).

Ponder and Hinely (1982) point out that the naturalistic observer must take care to avoid his or her intrusiveness on the research setting. They suggested that the observer may be more likely to be unobtrusive if he or she is familiar to the students and, because of position or other reasons, is a frequent visitor to the classroom setting.

LeCompte et al. (1982) agree with Erickson (1979b) that validity may be the major strength of ethnographic research because of the techniques of data collection and analysis employed by ethnographers. However, they also warn that problems of validity may occur and they offer suggestions for minimizing the problems. History and maturation can be a problem since ethnographers study natural settings with no attempt to control changes during the time of data collection. Instead, it is assumed that history will affect the nature of the data collected and that phenomena will not remain constant. To control the problems of history, ethnographers attempt to establish which baseline data changes and which remains constant. The rate of changes is
assessed by long-term studies (6 months to 3 years) which permit time-sampling procedures, the identification of intervening factors, and retracing of the factors isolated in final analysis. Maturation requires the use of similar ethnographic techniques for control. Ethnographers perceive maturational stages as a function of cultural norms. Therefore, they attempt to control maturation by the behaviors and norms that are expected in the sociocultural context being studied.

Dawson (1982) suggests multiple strategies for improving validity, and recommends that the strategies be combined in a way that will capitalize on their strengths and weaknesses. The use of triangulation which combines different research methods, informants, and contexts is one way to reduce error. Other strategies suggested by Dawson (1982) include using teams of multiple researchers, carefully establishing research boundaries, developing a system to record and maintain field notes, allowing sufficient time in settings, making follow-up site visits, using confirmation strategies, and establishing confidentiality procedures so that informants will not falsify or withhold information.

The issue of reliability also presents questions about the use of ethnography. Because of the uniqueness of each ethnographic study, the possibility of replication can be insurmountable. This is complicated by the nature of the research design and the data collected, by the presentation
and analysis of findings, and by the type of training obtained by the researcher. It can be argued that human behavior is never static, and thus, no study can be replicated exactly. LeCompte et al. (1982) suggest, however, that generation, refinement, and validation of constructs and postulates may not need replicated situations. They also posit that ethnographers must be careful to describe their research design and techniques of data collection and analysis carefully. To assume that others know all the rubrics of ethnography will create misconceptions among the uninitiated.

One of the specific problems of external reliability is that of the role of the participant observer in ethnography. Because the collection of data depends so much on the social relationship of the researcher with the subjects, this must be accurately described. The role of the researcher is closely related to the selection of informants in the study also. Informants should be representative of the group being studied, but those willing to be informants may not be typical group members. Their selection may give access to some group members, but preclude any access to other groups. To establish external reliability requires the ethnographer to carefully describe those who provided the data and to give the rationale for their selection (LeCompte, et al., 1982).
Another factor influencing replicability concerns the social context in which data are gathered. Many informants will reveal information when they are alone with the researcher, but will not provide data, or will provide different data, when in a group context. Thus replicability requires careful descriptions of the physical, social, and interpersonal contexts in which data are gathered. All underlying assumptions and definitions must also be carefully delineated, as should units of analysis and the methods for data collection and analysis (LeCompte et al., 1982).

The questions of internal reliability in ethnography is whether more than one observer would agree to the findings. LeCompte et al. (1982) describe this as interobserver reliability. To reduce threats to internal reliability, ethnographers use low-inference descriptors that are defined in precise, concrete terms. The use of multiple researchers would be an ideal way to preserve internal reliability, but the time-consuming nature of ethnography usually precludes this possibility. Another guard against poor reliability is to request reactions to developing analyses from selected informants (Wolcott, 1973), or from peer researchers (LeCompte et al., 1982). Mehan (1974) urges the use of audiotapes, videotapes, and other equipment that can record and preserve raw data so that the accuracy of conclusions may be verified by other researchers.
The timing and sequencing of ethnographic fieldwork is a weakness of ethnography cited by Mulhauser (1975). The time that it takes to collect and analyze data is usually so long that any knowledge gained may not be available in time to help the setting in which it was observed. Interpretation of ethnography becomes a problem when the researcher assumes that all readers will have the same inside knowledge that he has (Geertz, 1973). Inferential statements about overall trends and patterns and about causal relationships may be inadequately supported by data though they may be very interesting (Erickson, 1979a). Shavelson et al. (1981) suggest one last limitation to ethnography. Research journals that report the results of ethnographies usually demand a very concise format that makes evaluation of a study very difficult for most readers.

Though there are limitations to the use of ethnography, the methodology of careful ethnographers is as rigorous and systematic as that of other researchers. Ethnography is part of the long-respected field of anthropology, and is being constantly refined to improve its methods. As qualitative and quantitative researchers learn to integrate their approaches, research in education will be greatly enhanced (Wilson, 1977).
Summary

Teachers are decision makers (Hunter, 1979), who make both conscious and unconscious decisions during the preactive and interactive stages of teaching. The study of teaching effectiveness has evolved from beginning examinations of teacher characteristics (Medley, 1979) to current research on teachers' thoughts, judgments, and decisions (Shavelson et al., 1979). A current model of teacher decision making (Shavelson et al., 1981) describes a teacher's decisions as dependent upon the available information about students, individual teacher characteristics and previously stored knowledge, the nature of the instructional tasks, and the classroom and school environment.

During preactive planning, teachers make decisions and develop mental images of routines they prefer for interactive teaching. These images serve as a guide for interactive decisions and may even minimize conscious decision making during interactive teaching (Joyce, 1978-1979b; Morine-Dershimer, 1978-1979b; Clark & Yinger, 1979). One technique used by teachers to reduce the complexity of the classroom is grouping (Borko et al., 1981; Shavelson, 1982). Groups serve as the basis for planning, minimize management problems, make instruction easier, and improve social-interaction. There are, however, some limitations to grouping; students are often anchored in one position; characteristics other than
the grouping cue are ignored; and it is hard to get the prescriptive material for a group upgraded (Shavelson, 1982).

Research into a teacher's inner thoughts frequently utilizes naturalistic methodology, a form of ethnography used by anthropologists. Ethnographers collect their data first and form hypotheses later. This differs from quantitative research where hypotheses are formed before data collection begins. The ethnographer seeks to ground his theories in terms of the situation where data are gathered. Then he constantly tests his emerging hypotheses against the reality as he observes it. Therefore, he is constantly evaluating and refining instead of trying to fit his data to predetermined hypotheses (Wilson, 1977).

Qualitative research has several limitations including validity (Erickson, 1979b; Ponder & Hinely, 1982; LeCompte et al., 1982, and Dawson, 1982), but with researcher awareness and careful safeguards it can be used successfully (Dawson, 1982). The strength of qualitative research lies in the argument that studies done in actual school settings are more generalizable to other schools than studies done in artificial laboratory settings (Wilson, 1977).
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CHAPTER III

PROCEDURES

Grouping of students is a technique used by many teachers to create greater versatility in the teaching process. The reasons that teachers cite for the use of grouping are numerous and varied. Recent research has examined these reasons for grouping as well as the factors that teachers consider when making grouping decisions (Shavelson, 1982; Borko, 1982; Russo, 1978). Most studies of grouping have concentrated on elementary math and reading classes with little research directed toward secondary classes (Barr, 1975; Bossert, 1977; Shavelson, 1982).

An examination of the literature revealed no grouping studies that concentrated on secondary laboratory classes. The problem for this study is the grouping decisions made by secondary teachers and the effects of group typifications on teachers' expectations for the groups. The present study concentrated on the grouping practices of four teachers of high school laboratory classes in science (biology) and home economics (foods).

Since the intent of this study was to provide descriptive data related to teachers' grouping practices, naturalistic research techniques were selected. The
stimulated recall interview, supported by video-tape recordings and field notes, was the basic research technique used. Recent research has indicated that the need for additional data related to teachers' decision-making processes requires more than just a study of overt behaviors. Insight into decision making can be enhanced by tracing the mental processes that underlie the decisions that are made (Rist, 1979). By using the stimulated recall technique, a teacher's recall of his or her thought processes can be more readily attained.

A common criticism of qualitative research is that it does not satisfy the laws of reliability and validity, which tend to overlap in this type of research. The same problems which threaten reliability, such as unique situations that cannot be replicated and idiosyncratic behavior, also may threaten the validity of a study (Erickson, 1979b; LeCompte & Goetz, 1982). Because of this, great care has been taken to enhance credibility throughout the investigative process of this study. The status of the researcher is an important consideration because of the influence it may have on the responses of the participants of the study (Le Compte & Goetz, 1982). Since the investigator was employed in the same school in which the study was conducted, the subjects of the study were familiar with her. In her position as Instructional Administrator, the investigator frequently observed in all classes in the school and was not considered
a disruptive element when entering a classroom. Because of her observations in the classes being studied, the investigator was familiar with class routines and the normal pattern of teacher-pupil interactions. Erickson (1979b) has indicated the importance of the researcher having an understanding of the task environment present in classrooms when conducting naturalistic research. This insight also aided in planning effective methods of data collection.

The selection of subjects requires careful consideration if the question of external reliability is to be satisfied (Le Compte & Goetz, 1982). By providing full descriptions of the teachers selected for the study as well as the rationale for their selections, the researcher has addressed this problem. Only two homemaking teachers were available for the study because the third teacher taught only one class of Homemaking I Foods. From the six biology teachers, the ones with the most and the least amount of experience were chosen for the range of teaching repertoire and experience they appeared to offer.

Rich descriptions of the social setting of the study also enhance the replicability of ethnographic studies (Garfinkel, 1967; Le Compte & Goetz, 1982). Full narrative descriptions of the classroom settings have been included, accompanied by accurate scale drawings of the areas.

Another important aspect of reliability is the selection and complete description of the strategies used to collect
and analyze data (LeCompte & Goetz, 1982; Wilson, 1977). A number of techniques have been employed for the collection of data in this study to insure a broad coverage of information and minimize biases that might occur. Data has been collected through the use of audio-tape recordings, stimulated recall interviews, follow-up interviews, field notes and document collection. These are techniques that can be replicated. The categorization and analysis of data has utilized the grounded theory approach developed by Glaser and Strauss (1967). By starting with categories suggested in current literature and revising as analysis progressed, the final analysis categories evolved from the data. Careful definitions of the final categories have been included for complete understanding.

When compared to survey studies, experimentation, and other quantitative research techniques, ethnographic studies can claim high internal validity based on the techniques used (Erickson, 1979b; Le Compte & Goetz, 1982). The basic assumption that history affects the nature of data and that phenomena rarely remain constant (Le Compte & Goetz, 1982) is an essential part of the ethnographer's plan for data collection. By collecting data over a period of time and by using multiple collection techniques, the researcher has addressed this assumption. The use of constant comparison (Glaser & Strauss, 1967) in data analysis is a way of
reconstructing the maturation process through the perceptions of the participants involved (Le Compte & Goetz, 1982).

The threat to validity that might be caused by observer effects has been minimized in this study. The position of the researcher and familiarity of all participants with her activities gave her access to the classes in the study with a minimum of disruption. In a post-data collection interview, the participating teachers were asked if the researcher's presence during data collection changed their behavior in any way. Their responses indicated that classes progressed as usual with no perceived changes in their behaviors. To guard against any researcher-induced biases that might occur during data collection, the participating teachers were asked to read the narrative descriptions of their classrooms and confirm or reject the data presented there. The interviews following the collection of field notes presented another opportunity for the observer to verify the activities that were recorded. Only observable activities were recorded; if any judgmental statements were made, they were bracketed in parentheses to indicate the nature of the supposition (Appendix G).

The data collection process began with audio-tape recordings of the foods laboratory planning sessions that occurred on the day prior to actual laboratory classes. These recordings served as the focus for stimulated recall interviews that were conducted as soon after the recorded
sessions as possible. Additionally, the investigator observed an actual food preparation laboratory for the purpose of collecting field notes to add to the richness of data. Field notes were collected in the biology laboratory sessions and were used to provide the basis for stimulated recall interviews as soon after the laboratory classes as possible.

Interviews of all four teachers were non-structured in style, but they were based on key questions with no predetermined sequence. Thus the investigator was able to ask in-depth questions to probe the teachers' responses when desired. Basic interview questions were designed to include questions on topics other than grouping decisions to prevent the teachers from discerning the major focus of the study. This was done to prevent teachers from giving answers they thought the researcher was expecting.

After all stimulated recall interviews were completed, an additional structured interview (Appendix D) with each subject was accomplished to determine her perceived grouping practices and the rationale for them. The same structured interview was used to interview secondary teachers of non-laboratory classes for the purpose of obtaining a comparison of perceived grouping practices between secondary laboratory and non-laboratory teachers. All interviews were audio-tape recorded to provide accurate details for analysis.
The transcriptions were analyzed in an iterative fashion so that analysis categories evolved as the analysis progressed. The researcher coded each transcription for references to factors related to grouping decisions and teacher expectations of groups. After the individual grouping patterns and expectation standards of each teacher were developed, they were compared and contrasted with the other teachers' standards for similarities and differences. Tentative explanations and hypotheses were developed from the factors that were identified as common teacher decision making processes (Glaser & Strauss, 1967; Goetz & LeCompte, 1981).

Procedures for Collection of Data

Instrumentation

An unstructured interview based on selected key questions and in-depth probing questions served as the primary method of data collection (Appendix C). The key questions focused on the assignment of students to groups, tasks that were specified for each group, and interaction with the groups by the teacher. No predetermined sequence of questions was established so that the interviewer was free to ask probing questions into any area that was introduced by the teacher. In this way, the interviewer was able to probe with such questions as, "Why?" "How would you explain
that?" "Did you expect that to happen?" "Did that bother you?" Leading questions were often asked in order to introduce an area in which the interviewer wished to probe. A question that might be asked in this manner is, "What is the most difficult problem you have when planning a laboratory session?"

The unstructured style of interviewing was selected because it is particularly suited to naturalistic research (Brandt, 1972). It permitted the interviewer to insert relevant questions at appropriate places as well as to include questions on topics other than grouping decisions so that the teachers were not aware of the focus of the study.

All interviews were audio-tape recorded for the purpose of saving time and for accuracy in recording answers to the interviewer's questions. Transcriptions were made of all interviews and the validity of the transcriptions was verified by the research department of the local school district in which the study was made. All tapes, field notes, and transcriptions have been retained in original form for further verification if necessary.

Subjects

The subjects for this study were two Biology I teachers and two Homemaking I Foods teachers from one of the four high schools in the district (N=4). There were six teachers of Biology I in the school selected for the study. These
teachers taught a combined total of twenty-three sections of Biology I with an average of twenty-three students per section. Biology I is a two-semester course that requires completion of both semesters for credit. Students remained with the same teacher for the second semester unless scheduling problems occurred. The biology teacher with the greatest number of years of experience (Cindy) and the one with the least amount of teaching experience (Dana) were chosen as subjects for this study. Cindy had 24 years of experience and Dana was doing her first year of teaching. Both teachers were teaching in the selected study school for the first year. Cindy had earned her Bachelor's degree in Physical Education and her Master's degree in Physical Education with a minor in Biology. Dana had a Bachelor's degree in Natural Science Education which she had earned the previous year.

The homemaking department had three consumer homemaking teachers who were teaching a combined total of five sections of Homemaking I Foods with an average of twenty students per section. Two of the teachers each taught two sections of the one-semester course, so they were the two selected for the study. Ann had six years of teaching experience with a Bachelor's degree in Homemaking Education. Betty had nine years of teaching experience and had also earned a Bachelor's degree in Homemaking Education.
Additional teachers in non-laboratory subject areas were interviewed for comparison purposes. These teachers were selected by asking in each subject area in the school for the names of teachers who used grouping as a teaching tool. From the names submitted, one teacher was selected at random from each subject area. Three subject areas were conducive to grouping techniques: Language Arts, Fine Arts, and Social Studies. Additional comparison interviews were made by randomly selecting one biology teacher and one homemaking teacher from those teachers not included in the study.

Ecological Context

This study was conducted in one of the four high schools in a large suburban school district in North Central Texas. The school in which the investigator was employed was deliberately selected as the site of the study. The possible insights that could result from the investigator's position and duties have been documented throughout naturalistic research literature (Brandt, 1972; Erikson, 1979a, 1979b; Wilson, 1977).

The seven-year-old high school is the newest in the district and had a student enrollment for the 1982-83 school year of approximately 1,900 students. Socioeconomic status of the students ranges from lower middle class to upper middle class. The professional staff was comprised of 105 full-time teachers and five part-time teachers.
The homemaking department is located on the second floor of the school building and is arranged in a semi-open concept (Appendix A). The two foods laboratories are separated by a demonstration area that seats 24. There are free-standing movable bulletin boards and blackboards that serve as dividers between the demonstration area and the foods laboratories on each side of it.

Each foods laboratory consists of six kitchen units, one of which is slightly larger than the others and is called the "teacher's unit." Each kitchen except the teacher's unit features an island counter in which are located two two-burner range units and a sink with a garbage disposal. A wall oven and wall-mounted storage cabinets are included in the area adjoining the island unit of each kitchen. The teacher's unit is slightly larger than the other units and is designed in a U-shape. It contains a built-in dishwasher and refrigerator in addition to the standard equipment in the other units. All six kitchen units share in the use of the refrigerator and the dishwasher. The kitchen units are arranged around the outer perimeter of the laboratory so that the center floor area serves as a dining room. Six round tables, each seating four, comprise the dining area.

The science department, which is in the same second-floor wing where the homemaking department is located, has five biology laboratories. The laboratories are arranged in a back-to-back manner with a partial wall separating two
classrooms (Appendix B). Each room has an outside entry and a locked storage closet for supplies. The classroom area has a teacher's desk and seating for twenty-four students. The student desks are attached together in "strings" of three desks. Two chalk-boards are on the wall behind the teacher's desk.

The laboratory area in each classroom has two hexagon-shaped sinks. Three laboratory tables, each seating four students, can be arranged around each sink in spoke fashion, or moved to other areas at the teacher's discretion. Storage drawers for student equipment are located in cabinets along the periphery of the room. The laboratory area of the classroom is separated from the adjoining classroom and laboratory area only by a free-standing storage cabinet.

Data Collection Procedures

This study was conducted during the spring semester of the 1982-1983 school year. The variables of interest were the internal and external factors influencing the teachers' decisions concerning the grouping of students and their expectations of these groups during laboratory classes. The internal factors, such as teacher beliefs and organizational preferences, have been documented as important factors in teachers' grouping decisions. Once a teacher has grouped students, it is believed that he or she typifies the group as having specific characteristics and then expects the entire
group to perform accordingly (Shavelson, 1982). These student characteristics and the tasks they are assigned comprise the external factors that might influence the teacher's decisions.

Data collection for this study included audio-taping of class sessions, stimulated recall interviews of the teachers in the study, and structured interviews of the laboratory teachers in the study and of non-laboratory teachers outside the study. In addition, a document collection of lesson plans, printed class instructions and forms, and curriculum guides was made.

Traditionally, homemaking foods classes plan their laboratory activities on the day prior to the actual laboratory day so that class time may be more effectively utilized on lab day. During these sessions student groups are formed and given the requirements and limitations of the forthcoming lab and then given time to select a recipe and finalize their lab plans. As planning proceeds, the teacher may go from group to group to check on plans and give assistance when needed. Two tape recorders were placed in the laboratory during the planning sessions with one recorder serving as a back-up in case the primary recorder failed. The primary recorder was small enough to be easily transported by the teacher as she moved around the room, either by placing in a shirt pocket or by carrying in her hand. The first laboratory class for the semester was the
first one recorded so that the study would include original groupings before any changes were made by the teacher. The second and third recordings were made later in the semester so that there was the possibility of finding grouping changes and so the students had time to gain proficiency in the laboratory and to develop group interactions that might influence teacher decisions. Each homemaking teacher was audio-taped while planning three different labs for two different sections of foods classes (2 teachers x 2 classes x 3 labs = 12 recorded sessions). Field notes were made of one foods preparation lab for each teacher for the purpose of gaining a visual feel for the class and adding richness to the illustrative data.

Using the audio-tapes of lab planning sessions for stimulated recall, the teachers were interviewed about their classes as soon after the recorded session as possible. In most cases this was on the following day, thus giving the interviewer time to listen to the tapes and make notes of the incidents to be discussed. No classes were taped on Fridays because it was felt that a weekend delay would hinder recall by the teacher. The interviews, which were audio-tape recorded, focused on the assignment of students to groups, tasks that were specified for each group, teacher interactions with the groups, and teacher expectations for each group. An effort was made to discuss all the events that occurred during the class session so that the teacher
was not aware of the focus of the study. The interview was unstructured so that probing questions as well as leading questions could be asked (Appendix C). In that way, the interviewer was able to direct the interview in the desired direction.

Narrative descriptions (field notes) of Biology I labs were made of the same number of labs as were recorded in Homemaking I Foods labs (2 teachers x 2 classes x 3 labs = 12 sets of field notes). The observer entered the laboratory when the first class bell rang so that she was seated in the back of the laboratory area before the tardy bell rang and the class was called to order. Because of her position in the school, students were used to her and tended to ignore her presence. She brought into the classroom only a notepad, pencil, and a diagram of the room, indicating numbered lab tables, the classroom area, and supply areas. When class began, the observer described events as they happened, recording clock time in the margin and indicating the location of events in the room. The notes were taken in a combination of shorthand and longhand (Figure 2). Field notes focused on the teachers' instructions to groups and interactions with them.

Stimulated recall interviews with the Biology I teachers were accomplished as soon after the observed session as possible, often on the same day. Since the observer was in the classroom as events occurred, she had full knowledge of
10:40 Teacher (T): "Everyone take out your books and look at the drawing of a frog." Students (S) follow T's directions while T checks rolls.

10:41 T: "As you notice, we have 4 TV's. The TV is for each table to watch. While the TV is on, you do not talk, you do not write, you do not touch the frog. I'll tell you when to cut. Since these tables are not numbered like yours, this is table 1, 2, 3, 4, 5, 6 (T points to tables). I want you to be quiet in the lab, and if you talk I will send you back to your desk with a zero."

10:43 Ss move to lab tables. T brings frogs from storeroom and gives to each table. T: "Hey, be quiet" (in a soft voice).

10:45 T: "Please get quiet again." Ss do not hear her, so one S yells and quiets class. T thanks him. T repeats directions about listening, "When you get quiet, we'll start." S: "Shut up" (to class). Everyone gets quiet.

10:47 T turns on TV, walks around and checks equipment on each table as Ss watch TV monitors. Students look at frog while TV is on; T walks around and points out details to each group.

Figure 2. Sample Field Notes
the activities and could interview without first transcribing the field notes in full. All interviews were audio-tape recorded and transcribed in the same manner that the Homemaking I Foods interview tapes were transcribed.

After completion of all stimulated recall interviews, a more structured interview of the four teachers was done for the purpose of obtaining their perceptions of their grouping practices and the rationale for them. After demographic data were collected, planned questions were asked to elicit the desired information with occasional probing questions or explanatory statements made in order to guide the interview. The questions concentrated on grouping practices and the expectations for groups that teachers might have (Appendix D). This same structured interview was conducted with five teachers not included in the main study for comparison purposes. These teachers used grouping in the following subjects: Biology, Homemaking, English, Sociology, and Drama.

Documents were collected from the teachers in the study for the purpose of gaining additional insight into the nature of tasks, range of possible group arrangements, and curricular constraints. Documents collected included lesson plans, curriculum guides, lab planning sheets, and any printed instructions that were given to the students.
Procedures for Analysis of Data

Trial interviews and their analysis were conducted prior to the actual study for the purposes of uncovering possible errors in planning and to gain experience in the interview technique. As a result of these trial interviews the investigator found that a conversational beginning was frequently necessary to relax the interviewee sufficiently to obtain easy recall. Although the interviewees were all acquainted with the researcher prior to the study, there was some apprehension about talking freely when the conversation was being tape-recorded. The trial sessions familiarized the subjects with the interview process and lessened their apprehension.

To gain experience in taking field notes, the researcher and a colleague recorded activities in two different classrooms on several occasions. The field note procedures recommended by Brandt (1972), Erickson (1979b), and Doyle (1977) were used as guidelines for the technique. By comparing the two sets of notes, it was possible to check for descriptive adequacy and accuracy in describing classroom events. Trial field notes also provided the researcher with practice in using field notes as the basis for stimulated recall interviews.

All interviews in the study were audio-tape recorded for the purpose of obtaining accurate accounts of the teachers'
recall statements. Exact transcriptions of the recordings were made with the exception of extraneous phrases such as "you know" and "uh." (See Appendix H.) This required numerous replays of each tape to insure accuracy. In instances where exact transcription was not possible, this was indicated by "(inaudible)." Most of the inaudible passages occurred when both the researcher and the interviewee talked simultaneously.

After all transcriptions were complete, the tapes and corresponding transcriptions were number coded and released to the Research and Planning Department of the local school district for validation of accuracy. This was done by randomly selecting segments of tapes and listening to them while reading the corresponding transcription.

After validation of the transcriptions, an analysis of the collected data was begun. All transcriptions were coded for references to grouping decisions using a set of basic categories that were developed from the literature on teachers' grouping decisions (Shavelson, 1982; Borko, 1982; Russo, 1978; Borko, Shavelson, & Stern, 1981; McNair, 1978-1979; Shavelson, Cadwell, & Izu, 1977). As coding progressed, new categories developed from the data and some of the original basic categories were eliminated because they did not emerge from the data. For example, original plans included coding in the following categories: Student, Content, Procedures, Materials, Time, and Environment. As
coding progressed, it became evident that some categories were too limited, and others could be subsumed under another category. The final number of analysis categories was reduced to four as analysis progressed using the grounded theory technique as described by Glaser and Strauss (1967). The final categories were Student, Curriculum, Resources, and Teacher (Appendix F).

Through an iterative analysis process, each teacher's grouping patterns were developed. For example, when biology teacher, Cindy, said, "I'm trying to get him to get his grade up so he can pass, and he can if he wants to...," her comment was coded under the category of "Student - ability." Each teacher's comments were coded, then tallied so that patterns, if any, could be detected. The same process was used to examine each teacher's expectations of specific groups.

Documents from each teacher were analyzed to determine such things as constraints on tasks, expectations of students, and preactive grouping decisions. For example, when Betty wrote in her lesson plan that kitchen 3 would be in charge of preparing the beverage for the entire class, that would be coded as "Curriculum - management demand." The curriculum guide was found to have some influence on teachers' grouping decisions. For instance, when the Biology guide specified that students would dissect a frog in a single lab, teacher Dana found it necessary to place each slow student in a group of fast students so there would be
time to accomplish the lab in one day. This was also coded as "Curriculum - management demand." The information gleaned from an analysis of documents was used to supplement information gathered in the other phases of data collection.

The structured interviews of both the laboratory and non-laboratory teachers were analyzed in the same manner. They were then used for comparisons to check for any differences in grouping practices that might be caused by differences in academic tasks. Finally, tentative explanations and hypotheses were developed from an examination of the factors that were identified as common teacher decision-making processes.

**Summary**

A series of interviews based on 4 teachers' grouping decisions in 24 secondary laboratory classes and interviews of 9 secondary teachers' perceptions of their grouping practices plus an analysis of related documents resulted in a collection of data on teachers' grouping decisions and their expectations of groups. Specifically, the procedures for data collection and analysis used in this study made possible the following:

1. Descriptions of the similarities and differences held between teachers in secondary laboratory and non-laboratory classes (Biology, Homemaking, English, Drama, and Sociology)
in reference to factors influencing their grouping decisions and expectations of groups.

2. Descriptions of the similarities and differences within the secondary laboratory and non-laboratory teaching groups regarding grouping decisions and expectations of groups.

3. Descriptions of individual teacher's perceptions of their grouping practices.

4. Inferences and generalizations regarding the influence of task structures on teachers' grouping decisions.

5. Tentative hypotheses for further study of teachers' grouping decisions and expectations of groups.
 CHAPTER BIBLIOGRAPHY


CHAPTER IV

Analysis and Conclusions

The collection of data for this study utilized the techniques of stimulated recall, field notes and document collection. Analysis of the data was accomplished by the use of the grounded theory technique of Glaser & Strauss (1967). This involved the constant comparative method in which data were read to try to arrive at separate categories. Categories were then tested against the data and the process continued in an iterative fashion until the categories stabilized.

This chapter presents the findings that emerged from the analysis and is developed in five sections. The first section provides definitions of the coding categories that evolved through application of the grounded theory analysis procedures. The second section contains case descriptions of the teachers and their classes with emphasis on the factors the teachers appear to be most concerned about. Section three describes the grouping patterns of the homemaking teachers, biology teachers, and other teachers included in the study for comparison purposes. Section four presents the regularities and anomalies in grouping practices that appear to be indicated by the data. A summary of the findings appears in part five.
Definitions of Analysis Categories

The categories that evolved during analysis are listed below with a definition of each category (see Appendix C for original categories).

Student:

1) Task Approach - The perceptions a teacher has of the student's potential for successful completion of assigned academic tasks in a group setting. This variable includes such relational factors as: how seriously the student will take the assigned task; how likely the student is to be "social" (i.e., to be distracted by social interaction or to provide such distraction); how likely the student is to work collaboratively and productively in a group versus a preference to work alone either due to shyness or negativism. Example: "...and what I found was they'd be leaving their group and running across the room to see how their friends' muffins or biscuits were turning out..." (from Ann's transcript).

2) Work Habits - The reference a teacher makes to students' day-to-day pattern of performing classroom tasks. This includes such factors as: whether a student completes assigned lab work; whether the student shows initiative in accomplishing necessary but unassigned duties, and the quality of work that a student produces. Example: "...he
just doesn't get anything done; ... he just kind of sits there..." (from Dana's transcript).

3) Ability - References that indicate teacher has formed an opinion about a specific student's aptitude. Example: "...I do try to have a really bright student with some of the slower students" ... (from Ericka's transcript).

4) Social Interaction - References made to socialization skills or lack of them and the perceived effects of such behaviors in group settings. Example: "If you put popular students with their buddies, then they don't get anything done. They're too busy socializing..." (from Dana's transcript).

5) Typifications - Indications that a teacher has categorized a student with regard to role. Example: "...Shanda's my senior; she's my 'little mother'" (from Dana's transcript).

6) History - References that indicate teacher is influenced by knowledge of student's past history, family background, or outside influences. Example: "...what I learn about their background... Their environment at home..." (from Hannah's transcript).

7) Benefits - Statements that presuppose an enhancement or advantage to a student in some way. Example: "...I feel like it's better for them if they stay together..." (from Ann's transcript).
8) Needs - References that indicate a teacher is aware of individual students' differing needs. Example: "...really doesn't understand what they're doing, I'll spend more time with them" (from Hannah's transcript).

Curriculum:

1) Task Demands - References to curriculum requirements, curricular task structures, and demands related to content and/or curricular goals. Example: "...a new series of labs.... I've been embarrassed when I look at them because they are so easy..." (from Cindy's transcript).

2) Management Demands - References that indicate teacher is concerned with management-related activities for the purpose of meeting curricular goals. This includes time, sequencing, pacing, and control of inappropriate student behavior. Examples: "...when I stick them out here and here (referring to specific lab tables), they're not as 'into' things" (from Dana's transcript) and, "...I feel a lot of pressure to get that first lab done on time..." (from Ann's transcript).

Resources:

1) Facility - References to classroom/lab architectural arrangements that cannot be changed by the teacher. Example: "...because we teach in an open classroom, and the classroom borders on another classroom..." (from Ann's transcript).
2) Budget - References to financial limitations and/or demands that affect the teacher's decisions. Example: "...and our budget can't handle it, I'll suggest they copy the recipe to make out of school so that..." (from Betty's transcript).

Teacher:

1) Experience/Repertoire - Indications that teacher is basing a judgment on past experiences or on a repertoire developed from past experiences. Example: "I used to split them up and try to put them with people they did not like,... and what I found was they'd be leaving this group and running across the room to see how their friend's muffins or biscuits were turning out." (Ann's explanation of her reason for using sociograms for grouping).

2) Pedagogical Values and Beliefs - References that indicate the teacher's basic guiding precepts related to education. Example: "I tell the students they're coming into my class; I don't listen to what any other teacher says about them, so they're just a clean slate in my room" (from Betsy's transcript).

Case Descriptions

Ann (homemaking): Structured Grouping

Ann is a 26 year old female homemaking teacher with six years experience, all in the same school. She has a Bachelor's degree in Home Economics Education. Ann is a very
organized teacher who appears most comfortable with a high level of structure to her classes.

Labs in Ann's classes are preceded by several days of studying the basic principles related to a specific unit. The first day frequently is introduced by a filmstrip and followed by a teacher-led discussion. Written work in the form of a worksheet and a vocabulary list are usually included on the second day. The third day may consist of a teacher demonstration and pre-planning for the lab. After the fourth day lab, a quiz and final evaluation follows on the fifth day.

Ann's students are placed in groups prior to the first pre-lab planning session so that the groups can work together to plan their first lab class. In all foods classes, Ann uses a form of sociogram as a means of determining group composition. She asks each student to prepare a list of the four people that he or she would like most to work with. The students are promised placement with at least one of their choices when grouped, and Ann retains the privilege of making changes when needed.

When asked where she learned to use sociograms, Ann replied that she vaguely remembered studying them, but that she developed her grouping technique by trial and error in past experiences.

Usually I will try to have them be with the people that they enjoy being with because I find that if they don't... they will walk across the room to be
with who they enjoy being with, so I try to have them with the people that they would like to work with, if possible.

Actual placement into groups in Ann's classes varied somewhat from her stated method. Although both classes prepared their lists of four friends, Ann used different grouping techniques in each class. In one class the students were permitted to work with as many of their choices as class size and the layout of the lab permitted. The other class was grouped so that each student was in a group with only one of his or her choices. According to Ann,

I just tried to match it up where they had one person that they really wanted to be with, and the other people, I tried to scatter them around the classroom and I separated ... about eight girls who probably would be pretty loud if they were all together. I put one group at one end of the classroom and another group at the other.

The sex of her students did not appear to be an important factor in Ann's grouping plans. She reported that the sexes frequently just "naturally separate" when the students prepare their sociogram choices. The boys are often proud to be learning to cook and want to work together to show the girls that they can become good cooks. She commented that placing one girl with a specific group of low ability boys could have been very frustrating to the girl because "a lot of times girls are more experienced in the kitchen." Other factors such as student behavior, task approach, and attitude were prominent in Ann's discussion of her grouping practices.
Ann mentioned one student specifically in this regard, a boy named Paul who presented a unique challenge to her grouping plans. Paul asked to be grouped with "me, myself, and I, and Mrs. J (Ann)." Ann reported that placing Paul in a group was a real problem because

Nobody wanted to sit by him, and so I asked him who his friends were in the class. He said that he got along all right with Barry and Marie, so I put him next to them.

Since there appeared to be no problems with Paul sitting near Barry and Marie, and because they were more mature than most of the class, Ann placed the two of them in a lab group with Paul. She also talked to Paul and told him that he could not work alone because one of the goals of Homemaking I Foods was to develop the ability to cooperate with others in a working situation.

The group composed of Paul, Barry, and Marie did not function smoothly during the entire semester because of Paul's behavior. During observations it was noted that Paul took charge in his group and ordered the other two around. Marie ignored the bossing, but Barry argued about everything Paul told him to do. Even though Ann had made the students aware that she would change group placement whenever she felt it was necessary, she did not make any changes in that group. When discussing the situation she commented that,

I really don't know if I can put Paul with anybody else because he just doesn't get along with anybody.... I've already spent a lot of time talking with individuals about getting along with him.
Another grouping concern that Ann had to contend with occurred in the class in which she let the students select all their group partners. Four boys in this class had lower than average IQs and one of the four was a special education student. After the students had chosen their partners, Ann realized that three of these boys were in one group together, with the fourth one in another group. After the first lab she commented,

I thought I had separated them more than I had... and I'm thinking maybe I should split them up... because they can't get done as quickly and it may be frustrating to them.... You need to have somebody in there who knows what they're doing.

Although Ann talked about changing the group placement of the three low aptitude students, she did not change them. Instead she compromised and "put them up kind of where I usually am, to kind of watch them... near the teacher unit where it's kind of the center of the room." While discussing the activities that occurred during the second lab, Ann mentioned

I went ahead and left that slow group of boys together because... if they got in another group, they wouldn't really do anything and they wouldn't cook, but I think it's best for them to stay together.

It was observed that during labs Ann had to spend almost all of the time with the slow group and as a result was not able to monitor the other groups as closely as she said she would. During observations an incident occurred that pointed out the need for close supervision of that group. One of the
boys laid a paper towel on top of the stove where it came in contact with a hot electric coil and began to smolder. While making a routine scan of the room, Ann discovered the paper towel and removed it before it flamed. The potential for dangerous accidents is always present in a lab, but even more so when grouping several low ability students together. By keeping the slow group intact, Ann appeared to compromise between her plans to carefully structure the lab activities and her concern for the needs of the slow students.

Class size and facilities are another determinant of Ann's grouping practices. There are six kitchen units in the foods lab and the groups are as evenly placed as possible. Most groups are composed of four students with an occasional one of three or five. If any students are absent for a lab, the groups they are assigned to continue without them unless the lab is too complex for a smaller group to prepare. When that happens, the remaining group members are assigned individually to other groups, or two small groups are combined to form one.

The six kitchens in the foods lab vary in size slightly because of their locations in the room. The five kitchens located around the outer periphery are identical in design, but the two in the corners have slightly more floor space. The sixth kitchen, known as the teacher's unit, is quite a bit larger as well as different in design. Ann placed the groups in the kitchens with some thought to the
characteristics of the groups. In both classes, Ann placed the group that gave her the most trouble in the teacher's unit. In one class that group was Paul's group, while in the other class the group of slow boys was the one placed in the teacher's unit. Ann's reasons for this special placement were related to the fact that she could monitor that kitchen more easily.

I put them there... that kitchen is bigger. The other kitchens have islands that come out into the room... and it's more crowded to work in these other kitchens because of the furniture.... The kitchen that I put those two difficult groups in is more open; it's also closer to the door of the classroom... and closer to the place where I put my rolls and grade book... and it's easier to supervise there.

The pre-laboratory planning sessions are carefully structured by Ann to gradually place more of the planning responsibilities on the students with each succeeding lab. She accomplishes this in the following way.

I started out with the lab being very teacher directed. I'm working toward equipping them to be more independent; ... in the first lab I had everything scheduled out for them... and they copied it off the blackboard and we discussed it. This time I had a blank time schedule written up on the board... and I was trying to explain how the form worked and then the next time they're going to be doing this by themselves... There are so many instructions and... I want them to do [his form] right and to follow it later and so that's why I was working so closely with them.

The assignment of duties and the fulfilling of them as planned is very important to Ann. One of her goals for the semester was to check during every lab to be sure the
students were each performing the duties they had planned to do. Ann had learned from past experience that,

They'll turn in a plan and it will look like they're alternating steps and... then you go over and see what they're actually doing and they're not following their plan.

Ann deducts points from students' lab grades when they do not perform their planned duties because she believes that is "the best way to get them to do what they're supposed to do."

Paul and his group required constant monitoring in order to keep the group members on their assigned tasks. Conflict within the group developed during every lab because Paul continued to want to do all the work himself and apparently "convinced everyone in his group that he could do most of the work." Barry sat back and was happy to let Paul do all the work. According to Ann, she had to "keep after them the whole period to get Barry to do something and to get Paul to quit doing things." She commented later in the semester that she thought the placement of Paul and Barry together had worked well. She found that Barry was basically lazy and that Paul goaded him into doing his assigned chores even though Paul liked working alone. She said she felt like this was an indication that Paul was learning to cooperate with others as she had hoped.

Recipe selection and the number of choices that are permitted vary from lab to lab, depending on the available supplies, budget, and the unit being studied. For example, the first lab was on the preparation of muffins. The groups
were all expected to prepare the same recipe for basic muffins with no variations. On a later lab when any type of quick bread was acceptable, approximately twenty recipe choices were available and the groups could choose any recipe as long as it was not a duplication of a recipe another group selected. If a group took too long to make a recipe selection, it might be chosen by another group, and they were expected to make another selection. When the budget was limited toward the end of the semester, Ann reported that she occasionally selected the recipes for economy's sake and then had the groups draw for a recipe. In this way she could more easily control the cost factor.

Since the groups all prepared the same recipe or a variation of a cooking principle, Ann essentially expected the same basic cooking skills to be learned by all. During the last lab of the semester the students planned and prepared an entire meal so that they could use a combination of the skills they had acquired. Recipe selection for this lab was accomplished by the groups drawing for their recipe and then being given the chance to trade with another group if desired. Ann explained her reasons for using this method of recipe selection.

I could have, in order to have a more successful luncheon, ... assigned the more difficult things to the better groups; ... I could have even said, "you know, this group has done especially well; they'll get this responsibility," but I don't really enjoy fostering competition too much in my classrooms. That might work for another teacher, but I don't think it would have worked too well for me.
Ann did change this method, however, when the group of low ability boys drew the fruit salad assignment for their recipe. She reported that she was "afraid that they couldn't handle that," so she asked another group to switch recipes.

As students arrived for a lab, they were expected to don aprons and head coverings and to wash their hands. A centrally located table held the food supplies which were collected by one member of each group for their specific recipe. Ann monitored the kitchens from a position near the supply table and moved from group to group as needed. She occasionally made notes on a small pad as she monitored. Ann said that she looked for both "good things and bad things" to write down (figure 3).

Group members were expected to know the location of all equipment and how to use the equipment from past class sessions. They were also expected to have on their aprons and head-coverings and to proceed without a lot of commotion and noise. Ann wrote down any unusual occurrences during the lab and checked for cleanliness in each kitchen after the lab. She answered questions during the lab even when students should have known the answers because she didn't want any mistakes, but she made notes of this for future grading purposes.

Ann said she does not enjoy the evaluation of labs but feels there is a definite need for it.
I don't want to be the critical person..., but I'm trying to get them to do the best that they can do. I write down the things that they really should have known better... I might write down something bad that they do, but not take off points for it if maybe they wouldn't have known any better..., but if they should have realized beforehand, I'll take off points for it. I just kinda keep a running list and they're real sketchy notes.

<table>
<thead>
<tr>
<th>SIXTH PERIOD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group 1</strong></td>
</tr>
<tr>
<td>Monica - headcovering (-5)</td>
</tr>
<tr>
<td>Robert - apron (-10)</td>
</tr>
<tr>
<td>Oven was left on (-5)</td>
</tr>
<tr>
<td><strong>Group 2</strong></td>
</tr>
<tr>
<td>Recipe error - incorrect amount of ingredients (-5)</td>
</tr>
<tr>
<td>Dirty dishrag left in sink (-5)</td>
</tr>
<tr>
<td><strong>Group 3</strong></td>
</tr>
<tr>
<td>Roughhousing - Steve &amp; Marsha (-10)</td>
</tr>
<tr>
<td><strong>Group 4</strong></td>
</tr>
<tr>
<td>Counter was left very dirty (-5)</td>
</tr>
<tr>
<td>Extra credit - Keith - folded towels (+5)</td>
</tr>
<tr>
<td><strong>Group 5</strong></td>
</tr>
<tr>
<td>This group needs to get along together better</td>
</tr>
<tr>
<td><strong>Group 6</strong></td>
</tr>
<tr>
<td>Extra good clean-up job!</td>
</tr>
</tbody>
</table>

Figure 3
Monitoring Notes Made by Ann

Ann reported that many times she could not do a good job of making notes during a lab because she would become involved in helping a group or in intervening in a situation.
Evaluation of the students' performance was based on the notes Ann made and on her observations as the lab proceeded. Each student was asked to evaluate his or her group's performance on a standard evaluation form. Ann then compared her notes with the student's evaluation sheet and made corrections as she saw fit. Each group member received the same basic group grade which was then modified to reflect the student's individual performance. Her reasons for the use of a dual grading system were explained.

I think it's important for them to learn to evaluate what they do and a lot of times they want to think they're perfect and they want to get a hundred and they don't want to take off for anything themselves.

The food product quality rated a maximum of twenty points while everything else rated ten points per item. Behavior in the lab is one of the items that was valued at ten points. If Ann observed inappropriate behavior such as popping someone else with a dishtowel, she deducted five points from the lab grade. If a student failed to wear his or her apron, ten points were deducted from the grade.

Additional duties such as laundering and folding dish towels and putting away supplies were available for volunteers who need extra points. If no one asked to do these duties, Ann assigned them and still awarded extra points for them. When a student was absent on lab day, Ann required him or her to prepare the identical lab recipe at
home and bring written verification. The student received an individual grade for this, but no group grade.

Ann uses grades as a disciplinary tool frequently, but on some occasions she takes other measures. If an inappropriate behavior is judged by her to be of a dangerous nature she said she would "take the person out of the room, or put them in another part of the room." If they are removed from the room, they are sent to an assistant principal for more punitive measures. However, she believes that grades are so important to the students that "if you tell them they're getting points taken off for that, then it will stop it." Consequently, she uses grades more often than any other measure for disciplinary purposes.

When a student persists in exhibiting inappropriate behavior, Ann investigates the student's home environment by talking to the parents and to the student's counselor. In some instances, the information she gains causes her to react differently to their behavior. She found, for example, that both Paul and Gale, a disruptive girl in Paul's class, had been physically abused at home. Knowing of their backgrounds caused Ann to accept more inappropriate behavior from these students before she took serious action against them.

Ann quickly found that overlooking Gale's behavior did not help at all. She hesitated to call Gale's parents for fear Gale would receive more abuse. After conferring with an assistant principal, however, she did call Gale's parents and
continues to do so when necessary even though nothing seems to correct the behavior for long.

Ann feels that Paul is emotionally disturbed and that his irrational actions cause the other students to ridicule him. He sometimes will act "like he is five years old and babytalk," and Ann found this behavior hard to cope with. She tried giving Paul detentions but that didn't work because he liked staying after school. His counselor advised Ann not to call his parents because of the way they typically reacted. Toward the end of the year Paul's behavior seemed to get worse and Ann described the way she coped with his behavior then.

A couple of times when it seemed like he wasn't able to handle the situation or we had something we just had to get done, and he was disturbing everything, then I asked him if he would like to go to the counselor's office.... That would be the very last resort, but he was acting... just totally crazy. I told the counselor that I thought I was going crazy from having to work with him.

Ann's perception of the individual student's capabilities influenced her instructional techniques as well as her expectations of different groups. Although she had had low ability students in her classes at other times, she had never had four together in one class before. She stated that, "I talk more slowly in that class and I enunciate more things and... it's almost like grade school." The fourth low ability student, Bob, was in a group with two girls who had very good time management skills. However, they tended to do
most of the cooking and to assign simple duties like setting the table to Bob. Ann resolved after the second lab to talk to the girls and remind them that Bob must do his share of the cooking also.

The time that Ann spent with the low ability group of boys limited the time she had to work with the rest of the class. She justified this when she said,

"They really need a lot of attention because they just don't know what the next step is, and they're not sure what utensil to use and... it concerns me a lot.... Being the way they are, that may be the kind of job that they have later on... and that may be a skill that they really need to have.... They may be able to use them in a job situation.

While Ann worked closely with this group, she expected the rest of the groups to perform in a satisfactory manner with little guidance. She was not able to make many notes on her pad to check on the students' performance of assigned duties as planned.

The directions to the entire class were sometimes influenced by Ann's perceptions of student abilities. While demonstrating muffins to the class with the low ability students, Ann made the comment, "You need to pay attention to what the other people in the group are doing." In explaining this statement later, Ann said, "I want the people who have a normal IQ to be kind of watching out for those who don't because they might do something really foolish."

After the first lab Ann began to recognize differences in group performance and to have different expectations for
the groups. While discussing individual group organization and time management, Ann stated that "some groups are better than others." She expected the group of low ability boys to be slower to perform their lab activities, and she mentioned the group that Paul was in as being a slower group also. She felt that Paul's group was slow only because of the intergroup conflict that developed as a result of Paul's task approach.

Although one group had been slow to make a recipe choice, Ann did not perceive them as being typically slower than the other groups. She observed that they appeared to be tired on that particular day, and she referred to their attitude.

I think maybe they just have that kind of attitude where they just don't care about anything.... I know that one girl acted like she was tired.... She seems like she could be a leader and... I would expect her to act like more of a leader than she did. I'm thinking maybe she was just tired.

The basic factor that Ann mentioned when describing group differences was time management. She recalled, "I have one group that I couldn't believe how fast workers had their muffins in the oven and then another group, I had to push them to get them in the oven." When she referred to the low ability group of boys, Ann frequently mentioned the fact that she had to help them in order for them to finish on time, and observations confirmed the disproportionate amount of time Ann spent with the group. Since the lunch period followed
their foods class, Ann permitted the group to stay in the lab during their lunch time in order to complete their lab activities. She felt that was a satisfactory arrangement because of their special needs.

Her perceptions of the individual student's needs were a consideration in many of the interactions Ann had with students. For example, during her years of teaching she had come to feel that black students in particular had good learning capabilities but also had special needs that were unique. While planning the first lab, Ann used the names of four black students to illustrate the appropriate method of assigning duties within a group. Ann explained her reasons for selecting those particular names.

"They're black students and I think it is important to communicate the fact that I like them. I have a good relationship with them but I think it's important to bring out the black students and make them a part of things because I think sometimes they don't feel as much a part of the school as they should.... Those particular students are very good students and they have some of the best grades."

The foods units that Ann covered during the data collection period were Quick Breads (muffins), Quick Breads (biscuits), and Quick Breads (assorted variations). The fourth lab, in which field notes were collected, was an egg lab in which the students prepared their choices of egg dishes. Ann's labs were carefully structured with many rules, but observations revealed that in reality much of the
careful planning was lost to the complex activities of a foods lab.

During observations many incidents occurred that had not been a part of Ann's plans. For example, during the egg lab the group in kitchen number 5 could not find a skillet. Ann had to stop everyone and ask them to "look for an extra skillet." When none was found, she had to help the group decide which pan would be a satisfactory substitute. This was the lab period in which the slow group of boys left a paper towel on the stove top to smolder. Ann had to rush across the room to remove it and then caution the group to be more careful.

She realized during this lab that the groups were using more than their share of ice cubes which would leave the later class with none. She spent some time going to each kitchen and warning them to use only two cubes per person. One student dropped a portion of butter needed to fry eggs and Ann had to go to the refrigerator and portion out more butter for that group. These interruptions and many others occurred during every observation period making carefully structured plans and close monitoring more of a dream than a reality.

Betty (homemaking): Benefit Grouping

Betty is a 42 year old homemaking teacher who has eight and one-half years of teaching experience with 5 years in the
site school. She has a Bachelor's degree in Home Economics Education. Betty's classroom style appears to be more flexible than that exhibited by Ann.

Several weeks of the semester are spent in preparing for the first lab session in Betty's classes. Early in the semester, students study basic nutrition so that they can incorporate this knowledge into their recipe selections for labs. An intensive study of safety rules is an important unit of study also. Betty adds her own class rules to the safety rules and emphasizes that all language and personal conduct used in her class must be "G-rated." The use and care of all kitchen equipment is included in the pre-lab study units.

Most lab units comprise one week of study with the lab itself requiring one day for pre-lab. Betty reported that the lab units begin with one day of background material to get students acquainted with the terminology for the lab. This may be accomplished by reading aloud from the textbook and then discussing it, or by reading silently and completing a worksheet or crossword puzzle over it. The second day may be filled with viewing a filmstrip and completing a worksheet. The third day is comprised of discussing the worksheet or watching a teacher demonstration and then completing the pre-lab planning. Pre-lab planning always includes oral questions that review the material studied in the two days prior. The lab is on the fourth day with
post-lab evaluation and a unit test on the fifth day. Some labs require two days of preparation due to the more complex nature of the tasks involved. The first two labs observed in the study were on Friday, but the third lab was on Thursday, a fact that generated several student questions. Betty observed that the students "need to be more flexible about their lab days."

Betty believes that students should be allowed to work with their friends and emphasized that in her classes this is a successful approach.

I've found that by allowing them to choose their own group members, that it works well in nine cases out of ten. I tell the students at the beginning that I prefer that they work with whom they would like to work with. They realize that I have the option if it seems as though personalities do not blend... that I can alter the grouping. They also realize that they may have done everything correctly and there's no problem within their group but that I felt a change might benefit another group.

Betty reported that she seldom makes changes during the first three labs. If there seem to be problems, she watches the group in question for several labs so that they have a chance to work out their conflicts and resolve them. If she sees that a change is inevitable, she tells the group ahead of time and tries to do it in a way that will not make them feel as if they have done something wrong. She emphasizes that the change is done so that the group will be more workable and more efficient.
When a group change is made, the first consideration Betty makes is whether a student works well within the group. She prefers that the students "learn to work with a number of different people in the classroom situation." They are encouraged to work out their differences at the onset. Then, if conferences individually and collectively with the group do not work, a change may be made.

Another factor that may cause a group change is the failure of one student to share his or her leadership responsibilities. Betty wants every student to develop to his or her own potential. She described one group change that was made after the three pre-lab sessions were taped and before the field notes were collected.

I found this situation and I watched a couple of times to make sure.... In this instance there were two boys and one girl and it appeared to me that they were leaning on her leadership ability and that she took the lead and they felt like they couldn't do it without her. So I moved her to another group and moved another young man into their group... and as soon as the girl was removed from the group, they sat down and they did very well and they felt very good about themselves.

One factor that influences group formation is cited by Betty as the most difficult of all to resolve. She said this occurs when "you have a child that no one wants in their group," and this can be the result of a student being "extremely lazy who will not pull their weight," or a student who cannot "perform on the classroom level" because of low ability. When the latter occurs, Betty places that student
with her students who are mature and academically strong. She confers with the strong students privately and feels that "they understand." She also talks to the low ability student and asks, "Do you want to try it?" so he or she clearly has a choice and does not feel unwanted.

Before groups are formed, Betty discusses various options with the class. Boys can form a "bachelor unit" if they prefer, or they can work in mixed groups. Groups are permitted to select their kitchen locations but they understand that some kitchens are smaller and can accommodate only three students. The larger corner kitchens and the teacher's unit are spacious enough for four students or even five, if class size makes this necessary.

Each lab group has a "host" or "hostess" who is responsible for the master copies of the market order and time schedule and for seeing that group members have their individual copies of these items. This duty rotates for each lab so that in groups of three, everyone gets a chance to manage the group at least twice during a semester. Betty has observed that even weak students will put forth more effort when they are hosts or hostesses. She describes a weak student as

One who has difficulty working in a lab situation; who isn't confident to take charge of a particular group duty..., who kind of stands back and waits so hopefully someone else in the group will do something so he doesn't have to do anything.
She explained that when it's a weak student's time to be host or hostess, he or she seems to accept the responsibility and perform as expected.

Group members are expected to work out their time and duty schedules together under the leadership of their group host or hostess. Betty does not appear to have structured expectations for the delegation of duties, but she does encourage them to rotate all duties within the group. She does not monitor and grade them on the performance of specific duties; rather, she grades on teamwork and overall performance of the lab during the allotted time.

In addition to completing time and duty schedules during the lab planning session, each group must select a recipe from those Betty has identified as choices and then prepare a market order. During the first lab when muffins are prepared, every group prepares simple muffins from the same recipe. Betty feels that this gives her a better basis for comparison so that she can evaluate the group composition and teamwork involved. The second lab is biscuit preparation and groups choose from three biscuit recipes. After the second lab, Betty's students are given a free choice from all the available cookbooks, dependent upon the unit being studied, cost of the recipe ingredients, and time limitations.

Betty approves or rejects the chosen recipes as is appropriate, but she tempers rejections by suggesting that the student prepare the recipe at home, or select a similar
recipe that fits class limitations. During an observation one group asked if they could prepare beer biscuits from a recipe they found, and Betty rejected it simply by saying that beer biscuits are not "G-rated" and do not fit class guidelines. Occasionally she has a group that chooses a recipe that is too simple for the group's capabilities. When that occurs, Betty challenges the group to try a more complicated recipe. She reported:

Sometimes we do it kind of in a fun atmosphere like, "Who would like to have a challenge?" and I may have two or three recipes that are more difficult than others and they're given the opportunity... to take a challenge. Now if I have an exceptional group and they've chosen a very simple recipe I might say, "Oh, you know, today I just feel like you're ready for a challenge."

If a group chooses a more complicated recipe than they can handle, she tries to guide them to something easier without pointing out their shortcomings. However, if the complicated recipe is one they really want to do, Betty permits them to prepare the food because "sometimes I think it's better to let them try.... If it's something they really want to do, they can achieve it." She stated that in this situation she would give them as much help as necessary with no "stigma as far as the student ... or evaluation is concerned, because they're putting into practice what they've learned."

Lab activities are explained, studied, and planned prior to the actual lab day so that more time is available for food
preparation. Once the students enter the classroom, they are expected to be familiar with their duties and activities for that lab. Betty does not interrupt them with group instructions unless she notices they're having problems with a certain step. During one class Betty called for everyone's attention and told the students to call her to their kitchen to check their mixing technique before they added liquid to their muffins. She explained later that the groups were overmixing their muffins and she wanted them to avoid any more mistakes.

Betty monitors the groups during lab by watching them all from a central location near the supply table and by going from group to group as needed. She carries a clip board with her and jots down notes from time to time. Her notes are jotted down on an evaluation form like the one the students use for self-evaluation (Figure 4), and she records "their strengths and weaknesses." She goes in and out of the kitchen units a lot and likes to think of herself as "just there with them," making notes as they work.

Before groups are permitted to eat their food product, they must call Betty over to look at it and ask them questions about it. Many of the questions are directed toward the problems they encountered and the visual appearance of the food, and she was not heard making any critical comments. Instead of criticizing, Betty was observed asking questions that would lead the students to
INDIVIDUAL EVALUATION

You will receive an individual grade for each week.

1. I worked to the best of my ability. 10
2. I had all needed supplies (recipe, hair covering, paper, pencil). 10
3. I understood my jobs. 10
4. I completed the reading assignment. 10
5. I did my share of the clean-up. 10
6. I was on time and in class everyday. 10
7. I cooperated with my group. 10
8. My behavior was acceptable. 10
9. I worked quietly. 10
10. I completed my home assignment (attached on back). 10

EXTRA CREDIT: I performed extra jobs as needed. 10

TOTAL

STUDENT COMMENT:

TEACHER COMMENT:

Figure 4. Student Evaluation Form
realize why their product lacked quality. For example, field notes recorded the following comments.

9:58 T goes to get grade book, writes down grades; goes to kitchen 1, student is frying egg with cheese on it. T, "You added your cheese to the egg while it was frying?" Student, "Yeah, and it's a mess." T, "That side looks pretty, doesn't it?" (after student turns egg over).

10:02 T goes to kitchen 4, looks in oven; goes on to kitchen 5 and talks to the group about their silver placement. Scans room and goes to kitchen 2, "Oh, it looks good!"

10:18 T goes to kitchen 1, "How did it taste?" Student, "The potatoes were kind of yucky." T, "Were they soggy?" She talks about the quality of foods; reminds them of their table manners.

All students are given a basic group grade that evaluates lab fundamentals such as the use of proper measuring equipment, collection of supplies, ability to follow the recipe, group organization and teamwork, and working within the time limitations of the lab. As the semester progresses, additional units of table setting, table service, and manners are added so that later labs evaluate a wider range of fundamentals than early labs do. Betty has found that working within the time limitations of the fifty-five minute period is hardest for the students. To Betty the time frame presents no difficulties because she previously taught twice as many students in forty-five minute periods.

Each student's group grade may have additional points added or removed depending upon the individual student's performance. For example, if a student misbehaves during the lab, or fails to wear the proper apron and head-covering,
points are deducted from the group grade for that individual student. If another student performs extra chores such as putting away supplies, that student has points added to his or her group grade. Betty does not grade the groups on the number of times they ask for help. She reports that she wants them to feel free to ask for help at anytime.

Excessive absences may affect a student's lab grade. If a student misses one lab, Betty requires that he or she prepare the food product at home and bring a sample of it, plus a note from a parent, to verify his or her performance. If a student fulfills this requirement, the grade for that lab will not be affected. However, if a student misses more than one lab, this will be reflected in his or her grade.

Betty plans for a post-lab group discussion to evaluate the lab activities. She feels that this helps to reinforce the principles of food preparation that students experience in the lab. This is also a time for sharing mistakes and problems that occurred in the lab. By keeping the exchange on a positive note she feels that everyone benefits.

If they've made an error, I tell them that they need to improve and encourage them on how they can do better next time. I do stress... that we sometimes learn as much from a mistake as we do from doing it right the first time.... I feel that we have good rapport and a good feeling about each other so that we can pat someone on the shoulder and say, "Well, John, something went wrong in your kitchen unit.... Will you share with us?" And they will share their mistakes and then we can laugh together about it and then go on and proceed.
Although Betty's students prepare different recipes, she expects them to understand and practice the same basic principles. She explains:

For instance, in making biscuits, I want each child to understand the technique of cutting shortening into the bread dough, or... to have the experience of kneading dough..., of knowing where to place the rack in the oven..., so there's certain cooking techniques within each lab plan that each child is expected to master at a minimum level... what they've learned the week before.

Betty's perception of student ability does not appear to influence her evaluation of them, but it does influence the amount of time that she may spend in preparing them for labs and in the amount of help she may give them during the lab. For example, when asked why more time was spent on unit basics for every lab in second period than in fourth period, Betty explained,

The fourth period, as a whole, has a higher IQ and they can pick up simple directions quicker than my second period.... I just noticed, for instance, an assignment that I planned to last a day and a half, this group would finish in a day and a half, but it would take second period two or three days.

She found that giving directions for a test or worksheet required two or three repetitions for second period, but only one for fourth period. She believes that the second period students "just don't understand" what she is saying.

When asked how she would handle students who did not appear to be learning to their potential, Betty talked more about student growth than learning potential. She feels that there are very few failures in foods lab because all the
students finish the class knowing more than when they entered, regardless of previous cooking experience, and they all feel better about themselves.

Now if I realize that a student has cooked a lot at home, then I really get with them... and encourage them to make challenges at home and realize that we're doing basic techniques in Homemaking I; this is our curriculum.

Betty feels it is important "to know the child and his abilities." She spent quite a bit of time talking about a special education student she had worked with in the past. Even though the student did not pass the first year, Betty felt that she did learn something. After repeating the class, the student passed because Betty felt "she was able to comprehend better" the second year. She was treated like everyone else in the class with one exception. Because she could not comprehend written work, Betty tested her orally.

When there is a question about a student's potential, Betty seeks help from the counselor who works with that student. She occasionally mentioned telephoning a parent, also. She recalled one student who "did not really pass" but who became very interested in preparing family meals at home, according to his mother. Betty passed the student on the basis of the mother's report that he was "carrying over what he had learned."

Although Betty permitted the student groups to select their own kitchen units, the slowest group in each class ended up in the larger teacher's unit and was monitored more
closely by Betty. The group of three boys that was formed after Betty moved a girl out worked in the teacher's unit during second period. She monitored them more closely than the other groups because "they lacked self-confidence."

During fourth period, the teacher's unit was used by a group that had a low achieving student in it. Betty explained that only recently had standardized testing revealed the student had an average intelligence but a low self-concept. Consequently, Betty monitored that group more closely to check on that student's progress.

Other reasons Betty gave for closer monitoring of the teacher's unit related to the physical layout of the foods lab. During the first ten minutes of a lab, Betty likes to stand by the supply table and watch the students. From that location she has a clear view of the other five units and can see everything that goes on in them; however, the refrigerator blocks her view of the teacher's unit. Thus, she makes more trips to that particular unit in order to watch them as closely as everybody else.

Betty said she does not have serious discipline problems in her foods labs.

We have what we call a safety unit before they ever go into the kitchens and I'm very, very strict about safety rules... and they know at the onset, if they clown around, it'll be a serious offense. They may sit the lab out. If it's very serious they may go to the office, but I've not had serious misbehavior problems with my food labs. The most serious was popping someone with a dishtowel and I let them know by the tone in my voice and the look on my face that
it was totally unacceptable and they wouldn't do it again. That took care of it.

The food units that were studied during data collection in Betty's classes were Quick Breads (muffins), Quick Breads (biscuits), and Milk Cookery (puddings). The fourth lab, in which field notes were collected, was a lab in which breakfast was prepared using the principles of food preparation learned in the previous labs. Observations of Betty's classes left the impression of a relaxed and functional learning setting that was carefully organized with the students' best interests in mind. Betty's goals appeared to be built around helping the students to develop to potential, improve self-concepts, and enjoy their lab activities.

Cindy (biology): Ability Grouping

Cindy is a 50 year old female biology teacher. She has 24 years of teaching experience and this is the first year she has taught in the site school. She has a Bachelor's degree in Physical Education and Education, and a Master's degree in Physical Education with a minor in Biology. Cindy's teaching style can be characterized as one based on her judgments of the students' personalities and abilities combined with past experiences in the classroom.

Cindy's curriculum organization is based on a district approved curriculum guide that is used by all the biology
teachers in the site school. The biology teachers plan their units and labs together and they all attempt to coordinate their schedules so that all classes are studying the same units at approximately the same time. Cindy's classes spend an average of two days per week in the lab.

Classwork that prepares the students for a lab includes lecture, reading assignments, worksheets, and occasional teacher demonstrations. All the students are familiarized with the layout of the lab and its equipment prior to the first lab. Cindy discusses each lab activity on the day before the lab and often gives the students a worksheet to prepare and bring to the lab with them. Thus, on lab day more time can be devoted to the lab activity with less time spent on explaining the lab and organizing the students.

Cindy's lab has six regular lab tables that she uses for six groups of students and one storage cabinet top that she reserves for late arrivals or behavior problems that occur during a lab. She uses a combination of student choice and teacher assignment to place students into groups. She explains:

Sometimes I assign them, the ones that I want to keep together; otherwise, no. If they can do the work and behave themselves, I don't care, because that's really better for them if they enjoy who they are sitting with.

She believes that after the first week or two of school she can tell which students she needs to place.
I think anybody who has taught very long, the minute you call the roll, nearly, you can tell who's gonna go with what. I think after I've graded the first couple of sets of papers, I can group them.

At times the decision is based on the ability of one student to help another. When that occurs, she puts them together as lab partners. At other times behavior makes a difference and she makes it a point to separate specific students.

Although grades and behavior are important factors in Cindy's grouping, she feels that friendships may be an even stronger factor.

I believe that friendships among this age kid... are the most important thing they can think of, so since that's the way they feel, that's the way they're gonna act. Now if you want to separate like the good ones from the bad, behavior-wise, that works to some extent, but you're not gonna have... the good. The learning is not gonna come that way.... You have to look at how they react with each other, I think, just about more than their friendships; than anything else.

She related that one upset or unhappy student in a group can keep the entire group from doing good work on a lab. That student may be mad at her as a teacher, unhappy with a boyfriend or girlfriend, or upset about something that happened in another class. When she is aware that a student is affecting the work of an entire group, Cindy makes group changes on the spot.

Cindy admitted that selective placement of students is not a panacea. She discussed a student, Johnny, who was "pretty bad" and would not pass.
He's another kid that I have moved.... I had him moved from one of the classes that I had him in to this one; it has not helped a bit. He hasn't improved at all..., and I can't think of anything else to do for Johnny.

The students in Cindy's classes start out with lab partners and two pairs of partners are placed at each of the six lab tables. It was observed, however, that none of the groups in Cindy's classes were even in number. Group sizes at the lab tables varied from one to five. Cindy explained that the groups become uneven because she changes them around after almost every lab "based on the answers that I get at the end of the period." She permitted a group of five to work together "because of the interaction they have of getting answers and... I had rather do that than get incorrect data." She let that combination of students sit together only for labs. The single student who worked alone did so because he preferred working alone and Cindy had found from experience that he could not work effectively with anyone else.

Cindy uses one particular table in both of her classes as the location for her behavior problems. The table is located against the wall on one side of the room and is visible from anywhere in the room. In describing the group of four boys who are assigned to that table during one period, Cindy typifies three of them as being "bad." The fourth student had just transferred from another school.
district and was placed at that table deliberately so that he could be watched.

He hasn't been doing badly; I hated for him to sit there..., but I hated to move him because I knew what I had to watch.... I thought he would be good enough, but... he let those kids sway him.

Having one particular location for disruptive students is "so much easier.... You know where the trouble is coming from.... You don't have to go hunt." She has tried separating problem students before rather than putting them all in one group, but has decided everyone else benefits from having them all together. In this way the other students can "get something out of a lab instead of having them 'bugged' ... by one bad kid." Although she placed the disruptive students at one table for lab, Cindy was careful to separate them in the classroom.

On lab day, Cindy's students were expected to be seated in the classroom area for attendance check and last-minute directions before proceeding to the lab area. Cindy monitored the lab activities by moving from table to table to help where needed. Students were free to call out to her for help when needed and they often called across the room. There was a lot of commotion in Cindy's labs, but she did not appear to be bothered by it, and the students managed to complete their work on time.

A successful lab, in Cindy's opinion, is one in which all the students complete their lab papers and correctly
answer the lab questions. She knows that not everyone will get the same results because of the varied levels of ability in her classes of regular biology. She spends a lot of time selecting lab activities that can be successfully accomplished by everyone, and feels that the curriculum is very unrealistic as it is written. She tries to stay with the curriculum but finds much of it too hard for the lower level students, and so must adapt it to fit them.

She used a new series of lab activities during the last two labs in which data were collected and commented that they were successful.

I've been embarrassed when I look at them because they are so easy, but you have more success—quicker success with this type of thing. You don't spend over half the period explaining it. You lose too much time with the ones I've written; [they] are too hard.

While trying to find lab activities that are simple enough for her lower level students, Cindy worries about challenging the higher level students. When asked if Rita was an average student, she replied,

Really she is. She makes A's for me, but if she were in another kind of situation where it really was a rigorous class, she'd be making B's. And she's... like a bunch I have in there.... I get embarrassed. They should have been challenged much, much more than I... could do.... I don't know what has kept them from being bored to tears.

The classroom area of the biology labs is less than ideal according to Cindy. She described it as too small with very little space. The classroom chairs are attached in
"strings" of three and cannot be easily rearranged so that more students are near the teacher. Cindy feels that the students in the back of the room do not absorb much from her lectures.

It's just like if you stood in the front of your yard and turned the hose on and you put a row of bottles in the front and a row of bottles in the back. Which of the bottles do you think will be more full of water?... The ones in the back would not get very much.

Since the classroom arrangement made it difficult to get enough students near her for lectures, Cindy compensated by spending more time with the slower groups during lab. She relates, "I have to work so hard to get them to learn. Of course, my failure rate is not very high and that may be one reason why."

Each group was expected to clean up their lab table and put away supplies properly. When they failed to do so, Cindy called them back to clean up before they left the lab. She does not deduct from their grades when this occurs. Lab grades are solely dependent upon the answers on the lab worksheet that each student completes. Since Cindy encourages the lab groups to work together to find the correct answers, there are many duplicate papers, but she expects this. She feels that it is more important for the groups to work together and find the correct answers than it is for them to give an incorrect answer and learn it that way.
After the lab tables were cleaned up, students were expected to return to their seats in the classroom. With any remaining class time, Cindy asked review questions about the lab. She always called on students that she felt could give the correct answers, so that little time was wasted. If they were especially crowded for time, questions were directed toward one or two specific students who could respond accurately and quickly.

From the comments she made, it appears that Cindy believes most regular (not honors) students are weak or low in ability. For example, "Most of these kids in these regular classes, if you hold their hand, it's just fine, but once you're out of sight, forget it." At another time she stated, "They just don't have the background -- vocabulary and understanding -- it's just not there." During one lab it was noted that most of the students had trouble operating a microscope. When asked if this was a newly learned skill, Cindy replied that it was not new to them and "that's one of their things; they wouldn't learn how everyday."

Cindy said she has "never really thought about" how she reacts when students do not appear to be learning to their potential. Her only answer to this question was, "I know I go over answers a lot... because... they can at least find the correct answers. I hate for somebody to learn the wrong ones, and that happens a lot." When she sees that students are not learning at all, Cindy questions them about why they
are failing and why they aren't doing their work. She has found that if she asks them to explain what they don't understand, they can tell her. Then she sometimes starts "all over from the beginning."

After a lab on probability, Cindy commented that few of the students understood it completely.

They don't really understand that.... The reason why is because it is not a statement or question that you can answer with one word. Teaching this kind of kid is that way all the time.... To think or work out an answer by yourself.... They cannot do that.

She found that they could complete the lab work-sheets satisfactorily, but "when you start to ask the 'why' questions to compare different answers that they got, they don't know." She believes that those who scored 100% probably got the answers from her.

I try very hard not to give direct answers and they get so mad at me.... But I will answer... through the back door lots of times. If all they'd do is think about it, they probably could come up with an answer. But again, with this kind of kid, trying to get them to think is... almost impossible. It's a lot of waste of good kid!

When students in a group exhibited non-acceptable behavior, Cindy reacted in one of several ways. Occasionally she yelled at them, but most often she was observed ignoring them. Twice during one lab a student in the "problem" group fell over on his lab stool, creating a loud noise. After the first instance, Cindy asked calmly if he was hurt and then went on with her routine monitoring. After the second
incident she ignored him completely, as did all the rest of the class. In many instances, Cindy went to the student creating a disturbance and attempted to get him or her back on task completing the lab activities. She said this is her preferred method of reacting to non-acceptable behavior. She was also observed giving detentions to students who were late to class. At no time did she appear angry when disruptions occurred.

Cindy's labs were slightly noisy with a lot of student movement around the room and quite a lot of talking among the students. None of this bothered her as long as it appeared that students were on task and would be able to complete the lab as scheduled.

Although she talks as if only a very few of her students have any ability, Cindy appears to have a good relationship with them all. Her greatest concern appears to be the development, or discovery, of some lab activities that everyone can complete so that the correct answers to the lab worksheets can be supplied.

Cindy's classes performed three labs during the time in which field notes were collected for this study. The three labs were: dissection and study of the organs of a frog, reactions of yeast organisms to various products, and the study of probability and its relation to heredity.
Dana (biology): Performance Grouping

Dana is a 24 year old biology teacher who is teaching for the first year. She has a Bachelor's degree in Education with a Natural Science minor. Her teaching style appears to be very student oriented.

Dana always groups her students for labs and occasionally for other learning activities. For example, she utilizes work sheets as reinforcement of learning at times and permits the students to work in groups to complete the worksheets. Students are permitted to choose a lab partner at the beginning of the year and then given a chance to change partners at the end of the first semester. Dana reports that very few students request a change at that time. She justifies the student choice of partners by explaining, "It's up to them to get all the lab done... and so they're supposed to pick someone that they know will help them."

Students are not necessarily still with their original partner at the end of the first semester, however. Dana frequently makes partner changes and feels that she has probably changed nearly every partner at sometime during the year. After the students select their lab partners, Dana places them in the lab where she wants them. She not only considers their partners but also their lab station when deciding to make changes. As she explains:
I consider who I think will get the most work done and I try and put people together -- I have some people that have trouble with copying.... So I try and put them at a table where there are people that won't let them copy.

Another factor that influences Dana's grouping practices is the sociability of the students.

I've tried to put popular students with non-popular students. I know that sounds bad, but... if you put them with their buddies, then they don't get anything done; they're too busy socializing. I find at the end of the year, the students that are... unpopular end up being friends [with the popular ones] most of the time.

Although she wouldn't definitely say that culture is a factor in her grouping practices, Dana did say that she tried not to pair up blacks together "because they'll just fly off the handle" if things don't go right and then won't get their work done. She explained, "If I mix them with someone that's really more persistent, they'll do just fine because that kind of evens their temperament out."

The complexity of the lab task and the student's ability are two grouping factors that Dana considers very important.

I consider the lab that we're doing. A lot of times I know that certain students understand it better than the other ones -- sometimes I'll have to change groups around; it doesn't seem to bother them in the least when I change groups or change partners.... I do it one at a time and I'll say that, "I know that Susie's having a little problem, Buzz; would you mind being in her group for awhile?"

Student behavior is not a primary consideration when Dana first places student groups, but she finds it may become a consideration as the semester progresses. If she makes
changes for behavior, Dana must also consider the room arrangement. Due to the closeness of lab tables she has found that isolating behavior problems at one of the outer tables is most satisfactory. The quieter students are placed at the tables in the center of the lab area. She explained:

In my third period I let E.K., "Mr. Social," be at that table so that he is in the middle of everything and doesn't feel the need to get up and walk the whole lab.... When I had him at table 6, the outer table, he'd walk and roam the whole lab. Now that I've put him at table 4..., he'll stay in that seat because he's in the center of everything.

When group changes are made, Dana prefers to do so at the very beginning of class. She has tried making changes during a lab and found that "it embarrassed the student" and "caused a ruckus with the whole class." As a result of this experience, she makes changes before class actually begins and finds the students very cooperative.

Labs are planned the day before so that little time is needed for whole-class instructions on lab day. Dana explained that on the day before a lab, students "take notes, watch things, and listen." On lab day students report to the classroom area for attendance check and for a few general instructions. Their lab sheets and directions are filled out the day before so every one should know what to do in the lab. When Dana dismisses the students to go to the lab, there is little, if any, commotion as they report to their lab stations to begin work.
Before any whole-class instructions are given, Dana demands that all eyes be on her. Only then does she feel that she has their undivided attention. The students apparently respect Dana because it was observed that a number of students always chide those who did not heed her requests immediately. After general instructions are given, Dana goes to each lab table to see that all groups are on task. During the remainder of the lab, she monitors the groups by constantly circulating among the lab stations. She never raises her voice or appears agitated about anything that occurs.

Discipline does not appear to be a problem for this first year teacher. She is firm and consistent with all students. As she described her monitoring routine,

I just roam around the room and they know they get points off their lab grade... if I have to call them down... or if their lab is not left the way it started.... I've had students come up and argue but... they know what's expected and it's whether it's worth the points to them.

When deducting points isn't effective, Dana gives detentions or sends repeat offenders to the office. Her policy is to try to stop non-acceptable behavior before it occurs or becomes bad. An example of this is the way she handled a student named Sonny.

I don't have any trouble with Sonny, but I straightened him out the first week that he came in. He transferred in from another class and he immediately smarted off to everything I said, so I just called him after class and I said, "I don't know how often you do this, but you will not do it
to me. I will not put up with it.".... And he straightened up immediately.

Dana says that Sonny, who is very artistic, often comes to her classroom early so that he can show her his art projects. She feels that her praise of his art has helped his attitude in biology class.

In describing another incident, Dana commented that the students "like to get my attention," and may misbehave to do so. When that happens, she said, "I'll just smile at them and roll my eyes and then they're fine. That's their attention for the day and they go on." She explained that she is not very threatening looking and "if I get mad and throw a fit, that's what they want." She has found that a smile or a stare lets them know that she acknowledges their behavior, but does not approve. "If I got after everyone that did something wrong in lab, we would never have lab."

Dana's reaction to non-acceptable behavior is based on her judgment of the severity of the behavior. Frequently she simply walks over to the student and says, "Straighten up; please don't do that. It bothers me." She has found that if this embarrasses the student enough, the non-acceptable behavior stops. If she judges the behavior to be more serious, the student is removed from the lab situation and sent back to the classroom area, resulting in a grade of zero for the lab.
Dana admitted that frequently she stops and examines her own state of mind when dealing with a behavior problem. The fact that only a partial wall separates her lab from an adjoining lab keeps her "keyed up" and conscious of the noise level in her classroom.

I like the busyness of the lab, but I have to tell myself to take three deep breaths and then handle the problem.... I'll think, "Is this really that serious? Is that student normally like this? Are they just excited because they're in the lab and they're getting to talk?" I find that a lot of times... I get excited... and they get that reaction from me.... So a lot of times it's my fault.

Because she thinks she may over-react to some behaviors as a result of the room arrangement, Dana seldom lets a grade of zero stand as a disciplinary measure. Students are given the opportunity to stay after school to make up any zeros they receive because of non-acceptable lab behavior.

As soon as the lab activity is completed, students go back to their desks in the classroom to write their summary of the lab. There is no talking among these students even though Dana usually is still in the lab with those who are not finished with their experiment.

A close watch is kept on all students to be sure they are learning to their potential. As she monitors lab activities, Dana frequently stops and questions students in each group. She sometimes finds that students are on task, but really don't understand what they're doing. Instead they are just doing what the people across from them are doing so
they'll get the lab done and won't get in trouble. When she finds this occurring, Dana spends extra time with those students to explain the lab and answers any questions they may have. She said, "I try to make them feel comfortable to ask me any questions and not feel stupid when they ask me something."

If students aren't learning as they should, Dana asks herself, "What did I do wrong?" She has found that frequently after her first class of the day she can "pick up... what I did wrong and that will help the next class." Usually by the last two classes of the day, she finds the students comprehending more "because I have caught on." If an entire class doesn't understand all the work, she feels the blame should be on her, but if the problem lies with a few individuals, that is an indication they're having problems. Then she spends extra time with them in order to clarify any misunderstandings they may have.

Dana studies the students' personal records for insight into their capabilities. She examines standardized test scores and the scores of a district developed test that is designed to be predictive of the state adopted basic skills test. She found that many of her students were weakest in writing skills and so she plans lessons that require more practice in that area. She grades her students' papers for spelling, punctuation, and sentence structure as well as for the biology related answers. It was observed that many class
exercises included reading aloud. Dana believes this helps those weak in reading because they gain practice as well as get a chance to hear the material orally, and thus learn it easier.

Dana has had close communication with parents of her students. She often makes telephone calls to parents just to give them positive feedback about their children. When the school held an open house for parents, Dana awarded bonus points to those students whose parents attended. As a result, she had a record number of parents attend.

From experience gained early in the year, Dana decided that group grades were not a satisfactory way to evaluate her students.

The very first three labs I gave partner grades, but... I had one person do the lab and one sitting there a lot of the time and I didn't feel that was fair, so now I make them come back to their desk after they're finished with the practical part of the lab to answer their questions.... They have to do their conclusion on their own. It's a paragraph and they have to be very comprehensive to get full credit.

Other factors that influence the student's grade include behavior and "housekeeping" duties in the lab. Points are deducted for inappropriate behavior that results in their being spoken to more than once by Dana, for failure to leave the lab table in proper condition, and for failure to push lab stools under the tables.

Dana reported that her students' lab grades were not very high "because I grade high on the conclusion and I do
that because I don't want them to just be able... to do nothing and get a high grade." With the conclusion being worth thirty points and the data questions requiring transfer and application skills, Dana is able to evaluate objectively the students' understanding of the lab.

Conversations with Dana are sprinkled with her typifications of the students. For example, she described one class as her "socialites." They were the students who talked a lot and always let her know "that they give other teachers problems." She explained, "They continually tempt me and then they're like, 'Well, you wouldn't do that,' and then I do. They say, 'You're so unfair; we thought you were cool.'"

Dana occasionally referred to a specific group as "my quieter people" or "my real talkers." She frequently made comments that typified individual students. One student was her "question asker" and another was her "little mother." She described the "question asker" as a boy who was more curious than the others and asked deeper, more thought provoking questions than her typical student. Her "little mother" was a mature senior student who made sure that everyone around her got his or her work done. As mentioned before, E. K. was her "Mr. Social" who was always walking around the room talking to everyone and flirting with the girls.
Observations showed that Dana maintained an orderly classroom in which all students were expected to be accountable for their own work. She was firm and consistent in both grades and discipline. The students appeared to respect her and to feel comfortable with asking for help. Although Dana had a great concern for the individual student and his or her needs and rights, she never lost sight of her pedagogical goals. During the data collection period, Dana's classes studied the organs of a frog, yeast organisms, and heredity.

**Patterns Among Homemaking Teachers**

The two homemaking teachers, Ann and Betty, shared the same foods lab, the same curriculum guide, and the same basic philosophy that foods classes should be enjoyable to all. In addition, similarities were observed in several areas related to their grouping practices.

Ann grouped her students through the use of sociograms which helped her to place the students with as many as four of their chosen friends or as few as only one. This practice suggests the recognition of interpersonal relationships within a group, a necessary factor for effective grouping according to Schmuck and Schmuck (1975). They studied group processes and found that in order to successfully utilize grouping, a teacher must 1) recognize the power of interpersonal relationships within a group, and 2) focus on
the task to be accomplished and the way group members approach the task. Ann prepared the groupings and made her decisions based on her perceptions of the behavior of the students and special needs that individual students might have. For example, she placed a student that no one liked in a group with two of her more mature students because she felt no one else could work with him.

Although Ann retained the right to change group compositions whenever she deemed it necessary, no changes were ever made. When three low ability boys grouped themselves together through the use of sociograms, Ann talked about making some changes, but never actually made any. She rationalized the reasons for leaving the three boys together and made compromises in her monitoring techniques in order to keep the group intact and provide the extra help they needed.

Betty permits her students to form their own groups because she prefers to let them work with whom they would like. She retains the option to make group changes if she feels a group would benefit from a change. Although Betty mentioned a number of situations that would cause her to make group changes, none were made during the data collection period. In discussing group changes, Betty emphasized her concern for the students' feelings over her desire to have managerial control over group activities.

Both homemaking teachers expressed a concern for smooth group interaction and student cooperation with no
disruptions. Another concern was time related; they wanted the students to finish their lab activities in the scheduled fifty-five minute period. Group changes were cited by both teachers as a part of their teaching repertoire and as the solution for maintaining a well-managed laboratory class. Instead of using this option, however, the two made compromises in their plans for the apparent purposes of keeping the students happy and avoiding any bruised egos among them. Another explanation could be that they intuitively realized that making group changes might cause behavior problems.

The placement of the student groups in the kitchen units is another area of similarity shared by Betty and Ann. In all four of their observed classes, the group of students that needed the most help or closest monitoring worked in the larger kitchen, the teacher's unit. Ann explained that she intentionally placed these groups in the teacher's unit because that unit was larger and more easily monitored from everywhere in the lab. The teacher's unit contains more floor space and thus is easier to work in. By placing the problem groups there, she could assure a smoother functioning class that would be more likely to complete the lab activities on time.

Interestingly enough, in Betty's classes, the two groups that required the closest monitoring ended up in the teacher's unit, but Betty said she did not place the groups
in the larger kitchen. They chose their own kitchen unit. Betty's explanation for more carefully monitoring that kitchen was related more to the design of the unit than to the needs of the students. Because the placement of the refrigerator blocked her view of the teacher's unit, she had to go to the unit rather than scan it from her favorite vantage point.

Betty may have unconsciously guided her problem groups to select the teacher's unit, or their selection of that unit may have been accidental. Since Betty has not described any behavior problems or students with special needs in her classes, it is possible that she does not accept the reality that such problems exist. Another, and more plausible, explanation of the contradictions in Betty's reports is that she may have cited the reasons that she thought would present her in the most favorable way. This is a common problem in ethnographic research (LeCompte & Goetz, 1982), and one that was taken into consideration when designing this study.

Both homemaking teachers shared similar expectations of the groups related to the curricular tasks. All students were expected to learn the basic cooking principles of each unit studied and to exhibit basic preparation skills in the labs. Groups were required to plan their lab activities, order supplies, and perform the lab in specified blocks of time. Labs were expected to be orderly, pleasant, and task oriented.
Some similarities and some differences are evident in Betty's and Ann's typifications of individual students and groups. Both teachers used student intelligence to typify entire classes or groups. Ann talked about "the slow group of boys," while Betty described her second period class as a group that "just doesn't understand like fourth period does." They both mentioned time management and group organization when referring to specific groups. Betty classified some individual students as "weak" while Ann more frequently categorized individuals in the context of behavior. Both teachers mentioned individual students that "no one liked" and both teachers placed these students with their "more mature" students.

Patterns Among Science Teachers

The entire science department in the school where data were collected is committed to preparing their students for further education after high school. Academic standards are thought to be high and students are expected to be serious and dedicated about their science classes. Both Cindy and Dana support the departmental standards of excellence and this is evident from the data collected.

Neither teacher left the formation and placement of groups to student whim and chance. Cindy permits some students to group themselves, but with the stipulation that they are able to do the work and behave themselves. Other
students are placed by Cindy and are regrouped as often as she deems necessary. In fact, she admits to changing them around after almost every lab, dependent upon the quality of the answers students gave on their lab papers for the previous lab. She tries to group students so that interactions among them will create a helping situation and produce correct answers. She feels that correct answers are more important than students copying because she doesn't want them to learn incorrect answers.

Dana permits her students to select lab partners but admits that she has probably changed everyone sometime during the year. Her changes are based on several factors: getting the lab work done, not copying, student personality, the complexity of the lab task, and student ability. The primary consideration underlying all these factors, however, is whether the partners can get their lab work done correctly.

The placement of lab partners at lab stations is not left to chance by either teacher. Students are assigned their stations with their work habits in mind. Both teachers use an isolation technique for groups that create class disruptions and hinder the work patterns of others. Cindy uses a lab table that is in a central location where she can monitor it from any position in the room. Dana positions her behavior problems at a table on the outer periphery of the lab so that other groups will not be distracted from their lab performance.
Both teachers prefer to group their behavior problems together in one group rather than mix them in with the more cooperative students. They stressed the fact that they would not be able to monitor several behavior problems efficiently if they were scattered throughout the lab.

In comparing the grouping and group placement practices of Dana and Cindy, similarities are found that indicate they both consider the accurate completion of the lab reports as their primary pedagogical goal. This suggests an attempt to fulfill the departmental commitment to excellence and careful adherence to unit schedules. Other research has indicated similar findings. For example, Morine-Dershimer (1978-79) suggested that the teacher's own curriculum-management system and the local achievement norms produce the "situational realities" that direct the teacher's behavior.

Group expectations for both Cindy and Dana are similar; they both have the same final goal, but disagree on how to achieve it. Cindy wants all students to complete the lab activities and then answer the lab questions correctly, even if they must copy to do so. Dana expects accurate lab reports, but is very firm in her desire to promote individual work with no copying. These differences may be based on the two teachers' attitudes toward teaching and their repertoires of experience. As a new teacher, Dana is very enthusiastic about teaching and has high performance expectations for her students. Cindy, with 24 years of experience, doesn't appear
to have any enthusiasm for her job and may have realized that her job is easier if she doesn't expect too much of her students.

Both Cindy and Dana perceive specific categorizations or typifications for individual students and occasionally for lab groups or the entire class. Cindy typifies the majority of her regular students as being "weak" and lacking initiative. She feels that there are only a few students in her classes who are "high level." As a result of her typifications of the classes as a whole, she constantly searches for lower-level lab activities for them.

Dana typifies one entire class as her "socialites", but most of her categorizations apply to individuals. She has her "Mr. Social," "little mother," "question asker," and "real talkers." The primary difference between Cindy's and Dana's typifications apparently lies in the underlying basis for which the classifications are made. Cindy categorizes her students on academic ability while Dana considers the personality and social interactions of her students.

Patterns Among Others

Interviews were conducted with teachers of non-laboratory classes for the purpose of gaining a comparison of their grouping practices with those of the laboratory teachers. The interviewees were a language arts teacher, a sociology teacher, and a fine arts teacher. To further
examine any apparent patterns among the laboratory teachers in the study, an additional biology teacher and homemaking foods teacher were also interviewed for the grouping similarities and differences.

Homemaking

Hannah, the additional homemaking foods teacher, has seventeen years of teaching experience with her homemaking degrees emphasizing nutrition and family relationships. Hannah utilizes different grouping practices in her beginning Foods I classes than those she uses with her advanced Foods II and Foods III classes. The advanced classes are grouped in various ways, dependent upon the curriculum requirements. The Foods I classes, however, are grouped according to "how they work together."

Sometimes I'll find one person that will do all the work and some who will do none. I've been known to take the ones who do nothing and put them all in one group and see what happens. Because... sometimes you will get somebody... who is so concerned about their grade that they will not let the others do anything because they want a perfect grade. Sometimes I will have... strong leaders who are so bossy... especially girls will end up telling the boys they can't do anything but wash dishes; so that all enters into Foods groups.

Students are changed to other groups when they can't work quietly within a group or cannot behave in a manner that Hannah approves.

I don't group them the first lab, ever, with the understanding that if they're not quiet... then they'll be moved. Then I usually move one or two
specific people that lab... and make a big issue of it, you know, "you talked in the lab," or, "you popped each other with the towel."... This year I have so many Special Ed students ... that I've had a hard time grouping as it should be grouped.... Ordinary, everyday kids don't know how to work with those kids, and won't, as a general rule, work with them.

Completing the lab activities in the allotted time also is a prime concern of Hannah, as it was a concern of Ann and Betty. Although she made frequent changes in group composition, Hannah's grouping concerns are similar to those expressed by Ann and Betty. Smooth group interactions and completion of lab activities within the allotted time appear to be the driving forces behind the grouping concerns of all three homemaking foods teachers.

Hannah does not use one specific location for the placement of problem groups for two apparent reasons. One, she controls problem groups by making frequent group changes; and two, she rotates group placement in the kitchens for each lab. The rotation is done so that students will all have a chance to use different models and types of equipment that vary in each kitchen.

Hannah's expectations for the groups are similar to those expressed by Ann and Betty.

I expect them to enjoy themselves, to learn self-discipline, to learn to get along with other people, as well as learn to cook.... I think it's important in an elective; that they have, within a framework of structure,... time to say, "This is a fun class; I enjoy coming here everyday," that, "I can relax; I can get a drink of water." I like that
informal environment and my informality probably affects them.

Orderly, pleasant, and task-oriented labs that are completed within the specified class time are expected by all three homemaking teachers. A knowledge of the basic preparation principles and a demonstration of the skills necessary to complete the labs are the curricular requirements on which the teachers base their expectations for the groups.

Hannah does not appear to typify her students as Ann and Betty do. She views each student "as a mother would" and tries to work with them in that context. It is possible, however, that more specific typifications would have emerged if Hannah had been included in the study and more interviews with her had been accomplished.

Biology

Betsy, a biology teacher with four years of experience, was interviewed for the purpose of providing additional insight and possible contrasts to the grouping practices of the biology teachers in the study. The department standards appear to influence Betsy's classroom practices as they do the practices of Cindy and Dana. She permits students to select their own lab partners as long as they get their work done and do not disrupt the class. She makes changes when necessary, but considers the students' preferences and
ability when doing so. In order to complete a difficult lab in the allotted time, Betsy frequently places slow students with those who are quicker and have a greater aptitude for science.

Sometimes I will put somebody who works quick and is more intelligent with another group of students to try to lead them; to get it done in the time period that they have, because I don't give them homework and whatever they do has to be done in the class.

Unlike the other two biology teachers, Betsy does not isolate behavior problems. She feels that regrouping and monitoring closely during lab activities eliminates the necessity for isolation of specific groups. In the same way, she feels that if a group needs more help from her, she can manage that by careful monitoring, establishment of an easy rapport so students will feel free to ask frequent questions, and by being patient with those questions.

Betsy's expectations are similar to those of Cindy and Dana, but with some differences. She expects different levels of performance among groups due to varied abilities, but grades them all on an equal basis. The lab findings may differ from group to group, but each group must be able to write a good conclusion to their experiment, based on their findings. Betsy believes that understanding the experiment results is much more important than finding a specific answer to each lab question. Her interpretation of the departmental and curricular goals differs somewhat in this aspect from
that of Cindy and Dana who expect specific answers to lab questions.

No specific pattern of typifications for Betsy's students emerged from the single interview with her. She did, however, mention that she sometimes had "really smart girls" in one group, "medium smart girls" in another group, and "dumb boys" in a third group. This suggests that Betsy may base ability typifications on sex, but without further study, no such assumption can be made.

Language Arts

Ericka is an English teacher with fifteen years of teaching experience. She frequently uses student groups when she is introducing an abstract concept that she wants the students to explore and make applications from for greater understanding.

For example, if I were teaching Kohlberg's moral stages, I would briefly describe them, then I would put the students in groups and let them analyze the different moral stages and find examples of those stages in works, or come up with situations that would illustrate the stages.... So many times a student cannot understand an abstract concept from a teacher, but if they discuss it with their peers, they can work out their own definition of it and then they can... internalize it.

Ericka groups the students herself and considers several factors.

I consider intelligence levels; I consider sociability; for example, if I've got a very shy child... and then a very outgoing person, sometimes I try to mix those kinds of people.... I also like
a mixture of sexes; I don't think it's a real good idea to have all boys together, for example.... I try to put people who are discipline problems with people who are not discipline problems because so many times... they're almost forced to participate and work well with the group.

When a student's behavior is too bad, Ericka usually isolates that student and gives him or her an individual written assignment.

Group placement can be a problem in a regular classroom because of space limitations. Ericka likes enough space between groups that they do not disturb each other and that she can monitor them easily by moving around and among the groups. She sometimes utilizes a small hallway and a stairwell near her room for additional space. Only the highly motivated well-behaved groups are permitted to leave the classroom for other areas, however. If she has a group that needs more motivation, she may mix them into the other groups, or keep the group intact and work more closely with them.

When referring to one particular problem group, Ericka typified them as "negative about school in general, and authority in particular." In no other instance did she appear to have formed opinions about the general group characteristics of her students. An in-depth study of Ericka's classroom activities and more interviews with her might reveal typifications that are not evident in one interview.
Dean is a male drama teacher who has five years experience, all at the school where this study was conducted. As might be expected, classroom activities in a drama class are more informal than structured. Dean uses grouping only when students are preparing for an acting scene or an improvisation. Occasionally the students are permitted to group themselves, but Dean makes group assignments most of the time.

I try to watch the people that don't get along with a particular person, and I always try to regroup people. Of course, in drama we're not grouping gradewise or subjectwise as in a normal class. They're performing... every day and I make a point not to let them group themselves in the same clique each time.... I try not to get all males or all females up at one time.

Although Dean mentions acting ability as his priority consideration for grouping, he talks more about behavior management being a prime concern of group compositions.

I watch the groups to see how cliquish they become and make a point to separate those from time to time, and also people that don't get along.... I put some together several times for the purpose of seeing if they can learn to get along, but if there is someone they cannot get along with... then I try to keep them out of that group.

The placement of groups is not a primary concern for Dean. Student groups may work in the classroom, in an adjoining hall, or in the theater where drama productions are presented. Because each group has a specific and individual assignment, the only expectation that Dean has for groups is
that they all work seriously on their assignment without disruptive behavior. As with the other teachers who were only interviewed one time, Dean does not appear to have typifications for individuals, groups, or the entire class.

**Sociology**

Susan is a female sociology teacher who has five years of teaching experience. She has taught other social studies subjects besides sociology and uses grouping for specific projects.

I use grouping when we have the kind of projects... where it takes brainstorming, or if it's like making them imagine what it would be like, or if I have a discussion that they would be afraid to talk in front of thirty people but not afraid to share their ideas with three.

Students are grouped in one of two ways: they are permitted to form their own groups of four or less, or Susan groups them with their work habits being a prime consideration.

Sometimes I group spontaneously: say, "Find a couple of people to work with and pull your chairs together." Never more than four in a group because it loses the effect of a small group if you have more than four. Sometimes if I think there are things they need to get done, and there are people in class who will let the other people in the group do their work for them, I divide them up the way I want them to be,... but that's not very often.

Susan said she does not make group changes except when a student has a prolonged absence that could interfere with that student's share of the group assignment.
Group placement or location within the classroom is made as the space limitations permit. Susan does not feel that this is a serious factor in grouping. She does not have the same expectations for each group because assignments will be different for each group. Everyone is expected, however, to be seriously involved in the group assignment and do their share toward its completion. If behavior becomes disruptive, Susan deals with it on an individual basis and only takes disciplinary action when nothing else works.

The only typifications that Susan attributed to her classes were individual ones; none were made for her groups or her class as a whole. As with the other single interviews, typifications did not appear to be forthcoming on the basis of the structured questions alone.

Regularities and Anomalies in Grouping Practices

Analysis of the collected data began with expected categories of factors which were believed to influence teachers' grouping practices. As analysis and coding progressed, using Glaser and Strauss's (1967) constant comparison technique, changes were made in the basic categories as some were eliminated or subsumed under others, and new ones were added. The final four categories of Student, Curriculum, Resources, and Teacher revealed a number
of factors that appear to have some influence on teachers' grouping decisions.

Six factors were mentioned most frequently and by all the teachers in the study and by those teachers outside the study who were interviewed for comparison purposes. These factors, which are clustered under the two categories of Student and Curriculum, are ability, work habits, task approach, social interaction, task demands, and management demands. Very few of the factors mentioned by the teachers are clustered under the categories of Resources and Teacher, and none of them were mentioned frequently.

During the structured interview with each teacher, the question was asked, "What factors do you consider when grouping?", and also, "If you change the original groups, what factors influence the change?" By recording the teachers' initial responses to these questions, a chronological tally of the first three factors mentioned by each teacher was made (Table 1). In all instances, the other three factors were mentioned at some point by the teachers, but not in a manner that made a chronological listing possible.

Examination of Table 1 suggests that homemaking teachers feel that positive social interaction is the most important factor to them when making grouping decisions in their classes. In a like manner, biology teachers are apparently driven by the task demands of their curriculum when planning
TABLE 1
ORDER OF MENTION OF FACTORS CONSIDERED WHEN MAKING GROUPING DECISIONS

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Task Demands</th>
<th>Mgmt. Demands</th>
<th>Task Approach</th>
<th>Work Habits</th>
<th>Ability</th>
<th>Social Inter.</th>
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Table 2
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and implementing laboratory sessions. The other teachers who were interviewed teach non-laboratory subjects and, as might be expected, placed more importance on student ability.

Although these findings appear to be straightforward and could be easily explained, the painstaking analysis and coding of the unstructured interview transcriptions, as well as observations in the classrooms, suggest different results. The analysis and coding of the transcriptions included a numerical tally of the number of times each factor was mentioned or referred to by each teacher when being interviewed about the laboratory activities.

Table 2 provides a count of the number of mentions made by each teacher and a total for the two teachers in each department. The mentions made by the teachers outside the study are not included because only one structured interview with each was conducted, and the number of mentions is too few to provide any numerical differentiation between factors. It is possible, also, that the structure of the questions led them to reply in the way they felt was expected of them, or which presented them in the most favorable manner. The teachers in the study were interviewed in a non-structured manner three times and did not know the emphasis of the study at that time. Therefore, it was hoped their mentions of the factors under these circumstances would present a more accurate picture.
A comparison of the factors in Tables 1 and 2 reveals some differences in those factors cited by the homemaking teachers as being most important to them and those mentioned most often in the unstructured interviews. The factors cited by the biology teachers in Table 1 do not differ as much from Table 2 as those of the homemaking teachers. What is it, then, that caused the homemaking teachers to report one type of influence on their grouping decisions and apparently function under other influences? There are several possible explanations. Their answers may have been biased in the manner assumed to be most favorable to them, or that they thought the interviewer wanted to hear. Another explanation may be that they actually believe their report even when it isn't accurate. Brandt (1972) warned that the interviewee's perception of the socially desirable response influences all subjective reports. This is especially true when the respondent feels that his responses are likely to be used in evaluation of him. Unconscious self-distortions may also occur based upon the individual's self-esteem and self-worth. Brandt explained this as a tendency to fool oneself. Erickson (1979a) and LeCompte and Goetz (1982) also warned that accurate reports cannot be expected in all interviews.

Homemaking traditionally has been an elective subject that students enjoy, and one in which socialization skills are developed. As Hannah explained, "I expect them to enjoy
themselves, to learn self-discipline, to learn to get along with other people, as well as learn to cook in a foods class." Students usually enroll in homemaking foods classes either because they like to cook or to eat, or they have heard it is a "fun class" that is easy to pass. This type of teacher philosophy coupled with student expectations of homemaking foods classes may, therefore, have influenced the responses given by the homemaking teachers in the structured interview sessions.

A second explanation of the inconsistencies between Tables 1 and 2 is that the teachers do not actually know or cannot articulate the real influences on their grouping decisions. Wilson (1977) cites this phenomenon as one of the basic justifications for ethnographic research. Careful study of human actions in their natural setting can provide more meaning than just concrete facts or introspective reports, according to Wilson.

**Decision factors among homemaking teachers**

The homemaking teachers appear to be most influenced by management demands followed closely by task demands, then task approach and work habits. Social interactions were mentioned least by both teachers, even though they espouse it as their primary influence. Ability was ranked low by both teachers also. One explanation of this clustering of variables around management and task demands may be explained
by an examination of the complexity of homemaking foods content and the demands placed upon the teacher.

The first foods lab studied by Foods I students is by design the simplest. The class is divided into six groups and placed in separate kitchen units where each group prepares the same basic recipe for biscuits. To the teacher, the curricular task requires that the students learn the basic principles necessary for mixing biscuits and demonstrate the essential skills for preparing them. A successful completion of this task includes supervising six kitchens at once to be sure no one gets hurt, everyone performs his or her assigned duty, the recipe is completed without a waste of supplies or an error in mixing, the activity does not disturb the classes in the adjoining open classrooms, and the biscuits are completed in time for consumption and clean-up. On top of all this, the teacher must evaluate the activities and the finished product in an objective manner. The task becomes even more difficult at this point: What is a perfect biscuit? It may be thick and fluffy, thin and flaky, pale or golden brown in color, ad infinitum.

After the initial "simple" lab, those that follow become increasingly more complex. Student groups are required to select and prepare different recipes with the same underlying preparation principles for several labs and then climax the semester with a complete meal in which every group prepares a
different recipe, each utilizing different preparation principles. In all of these, there is no specific correct answer to a set of questions; there is no perfect preparation technique. Some students will have more experience in cooking than others, and this in itself can create problems. Often those with experience think they know all that is necessary for food preparation and tend to think that their preparation technique is the correct one to use, regardless of the technique emphasized in class.

These complexities of a foods lab require homemaking teachers to have a vast repertoire of management skills. Ann described some of the management demands that she encountered during the planning for one lab.

Filling out the papers took a lot more time... and by the end of the first day, they had just finished their market order..., so yesterday it took almost the whole period for them to finish their time schedule and do their pre-lab... It will not be so hectic for the lab because they will have done about half of it..., but that's kind of hard for a teacher because you want them to be active every minute.... I get concerned when they finish five minutes before the bell rings.

When time schedules don't work out well, Ann explained that there are often behavior problems. While observing a lab in one of Betty's classes, field notes show that the following occurred during a five minute period.

9:59 a.m. Teacher (T) goes to kitchen no. 1, looks at potatoes. "Alright, the time now, class, is 9:59, so check your time schedule." She stands and scans the room.
10:00 a.m. Girls in kitchen 3 have trouble with microwave oven; T crosses room to help them and explain its usage. "Looks nice." T goes to kitchen 6, "Jim, you're supposed to make the toast, aren't you?" She talks to the group about staying on schedule. Scans room.

10:02 a.m. T goes to kitchen 4, looks in oven; goes to kitchen 5 and talks to group about silver placement on table. Scans room. Goes to kitchen 2, "Oh, it looks good!"

10:03 a.m. T goes to supply closet and takes plastic wrap to kitchen 2. Student in kitchen 6, "Ms. L., somebody got our potholder." T finds potholders; goes running to microwave to stop it. Girls had used metal pan.

If these activities are multiplied by eleven, it is reasonable to expect the management demands to supercede the task demands of a class that lasts for fifty-five minutes.

The task approach of the students ranked third in importance to homemaking teachers. For the purpose of analysis and coding in this study, task approach subsumes the collective traits of an individual that include the manner in which he or she accepts an assigned task, willingness to cooperate, socialization skills, temperament, emotions, and attitude. A student's task approach is likely therefore, to be important to a teacher because it can influence work habits, behavior, leadership abilities, peer interaction, and cooperation. To the homemaking teacher faced with complex task demands, a student's task approach may become equated with the successful completion of those task demands.

The finding that task approach is important to homemaking teachers is similar to findings made by Pullis and
Cadwell (1982) in a study of the importance of temperament characteristics on teachers' decisions. They found that teachers were particularly sensitive to students' Task Orientation. They suggested that teachers view those with positive task orientation as needing less supervision in all types of classroom settings.

The work habit variable also is closely clustered with management demands, task demands, and task approach. Good work habits enable the students to be self-motivated, prepared for the lab, able to follow lab plans, and to work within the allocated fifty-five minute period. A student with good work habits is not usually one who causes behavior problems for the teacher; therefore, good work habits are important to the teacher and are closely related to management demands.

As she discussed the factors influencing her grouping changes, Betty said, "Probably the most difficult is when you have a child... that is either extremely lazy or will not pull their weight." She also referred to work habits when discussing students with learning disabilities.

Now you may have a group that performs in the 70's, but in that particular group, there might be children who have learning disabilities... but they put a great deal more effort into it than you might think if you just looked at an evaluation form based on their skills.

Ann had many problems with the group in which Paul, Barry, and Marie worked. Paul wanted to do all the cooking
while Barry wanted to sit back and ridicule everything that went on in class. Task approach and work habits become very closely entwined in situations like this. Paul could not be moved because no one else would work with him, so Ann "had to keep after them the whole period to get Barry to do something and get Paul to quit doing things."

Another explanation for the importance of work habits and task approach to the homemaking teacher is related to the manner in which students are enrolled in homemaking classes. As mentioned previously, many students enroll in foods classes because they like to eat, or because foods classes have the reputation of being "easy" classes. In addition, school counselors frequently place students in homemaking classes when they need an additional semester of credit for graduation or when they cannot pass academic classes and need more credits. The management load upon the teacher becomes even greater when this occurs because these students typically do not like to study and often do not like school. Ann discussed the problems she had with Barry.

He has a kind of cocky attitude, but... he didn't sign up for that class. He makes a big deal about it all the time..., and he kinda wants everyone else to have the same attitude like, "What are we doing in here?"

To add to the homemaking teachers' management problems, mainstreamed special education students frequently are enrolled in foods classes. These students require close supervision and the teacher must decide what group placement
will be best for these students as well as for the rest of the class. Ann reported that the special education students "frustrated" her because they could not remember class instructions and required so much of her time. She was faced with the decision of placing four special education students all in one group, or putting them individually into other groups. Her final decision was to keep them in one group and spend much of her class time with them. This placed more importance on the management techniques she employed because the rest of the class had to function smoothly with less supervision.

In evaluating the semester labs, Betty said,

In the final analysis, both classes performed pretty well in their labs. On their written work, fourth period will outscore second on an average of ten to fifteen points..., but the second period works very hard and there are sweet students in there who are capable. But as a composite group they are slower.

Betty apparently equates success with hard work and positive task approach more than academic ability.

The ability variable was ranked less important than the variables of management and task demands, work habits, and task approach by Ann, also. Rather than being perceived as a factor alone, Ann possibly sees low ability as a contributing factor to the need for greater management control. She related a number of times that having slow students in her classes contributed to management demands for her, and although she weighed alternative solutions to their placement
in groups, this factor still did not rank as high in her thoughts as did other factors.

The social interaction variable ranked much lower than expected since both homemaking teachers cited it as their greatest influence in making grouping decisions. The teachers defined social interaction as "getting along with others" (Ann) and having personalities that "blend" (Betty). In this context social interaction can be viewed as a management ploy that served to help avoid classroom disruption. When discussing social interaction in the groups, both teachers warned the students that group changes would be made if group interaction was not satisfactory. The fact that neither teacher made any group changes suggests that positive social interaction was not as important to them as other demands were. Or they could have felt that making group changes would create more management demands as new group members adjusted to a change and were perhaps unhappy with their placement.

The fact that Betty mentioned management demands so infrequently in comparison with Ann suggests that Betty did not accurately portray her classroom activities to the interviewer. In light of the known complexity of homemaking foods laboratories, so few mentions of management demands seems totally unrealistic. One explanation is that she was aware of the management demands, but felt that an effective teacher does not have management problems; therefore, to
discuss such problems was to admit that she was not effective. Another explanation may be related to the evaluator position of the researcher. Betty may have felt that to discuss management problems would jeopardize her annual evaluation. Still another justification for her reluctance to discuss management problems may be attributed to an unconscious blocking of the actual situation while she functioned in a manner inconsistent with her value system. This could be a form of fooling oneself as mentioned earlier (Brandt, 1972).

An examination of the management demands of a homemaking foods class suggests that the measure of a successful lab appears to be a smooth flow of student activities with no serious mistakes or accidents rather than specific correct answers to a set of lab questions. Thus, the management demands appear to supercede task demands, task approach, work habits, ability, and social interaction skills, and are the driving force behind homemaking foods teachers' grouping decisions.

Decision factors among biology teachers

An examination of Table 1 shows all three biology teachers mentioning task demands as the first factor they consider when making grouping decisions. Considering the departmental emphasis on structured classes with high expectations of performance for all students as well as
adequate preparation for those who are college-bound, this information seems consistent. Table 2, however, shows some slight differences. Management demands appear to be almost as important to the science teachers as the task demands. This is consistent with findings reported by Sanford (1983) that the complexity of science class content and activities makes management variables important.

Observations made in the biology labs reveal a complexity of management demands similar to, but to a lesser degree than, that in homemaking foods labs. The teacher must monitor groups of students working at six tables, manage student behavior, stop inappropriate action quickly, keep students on task, make student placement changes when necessary, and assure that all this activity is completed in a specified amount of time. This differs from the foods classes in several ways: everyone in biology is working on the same experiment and using the same directions, there are no special education students in biology, there are no students assigned to biology just for extra credit, and biology is regarded as a subject required for graduation.

The task demands for biology are also somewhat simpler than those in homemaking even though the academic expectations are higher. Successful completion of the goals of a biology lab demand specific and exact conclusions to the lab assignment with an understanding of the concept being studied so there is transferability to related concepts.
This appears to be simpler to evaluate than the homemaking goals because of the specificity of the final conclusions.

The two biology teachers in this study appear to use management practices as tools that will give them the task objectives they desire. Dana permits her students to select their partners, but she places them at lab tables where she wants them to work. She explained, "I consider who I think will get the most work done," and she places those who are likely to copy, "at a table where there are people that won't let them copy." In describing a successful lab, she said, "Everyone got their labs turned in. I graded them... and my lowest grade was an 82! I was excited." Cindy makes changes in group placement "based on the answers that I get at the end of the period." She likes for groups to sit together when they get the "interaction" of correct answers and doesn't care if they copy because she prefers that to having them learn "incorrect data." Students are permitted to work with anyone they choose as long as they "can do the work and behave themselves."

Task approach was mentioned almost as frequently as management demands and even though Dana appeared to be the most student-oriented, Cindy discussed student task approach more than Dana. In nearly every instance, task approach was closely related to completion of the task when discussed by the two biology teachers. When asked why she spent so much
time with a boy named Steve, Cindy explained:

Steve is a pain.... I think he'll fail and he shouldn't.... I watch him like a hawk and... he likes the attention so he loves it. So I get the work out of him, but I shouldn't have to do that.

Cindy also described Joey as "another one... that's pretty bad... and full of smarts" who refuses to do his work. She has given up on him because his attitude is so bad that she can't find a solution that is effective.

Dana mentioned that she had trouble getting some of the girls in one class to cut up a frog because they were so "squeamish." To solve the problem of getting them on task, she asked a boy to go to their table and begin the cuts. Once that was done, she explained that "they all started joining in and they worked." Dana described one male student as a very curious person who always wants to know "why," but who has a hard time getting any work done. "He just likes to jibber-jabber.... He can't seem to accomplish anything unless you stay on him constantly."

Task approach, with its underlying attributes of attitude, character, temperament, behavior, and emotions appears to be an important factor in science teachers' decisions about group placement also. The student Dana has typified as "Mr. Social" likes to walk about the lab and talk to everyone. She placed him with three quiet students at a table in the center of the room where he is in the midst of the activity and doesn't feel the need to roam. Cindy
explained that one person in a group can influence the other group members so much that a change is needed if the task is to be completed.

You're gonna change them a lot of times by looking at their labs to see what their results are. If you find out one group, for instance, has not done one thing, and... you've got one person in there that's probably keeping them all from doing it, you change it.

The importance of task approach in the biology teachers' decisions is consistent with the findings of others that pupil characteristics, including attitude, behavior, motivation, self-confidence, mood, sense of humor, determination, and consideration of others are important cues in teacher decisions (Caplan, 1973; McNair, 1978-1979; Borko, Cone, Russo, & Shavelson, 1979; Clark & Peterson, 1979; Morine-Dershimer, 1979).

Work habits ranked fourth in frequency of mentions by the two biology teachers. Dana tries to organize the lab activities so that both partners get an equal share of the work instead of one student just recording as the other performs the assigned activity. She explained:

I spend so much time worrying about... everybody getting their hands into the lab. There are some students who like to take the following role and sit there and watch everything be done and not have the responsibility of goofing up.

She asks questions on the lab report that require the student to apply the knowledge learned during the lab. If a student has not participated in the lab activities, he or she cannot
answer the questions and Dana has feedback about the effectivenes of her lab. Her students are required to work alone on the lab reports which is in direct contrast to Cindy's preference that students collaborate in order to achieve the correct answers.

Cindy placed one group of four boys at a table that was out of the flow of traffic but in view at all times because the group's behavior and work habits were poor. This was a management ploy that Cindy used to keep everyone else on task. By always having the behavior problems at one table, Cindy said, "You know where the trouble's coming from; you can hear them." She tried separating the behavior problems into other groups but found that this kept everyone from learning anything in the labs. Cindy described another student, Fred, as "a very good student." She had him in a group with Joey, the boy she has given up on, and a girl who was not very motivated. She said Fred was "about the only one in there that works. Bless his heart, he will work."

The concern of Cindy and Dana that all students have good work habits is likely to have a two-fold purpose, culminating in accomplishing the goals of the lab. In most instances when work habits were mentioned, they were related either to classroom management demands or to completion of the lab report. In either case, the final measure of the concern with work habits was directly related to the
departmental and curricular task demand that the lab be completed and understood by all.

Ability did not merit a large total of mentions by the biology teachers, although Cindy appeared more preoccupied with ability than Dana. Cindy's main concern was that the students did not have the ability to "think or work out answers" by themselves. She saw them as not being able to answer any question that required more than a one-word answer. She described a new series of lab activities that she had just begun to use for her classes.

I've been embarrassed when I look at them because they are so easy, but you have more success -- quicker success with this type of thing. You don't spend over half the period explaining it. You lose too much time... The ones I've written are too hard. These are much better.

Cindy emphasized that she had a few students who were probably bored with her labs, but in order to make the labs functional for all levels of ability, they had to be easy enough for everyone to handle. This is consistent with findings reported by Dahllof (1971) that a "steering group" of low ability students controls the pace of instruction.

Dana used two basic techniques to help her students when they did not seem able to perform the lab activities. By monitoring carefully, she reported that she could usually spot the students who "really don't know what they're doing, or they're just doing what the people across from them are
doing." When this occurs, she works more closely with those students and encourages them to ask more questions. At the same time, she examines her techniques and asks herself what went wrong. She admitted that, "Most of the time it is my fault," because she failed to prepare them adequately or didn't clarify her explanations.

Another technique that Dana uses is a form of student monitoring that she incorporates into her grouping. When a lab is exceptionally time-consuming or more difficult than usual, she places the slower, low ability students with the more capable students. This assures completion of the task in the allotted time period. During one observed lab class, Dana called a student to the front of the room to demonstrate how to accomplish that day's lab activity. When asked why that particular student was selected, she explained:

Ben's kind of shy and it's... hard for him to understand these labs. Every lab I end up going over and explaining to Ben how to do it, so I thought if I called him up..., I wouldn't have to spend the extra time explaining to Ben.

The low emphasis placed on ability by Cindy and Dana may be explained in part by the fact that biology is a course that is commonly used for required science credit for graduation. As a required course, all levels of students are likely to be enrolled and the teachers have no option except to do the best they can to teach to all levels. Cindy, with her twenty-four years of teaching experience, has undoubtedly taught all levels of ability, but at this stage in her career
has no great patience with the slow ones. Hence, her preoccupation with ability and her proclivity for right answers so that the task demands are fulfilled. Dana, in contrast, is a first-year teacher who has great enthusiasm for teaching and a willingness to search for her weaknesses and improve upon them.

Social interaction rated infrequent mention by Cindy and Dana. Since the lab activities were straight-forward and identical for everyone, with final results to be the same if correct, there was no room in either teacher's thoughts about social interaction unless it created management demands for them. Dana mentioned that one girl had a crush on two boys in her group, thus causing a grouping change so they could all get their work done. In another instance, she described a situation involving social interaction.

I had a foursome that I didn't know well enough to realize that they shouldn't have been put together. They were friends, but picky friends, and they cut each other down constantly and they didn't get their labs done and I had to separate them.

Cindy also equated social interaction with task accomplishment. She feels that friendship is extremely important to the high school age student, and that separating friends for behavior reasons is only a temporary solution. As she explained, "The learning is not gonna come that way." She believes that putting friends together, in spite of behavior, is often a better way to get lab work done.
Cindy agrees with Dana that "boy-girl things" can be traumatic and very disruptive to classwork.

An examination of the factors that cue or influence biology teachers' grouping decisions suggests that the perceived academic task demands in the site school comprise the force that drives the grouping decisions for these teachers. Management demands, because they are so intrinsically a part of task demands, command a position of importance that is close to that of task demands. This may be the result of departmental standards at this school alone. Further research and expanded studies will be necessary for clarification.

Conclusions About Grouping Practices

A comparison of the findings related to grouping decisions in homemaking and biology classrooms reveals similarities as well as differences. Homemaking teachers apparently feel that the complexity of task demands requires that even greater emphasis be placed on the management techniques necessary to cope with those demands. In contrast, the biology teachers feel so compelled to accomplish the task demands that this assumes priority over all other concerns. Second in importance to the biology teachers is apparently the successful manipulation or management of all facets of a laboratory activity so that the top priority, task completion, is achieved. The complexity
of homemaking content and the activities necessary to achieve the curricular tasks merit a ranking of second for task demands in homemaking foods classes. The homemaking teachers and science teachers agreed that task approach and work habits rank a close third and fourth to the demands of task and management, followed by ability, and finally social interaction.

Since the factors of task demands and management demands ranked first and second in importance for both subject areas, there is likely a strong interface between them that makes the ranking of one over the other questionable. A close examination of both subject areas is necessary for an understanding of the indicated differences.

Homemaking foods classes, because of their traditional image and existing preconditions, place certain unique demands upon the teachers and their pedagogical decisions. The traditional image, or folklore, that pervades all homemaking classes is that homemaking teaches "cooking and sewing," and is an elective course so that only "good" students who want to learn to cook and sew take these classes. Preconditions that exist include student expectations for the class, the elective nature of the class, values and beliefs of the teacher, and the curricular task.

Student expectations for homemaking foods classes are closely tied to the folklore that credits homemaking with "only cooking and sewing." Students enroll in the class
because they expect it to be easy and fun with lots of eating. The elective nature of the class places a demand upon the teacher to attract enough students to justify a class, or classes. In essence, the teacher must devise a marketing strategy that will be attractive to students. The most logical and easiest strategy is to give students what they want - a class that is fun and easy with lots of eating.

Homemaking teachers' values and beliefs may be shaped partly by the folkloric image of the subject area. They come to believe that their classes must be very student oriented and that students should enjoy themselves. Their classes emphasize student social development and might be classified as having a "personal benefits" approach.

The personal benefits approach, coupled with the curricular tasks of modern homemaking foods classes, presents a complex set of demands for the homemaking teacher. Resources are limited since students cannot each have his or her own kitchen and supplies, so group work becomes a necessity. The preparation, consumption, and clean-up of food is a time consuming operation that must be encapsulated in a fifty-five minute period.

In addition to the complexities of time demands and limited resources, the teacher faces the problem of ambiguous criterion measures. There are no specific standards for a "good" biscuit, or a "perfect" egg that the teacher can use for evaluation purposes. Since such standards are very
subjective, the teacher who attempts to tighten up the criteria runs the risk of not meeting student expectations for the class and thus losing potential students.

Tight control of student behavior presents similar problems for homemaking teachers. To be very strict and enforce class rules with no exceptions would force the homemaking teacher to lose sight of her goals of positive student interaction and attractive marketing strategies. Student management becomes even more of a challenge when class members are non-motivated, or have special learning problems.

An examination of existing folklore and the same preconditions for biology classes reveals some distinct differences from homemaking classes. The folklore about science classes is that they are for the more academically gifted student and that the knowledge transmitted will be of use for the improvement of mankind.

Student expectations for biology class are that it is a hard course with lots of homework. This does not require any marketing strategies by the teacher because biology is either a required course or a constrained offering that nearly every student must take.

Biology teachers' values and beliefs are more content oriented than student oriented as the homemaking teachers' values and beliefs are. Their primary goal is to impart a body of knowledge to students so that they can advance on to
higher levels of education. This might be described as a cultural transmission goal or a "social benefits" approach to teaching biology.

Biology classes present task demands similar to those of homemaking foods classes with one exception. Resources are limited and require group work; activities must be completed in the same fifty-five minute period. The difference lies in the criterion measures used in biology classes. Criteria are specific and measurable, so they are unambiguous, and can be tightened as the teacher desires. There is no pressure to worry about student expectations and marketing strategies. Student behavior presents no problems for the biology teacher for the same reasons.

Examination of the pressures upon homemaking and biology teachers' decisions indicates that there are differences strong enough to cause a differentiation between Task Demands and Management Demands as indicated by the data analysis. The differences lie in the overall emphases for the two classes. Homemaking teachers structure their groups so that they can teach social interaction skills; this might be designated as a Personal Benefits approach. Biology teachers use a Social Benefits approach that is based upon the importance of structuring groups so that the transmission of knowledge can be accomplished.
Summary

A comparison of the two homemaking teachers in the study revealed the same underlying philosophy that all their students should enjoy their classes and develop or improve their socialization skills. There were some differences in the way the two teachers structured their classes, but final analysis revealed that their grouping decisions were driven by the complex management demands placed upon them by a Personal Benefits approach to teaching Homemaking Foods I.

The two Biology teachers operated under a Social Benefits approach that was based on the philosophy that biology was a necessary body of knowledge for everyone. They also differed somewhat in the techniques they used to reach their goals, but analysis revealed that the grouping decisions of both teachers were driven by the Task Demands necessary to fulfill their Social Benefits approach to teaching Biology I.
CHAPTER BIBLIOGRAPHY


CHAPTER V
Conclusions and Implications

This study examined the influences, both internal and external, that impinged upon the grouping decisions of four secondary laboratory teachers in a natural school setting. Previous research on grouping decisions has concentrated on elementary reading and mathematics classes (Barr, 1975; Borko, 1982; Shavelson, 1982) with little emphasis on secondary classrooms. No grouping studies are known to have investigated secondary laboratory classes. The present study describes the grouping practices of two Homemaking I Foods teachers and two Biology I teachers.

Naturalistic methodology was used for the collection of data and the primary data collection tools were ethnography and stimulated recall. While acting as a participant observer, the researcher recorded field notes in six separate lab sessions for each biology teacher. These field notes served as the stimulant for stimulated recall interviews with each teacher as soon after each lab as possible. Audiotape recordings were made of six pre-lab planning sessions for each homemaking teacher and these tapes served as the stimulant for stimulated recall interviews with them. Additionally, field notes were collected in two foods labs.
for each homemaking teacher for the purpose of adding richness to the descriptive data. Following the stimulated recall interviews, an additional follow-up interview of each teacher served to elicit their grouping practices after they were aware of the focus of the study. The grouping practices of non-laboratory teachers were recorded for contrast and comparison with those of the laboratory teachers. All interviews were audiotape recorded and transcribed for analysis. Additional data in the form of documents were also collected. Documents consisted of curriculum guides, seating charts, lesson plans, and laboratory worksheets.

Data analysis began with a set of preselected categories of factors believed to be an influence on teachers' decisions (McNair, 1978-1979). As comparative analysis (Glaser & Strauss, 1967) progressed in an iterative fashion, new categories emerged and some existing ones were subsumed under others. When analysis was complete, four categories with fifteen factors had been identified. The four categories found to be most influential on teachers' grouping decisions were Student, Curriculum, Resources, and Teacher Characteristics. This is consistent with a current model of teacher decision making (Shavelson & Stern, 1981) that depicts teachers' decisions and judgments as dependent upon information about students, the nature of the instructional task, teacher characteristics, and environmental factors.
A tally of the number of times each teacher mentioned the sub-categories (factors) suggests that six factors are more important in teachers' decision making than the other nine. Under the category of Student, teachers most frequently mentioned task approach, work habits, ability, and social interaction skills. Under the category of Curriculum, teachers mentioned most frequently the variables of task demands and management demands.

The two most important variables to all four teachers are apparently task demands and management demands. Laboratory classes are complex and have a number of preconditions that place great demands upon the teacher who must supervise student groups working independently toward a curricular goal. Homemaking teachers face a folklore image that expects them to be student oriented and teach only cooking and sewing. Students expect homemaking class to be "easy and fun" and in order to attract students to their elective classes, the teachers strive to meet student expectations.

Criterion standards for homemaking foods classes are ambiguous and to tighten the standards might scare off potential students. To have tight control over behavior problems could produce similar results. Added to these management problems are others: special education students and non-motivated poor students are scheduled into homemaking classes because "anyone can cook." Thus, homemaking teachers
appear to take a Personal Benefit approach and management demands become influential to their grouping decisions.

Biology teachers face an image of classes that impart knowledge needed for the betterment of society. The teachers are content oriented and they have clear, concise criterion to meet. Biology is usually a required course so that students must enroll even though the course has a reputation for being hard. Consequently, biology teachers usually have a Social Benefit approach to teaching and task demands become the most influential factor to them.

In summary, homemaking teachers seem to want a pleasant, orderly class meeting. They have few absolutes from content operation to help their authority so they must strive for maximum interest and cooperation. Their grouping decisions reflect this need. Biology teachers have authority underpinned by clear content; therefore, their grouping decisions are based on the most efficient and effective way to accomplish their task of transmitting knowledge.

Discussion

Three research questions were posed as the basis for this study. Those questions asked 1) what influences student characteristics have on grouping decisions, 2) what influences environmental factors and tasks have on grouping decisions, and 3) what influences group typifications have on grouping decisions.
Influence of Student Characteristics

Analysis of data resulted in eight general factors for student characteristics that influenced teachers' decisions with four of the factors apparently more influential than the others. Task approach, for the purpose of this study, denotes a student's potential for successful completion of assigned academic tasks in a group setting. Teachers in this study made numerous references to the various facets of student task approach during stimulated recall and many of these references were related to student behavior. Teachers appeared concerned about behavior that threatened classroom routines and the smooth flow of activities. They mentioned non-appropriate behavior that prevented task completion and caused distractions for others. When student attitudes were negative or non-productive in nature, the teachers worried about the effect of that attitude on the rest of the group. Likewise, when a student appeared emotionally upset because of outside influences, the teachers expressed concerns about the amount and quality of work that student's group would produce.

The biology teachers coped with student task approach problems quite differently than did the homemaking teachers. When a biology student behaved inappropriately, was emotionally upset, or had a negative attitude about biology class, or school in general, the biology teachers
used two basic strategies for coping. The determination of which strategy to use was influenced by the severity of the problem and by the degree of disruption suffered by the rest of the class. When the problem was not disruptive, the teacher kept the student after class for a one-on-one talk, or if slightly disruptive, gave the student a detention after school. If the behavior or attitude was of a nature that affected the task performance of the entire class, however, the student was isolated from the class immediately and a group change was made before another lab was scheduled. Thus, the grouping decisions made by biology teachers suggest that their primary concern is the maintenance of a smooth flow of activities for a successful completion of the task.

Homemaking teachers reacted to student task approach problems in a slightly different manner. Emotional and attitudinal problems were mentioned frequently, but no patterns of teacher behaviors were discerned for this type of problem, unless it can be suggested that their pattern was to talk about the problem, but do nothing to change it. When behavioral problems occurred, the common reaction was to talk to the student immediately and to deduct points from that student's lab grade. No group changes were made during the data collection period although the teachers both reported that they sometimes made changes.

The typical reaction to any student problems within a group was to talk to the group and then to monitor the group
more closely. Both teachers rationalized their reasons for the strategies they used and, without exception, their reasons were management related. They felt that a group change would upset the smooth flow of activities and result in chaos in the lab. The manner in which homemaking teachers react to task approach problems suggests that their primary concern is to maintain a trouble-free laboratory activity while keeping the students happy.

The student characteristic mentioned most frequently after task approach was work habits. Biology teachers related work habits to the students' ability to complete the lab task and turn in an accurate written report. One teacher grouped students together where they were most likely to find the correct answers, even if it meant some would copy from their partners. The other teacher insisted on the students working individually to complete the lab reports, but grouped poor workers together and isolated them on the periphery of the room so they would not distract other groups from their work. Homemaking teachers' primary concern with work habits was whether the students were self-motivated, orderly, cooperative, and good time managers so they could complete the lab in the scheduled classroom period. These observations suggest that, to the biology teachers, a student's work habits were related to accurate completion of the task while, to the homemaking teachers, the most
important goal of good work habits was to maintain and manage
the lab activities within the allotted time.

Student ability was a concern of all the teachers in the
study, but it ranked third in importance of student
characteristics. Both homemaking and biology teachers' concern with ability was related to the student's capability to read and follow directions. Their strategies for dealing with low ability students differed somewhat, however. One homemaking teacher grouped her low-ability students together in one group and then sacrificed her monitoring time to helping that group during labs so they would not make any mistakes or hurt themselves. The other homemaking teacher did not have any low ability students during the data collection period, but reported that she had previously placed low ability students with high ability students so they would not make mistakes in labs. Both strategies indicate the teachers' concern with maintaining a trouble-free lab since mistakes or accidents in a foods lab can cause an interruption in the flow of activities.

The difficulty level of the task influenced the biology teachers' strategies with low ability students. Both teachers placed low ability students with more proficient students when the lab assignment was a difficult one, or one in which time was a crucial factor. One teacher appeared to be particularly concerned about student ability at all times, and not just when the lab was difficult. In fact, her goal
in planning labs was to use lab activities that would fit the capabilities of her lower level students. The other teacher gave extra help to those students whose abilities were low. Both teachers related their concerns with low level abilities to the successful completion of the task.

The fourth variable that received significant mentions by the laboratory teachers in the study was social interaction skills. This particular variable was the one named most important by the homemaking teachers when asked what factors they considered when making grouping decisions. Data analysis failed to support their belief that social interaction skills were most influential to them, however. During the data collection period, homemaking teachers mentioned "working well with the group," "getting along with others," and "cooperating" frequently, but, in nearly every instance, the connotation was management related -- getting the lab completed as smoothly as possible. Students were threatened with group changes if group interactions were not satisfactory, but no changes were observed during the study. This suggests that teachers were afraid to make changes for fear management problems would be accelerated, or because they were afraid to do anything that might jeopardize students' perceptions of the class as one that is easy and fun. This may also have been tempered by the teachers' belief that homemaking classes should be oriented to socialization.
Biology teachers mentioned social interaction less frequently than homemaking teachers. When mentioned, the importance of social interaction appeared to be related to management demands and subsequent completion of the task. One teacher mentioned that students were happier and thus learned more when working with friends. The other teacher felt that boy-girl situations were a negative influence on appropriate lab behavior and often influenced task completion.

The student characteristics of task approach, work habits, ability, and social interaction skills were identified as most influential on laboratory teachers' grouping decisions. When those characteristics began to interrupt the smooth flow of lab activities, homemaking teachers felt it was necessary to make grouping decisions to correct the negative effects. Biology teachers were influenced by these four student characteristics when they felt the successful completion of the task was threatened.

Influence of Environment and Task Demands

The unique environments of homemaking foods and biology labs did not appear to have a lot of influence on teachers' grouping decisions. In both subject areas the teachers mentioned that the open concept design of the labs kept them concerned about their students disrupting those in the adjoining classrooms. One homemaking teacher reported that
the teacher's kitchen unit was arranged so that the location of the refrigerator blocked her view of that group and increased her monitoring problems. Both biology teachers felt that there were more efficient lab designs than the one in the site school. None of the teachers reported any administrative constraints to their pedagogical duties. All environmental concerns expressed by the teachers were management related concerns.

Task demands were found to be the most influential category of influences on biology teachers' decisions. It is believed that the primary reason for this may be related to high departmental standards and a commitment to excellence among all the science teachers. Another reason may be the fact that biology is one of the science courses that all the students in the site school take to fulfill the required two science credits for graduation. Also, all seven biology teachers in the department follow a carefully planned and timed sequence of lab units so that everyone stays on the same schedule. This makes the ordering of perishable lab supplies much more efficient. The task demands of a biology class are complex by nature without adding departmental standards, schedules, and student graduation needs. Therefore, it is easy to see why task demands are the greatest concern of biology teachers.

The task demands of homemaking foods appear to be even more complex than those of biology. This can be explained by
the facts that there are no clearly defined products in foods labs, there are multiple tasks going on at once, there are often non-motivated students in homemaking classes, and special education students are frequently mainstreamed to these classes. In addition, students must be attracted to enroll in the elective homemaking classes. In order to fulfill these task demands while keeping the students happy and satisfying their own values, the teachers necessarily placed most emphasis on management demands.

Influences of Group Typifications

Group typifications are believed to have some influence on teachers' grouping decisions, but to a lesser degree than other influences. The two biology teachers typified their groups, but in different categories. One typified on the basis of ability and selected lab activities accordingly. For example, she tended to classify all her classes as low-ability and selected activities she felt they could perform. This is consistent with findings that teachers match teaching methods to perceived student ability (Shavelson, 1973; Brophy & Good, 1974; Dusek, 1975; Prawat, 1980). The other biology teacher typified specific groups as "socials" or "non-socials" and grouped so that the non-socials would improve in social skills and the socials would not be disruptive to the rest of the class.
Both homemaking teachers typified groups, and occasionally entire classes, on the basis of ability. They also classified on the basis of time management skills and group cooperation and organization, but no group changes or other grouping decisions appeared to be made on the basis of these typifications. The only grouping decisions they based on typifications occurred when they grouped individual students that "no one liked" with their "more mature students."

**Implications and Recommendations**

Based on the results of this study, there are several implications and recommendations that seem appropriate for the consideration of others involved with teacher decision making.

**Research**

The findings of this study suggest that there are unique patterns in secondary laboratory classes when compared to other levels and disciplines. Those interested in this type research might consider investigating one of several areas. First, there is a need to examine other levels and other settings to further refine the questions for this study. For example, do middle school science departments have the same high standards and expectations for their science students? Or is this aspect one that is unique to high schools only?
because of the closer proximity to graduation and further education? Second, do other high school science departments have the same high expectations, or is this an artifact of the site school only? Third, do all homemaking departments have the same problems with non-motivated students and special education students? If so, do they use the same patterns of coping? Fourth, what are the bases for grouping decisions in other laboratory settings? For example, what factors are used by Industrial Arts teachers or instrumental music teachers when they group students for instruction? Finally, regardless of the facet of this study that is selected for further study, there must be multi-site studies before any generalizations can be made about secondary laboratory teachers' grouping decisions.

Teacher Education

Another area of research that merits attention is the area of teacher education. What are future teachers taught about grouping? What aspects of teacher training subtly influences the values part of management grouping? What philosophical perspectives are science teachers and homemaking teachers exposed to? An examination of the training these future teachers receive with regard to their perspectives of the task might be revealing. The findings in this study suggest that homemaking teachers may be socialized to the importance of the personal approach while biology
teachers may be taught that content, or a domain of knowledge, is most important. Additionally, further research might isolate skills in the areas of group management and laboratory supervision that would be a valuable addition to the training that future teachers currently receive.

Administrators and Supervisors

An awareness of the complexities present in laboratory situations should be included in the knowledge base of all administrators and supervisors. This would provide a better understanding of the skills needed by job applicants and might prevent unwise decisions when filling vacancies. An administrator who understands the management demands of laboratory teachers might be more sensitive to scheduling problems, assignment of unmotivated students, and supply needs. Evaluations of laboratory teachers should be considered from a different perspective if they are to be unbiased. It is recommended that all administrators and supervisors become more familiar with laboratory classes for these reasons. Supervisors, additionally, can be of more assistance to inexperienced laboratory teachers if they are familiar with the demands and pitfalls of laboratory classes. In particular, supervisors who use principles of clinical supervision may find the use of naturalistic data collection procedures beneficial in understanding the goals and operations of these classes. In like manner, efforts to
understand the reasons for laboratory teachers' decisions could add a useful dimension to supervision of these teachers.

Staff Development

An invaluable aspect of teacher training in any area is the continuing education that is provided during staff development sessions. Laboratory teachers could benefit from an awareness of the factors that influence their pedagogical decisions, and from knowing how they are currently reacting. The use of videotaping equipment to record lab activities would provide laboratory teachers with a peek into their practices and bring those practices to a conscious level. This could lead to an improvement of present practices.
CHAPTER BIBLIOGRAPHY


Shavelson, R. What is the basic teaching skill? Journal of Teacher Education, 1973, 24, 144.

APPENDICES
APPENDIX A

Homemaking Foods Laboratory
APPENDIX B

Biology Laboratory
Biology Laboratory
APPENDIX C

Unstructured Interview Schedule
APPENDIX C

UNSTRUCTURED INTERVIEW SCHEDULE

Examples of in-depth questions to probe teacher's classroom responses:

1. What were you thinking of when you made that particular response?

2. What would you do differently if you could do this situation over?

3. What outside factors influenced the situation in question? Interruptions? The classroom limitations (lack of equipment, time, room lay-out, etc.)? Information you have about the student?

4. If this behavior had occurred in another group, would you have responded in the same way?

5. Were you surprised by the behavior in that particular group?

If not, had you made prior plans about how to respond to this particular type of situation?
APPENDIX D

Structured Interview Schedule
APPENDIX D

STRUCTURED INTERVIEW SCHEDULE

Demographic Data
- Age
- Sex
- Subjects taught
- Years of teaching experience
- Years in this school
- Educational background

Questions
1. When do you group students for instructional purposes?
2. What factors do you consider when grouping?
3. Do you expect each group to perform the same learning activity? Why or why not?
4. Do you ever change the original groups? If so, what factors influence the change?
5. Describe how you would introduce activities to the groups.
6. Describe how you would monitor the groups during a class period.
7. (a) If students in one group exhibit non-acceptable behavior, explain how you would react to the situation.
   (b) Describe the factors you would consider while reacting to the non-acceptable activity.
8. (a) If students in one group appear not to be learning to their potential, explain how you would react to the situation.
   (b) Describe the factors you would consider while reacting to the non-learning activity.
APPENDIX E

Initial Coding Categories
APPENDIX E

INITIAL CODING CATEGORIES*

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*Adapted from McNair, 1978-1979
APPENDIX F

Final Coding Categories
## FINAL CODING CATEGORIES

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APPENDIX G

Transcribed Field Notes
Purpose of lab - dissection of a frog
Students are seated in classroom area
Class time: 10:40 - 11:35

10:40 T: "Everyone take out your books and look at the drawing of a frog." Students follow her directions while T checks roll.

10:41 T: "As you notice, we have 4 TVs. The TV is for each table to watch. While the record is on, you do not talk, you do not write, you do not touch the frog. I'll tell you when to cut. Since these tables are not numbered like yours, this is table 1, this is 2, 3, 4, 5, 6 (teacher points to tables). I want you to be quiet in the lab and if you talk, I will send you back to your desk with a zero." (Class is in lab equipped with TV sets -- not regular room).
10:43 Students move to lab tables. T brings frogs from the storeroom and gives to each table. T: "Hey, be quiet." (in a soft voice)

10:45 T: "Please get quiet again." Students do not hear her, so one student yells and quiets class. T thanks him. T repeats directions about listening, "When you get quiet, we'll start." S, "Shut up." (to class) Everyone quietens.

10:47 T turns on TV; walks around and checks equipment on each table as students watch TV monitors. Students look at frogs while the TV is on; T walks around and points out details to each group.

10:49 S asks question about TV picture. T: "Just watch right now." T walks around room; class is quiet and watches TV.

10:51 T turns off TV and gives instructions; shushes students. T goes to table 1, then to 4. S at table 3, "Miss Turner, help please." T moves to table 3, helps them; then to table 6 and works with them.

10:53 T goes to table 2, leans over table between two students; on to table 1, then to 4, leans on student's chair and points out frog's parts to the group.

10:54 T goes to table 3, "All right, are you finding everything? What is this right here? And what is this hole here?" Students answer. T moves to table 6; turns to class, "Let's quiet down, please." She helps table 6.

10:55 T: "All right, everyone put your hands on the table. You should have found the nostrils and eye sockets. We'll move on after you get quiet." Turns on TV.

10:57 While TV monitor is on, a girl at table 6 accidentally flips embalming fluid in another's eye; they quietly discuss what to do. T sees this, gets a paper towel and dampens it and gives it to the girl without saying a word.

10:59 T turns TV off; walks to table 2, then to 5, then 3, then on to table 6, "Okay, good." She goes back to 3, gives directions; goes to table 5, then table 2, and 1; helps student at table 1. Moves to table 4. T comes back to monitor B, "Alright, now, I want you
to focus your attention back on the TV. Tammie. When everyone gets quiet, I'll turn it back on again." Turns on TV.

11:01 T stands by monitor, scans room, shushes class as they begin to talk among themselves.

11:02 T turns off TV, gives more directions to class; moves around room.

11:03 T stands in center of room while giving directions. "You're supposed to begin at what end to start cutting? Everyone be sure to start at the anal opening."

11:04 T goes to table 2, leans over and helps them; then goes to table 5 and demonstrates how to cut the frog. She moves to table 6, gives a suggestion for easier cutting, "You might want to use a razor blade, Julie." T goes to table 3 and directs the cutting procedure; moves to table 5, then to 2, addresses entire class, "Be sure when you are cutting the stomach that someone holds the muscles up and that you don't cut the organs."

11:06 T goes to table 4, watches as student cuts; moves on to table 1, nods, goes on to table 2; student at table 3 argues with other students about procedures. Their voices are a little loud so T hurries over but doesn't say anything. Students get quiet when she gets near. Student at table 1, "Ms. Turner," T goes to table 1, then moves on to table 4. "Be sure to keep the major muscles of the frog."

11:08 T goes to table 2, leans over and helps that group; moves on to table 6 when they call her. T goes to table 5, nods, moves back to table 3, leans over and says, "Looks alright."

11:10 T gets class' attention and tells them what they should have done by now; she begins TV, calls, "John, stop." John explains that he only had one more thing to cut. Teacher: "I'm waiting." John puts his hands down and she turns on the TV. T goes to table 4, then 1, scans room, moves to table 5 and watches; looks at table 6, directs students to watch the TV; scans room again, shushes a student; everyone watches TV.

11:13 Student brings paper to T who signs it and student leaves the room; turns off TV, gives directions again.
11:14 T: "Class, I cannot speak over all of you." She waits for silence and then continues to give directions. T goes to table 1, then table 4, helps them; table 3 calls T and she goes to them; S: "Ours just ate and his stomach is full." T: "That's great."

11:15 T tells class about the other class finding insects inside the frog's stomach. T moves to table 4, then goes to each table to check on student work.

11:16 Table 3 finds a tiny skeleton or something in the frog's stomach. T goes to table 3, looks at their find, goes on to table 6; leans over and helps them, "What is that stuff called that you have there?" Students don't know the answer, so T tells them.

11:17 T moves to table 2, on to table 1, gives instructions to entire class. S at table 3, "We found a hamburger in ours." Students around that table laughed; T ignores them and goes on to table 2, then back to table 3 and looks at their find; makes no comment.

11:19 T: "Everyone listen to me, please. I need your attention. Now we're going to watch -- John -- Derek." Students get quiet; T turns on TV.

11:20 T: "Look for the liver." She goes to each group to check on them. Turns off TV. "How many people have the intestine cut out now? If you haven't done that, go ahead and do it now." T moves to table 5, asks a question and turns to table 6 and says, "This table should know." Girls at table 6 laugh and say they can't pronounce it; T laughs and tells them the answer.

11:22 T turns on TV again; stops it; "When I have your attention, again." Girls at table 6 are laughing; T watches until they stop and then turns on TV.

11:23 T turns off TV; goes to table 3 and questions the group; moves on to table 6 and questions them. Does the same with other tables.

11:24 Student at table 6 goes across room, "Ms. Turner, we found our heart." T looks up, "Good."

11:25 T stands by monitor 8, scans room, prepares to turn on TV, calls out, "Terry," looks around, "Scott, wake up." T turns on TV; goes to each table to check on them; shushes the class.
11:29 T turns off TV and asks questions of entire class; everyone talks at once. T, "Class, I asked you a question. How do frogs breathe?" Class all tries to answer at once. T: "I can't speak above you." T gives directions for lab cleanup, "Randy, I'm speaking..."; continues to give directions.

11:31 Girls at table 6 sing funeral dirge for frog; T goes to them and speaks quietly; singing stops; T goes on to check other tables. T: "Be sure you wipe off your table," goes to sink while students are cleaning up. T sends some students to the other sink in the storeroom; goes to check on them, then comes back to lab to direct cleanup. As students finish cleaning, they push in chairs and go to classroom area quietly.

11:33 T checks lab, "Some of these chairs aren't pushed in to the table; that's minus 5." Students hurry to push in chairs. T calls Jay to wipe off his table again.

11:34 T tells students to begin written work when they finish cleaning up. Class is quiet. T asks, "How many of you enjoyed that lab?" "Was it better than the earth worm?"

11:35 T gives directions for tomorrow as well as a reading assignment. "You might have a pop quiz tomorrow." T asks questions about the lab; students answer quickly and correctly. T: "Everyone is talking at once; let's have one person at a time." Bell does not ring, but other students begin passing in the hall; students want to leave, but teacher shakes her head, "No," so students remain seated until she finally dismisses them.
APPENDIX H

Transcription Of Stimulated Recall Interview

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Interviewer (I):
Let's talk about your sixth period class now a little bit; this is your class that you have Jack W. in and we talked about him quite a bit last week. In that class, real early in the class, you shifted someone from another group; do you remember doing that?

Teacher (T):
Yes, I don't remember if I told them exact; I think I told them that they might have to change tomorrow; in that class there were several people absent on that day and there were several people absent on the lab day and they ended up with only about two people in a group so I had some people change on the lab day and I think it was probably Debbie P. because she was -- she was concerned that she'd be the only one in her group and on the lab day they started to work together and leave out -- leave one of the kitchen units empty and just -- she was just going to go with someone else, but I had her go back to her unit and got someone else from a group that had three so there'd be two at that group and had them go ahead and work because I feel like when they have two in a group, I think that's ideal because they have to work so hard and they have to do all of it and I think they learn more so we went ahead and did it that way. We did have to move people around because of the absences...

I: That must be it. Let's listen here. I wrote down that you did some reorganizing of the groups and that's probably what it is; let's listen and see.

T (on tape): "And then you'll also have two evaluations to fill out about your biscuits and you'll also, I'm going to have you do your group evaluations tomorrow instead of the next day; and so at the end of your class, you can go ahead and evaluate how the lab went because since spring break is coming up, I think it would be better if we did that tomorrow; we're going to have a shorter class period on Friday. On Friday you'll be having a test over biscuits and hopefully, maybe tomorrow we'll be able to review a little bit for it, but really, cooking biscuits is probably the best review for it; okay, let's go ahead and fill this out then, and what would you put..."
T: I'm pretty sure that's who it was. She had said that she was concerned because there were only two in her group to start out with and the other member was absent that day.

I: Okay, and you reminded them again that they needed to plan to alternate their chores and that's what we talked about last week, that you want to be sure that students don't get stuck with washing the dishes every time (right) and that sort of thing. Okay, tell me what Jack came up with this planning session. Do you remember?

T: In the planning session? He was, oh, he had decided that he was gonna give Larry all the work because Larry had been -- didn't do any of the work last time -- was that what --?

I: That's it -- let's listen to that.

T (on tape): "and you'll have to go from there with it. Is your evaluation (inaudible) Okay, this is your recipe, you can go ahead and staple it -- oh, did you not -- you did it on your own paper?"

S (on tape): "I'm gonna go ahead and do it on this. This is just a scratch --"

T (on tape): "See, it has to be turned in to me at the end of the period, and you don't have time to copy it all over; not unless you stay after; are you planning to stay after?"

S (on tape): "I'll do it and turn it in next week;" (Inaudible passage between Jack and teacher).

T (on tape): "I know; well, I think you're gonna have to turn in that one Jack because you're not going to have time to copy it over, unless you stay after, so go ahead and turn that in. I understand that, I'm carrying paper around, so you can just tear it off just to turn it in; I just want you to go ahead and staple it together."

S (on tape): "Can I turn it in at the end of class?"

T (on tape): "That's right, that's what you're supposed to do; I just want you to staple it; okay, thank you."

I: You're very patient.

T: Well, I just really enjoy students; I kinda like the underdog students anyway, I don't mind having Jack in my class; he's interesting, he's contributes in his own way;
I: What was he telling you -- something about band?

T: That was because he didn't want to be taped; he gets real upset if the tape recorder is working and he was saying that he didn't like it because -- and he said that he was taped in band, too; he plays the drums and the tape recorder was right by the drums and he's afraid he'll miss a beat.

I: Oh, I couldn't understand what he was saying and I could tell he was afraid he'd miss a beat. Okay, so that's what it was about; but he really wasn't willing to stay after, to stay late and finish up his paperwork, was he?

T: No, he stays late a lot and so I thought maybe that's what he was planning on doing; he's very much, uh, he likes to kinda do things his own way and, you know, like that, what he had done -- I knew at the beginning of the period, that he'd written out his own form on paper because I had that up on the board and he didn't realize -- the last time they did do it on their own paper and I didn't have this run off, and I ran this off for this time, this paper here, the ditto, so he was supposed to do it on the ditto and he just went ahead and did it the way he wanted to do it on his own paper and that's something that I, you know, the next time he probably wouldn't do it, I think it was probably due to that situation that he did that.

I: Okay, there's, I think right close here on the tape there was a group that came to you with a problem --

S (on tape): "I don't understand where..."

T (on tape): "You weren't here the last time, right? So you just are out of it still? You didn't understand at all what we're doing? (inaudible) No, it's kind of discouraging, but I think maybe you'll understand better tomorrow when we get together (inaudible) Oh, that's okay, what I told you was just to start at the top and fill it all the way down, (inaudible), that's fine, but just go ahead and staple this together and then you dry out the sink."

I: Okay, so that was just a problem that one student in the group had?

T: Yes, she was suspended for two weeks and she missed our first lab and I think she had a -- well, she's pretty low IQ to start out with, but I think she had a mental block that she -- she told me she wasn't going to cook the next day and I told her that she was and I asked her why she
thought she couldn't and she said, "I don't know what we're doing," and I said, "Today we'll plan it and you'll see what we're doing," and she just didn't understand but I'm not sure she's really trying to, either, you know, but she had missed the first time and so, you know, there wasn't time to review all of it except we were going through the same process we went through before, but she just didn't catch on; but that was that one...

I: Did she cook well, then, the next day?

T: She was absent.

I: Oh, she was? Do you think she was absent because of the lab?

T: No, I don't think so; she came and let me know early that day that she was -- that she might miss it and I think she had some kind of appointment and she didn't know if she'd be back in time. She said she'd try to be back in time, so I think her attitude changed about it and I think she wanted to be there, but couldn't; she'll have to make them at home.

I: Okay, there's one more time that Jack appears on tape, let me see if I can catch it...

T (on tape): "Okay, yes, since they're not here, you may... you need to stay open to the fact that they may want to change things around a little bit."

S (on tape): "Larry didn't get to do what he wanted to do."

T (on tape): "What did he want to do?"

S (on tape): "A lot."

T (on tape): "He wanted to do a lot?" (interruption over intercom)

S (on tape): "Except for one thing; he didn't want to set the table so I went ahead and did that."

T (on tape): "Okay, that's okay, but everybody needs to, you know, he'll need to set, you can tell him to set it... (inaudible). Okay we'll probably get that worked out; I hope it will work out better this time and it sounds like it's going to."

I: Okay, Jack was just -- this was one of the places where he was deciding what Larry would do.
T: Right, that he would do more work. And in the actual lab, I just realized one thing, that Larry did set the table; he said that Larry wasn't gonna set the table, that's just because they had to rearrange things because one girl was absent; there was just the two of them working and Larry did do more work in the lab, but Jack stayed after school almost 30 mintues washing dishes and I asked him how -- why it took so long and he said that Larry hadn't done a proper job of washing the dishes so he rewashed everything that Larry washed; and he's very much a perfectionist and I don't know, you know, I hadn't seen the dishes to see how bad they were but he, uh, even though Larry did do more work, apparently he didn't do it as well as Jack would have wanted Larry to do.

I: So he was willing to do it over to have it done right?

T: Yeah, it's really interesting. He really works hard; he has some real good qualities.

I: Is there anything that happened, either in the lab or in the planning session that you would do diffently if you could do it over again?

T: Well, I always learn, like, from the first class period that I go over the lab planning is third period and then I go over the same thing sixth period and I always feel like, when I do the same thing, sixth period's improved and like, in the planning, in sixth period, I didn't have them give examples of all the different kinds of food in the market order because I realized it was close enough to the end of the period that we needed to get on to something else and I just -- I gave them the examples real quickly and I tried to go through the market order real quickly in that class and I also really stressed that everyone needed a plan sheet that was going to go in the folder and made that more of a focus of the lesson that this, is why we're doing this so that you have this on file to prepare you for other labs. I had kinda thrown that in third period, but I hadn't emphasized it as much and those are the main differences I can think of; but it did go better sixth period; a lot of times it does, just because you actually, you can plan something on paper, but then when you actually run through it and the way that the students responded to it and that kind of thing, can change the way that you do it the next time.

I: Okay, how about if you had another student that responded or reacted the way Jack does to working in the group, would you treat them in the same manner that you do Jack, do you think?
T: In which aspect?

I: In other words, you know, if they wanted to do so much of the work themselves rather than really cooperating and participating in a group. You've been very patient with Jack; do you think you'd be as patient with any other students?

T: I don't know; I'm not really -- I mean, even though it sounds like I'm being real patient with him, the whole time I'm not gonna let him -- well, I mean, I am trying to be patient with him, but I'm not gonna let him just do what he wants to do. He's not, I mean, as far as staying after, to wash the dishes better. I wouldn't say, "Well, you have to go home now," or anything like that, but I'm not just letting him do what he wants to do. It might, I don't know if it sounds that way, (inaudible) it's kinda hard to tell, but I'm trying to get him to share the responsibilities and that's been what I've been trying to tell him to do. And that's what he was trying to do in that planning was give Larry a lot of work, but, and Larry did do more work, but I had to keep after Larry the whole time to work, too; (did you?) because he, uh, he's kinda hyperactive and he kinda walks around the room and then comes back to where he's supposed to be and he was mad, too; Jack made a recipe error, a mistake, and Larry was mad that it happened, and I told him that he needed to be in there watching and observing you know, but I, you know, I do think you have to deal with different personalities differently in a lot of cases but I think at the same time you have to be fair and have certain guidelines yo have to go by and I'll take off, you know, if Jack, I mean like someone else, their mistake might be that they don't do enough work; his mistake might be that he does someone else's job. And I do; what I'd like to do is take off if he does do too much of it because I'm trying to help him to learn how to work in a group but I'm not trying to just let him do whatever he wants to do just because he's different. He is different and you do, you know, I do feel sorry for him because of the fact that he doesn't have very many friends and everything, but at the same time, you know, he still has that independent self-will that he wants to do things his way, and he can't do things his way all the time...

I: You have to keep an eye on him -- (yeah). Okay, your group of slow boys is in your second period class and Jack is in your fourth period class?

T: Right.
I: What would you do if you had them both in the same class?

T: It would be difficult... it would be very difficult; you do find that certain students require a lot more attention than others and it would be pretty bad...

I: You could face it if you had to?

T: Yeah, but it would be hard, it really would, if you never really, you really -- a teacher doesn't have any control over what combination of personalities will be in a class and it can be -- some can be very complicated.

I: Do you suppose, if that had happened, instead of having those three slow boys in a group together, you would have spread them out, each one to a group? With more normal ability students?

T: Possibly; sometimes you can't -- you can't do things the way that would be best for them; sometimes you just have to look at it logically and say that the whole class is not going to be able to function unless I do this and it's too bad but that's the way it's got to be and if, you know, you probably would have to do that; it just would be too much for one person to handle; if you could have somebody to come in and help...

I: You're dreaming!

T: I've never seen that, so you probably would; sometimes you just have to look at it -- the logistics of it; and not be, you know, I like to think about the individual differences and gear it to the individual and everything, but sometimes the classes are just too large for, or for other reasons you just can't -- you just kind of have to go along.

I: I can't think of anything, really; I feel like we've covered about everything.

I: Okay, that takes care of today. Thank you.
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