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THE INFLUENCE OF CLASSROOM FEATURES
ON STUDENT QUESTIONING BEHAVIOR:
A STUDY OF ONE SIXTH-GRADE CLASSROOM

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THE INFLUENCE OF CLASSROOM FEATURES ON STUDENT QUESTIONING BEHAVIOR: A STUDY OF ONE SIXTH-GRADE CLASSROOM

by

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ABSTRACT

THE INFLUENCE OF CLASSROOM FEATURES
ON STUDENT QUESTIONING BEHAVIOR:
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This study was undertaken as a beginning line of inquiry which would add relevant knowledge to current theory on student questioning behavior. Specifically, the focus of this research was to document how various features of the classroom (e.g., characteristics of instruction, and attitudes and behaviors of the classroom teacher and her students) influence the frequency and function of student-generated questions.

The methods of data collection included multiple observations and audio-taping of instructional events and teacher and student interactions as they naturally occurred in one sixth-grade classroom. In addition, the classroom teacher and her students were interviewed for the purpose of documenting the participants' perceptions regarding the generation of questions during academic instruction.

This study is significantly different from other work on this topic because it directly addressed four major

issues which have been ignored by previous research. These issues included: (1) the documentation of student questions generated within private settings (i.e., generated during one-on-one interactions with the classroom teacher), (2) consideration of the interactive nature of classroom events (i.e., how features within the context operate together, not in isolation, to affect human behavior), (3) the documentation of the participants' point of view, and (4) the collection of data within the natural setting of the classroom.

As a result of this study, new information has been gained, and a more thorough understanding has resulted regarding how salient features of the classroom operate interactively to influence the nature of student questioning behavior. The findings of this study have implications for classroom practices. In order for teachers to facilitate the generation of students' questions during academic instruction, they need to employ a wide variety of strategies. These strategies address explicit and implicit teacher-related behaviors such as: teaching students how to formulate effective questions; providing appropriate responses to student-generated questions; increasing teacher accessibility to students; and providing instructional methods and materials which actively involve students in the process of learning.

DEDICATION

This study is dedicated to my father, Abe Tompkins, who encouraged me to ask questions, and then allowed me to find my own answers.

ACKNOWLEDGEMENTS

I would first like to acknowledge those individuals who made it possible for me to conduct this study. My sincere gratitude is extended to Mrs. Powell and her students for allowing me into their classroom. In addition, I would like to thank the building principal, and all of the staff at Great Lake School, for providing me with such a warm and friendly atmosphere in which to conduct my research.

I would also like to thank my dissertation committee. A special thanks to Douglas Campbell, dissertation director, for holding up to the enormous challenge of directing this dissertation over a long distance (both in time and geographically). His guidance throughout this experience was most valuable, from a professional and personal perspective. In addition, I extend my thanks to James Gavelek, committee chair, for his support and help in sorting out the various details required in the process of completing my study. I would like to thank Annemarie Palincsar, for her encouragement and her strong shoulder, both of which helped me through this project. A special heartfelt thank you is reserved for Susan Melnick, who not only provided me with professional guidance and mentoring

throughout my doctoral studies, but extended personal advice to me on occasions when it was truly needed.

I would also like to thank my family, especially my mother, who wondered why it took so long to write this "paper". Perhaps now they will understand what I was doing with all of my time. I hope my educational accomplishments provide an impetus for my nephew and niece, Seth and Emily.

A final thank you for my husband, Jim Plog, who knows first hand about how much blood, sweat, and tears it takes to produce a dissertation. We can now look forward to uninterrupted weekends together.

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CHAPTER ONE

INTRODUCTION

Purpose of the Study

This research study was undertaken as a beginning line of inquiry which would add relevant knowledge to current theory on student questioning behavior. The primary purpose was to document how various features of the classroom influenced the frequency and function of student-generated questions. In order to meet this purpose, I observed and audio-taped student and teacher interactions which occurred during a variety of academic instructional activities. A total of twenty-six academic lessons were observed within one sixth grade classroom. In addition, I interviewed the students and their teacher in order to reveal their personal perceptions regarding the generation of questions.

The Importance of Studying Questioning Behavior

Over the years, student questioning behavior has captured the attention of scholars from a wide variety of disciplines. Perhaps this attention has resulted because the asking and answering of questions is one of the most typical of activities found within classrooms. Researchers

studying this behavior have utilized experimental and observational methods in their attempt to learn more about how and why people question. Yet, despite the pervasive nature of questioning and the dearth of studies examining various aspects of this behavior, there is still a large gap in our understanding.

Most all of the literature on questioning asserts that learning is positively influenced through student's effective generation of questions. For example, philosophers have long regarded the posing of a question as the beginning formation of knowledge (Clark, 1972). Cognitive psychologists have stated that there may be a positive relationship between the self-generation of questions and successful problem solving (Kearsley, 1976). Recent interest in metacognitive processes (i.e., awareness of ones own strategies for learning) has prompted a new interest in student's questioning behavior. In the last ten years a variety of experimental studies have been carried out for the purpose of discovering how learning is positively influenced by the promotion of student-generated questions (Meyers & Paris, 1978; Palincsar, 1983; Wong, 1985).

Many educators believe that students are more likely to attain higher levels of thinking when they are encouraged to pose questions (Carin & Sund, 1971; Helfeldt & Lalik, 1987). This generation of questions by students has been viewed as a natural expression of a healthy and curious mind (Robinson

& Rackstraw, 1975; Wesley, 1937) and reflects that the child is actively and productively involved in his/her work (Hassler & Smith, 1930). As children question, they are exploring their environment and gaining knowledge through the use of language (Halliday, 1975). This specific use of language, the generation of questions, is considered by many to be crucial for children's educational success (Goody, 1978; Wilkinson & Calculator, 1982).

In short, it is believed that the generation of relevant questions helps direct student attention, increases student involvement in learning (Olmo, 1975; Rowe, 1978) and facilitates cognitive development (Blank & Covington, 1965; Fahey, 1942). This importance attributed to learner-generated questions is aptly summarized by the following quotation, "Once you have learned how to ask questions-relevant and appropriate and substantial questions-you have learned how to learn and no one can keep you from learning what you want or need to know." (Postman & Weingartner, 1969, p. 23)

It is likely that the importance attributed to learner-generated questions is based on a relatively simplistic or naive perspective. This perspective does not take into consideration the complexity of classroom life nor the great variability of questioning behavior which takes place in traditional classroom settings. As I will detail in the following section, this study sought to go beyond a simplistic view of student questioning behavior.

The Significance of the Study

The elementary school classroom is a complex environment in which the teacher is responsible for providing a variety of learning experiences for his/her students. In addition to being a learning environment, the classroom is also a language environment (Stubbs, 1976). This educational setting includes the written language of instructional materials as well as the spoken language exemplified in conversations which take place between the teacher and his/her students.

One very specific use of language generated during these teacher-student interactions is questions. Information about what activities and behaviors affect children's generation of questions, as well as what meaning teachers and students have for these activities and behaviors, is relatively unknown. That which was true over fifty years ago, when Isaacs stated that we must examine the situation that gives rise to the question (1930), is still true today. The processes and conditions whereby questions are generated need to be identified (Dillon, 1982).

While previous research has yielded valuable information on this topic, there is still much we do not know about student questioning behavior. One reason we lack information in this area is because previous studies have failed to address some of the major problems associated with this line of research. These problems are significant

because they affect the validity of the data collection and analysis.

Problems associated with previous research include the failure to: (1) document questions asked in private settings, (2) consider the interactive nature of classroom features, (3) discover what meaning the participants have about questioning behavior, and (4) study questioning as it occurs within its natural context. In the remainder of this section I will discuss how I addressed these problems within my study.

Documenting Private Questions

Most of the observational studies which have taken place in the classroom have had a very narrow focus and have utilized methods of data collection which were not designed to capture the variety of the verbal interactions which occurred between students and their teacher. Observational studies documenting the frequency of student questioning, such as those conducted by Flanders (1970), Stevens (1912) and Susskind (1979), focused only on publicly accessible questions and, as a result, failed to document those questions which were generated by students in private settings. As a result of the failure to document privately occurring questions, a major source of data was overlooked by researchers.

As part of my data collection the teacher was equipped with a remote microphone which picked up the private

conversations between the teacher and her students. As the teacher moved around to the individual students, as occurred during a variety of independent academic activities, I was able to listen and record these conversations. As a result of utilizing this method, my study revealed a more realistic account of the frequency of student questions than has been previously reported.

The Interactive Nature of Classrooms

Another problem with previous studies, both observational and experimental, is that they have failed to address the complexity of learning environments. Studies such as those conducted by Torrance (1970b), Robinson and Rackstraw (1975), and Dillon (1981a), while certainly providing worthwhile information, focused on the role of a single feature of the learning environment as it influenced the generation of student questions. Given the complex nature of classrooms it follows that there is a need to examine how various features operate interactively to influence questioning behaviors. This issue was resolved in my study by documenting a wide variety of academic activities and student and teacher behaviors within the classroom. In addition, during the analysis of these data, I was careful to consider how these features could operate in various combinations to influence student's questioning behavior.

Participant Perspective

The third problem with previous research on this topic is that it has often failed to present the participant's point of view. Given that questioning occurs as a result of interactions between and among individuals, it stands to reason that researchers must discover what meaning the participants have about these interactions. Without directly revealing the participant perspective the findings are limited, since they represent a researcher's subjective interpretation of the events. A significant portion of my data base was obtained by interviewing the classroom teacher and her students for the purpose of discovering what they knew about the questioning behavior within their classroom.

Naturalistic Study

The final problem associated with previous studies is that most have them have been conducted within simulated instructional settings. The major criticism of these studies is that the findings do not explain behaviors that occur within the natural setting of the classroom. This lack of generalization of the findings exists because the experimental setting lacks the complexity of the activities which occur within the typical classroom. I was able to resolve this problem by carrying out data collection within the natural setting of a classroom.

Research Questions

Since the purpose of this study was to explain how student questioning behavior was influenced by the context in which it occurs, it was necessary to document and understand the nature of student questioning and the various features which existed within the context of the classroom. In order to guide the collection and analysis of data, the following research questions were formulated:

1. What are the daily classroom routines and the characteristics of instructional methods and materials?
2. What is the frequency, form, and function of student-generated questions and the questioning related attitudes, values, and behaviors of the students?
3. What are the questioning related attitudes, values, and behaviors of the teacher?
4. How do the salient features of the classroom operate interactively to influence the nature of student questioning behavior?

Although all four research questions were formulated prior to the initiation of the study, question four was modified, as reflected in its current form, during the analysis process. The original question, how do the salient features of the classroom influence the nature of student questioning behavior, did not explicitly address the complex, interactive nature of the context.

Organization of the Chapters

In this chapter I presented a brief introduction to my study. This introduction addressed the purpose and importance of studying questioning behavior, the significance of the study, and the research questions. In Chapter Two, the literature is reviewed. This review includes research and literature relevant to the following areas: (a) the definition of what constitutes a question, (b) the identification of the salient features within classrooms, and (c) the interactive nature of classrooms.

In Chapter Three, I present the methodological design of this study. Specific issues related to the validity of data collection and analysis are included within this presentation. I also discuss the selection process for the research site and describe the setting in which the study took place. Chapter Four provides the reader with an introduction to the classroom as I describe daily routines and the characteristics of instruction. In Chapter Five, I present data on the frequency, linguistic forms, and the semantic functions of student questions generated during academic instruction. In this chapter I also present the characteristics associated with the students and discuss how their attitudes, values, and behaviors, influenced their questioning behavior.

In Chapter Six, I continue with the presentation of salient features, focusing on the classroom teacher, and

questioning. This discussion includes revisiting various aspects of instruction and their influence on the nature of student generated questions. A summary of the findings and concluding remarks are included in Chapter Seven. The summary focuses on how various features within Mrs. Powell's classroom operated interactively to influence the nature of student questioning behavior. Concluding remarks address how the findings of my study add to our developing theory of children's questioning behavior, and serve to inform practice. Also included in this final chapter are my recommendations for future research on this topic.

CHAPTER TWO

REVIEW OF THE LITERATURE

Overview

As presented in Chapter One, the purpose of this study was to identify how various classroom features influenced the nature of student questions generated during academic instruction. In order to carry out this study it was necessary to review the relevant literature in order to clarify what constitutes a question as well as identify what features of classroom life I should focus upon for my data collection and analysis.

In the first section of this chapter I will present the literature which addresses issues related to defining characteristics of questions including clarification of frequency of generation, linguistic form, and semantic function. In the second section I review the literature which identifies how specific individual features of classroom life (e.g., characteristics associated with the teacher, instruction, and students) may operate to influence the nature of student generated questions. In the final section of this chapter I will present the literature which addresses the complex nature of the classroom and emphasizes

how various features within the classroom may operate interactively to influence student questioning behavior.

What Constitutes a Question?

Defining the nature of questions is a very important step in conducting a study on the topic of questioning. Despite this importance, many studies on this topic have neglected to explicitly defined this term. Perhaps researchers assumed that there would be little problem identifying questions as they would be easily detected by obvious linguistic structures. As will be discussed, there is more to the task of defining a question than is reflected by the linguistic form.

Despite a shared general understanding, among adults and children, of what makes a question a question, there is no single or true definition that one could use to help direct a research study (Goody, 1978; Robinson & Rackstraw, 1975). Fortunately, this does not mean that there are no fundamental assertions which can help direct the researcher. Scholars from the disciplines of philosophy, linguistics, psycholinguistics, and sociolinguistics have stated there are certain consistent characteristics of a question. A definition resulting from the synthesis of these characteristics, while admittedly not the only possible definition, is necessary as it serves to direct and increase the researcher's knowledge on this topic (Robinson & Rackstraw, 1975).

Based on the relevant literature from these disciplines, it appears there are two assertions which can be made with respect to defining a "question." The first assertion is that a question is reflected through its expressed linguistic form as well as its intention or function. While form and function are assumed to be interrelated, no isomorphic relationship exists. This means that not all linguistic forms, whose surface structures reflect a question, function as questions. In addition, many utterances can serve the function of a question although their surface structures (i.e., linguistic forms) do not appear to reflect this intent.

The second assertion is that one must study the form and function of questions as an interrelated unit operating under the influence of the context in which they occur (Mehan, 1979; Wilkinson & Dollaghan, 1980). This means that in order to accurately determine when a question is a true question one must consider various contextual features associated with the utterance (i.e., accompanying verbal and nonverbal behaviors of the speaker as well as the intent as directly expressed by the speaker).

While these two assertions allow the researcher to better understand what constitutes a question, they also point out the complexities involved in studying this behavior. The following discussion focuses on the linguistic, functional, and contextual issues relevant to the study of questioning.

The Linguistic Features of Questions

Early linguistic and psycholinguistic studies typically focused on documenting the structural development of children's questions (e.g., Cazden, 1972; Smith, 1933; Tyack & Ingram, 1977). Based on multiple observations of children in a variety of settings (e.g., play, educational, and mother-child interactions), researchers revealed there were two common ways in which questions could be linguistically structured. First, questions could be reflected by the use of an interrogative at the beginning of an utterance (e.g., Who, What, When, Where, How, Why); second, they could be reflected through the use of an inflected form of an auxiliary verb (e.g., "Do you have the book?" or "Could you tell me the date today?"). With both of these linguistic structures one can readily recognize the utterance as a question based on its linguistic form. Upon further examination of later psycholinguistic and sociolinguistic literature, it was made clear that it is not accurate to rely solely on these two obvious linguistic forms in an attempt to represent all possible syntactic structures. For example, Kearsley (1976), in his cross-disciplinary review on question-asking, proposed that there are a variety of syntactic forms which could reflect a question. In addition to the previously described interrogatives and auxiliary verbs, Kearsley stated there are also indirect or passively constructed questions (e.g., "I wonder what time dinner will

be served.") as well as tag questions (e.g., "That dog is big, isn't he?"). Kearsley also included nonverbal questioning in his taxonomy. Overt gestures, such as a raised eyebrow or puzzled facial expression, were identified as indicators that a child had a question.

Since the focus of this present study was on students' request for information during academic instruction, I was especially interested in a 1980 study by Wilkinson and Dollaghan. This research focused on the communication abilities of three first grade reading groups. In this study, specific attention was paid to the children's requests for action and information. Based on data gathered through audio and video tapes of small group reading lessons, the authors analyzed the student's requests and reported on the various linguistic forms used by the speakers.

According to these researchers the students' requests for information were represented by the following linguistic forms: (1) interrogatives (including tag questions and intonation markers such as, "She doesn't even know what?"), (2) declaratives (e.g.,"I need help."), and (3) imperatives (e.g., "Tell me what this says."). What is revealed in these two studies is that a question does not always take an obvious linguistic form. What appeared to be declaratives, according to syntactic surface structure, were actually requests for information. For example, the declarative "I'm stuck on a word" was not generated to inform the listener

but actually represents a request for help from the listener.

In presenting the previous examples of research, it becomes clear that there are various ways in which a question (specifically, a request for information) can be expressed. It is important to note, for methodological reasons, that to date there is no singularly accepted way of categorizing these structures. In documenting the linguistic acquisition of questions in children, researchers have developed their own distinct way of organizing these linguistic forms into taxonomies. While taxonomies are generally helpful, in that they shed light on the potentially available syntactic forms of questions, no taxonomy, based solely on linguistic structure, would be sufficient in defining what constitutes a question.

The Semantic Functions of Questions

As stated earlier in the discussion of linguistic form, syntactic structure must be considered in conjunction with semantic function. This statement implies that one can not always identify a question based on the surface linguistic form and that syntactic form and semantic function must be examined together within the context which produced the original question (Cazden, 1970; James and Seebach, 1982; Kearsley, 1976; Meyer and Shane, 1973; Wilkinson and Dollaghan, 1980).

While there are numerous interpretations of the term semantic function, it has been most commonly defined as representing the meaningful intent of the speaker. This definition implies that any attempt to label a question must include the true purpose or meaning in asking the question as expressed by the speaker (Searle, 1975). The following discussion addresses the issues associated with determining the function of questions.

Early philosophers commented on the issue of what constitutes a question. Their focus was not on the linguistic structure but the intent or function served by the question. For example, in 1917 Claparede (cited in Fahey, 1942) commented that a question results from an individual's awareness of an existing problem and the desire for a solution.

Fahey (1942) and Woodworth (1922) also believed that questions originated with an individual's curiosity about a problem situation. They believed that individuals posed questions in order to obtain specific information which was intended to resolve the disparity that existed between their past experiences and the new information presented.

Defining the functional aspects of questions is not as simple as these early philosophical statements may indicate. A speaker's intent in posing a question may <u>not</u> always be to request information in order to resolve disparity in information and/or to solve a problem. Just as there exist various taxonomies representing linguistic

forms, there are numerous taxonomies which have attempted to characterize the various functions served by questions. Within the last fifteen years, over ten distinct classification systems have been utilized in various questioning related research studies. The following examples, while not exhaustive, reflect the various approaches researchers have taken in their effort to characterize the function of questions.

One of the earliest, and perhaps most widely used, classification systems was that developed by Piaget (1926). This system evolved from lengthy observations, over a ten month time period, of the questioning activity of one six year old boy. The child was observed while engaged in informal interactions with an adult.

Based on these observations, Piaget developed a classification system for functions which consisted of the following separate categories: (1) causality-concern for physical or mechanical causality, (2) reality-concern for factual information, (3) actions-concern for why certain actions take place, (4) justification-concern for the rationale for rules and regulations, and (5) classification and evaluation-request for information about names and categories of objects. This system, considered highly reliable, has been popular with other researchers. Piaget's system of classifying functions of questions has been used frequently, with minor modifications, by researchers

conducting normative language acquisition studies (Davis, 1932; Meyer and Shane, 1973; Smith, 1933).

Davis (1932) studied the form and function of some 3,500 questions generated by children age three through 12. Davis utilized the basic five categories developed by Piaget and added two categories of her own. Citing, in part, the greater variety of data collecting situations compared to Piaget's original study, Davis introduced the categories of: (1) social relations-questions referring to information about how to get along, and (2) rhetorical-questions reflected in true questions based on linguistic form but not intended by the speaker to elicit a response.

More recent research has introduced new classification systems. Similar to Piaget, these systems sought to characterize the intent underlying a speaker's question. In 1976, Kearsley proposed a classification system which included the following: (1) echoic-request for repetition or confirmation of information, (2) epistemic-requesting new information, (3) expressive-conveying information to a listener using the linguistic "tag" form of a question (e.g., "Bill is coming, isn't he?), and (4) social control-question posed to exert control or sustain conversation.

The Contextual Component

Other researchers, discontent with the existing systems, developed additional taxonomies based on what they

termed "pragmatic" functions. Introduction of this term in reference to the function of a question reflected the importance of studying the use of language in its naturally occurring context. One specific branch of pragmatic study deals with the analysis of speakers' communicative intents or the reasons that people talk to other people (Chapman, 1981). Unlike the previous systems of classification, the pragmatic approach sought confirmation of intent by consulting directly with the speaker in order to uncover the purpose of a question (James and Seebach, 1982).

Within this pragmatic line of research, there are at least six different systems for classification. While these systems reflect a wide variety of pragmatic function categories, there are similarities among them. All systems reviewed included the following broad categories: (1) informational function-request for unknown information, (2) directive function-request for action or permission, and (3) conversational function-question posed for the purpose of initiating or maintaining verbal interaction.

In 1980, Wilkinson and Dollaghan proposed a system which collapsed these three broad categories into two; requests for action and requests for information. Requests for action are questions posed for the purpose of eliciting some type of action from the listener. Requests for information are questions posed for the purpose of eliciting some information from the listener.

The previous functional classification systems are representative examples of existing structures which have attempted to capture the intent or purpose of a speaker's question. After reviewing these systems, it appears that there is no singular structure that has been accepted as capably describing all potential functions of a question.

The Frequency of Student Questioning

While the literature on the frequency of student questioning does not directly relate to defining what constitutes a question, it does assist in our general understanding of the characteristics of student questions. Specifically, what the literature reveals is that students generate very few questions during academic instructional activities. This assertion is based on two comprehensive studies which have analyzed the total amount of verbal communication in the classroom and compared teacher generated questions to student generated questions. In this section I will detail this literature and highlight the relevance to my study.

One of the most widely known research projects on the topic of student frequency of questioning was directed by Flanders (1970). With an accumulation of almost ten years of data, he and his colleagues reported that only 1-4 percent of the total percentage of student talk within classrooms can be attributed to student-generated questions. This finding is based on the observation and written

recording of the verbal communications which occurred in a variety of classrooms settings (e.g., kindergarten through graduate school) during different subject-matter activities (e.g., social studies, mathematics, etc.).

Although the researchers only collected data on the total amount and type (e.g., questions, statements, responses, etc.) of verbal interactions, and did not report on related contextual events associated with the communications, their findings are startling. Flanders reported that on the average, that is, considering all classroom settings and subject-matter observed, teachers dominate up to about two-thirds of classroom talk. Although the amount of student generated questions could vary by grade level and subject matter, only one to four percent of the total amount of student communication can be characterized as student questioning. Further, Flanders found that of this percentage of student-generated questions less than 20 percent could be considered higher-order or thought provoking questions. Flanders found that the majority of student questions were requests for clarification of directions or requests for teachers to repeat statements.

Flanders concluded that the primary reason for such a small percentage of student questioning is that teachers are not spending enough time engaging students in quality communication. Flanders focused on the role of the teacher in modeling and promoting thinking and postulated that

teachers spend very little time nurturing the ideas and opinions of their students.

One criticism of Flanders' research is that he did not capture the complexity of classroom life through his documentation. He did not record associated non-verbal behaviors which accompanied the verbal communications, nor did he access communications which may have taken place in more personal or private settings as occurs frequently in classrooms. In reporting only publicly accessible communications, Flanders' data may not accurately reveal the total picture with respect to frequency of student generated questions. What is clear, however, is that in the typical classroom setting during open discussions between teacher and student, students do not generate a high frequency of questions during academic instructional activities.

In his 1979 article, Susskind reported on his line of research which, among other issues, focused on the nature of student initiated communication. Methods of data collection included observations in classrooms, recording of the types of statements made by teachers and their students, and teacher interviews. In all, 32 classrooms, grades three through six, were used for data collection. Observations lasted about 25-40 minutes and each classroom was visited three times.

During these observations, both teacher and student questions were recorded. The findings of Susskind supported that of Flanders. During an average 30 minute observation

period, teachers asked an average of 50 questions while students asked an average of less than two questions. As Susskind projected, at this rate an average student would ask approximately eight questions a year, or about one question per month in a typical Social Studies class. Students did generate more verbal communications during these instructional settings; however they were in the form of declarative statements which averaged less than five statements per thirty minute Social Studies period.

As with Flanders' study, the research conducted by Susskind did not include data collection methods which could access the student questions which may have been generated in private, between the teacher and the student. Since Susskind focused only on the frequency of student questions generated during open discussion in Social Studies, I question the generalizability of these data to other settings and subject areas. However, it is clear that, as in the Flanders' study, there is substantial evidence that teachers dominate classroom communication. Of the total amount of verbal communication generated by students less than one-third was in the form of a question.

Susskind also focused on the role of the teacher as a promoter or inhibitor of student-generated questions. Following his observational and interview phases of his study he carried out an intervention and evaluation phase which was designed to assist teachers in improving their own questioning behavior and increasing student initiated

communication. While this particular phase of the study is not directly relevant to my own research, this focus on the teacher's role in facilitating student questioning is noteworthy.

The studies by Flanders and Susskind reveal the need for sensitive data collection methods in order to capture the complex nature of classroom life. Both of the studies cited provided data based solely on public questions the observer was able to hear while seated in the classroom. Neither Flanders or Susskind attempted to record questions which were asked in more private settings.

Although it is clear from the findings of these studies that students generated a low percentage of questions during various academic subjects regardless of grade level, it is not clear why. Both researchers focused on the role of the teacher without consideration of other features of the classroom (e.g., instructional methods and materials, characteristics of the students, student grouping) and how they might affect the generation of student questions during academic instruction. In the next section I will review a more extensive body of work which does address the various ways the features of the classroom affect the generation of students' questions.

Salient Features of the Classroom

A major purpose of data collection for this study was the documentation of the salient features of the classroom.

Based on my own observations and the perceptions of the teacher and her students I sought to identify and explain how various aspects of classroom life could influence the questioning behavior of students during academic instructional activities. As a result of reviewing the relevant literature I was able to discover how a variety of salient classroom features operate to influence questioning behavior. Although I would remain open to observe and document additional features not identified in previous research, this body of literature helped focus my data collection toward documentation of the most relevant features associated with student questioning.

Teacher Attitudes and Behaviors

There is a variety of literature which has examined the effect of teacher-related attitudes, skills and behaviors on student questioning. In this section this body of literature will be presented and its application to this study will be discussed.

In addition to any instructional attributes, and their consequential affect on student questioning, it is almost a given that in order to promote student questions one must have a positive attitude about student questioning. Blank and Covington (1965) state that if teachers believe that student questions are important for learning, and they communicate this attitude explicitly and implicitly, they

can, in effect, set the stage for the promotion of student questions.

Once teachers develop a postive attitude toward student questioning, there are specific behaviors which can serve to communicate this attitude, and also directly enhance the questioning behavior of students. For example, one way that teachers can communicate their positive attitude about student questioning is through the establishment of an environment of inquiry where methods of teaching are creative and student-centered, and where materials allow for hands-on manipulation. This environment is obtainable as a result of the teacher's implicit and explicit communications to his/her students.

Along with the teacher's selection of appropriate teaching methods and materials, his/her modeling of appropriate questions may also serve to promote the generation of student questions (Rowe, 1978). According to Rowe, when teachers ask questions of their students which stir their curiosity they are implicitly communicating to their students through their own modeling. As a result of this modeling and active use of true inquiry questions (as oppose to questions asked by teachers to evaluate student knowledge) it has been proposed that students will begin to realize the value their teacher places on questioning. The modeling of genuine questions by the teacher may also teach students how to pose their own effective questions (Marksberry, 1979).

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In addition to modeling genuine questions, it has been proposed that teachers need to possess the skills necessary to directly instruct students in the development of effective questions. Specific recommendations for this include having the teacher assist students in recognizing and understanding the qualities of a "good question" (Rowe, 1978).

As teachers provide opportunities for students to actively engage in an inquiry discussion format, and provide direct instruction and practice with various types of questions (e.g., Bloom's taxonomy of hierarchical questioning), as well as the appropriateness of their use, they are communicating to their students the importance questioning plays in the learning process (Blank and Covington, 1965; Carin and Sund, 1971; Dillon, 1983; Helfeldt and Lalik, 1976; Herwig, 1982; Hunkins, 1972; Reigel, 1976).

There are two other teacher behaviors discussed in the relevant literature and both of these relate to how teachers can communicate a positive attitude about student questioning. The first behavior relates to how teachers respond to student-generated questions. According to various authors, teachers communicate a positive attitude toward student inquiry when they treat children's questions with honest enthusiasm. This includes having the teacher display appropriate verbal reward for good questions. In addition, teachers will be more likely to promote

questioning when they treat children equally in responding to individual questions (Helfeldt and Lalik, 1976; Hunkins, 1972; Mehan, 1979; Rowe, 1978; Torrance, 1972).

The second teacher behavior identified by the literature relates to the time teachers allow for students to pose questions. Often teachers appear to explicitly communicate a positive attitude about questioning by directly asking their students for questions. On the surface the teacher is demonstrating effective questioning facilitating behavior; however, upon further inspection it seems that teachers usually provide insufficient wait-time for their students to pose any questions (Rowe, 1978; Torrance, 1972).

What appears to happen in these situations, where teachers explicitly ask for questions without providing sufficient wait-time for students, is that the implicit message communicated by the teacher is the one that is received by the students. In other words, it is not what the teacher says that the students respond to but what the teacher does that carries the power. While the student hears that the teacher wants questions, it appears to be an insincere request because the teacher does not provide the time for the student to pose the question.

According to Mishler (1975 a,b; 1978) and Goody (1978) a positive attitude and the opportunity for student-generated questioning are very important teacher behaviors which greatly affect student questioning. Mishler described

this combination of attitude and opportunity as the status awarded to students by their teacher. Mishler and Goody have stated that in order to promote questioning within classrooms, teachers need to communicate to their students, verbally and nonverbally, that they have equal rights with the teacher to pose questions.

One way in which teachers can communicate this status to students is to reduce their authoritarian role. One way in which teachers can reduce overly controlling behavior is by not answering a child's question with another question. This, states Mishler, is often done to regain control of the conversation and reduce the status of the student in the conversation.

Another related behavior exhibited by teachers in their attempt to keep control over students is the successive questioning of students. Successive questioning can be characterized as the teacher asking multiple questions to a student without allowing the student an opportunity to follow-up on their previous answer or redirect a question back to the teacher. It is believed that this type of behavior on the part of a teacher serves to maintain control by cutting off a student's access to conversation. As a result of reducing these controlling behaviors the teacher allows his/her students to become more active in establishing and maintaining the direction of conversation in the classroom. Once students feel they have the right to

initiate conversation, they will feel more inclined to generate questions.

According to the literature, the most essential teacher related attribute related to the promotion of student questioning is the value the teacher places on questioning. It has been stated that when teachers can explicitly and implicitly communicate this positive attitude, through various instructionally related behaviors, they are more likely to provide students with an environment for inquiry.

The literature reveals that there are many ways teachers implicitly communicate their attitudes. One manner is through their own questioning behavior. By avoiding successive and evaluative questions to students, teachers may serve to reduce their authoritarian role which in turn may allow students greater access to initiating or sustaining conversations of inquiry with their teacher. In addition, the granting of sufficient wait-time for students to generate questions and the nature of the teacher's response to a student's questions may also serve to implicitly communicate to the student, and the class as a whole, the value that the teacher places on student questioning behavior.

Teachers can also display more explicit behaviors which will help communicate their attitude about student questions. This can be accomplished through direct teaching about the qualities of appropriate questions. The combination of explicit and implicit communications by

teachers is believed to play a critical role in helping students realize the value of inquiry in the learning process.

Instructional Methods and Materials

In an experimental study, Torrance (1970b) looked at methods of instruction and type of materials and their influence on the generation of student questions. Specific attention was paid to the difference in questioning behavior (i.e., frequency and function) with students who were allowed to manipulate objects versus students who were not.

All of the more than 60 six-year-old children who participated in this study were given basic instruction in question asking. The subjects were then randomly assigned to six member groups. All groups were exposed to the two different methods of presentation, demonstration, and manipulation of objects.

In the first method of presentation the learners were allowed to manipulate objects presented to them by the instructor. The objects included a plastic buzzing bee, a musical instrument, an acrobatic bear and a bear that moved when you pushed a button. In the second method of presentation the students were merely exposed to a demonstration of the object by the instructor. Throughout both instructional presentations the children were encouraged to ask questions.

Torrance found that significantly more questions were asked when the children were allowed to manipulate the

objects than when they were simply observers of a demonstration. Torrance concluded that this increase in questioning was a result of the instructional method which allowed students to be actively involved with the material presented.

Torrance also found that the questions asked by the children in the demonstration group were more descriptive in nature than the manipulative group. Torrance stated that the children in the demonstration group asked questions that were fairly obvious (e.g., "Is that green?") versus the concrete group which asked questions reflecting more curiosity (e.g., "Why is that green?").

Another experimental study, by Robinson and Rackstraw (1975), examined the effect of instructional materials on the frequency and types of student-generated questions. Using a systematically varied schedule of presentation, 33 eight to ten-year-olds were exposed to photographs of animals, stuffed animals, and a verbal description of an animal. The three presentations were done by a classroom teacher as part of a lesson on animals. The students were instructed to write down anything they wanted to know about the animal presented. Students had ten minutes to write down their questions.

Although the authors admit there were problems with the study (i.e., type of animal presented and its order of presentation may have affected question production), they concluded that a significantly higher amount of questions

occurred when children were exposed to the concrete object than to the picture or verbal descriptions.

Another interesting finding of this study was that the functions of questions generated during the three presentations were different depending on the material used. Robinson and Rackstraw found that students' questions focused mostly on the animal's physical attributes during the oral descriptive presentations. The authors concluded that since the children could not see the animal in this situation, they were probably affected by this. The authors believed that the descriptive inquiries made by the students reflected their need to know specifics about the animal. These requests for information about attributes of the given animal were probably not an issue when the child could actually see the stuffed representation or see the animal as represented in the picture.

Based on the studies presented above, it appears that student questioning increases when students are exposed to concrete objects or allowed to manipulate the objects. According to the findings of these studies, students ask fewer questions when exposed to instructional presentations using pictures, demonstrations, or verbal descriptions. As stated by Torrance (1970a) and Robinson and Rackstraw (1975), it appears that concrete items and the opportunity to manipulate these items leads to the promotion of questions in general and more mature questions specifically.

There is additional support in the literature for these conclusions. Supporters of student-centered learning believe that active participation by the student results in greater student questioning (Blank and Covington, 1965; Marksberry, 1979; Susskind, 1979). One discipline which has addressed this position is science education. In her 1978 book, Rowe discussed how active student participation resulted in the promotion of student inquiry during science instruction. Rowe suggested that one way to get students actively involved in their own learning is to provoke their curiosity. When teachers use methods of presenting information that are creative, it is believed that learners will become more attentive and active and, as a result, more learner questions will be generated.

In Susskind's 1979 article, he indicated that in order for children to exercise their creative abilities, they must be allowed to actively engage in learning. Marksberry (1979) also asserted that student-centered learning situations are more likely to arouse student interest and motivation which results in more student-generated questions.

In a 1982 paper, Doyle reviewed a variety of research which focused on the academic work in elementary and secondary classrooms. Specifically, Doyle was concerned with how modifications in instruction and instructionally related activities could increase student achievement. Included in his discussion on the implications of these

various studies Doyle examined how particular academic tasks directed the types of questions posed by students. Based on the findings of related research Doyle hypothesized that the function of students' questions would be influenced by the nature of the task. For example, if the goal of the task was to successfully perform or complete a specific activity, the student would be led to ask question which would assist him/her in successful completion of the task goal. This, Doyle believed, would occur because students are seriously driven by the need to be accountable for their productivity.

Doyle speculated that when teachers emphasize, through direct instructional means or as implied in their choice of instructional materials, that the goal of a task is to perform or complete the assignment, higher order types of questioning were inhibited. Questions that result in this type of task situation are questions that focus on how to rather than why.

Student Grouping

In looking at another research study by Torrance (1970b) it was discovered that student group size during learning activities may have an effect on the number of questions produced during academic instruction. The subjects of this experimental study were 192 children. All subjects, of average intelligence, were involved in a large group learning situation (24 members in the group) and at

least two small group learning situations (twelve, six, or four members in the group).

All groups were shown stimulus pictures from various Mother Goose stories. While they viewed the pictures they were instructed to think of all the questions they could to discover what was going on in the pictures. A time limit of ten minutes was used and all student-generated questions were recorded in writing by the experimenter (a trained graduate student or a teacher).

After analyzing all of the questions generated in the various groups, excluding repetitions, it was reported that group size had a statistically significant effect on the number of questions generated. The data revealed that the grouping with four students produced, on the average, twice as many questions as the grouping of twenty-four students.

Although Torrance admitted that the small sample size and a lack of replication of the data did reflect major limitations of the study, he felt strongly that small groups of four to six students would result in increased question asking. Torrance concluded that one possible reason for this increase in question generation may have been because the smaller group size allowed for more student-teacher interaction. This conclusion is consistent with an early assertion by Smith (1933), who stated that in order to facilitate student questioning the teacher must first be physically accessible to his/her students.

Student Attitudes and Behaviors

In this section various features directly associated with the learner will be identified and discussed from the perspective of how they affect the student's generation of questions during academic instructional activities. This discussion includes information from a variety of disciplines, including linguistics, sociolinguistics, and cognitive psychology.

The ability to question is clearly dependent upon the existence of certain prerequisite skills. Research on language acquisition has identified specific linguistic skills necessary for the generation of questions. In order for children to be able to question, they must first possess the prerequisite abilities of speech. In addition to the necessary physiological prerequisites, learners must also have knowledge about the proper formulation of questions according to syntactic and semantic rules. These basic prerequisites are not sufficient, however, and learners must also master basic cognitive skills (Blank and Covington, 1965; Cazden, 1970). These cognitive prerequisites require that a child understand what knowledge they possess as well as an understanding of means-ends relationships. It is the obtaining of means-ends relationships that enables a child to know that knowledge can be gained by posing appropriate questions. Children must also have the metacognitive ability to monitor their own level of understanding (Wonnacot and Raphael, 1982). In other words, for learners

to pose a question they must first be certain about their knowledge and realize when there is a gap in their knowledge; then they must understand that the posing of an effective question will help them obtain pertinent information.

In their 1979 article, Miyake and Norman discussed their experimental study which examined the relationship between a learner's prior knowledge about a specific task and the learner's requests for addition information. In this study, the authors used college students as subjects. At the beginning of the study all of the students were unfamiliar with word processing procedures for the computer. After dividing the students into two groups, one group was given some basic training in the use of the computer commands while the other group received no training about the task. In all, sixty adults were tape recorded while involved in a computer learning activity. The overall goal of this experiment was to capture the subjects' freely occurring thoughts and questions while they were involved in learning activities on the computer. The authors found that the group with no previous training asked more questions on the easier portion of the tasks than they did as the tasks increased in difficulty. The reverse was true for the group which received some basic training; they asked very few questions on the easy tasks but their questions increased as the tasks became more difficult.

Myake and Norman concluded that there appeared to be a relationship between the prior background knowledge of the learner and the number of questions generated. Based on their findings, it seemed that if one wished to generate a high number of questions from a learner, the material used must not be too familiar to the learner. Over familiarity with material produced significantly fewer questions since there was little need for additional information. The authors also posed that if the learner had too little background knowledge about the topic, he/she would ask very few questions as the tasks increased in difficulty. The authors believed the reason for this was that, due to inadequate background knowledge, the learners were unable to successfully cope with the incoming material and as a result had little if any idea of what information was needed to complete the task.

Miyake and Norman found that in order for learners to generate questions there must be an appropriate match between learners' prior knowledge and the material presented. In addition, learners must be aware of what they do know and realize that questioning can be an effective method for obtaining information. Similar conclusions have been made by others who have studied the relationship between a learner's prior knowledge and the nature of questions asked during various academic instructional activities (Goody, 1978; Rowe, 1978). There is a common belief among these researchers that overly familiar and

simplistic materials reduces the learner's curiosity and need to know. It is this lack of curiosity, or disparity between what the learners know and what they need to know, which inhibits the amount of learner-generated questions.

For a child to be considered a competent questioner, (i.e., one who can successfully elicit an appropriate response from a listener) he/she must also have an understanding of some of the sociolinguistic rules or norms that govern classroom questioning (Wilkinson and Calculator, 1982). It is these structures or classroom procedures that give the activity of questioning its organization and ultimately allow the child to make sense of his/her environment (Mehan, 1979).

These classroom structures represent the implicit and explicit rules or norms associated with questioning. As an example, in order for children to be effective questioners it is necessary for them to know when it is appropriate for them to pose a question in the classroom (Cazden, 1979; Mehan, 1979; Philips, 1983; Sinclair and Coulthard, 1975). Just as children must gain linguistic, cognitive and metacognitive competencies, they must also learn to use questions according to the social norms, rules, or customs of the classroom (Heath, 1982; Olson, 1982; Tyack & Ingram, 1977). It is not enough that students know the norms; they also must understand how they vary from situation to situation.

A major issue in the child's awareness of classroom norms is the fact that these norms can be explicit as well as implicit (Gumperz, 1971; Mehan, 1979). At times the teacher may directly communicate question related norms to his/her students. Often times the teacher's communications are more subtle and the child must abstract the rules based on the teacher's implicit verbal and/or nonverbal behaviors.

These implicit communications can be in the form of direct teacher statements (e.g., "Wait until I'm done giving directions"), nonverbal gestures (e.g., an extended hand toward the student indicating the student is to wait), or a lack of verbal or nonverbal response (e.g., the teacher ignores the student's question). The point is that the child must deal with a variety of teacher communications in order to come to know the norms associated with the use of questioning within the classroom.

In addition to the influence of learner knowledge and material and classroom norms on the generation of student questions, there is another learner associated characteristic that influences whether a child will or will not ask a question: personal motivation. While Miyake and Norman (1979) and others have pointed out that material can influence a child's need to ask a question, it also seems logical to conclude that children will question more frequently when they personally determine there is something important for them to know.

This issue of personal motivation as it serves to facilitate and or inhibit question generation was examined by several researchers. Of most relevance to this discussion is Rogoff's (1982) research, in which she studied how personal motivation influences questioning. Although Rogoff's work did not take place in the classroom, her findings have application for classroom-based research.

Rogoff's study focused on the relationship between a child's motivation to ask a question and the goal of the task as defined by the teacher. Rogoff stated that in addition to a child's questioning being influenced by the familiarity of the material and the social context, children are influenced by their perception of the task. In other words, the implicit or explicit goal of a task, as intended by the teacher, may not be the goal as perceived by the student. It is the match between these goals that influences the child to generate task related questions.

Rogoff posed that when the child's perception of the goal of a task closely matches the intended goal, as explicitly or implicitly communicated by the teacher, the child will ask more questions than if there is not a match between the child's perception and the teacher's intent. Central to this position is the notion that this relationship not only influences the frequency of learner-generated questions, but also the function of the questions generated by the learner.

Along with the above mentioned student-associated skills (e.g., linguistic, sociolinguistic, cognitive and metacognitive) there are specific student-related attitudes and resulting behaviors which may also influence the generation of questions. Dillon (1981a) stated that there appears to be a norm against student-generated questions during academic instructional activities. Dillon believed that student attitude may be a major reason why students fail to ask questions in the classroom.

Dillon had 166 student-teachers complete a questionnaire. The subjects were all students who were enrolled in a college teacher preparation course. The focus of the questionnaire was to discover the reasons why these students did not ask questions of their college instructors. According to Dillon's study of student-teachers, a central reason why students do not pose question more frequently is because of their feelings of discomfort.

In Dillon's study, the student-teachers stated that they often failed to question their teachers because they expected their questions to bring negative reactions from their peers and/or their teacher. Many believed their questions would be interpreted as dumb and, if they were to ask "dumb" questions, they would lose face in front of their classmates and the teacher. It appeared that students felt their questions, whether appropriate or inappropriate, could potentially reveal their ignorance about a topic. This fear

of being viewed as incompetent inhibited question-asking despite an underlying need for additional information.

Dillon's findings relate well with Mishler's work which focused on the social nature of children's classroom behavior. As Mishler stated (1975a), it is important for students to feel they have equal status with the teacher in order to facilitate the generation of questions. One way this status is implicitly given to students is through the teacher's reduction of his/her role of authority within the classroom.

The Interactive Nature of Classrooms

Most of the studies presented thus far have been correlational studies with process-product designs. The common focus of this body of research has been on the relationship between individual features of the classroom (e.g., instructional materials or specific teacher/student characteristics) and specific outcomes (e.g., children's questions). Of the observational studies that were cited, they too focused on the documentation of individual features of the classroom (e.g., how instructional materials affect the frequency of student's questions).

The major criticism of the studies reviewed thus far is that they ignore the richness and complexity of classroom life. Basic to the assertion that classrooms are complex environments is the notion that the features which exist within the classroom do not operate independently of each

other to influence the behavior of the participants. As will be detailed in the following discussion, there is considerable support for this assertion, and consequently for the development of research methods which go beyond an individual feature approach as represented in many of the studies on student questioning behavior. The literature reviewed in this final section focuses on an approach to research which is based on the assertion that features within the classroom operate in concert, not in isolation, to affect human performance.

In an 1977 article, Bronfenbrenner detailed an "ecological" approach to research in human development. Within such an approach researchers would focus on the content of an environment as it interacts with human organisms to bring about change. This ecological approach differs from previous approaches which focused primarily on specific individual processes to explain human performance, while virtually ignoring the role of context.

Bronfenbrenner is not alone in his proposal for a broader approach to research. Doyle (1977) also supported such an approach. In reference to the complexity of classrooms, and the need for a more complete understanding of classroom events and their effect on human performance, Doyle presented what he called a classroom ecology paradigm. Within this paradigm, researchers focus on understanding the relationship between human responses and environmental demands.

In 1983, Parker discussed the influence of schooling on the development of the individual. In this article he addressed how individuals are greatly influenced by the social environment in which they interact. Parker stated that there is a need to have a clearer understanding of how policies and practices within the social context of the classroom influence human development and performance.

Parker was particulary interested in examining the role language plays in the growth of the human mind. Parker's review of various psychologist's perspectives, such as Vygotsky and Bruner, highlighted the important relationship which he feels exists between language and the culture of a social setting to influence intellectual development. From this perspective Parker goes on to hypothesize that schools are "language saturated" cultural institutions (p 143). Parker strongly suggests that if schools have the potential to play such an critical role in the development of the human mind, then it is important for us to discover what we can about the policies and practices relate to the cultural and language activities of the context.

Concepts presented in a 1982 article by Rogoff draw together many of these issues identified by Bronfenbrenner, Doyle, and Parker together. In this article she detailed two proposed approaches for research, both of which emphasize the need for a more complex orientation to classroom research than has been reflected in the single factor studies of individual performance.

The focus of Rogoff's article was on understanding how various psychological events, such as cognitive development, are influenced by the environment in which they occur. In other words, aspects of a given context (e.g., nature of a task) are viewed as they interact with aspects associated with the participants (e.g., motivation) within a context to affect performance (e.g., student questioning).

In presenting her two approaches, "interactive" and "transactive," Rogoff not only gave further support to an integrated approach to viewing classroom life, she went one step beyond. In describing the transactive approach Rogoff stated that features within the classroom cannot be defined or understood as independent entities. While these features may be segmented for the convenience of documentation, they must be analyzed as a single integrated unit.

There are several examples of researchers who have utilized what can be characterized as an integrated approach to the study of human performance. Although different labels were used in describing their approach, the researchers had a common goal of considering the interactive or holistic nature of classroom events.

In their 1984 article, Raphael and Gavelek discuss how to manipulate the learning environment to promote reading success. The ideas presented by these authors are relevant to my own study because they too were interested in understanding how student's language and language related

behaviors are influenced by the various features within the context of the learning environment.

The authors clearly emphasized, through the development of an integrated guiding framework of the reading process, that variables such as learner characteristics, nature of materials, tasks and goals, and instruction and learning activities do not operate in isolation but rather interact within the social context of a classroom to influence reading performance.

The conceptual framework presented by Raphael and Gavelek provides a way of thinking which addresses the complexity of the learning environment as well as the interactive nature of features within the learning environment. The work of these authors emphasizes the need for researchers to consider a variety of contextual features as they may operate interactively within a social context to influence student performance.

Summary of the Literature Reviewed

The Nature of Questions

The literature in this area assisted in clarifying what constitutes a question. In my attempt to define this term I reviewed literature from the areas of linguistics, psycholinguistics, sociolinguistics, and pragmatics. While no single definition exists two assertions can be made with regard to questions. The first assertion is that a question is reflected through its expressed linguistic form as well

as its intention or function. While form and function are assumed to be interrelated, no isomorphic relationship exists. This means that not all linguistic forms, whose surface structures suggest a question, function as questions. In addition, many utterances can serve the function of a question although their surface structures (i.e., linguistic forms) do not appear to reflect this intent.

The second assertion is that one must study the form ANd function of questions as an interrelated unit operating under the influence of the context in which they occur. This means that in order to accurately determine when a question is a true question, one must consider various contextual features associated with the utterance (i.e., accompanying verbal and nonverbal behaviors of the speaker as well as the intent as directly expressed by the speaker).

The body of literature which assisted in defining what constitutes a question clearly states that documentation of questioning behavior must address the linguistic form, semantic function, and associated verbal and nonverbal behaviors. In order to accurately ascertain the function, one must reveal the true purpose of an utterance as expressed by the speaker. It is also clear that while researchers must address issues related to form and function, there is no single taxonomy capable of classifying what constitutes a question.

The literature on the frequency of student-generated questions revealed that students do not pose very many questions during academic instructional activities. When compared with the total amount of questions generated by the teacher or the total amount of student-generated utterances, researchers have found that student-generated questions accounted for a very small portion of the verbal communications that take place in the classroom. Research in the area of frequency of student-generated questions has also focused on the role of the teacher as facilitator or inhibitor of student inquiry behavior.

The Salient Features of the Classroom

As a result of reviewing the literature in this area I was able to identify what previous researchers believed to be the most salient features of classroom life which served to influence student questioning behavior. Although I would need to remain open to new information, this body of literature assisted in my data collection method by providing a clear focus for my initial observations.

According to the literature data collection should focus on characteristics of instruction (e.g., instructional methods, materials, and student grouping) as well as characteristics of the teacher and the students (e.g., attitude, skills, and behaviors associated with questioning). Documentation should include whether the teacher uses creative, student-centered types of activities,

which allow the students to manipulate objects, or traditional, teacher-centered activities in which the teacher demonstrates or lectures about a given topic. Also included in this documentation of the context is the type of student grouping utilized during instructional activities since group size may influence the generation of student questions.

The literature on teacher-related characteristics suggests that there are various attitudes, behaviors, and skills associated with generation of student questioning behavior. In order to accurately document the features which may influence this behavior the literature suggests focusing on the following: the attitude the teacher has toward student-generated questions, how she implicitly and explicitly communicates this attitude, the teacher's modeling of questioning, how the teacher instructs her students in the skills of inquiry, the amount of wait-time allowed by the teacher for students to generate questions, how the teacher responds to student-generated questions, and the teacher's own questioning behavior.

Just as the literature suggests there are specific teacher-related characteristics, there appear to be specific student-related characteristics which have an influential effect on their questioning behavior. In order to accurately document how features of the context come to influence student questioning behavior, the literature suggests a focus on the following areas of student

attitudes, skills and behaviors: the student's linguistic, sociolinguistic, cognitive and metacognitive skills; personal motivation and attitude toward questioning; the student's level of familiarity with subject-matter; their perception of the purpose of a task; their knowledge of the norms governing question generation; and the student's level of comfort in generating questions.

The Interactive Nature of Classrooms

The literature summarized in the preceding section focused on identifying individual features within the classroom and how they may operate independently to influence the questioning behavior of students. There is an additional body of literature which emphasizes that these features may operate interactively, not independently, to influence questioning behavior within the context of the classroom. This body of literature addresses the richness of the context by recognizing that the classroom is a complex environment in which the performance of the participants may be influenced by a variety of activities and behaviors.

This interactive approach to the context has implications for both data collection and analysis by recognizing the need for a more complex orientation to classroom research. This approach focuses on the role various contextual features could play in influencing the questioning behavior of students. In addition to the change

in emphasis from individual features to multiple features, this body of literature considers that various features may operate interactively to influence the generation of student questions during academic instruction.

CHAPTER THREE

METHODOLOGY

Overview

The purpose of this study was to identify how various classroom features influenced the nature of student-generated questions. I utilized techniques for data gathering and analysis which would accurately capture and present the complexity of classroom life. The following research questions, developed from the literature presented in Chapter Two, helped me to retain my focus for data collection and analysis.

1. What are the daily classroom routines and the characteristics of instructional methods and materials?
2. What is the frequency, form, and function of student-generated questions and the questioning related attitudes, values, and behaviors of the students?
3. What are the questioning related attitudes, values, and behaviors of the teacher?

4. How do the salient features of the classroom operate interactively to influence student questioning behavior?

The procedures for the collection of data were divided into two related phases (see Table 1). In the first phase I became acquainted with the contextual setting as I observed the daily routines within the classroom. During my twelve days of observation I documented the frequency, forms, and functions of the questions generated by the teacher and her students. I also observed and documented a variety of academic activities and participant behaviors associated with questioning. During this phase I utilized fieldnotes and remote audiotaping to record data.

Upon completion of phase one data collection, I left the classroom in order to conduct a preliminary analysis of data. The purpose of this analysis was to refine the focus of my study and develop procedures which were to be utilized in the second phase of data collection. As a result of this preliminary analysis, I developed several hypotheses regarding student questioning behavior. These hypotheses focused on describing the nature of questioning, including what and how various classroom features influenced the generation of questions.

The final step in the process of data collection was for me to discover the participants' views about questioning behavior within the classroom. Based on the hypotheses formulated from the preliminary analysis of data, I

developed specific questions to ask the teacher and her students. The second phase of the data collection consisted of individual interviews of the teacher and her students. Upon completion of the interviews I left the research site to begin intensive data analysis, which would center around the original research questions and my emerging hypotheses.

Table 1

Overview of Data Collection and Analysis

PHASE ONE	Days	Subjects	Methods
Orientation	Jan 23		Observation
	Jan 30	All	Fieldnotes
	Feb 1		Audiotaping
----------Initial Analysis of Data----------			
Focused Observations	Feb 8	English	Observation
	Feb 10		
	Feb 13		Fieldnotes
	Feb 14	Math	
	Feb 17		Remote audio
	Feb 20		taping
	Feb 21	Soc. Stu.	
	Feb 22		
	Feb 24		
--------Preliminary Analysis of Phase One Data--------			
PHASE TWO	Days		Methods
Student Interviews	Mar 16		Audio recording
	Mar 19-22		Fieldnotes
Teacher Interviews	Mar 12,13		Audio recording
	June 6		Fieldnotes
----------Final Analysis of All Data----------			

Issues of Validity

Researchers employing descriptive methods of data collection and analysis have been criticized about the validity of their methodology. One reason for this

criticism is that historically descriptive researchers have not operated as a unified body directed by shared methodological procedures. Over the years, however, a variety of recommendations have been proposed in an attempt to effectively address the issue of validity for descriptive studies.

The first recommendation for increasing the validity of descriptive studies is for researchers to provide the most detailed accounts of observed events. This accurate reporting is crucial since observations comprise the major source of data collect in descriptive studies. In order to meet this recommendation, and as a result capture the relevant characteristics of observed events, it is essential for the researcher to uncover the participant's view or interpreted meaning of events (Erickson, 1979).

In other words, in addition to providing detailed accounts of activities and behaviors observed, the researcher must also clearly document the participant's point of view with respect to the observations. As a result of incorporating observations with the participant's interpretation of events, the researcher presents a more valid description to the reader. Thorough documentation includes repetitive observations over time coupled with participant interviews. This process addresses the issue of potential research bias by including the perspective of the participants, thus reducing the subjective nature attributed to descriptive research.

A second recommendation is for researchers to establish a framework, grounded in relevant theory, which will serve to organize their study. Included within this framework should be information about what the researcher may expect to find within the context under observation. The development of a clear framework is intended to allow the researcher to focus in and capture the most appropriate classroom events (Erickson, 1979).

Miles and Huberman (1984) also discuss the need for increased validity in descriptive studies. They are in agreement with Erickson in recommending that the presentation of a framework, grounded in relevant theory, helps to resolve the issue of potential research bias (or at least ground such bias). Miles and Huberman point out that when the researcher develops this structure prior to entry into a research site, the issues about what events to investigate remain explicit. As a result of this activity, the focus of the study will remain clear to the researcher. The authors conclude that the guiding framework also helps direct the development of relevant research questions. It is apparent that this framework not only serves to direct data collection but can also help guide the development of effective analytic procedures. As a result of the researcher's systematic approach to descriptive research, through the use of a clear theoretical model to guide data collection, there is an increase in the validity of the conclusions drawn from the data.

A third recommendation aimed at increasing the validity of descriptive research focuses on specific strategies for data collection. Due to the dynamic and variable nature of action within a classroom, it is important for researchers to develop data collection procedures which effectively capture and preserve these actions. According to Mehan (1979) and others (e.g., Campbell, 1986; Erickson, 1986; Wilkinson, 1982), research validity is also increased when data gathering and analysis procedures are explicit. Accurate recording can be attained by having the researcher supplement observational fieldnotes with audio or video recordings. This type of documentation not only allows the researcher to record a greater variety of action but also allows the researcher to accurately retrieve information which can be reviewed numerous times during data analysis. This repetitive review of the data is central to the process of analysis. As a result of having accurate and retrievable data the researcher can significantly reduce incomplete or ambiguous findings. Repeated, systematic reviews of these data allow the researcher to arrive at more valid interpretations since he or she will be able to consider confirming and disconfirming evidence (Erickson, 1986).

Assertions or interpretations which emerge from this process have increased validity because they are based on evidence gathered over time and across events. In the attempt to capture relevant aspects of the context under study, the researcher must take care to uncover the rare

event as well as the frequent events occurring within the context.

The fourth and final methodological recommendation is to present data in a clear and thorough manner so that others who review it will be able to draw similar conclusions. According to Campbell (1978) and Erickson (1986) the focus of descriptive research is different than quantitative in that the intent of the descriptive researcher is not to prove causal relationships among variables under study but rather to clearly demonstrate to the reader the plausibility of the findings. Regardless of the specific methodology, descriptive or quantitative, the researcher must present sufficient and meaningful data to support his or her conclusions.

All of the recommendations listed above were incorporated into my research. First, in order to accurately uncover the participant point of view, and as a result more accurately understand events within the classroom, I interviewed the classroom teacher and her students. Second, in addressing the need for a guiding framework, I reviewed the relevant literature which provided a clear focus for the documentation of classroom events. Third, I utilized an audio-recording device which allowed me to me accurately record and preserve the verbal interactions as they occurred within the classroom. Finally, I organized the presentation of my study to clearly present the details and discuss the findings. As a result of this organization

I sought to provide the reader with sufficient information to support the plausibility of the findings.

Research Site Selection

Despite the variety of literature on the topic, there is still a great deal we do not know about student questioning behavior. One reason for our lack of understanding is because we have not fully studied this behavior as it occurs naturally within the context of the classroom. By selecting a single classroom in which to carry out intensive investigations, I believed it would be possible to conduct a study which would add depth to the current knowledge base.

My first task was to locate a teacher who actively promoted student questions during academic instruction. I began by interviewing various professionals in the field of education (e.g., field-based researchers from Michigan State University's Institute for Research on Teaching as well as several local school principals). I selected these individuals based on their first hand knowledge about the questioning behaviors of teachers. My intent was to identify an upper elementary classroom in which to conduct my research. I selected this age group because it was more likely that older students would possess the linguistic and sociolinguistic competencies necessary to formulate questions. In addition, since I would be interviewing the students, I believed the older students would be able to

effectively recount and communicate their awareness of the daily routines of classroom life.

During the interviews conducted with the researchers and principals I asked them to support their nominations by citing specific academic activities and/or personal strategies the teacher utilized in order to facilitate questioning behavior in their classroom. I asked them to comment on various issues identified in the literature as facilitating activities and behaviors. For example, I asked them to consider: (1) Does the teacher directly solicit questions? (2) Does he/she promote active learning activities for students?, and (3) Does he/she present a nonauthoritarian style?

As a result of this process, several teachers were identified. I then compared the characteristics of the nominated teachers with the information presented in the relevant literature. My intent was to identify a teacher who appeared to provide what the literature identified as the basics for the formulation of an atmosphere of questioning within the classroom (i.e., a teacher who was nonauthoritarian and explicitly and implicitly solicited questions from his or her students).

After comparing characteristics, one of the nominated teachers was selected. I then contacted the teacher in order to set up an initial meeting. The goal of this first contact with Mrs. Powell (a pseudonym) was to conduct an informal observation within her classroom to confirm the

existence of the activities and behaviors first identified by the nominating professional. I also discussed the broad purpose of my research project with her at this time. Based on my initial interview and observations, I felt that Mrs. Powell's classroom would be a good research site. Her statements to me indicated that she valued questioning, and my initial observations confirmed that she directly solicited and received student questions during academic instructional activities. This information, coupled with a strong recommendation from Mrs. Powell's building principal and a researcher from the IRT, made me feel this classroom would be appropriate for my study.

In addition to the discovery that this was a classroom where student questioning did occur, Mrs. Powell's classroom was selected because I had previous contacts with this classroom. While acting as a supervisor for student teachers placed with Mrs. Powell, I often sat in and observed in her classroom. As a result, her students were already accustomed to my dropping in their classroom during the day. I believed that this familiarity could possibly reduce the potential disruption caused by my presence as a reseacher in the classroom.

Description of Research Site

The school in which Mrs. Powell's sixth grade class was housed was built in the 1950's and was located in a predominantly black and Hispanic low-socioeconomic

neighborhood. This school, Great Lake Elementary, was paired with another school, Oakwood Elementary, for purposes of integration. Although located within the same inner-city school district, the neighborhoods around these schools had very different demographics. Students from the predominantly white middle-class neighborhood surrounding Oakwood were bussed to the Great Lake area for kindergarten and grades five and six. Students from the Great Lake area were bussed to Oakwood for grades one through four.

There were approximately 300 students in Great Lake school. There were two kindergarten teachers, three fifth grade teachers, three sixth grade teachers, and one fifth/sixth grade split. All classes were self-contained (i.e., teachers were responsible for teaching all subjects) except for reading. For reading, all fifth and sixth grade students were placed in homogeneous ability groups.

The demographics of the student population within Great Lake Elementary was very diverse as a result of this cross-town integration pattern. In addition to the twenty-three students Mrs. Powell had in her homeroom, three additional students, from two special education classes (two with learning disabilities and one with a hearing impairment) were mainstreamed into Mrs. Powell's class at various times throughout the day. Of these 26 students, 11 were females and 15 were males. Fifteen of the students were caucasian, five were black, five were Hispanic, and one was American

Indian. These children represented a wide range of academic abilities. Three of the students were in the highest reading group in school and they consistently functioned at or above grade average in academics.

Approximately eight students were experiencing difficulty in one or more academic areas as exemplified by their performance in the classroom and on standardized tests. Two of these students received academic support services from the bilingual teacher. The school also had an instructional aide that worked periodically with several of Mrs. Powell's students who were having difficulty. Of the students in the lower academic group, one was repeating sixth grade. The remainder of the students were functioning at or around grade level. In short, Mrs. Powell's class consisted of a very heterogeneous group of individuals with their own distinct personalities representing a variety of academic abilities as well as racial, cultural, and socio-economic characteristics.

The physical layout of the classroom was traditional. As you walked directly into the room you entered the front of the class. In the front of the room there was a piano and a round table. Mrs. Powell began most of the business of the day from this area of the classroom, although she rarely sat at the table or her teacher's desk, which was also located at the front of the room. There were several bulletin boards scattered around the room and there was a bathroom, sink and storage area located along one side wall.

On the opposite side wall there were windows with bookshelves directly beneath.

The students were assigned individual desks which were organized into five rows of six each. A large chalk board was located at the front of the room, and the student's desks faced in this direction. Along the back of the room was a folding wall which served as a room divider between Mrs. Powell's and another sixth grade classroom. Although this door was opened periodically for large gatherings, the classes operated as two single units.

There was an open area located toward the back of the room. There was carpet and a small table in this area. There was also an aquarium located near the back of the room. The students and their teacher used this section of the room to work together on projects or to spend their free time when they were done with assigned work.

Data Collection Procedures

Phase One

The first phase of data collection focused on documenting the salient features of the classroom and the nature of students' questions (e.g., frequency, form, and function). The collection of data was accomplished using fieldnotes and audiotapes. At the beginning of this phase I spent three days getting oriented to the classroom. This orientation served several purposes. First, it allowed me to capture the lay of the land or the routines of what

typically went on within this classroom (e.g., subject-matter presented, order of presentation, time devoted to subjects, etc.). During the three days of orientation, (distributed over a one week period), I sat at the back of the classroom taking observational fieldnotes. The verbal interactions were also captured using a small audio recorder with a built-in remote microphone. By sitting at the back of the room and using discrete recording instruments I sought to create as little disruption as possible while at the same time carrying out necessary observations and allowing the teacher and her students to get comfortable with the presence of a researcher in their classroom.

The second purpose served by the orientation observations was the formation of a coding system for recording the questions generated by the students. This system, which was used throughout phase one, was continuously refined as necessary. The third purpose served by the three days of orientation was that it allowed me to identify and address any potential problems which would be associated with data collection (e.g., audio-recording needs, locations for most effective observations, etc.).

As a result of the orientation portion of data collection I was able to capture the most salient features of classroom life. In documenting the variety of classroom activities and participant behaviors a wide angle perspective was achieved, a perspective which provided for a

better appreciation of the complexity of life in this classroom.

As stated earlier, these early observations also resulted in a coding system which facilitated documenting the nature of student questions. This coding system allowed me to quickly and accurately document the frequency of questions as well as the verbal and nonverbal behaviors which accompanied the generation of student questions during academic instruction. The system allowed me to deal with large amounts of incoming data while providing more time and energy for observing and documenting other related activities and behaviors which called for more lengthy descriptive documentation (e.g., location of teacher during question).

During the orientation to the classroom I was also able to identify and address two methodological problems. The first problem, discovered during orientation, had to do with my original focus on a specific type of student question. The second problem related to the procedures for observing and documenting student questions.

The original focus of this study was to document student questions which represented requests for epistemic information. During the orientation observations I discovered that there were essentially no epistemic questions generated during academic instruction. Defining epistemic questions as direct requests for causal information (e.g., "Why do you move the decimal point in the

dividend before attempting to solve the division problem?"), my early observations revealed that the questions generated by the students were more often requests for content or procedural information (e.g., "What do we do with the decimal point?"), rather than requests for causal information as reflected in true epistemic questions. As a result of this finding, the focus for all subsequent observations in phase one was expanded to include all types of student questions generated during academic instructional activities.

The second problem identified during the orientation observations proved to be a critical problem to overcome. I discovered that the teacher and her students were often engaged in private one-to-one conversation during various academic instructional activities. Suspecting that students could be asking questions during these interactions it was necessary to implement data collection procedures which would capture these private teacher-student interactions. The new procedures needed to be in place before continuing with phase one of the data collection.

After the three days of orientation I left the classroom to address the problem with data collection procedures. This time allowed me to secure more sensitive recording instruments. The new equipment consisted of a small remote audio transmitter with a built-in microphone hook-up. The remote transmitter was contained in a pouch on the back of a lightweight vest. With this equipment I was

able to receive the input through a remote receiver which was attached to a recorder in order to make a permanent record of these interactions. For the remainder of phase one data collection, instead of the small recorder used during the orientation observations, the audio recordings were done using the remote equipment. During the time away from the research site the coding system, originally developed during the first three days of observation, was further refined to allow for more accurate and easier documentation during the remainder of phase one data collection.

Prior to my reentry into the classroom the teacher was interviewed for the purpose of confirming the daily schedule and associated routines I had observed during the orientation observations. I also used this time to familiarize the teacher with the new equipment and obtained her consent to wear the equipment throughout the day. The teacher readily consented and the equipment proved to be lightweight. The vest was not constricting and Mrs. Powell stated she "missed the vest" after phase one data collection was completed.

Upon returning to the classroom I sat at the left side of the classroom. From this vantage point I could view the faces of the students and had accessibility to the actual work they were doing at their desks. With the remote receiver hooked up to a tape recorder, which I could monitor with an earphone attachment, I was now able to receive all

of the verbal interactions directed to the teacher (private and public).

Due to the nature of the equipment it was obvious to the students that their conversations were being "bugged." The students were informed by their teacher, on the first day she wore the equipment, that I was now able to pick up on all of their conversations. Those students who indicated an interest were allowed to listen to playbacks of conversations made the first day of recording.

Although I was able to monitor various aspects of the private conversations occurring between the students and their teacher, the focus for documentation for the first two days of use was to code only the frequency of questions by subject and activity. This two day "warm up" period allowed me time to learn how to monitor the auditory input received through the remote recording device while simultaneously taking fieldnotes on the observable academic activities and associated participant behaviors.

As it turned out, the identification and subsequent solution to the problem of how to access and record private student-teacher interactions was of major importance to my study. As is evident from Table 2, there were more than twice as many student questions documented when I was able to capture the interactions which occurred privately between the teacher and a student. A total of 58 questions were recorded without remote monitoring versus 167 total questions recorded with remote taping.

The discovery of the frequency of student questioning occurring during these private interactions was significant, since a major source of data would have been omitted without the use of this sensitive data collection equipment. As discussed in Chapter Two, previous studies have not utilized such methods and, as a consequence, their results provide a distorted picture of student questioning behavior.

The second major difference between the data collection which took place during the orientation and those procedures carried out for the remainder of phase one was that my observations were more directly focused than those of the orientation. I observed and documented the specific academically-related activities and participant behaviors most closely associated with the generation of student questioning as identified by the literature. In addition, as the observations continued in phase one, I became more sensitive to additional relevant activities and behaviors not mentioned in the literature.

Beginning with the observations on February 13th, and continuing throughout the remainder of this phase of the study, I sought to document the most salient academic activities and participant behaviors associated with student questions generated during academic instructional activities as well as the nature of student questioning (i.e., the frequency, the number of questions by subject area and instructional activities, and the linguistic forms and semantic functions of the questions).

Table 2

Frequency of Student Questions

Whole Group Taping

Dates	Math	English	Soc. Stu.	Total
Jan 23	15	7	2	24
Jan 30	8	6	*	14
Feb 1	9	8	3	20
			total	58

Remote Audio Taping

Dates	Math	English	Soc. Stu.	Total
Feb 13	31	18	6	54
Feb 14	45	7	1	53
Feb 17	23	27	10	60
			total	167

Procedures for Observational Fieldnotes

During phase one of data collection I compiled detailed fieldnotes. Using the model suggested by Schatzman and Strauss (1973), the notes were organized into three particular types: observational, theoretical, and methodological. The basic purpose of the fieldnotes was to record the on-going activities (verbal and nonverbal) observed within the context of the classroom. Although all verbal interactions were recorded on audiotape, the fieldnotes served to supplement these recordings as well as make for easier access of retrieval to the taped data. Access was facilitated by using the tape recorder count in my notes. Observable events were recorded in the fieldnotes using brief two or three word phrases. Each day after

leaving the site, the notes were reviewed and the short phrases were used to stimulate my recall of more detailed information. When applicable, the audio-recordings were also reviewed to fill in incomplete or missing information. This detailed information was then added to the original fieldnotes.

The purpose of the daily review of all fieldnotes was, as Schatzman and Strauss state, "to make something" out of what was being recorded (1973, p. 101). This review served as an initial analysis of the data, as it allowed me to note recurring patterns as well as exceptions to the patterns. The original "observational" notes were based on my direct observation of classroom events (verbal and nonverbal). These original notes were intended to address the who, what, when, where, why, and how of behavior in this context.

During the taking of the fieldnotes in the classroom, and also during the review after leaving the research site for the day, I would make "theoretical" notations. These "theoretical" notes represented personal interpretations or meaning attributed to observed events. For example, one observational note stated that the teacher asked the students to raise their hand prior to asking a question. Upon reviewing this note I made an additional technical notation that this behavior was an indication that there were certain rules or norms associated with students' generation of questions (e.g., students must raise their hands to ask questions).

In addition to observational and theoretical notes I also made "methodological" notations. These were made during on-site observations as well as during the daily review of the fieldnotes after leaving the site. The purpose of this type of notation was to provide me with information which would remind me to take specific actions such as refocusing a specific data collection procedure, refining the coding system, or expanding the focus of observation to include a recently observed behavior.

As a result of this daily reviewing of the notes, as well as the audiotape recordings of the verbal teacher-student interactions, my observations on future days were more focused. As I became "smarter" about what was being observed, the observational notes carried a code of their own. For example, after a couple of days in the research site I began to observe patterns in the teacher's behaviors (verbal and nonverbal) which implied there were certain rules or norms associated with children's questioning. While collecting additional evidence related to the rules or norms associated with questioning I was able to add a code to the phrases. For example, after the notation that the teacher directly asked a student to raise his/her hand before asking a questions I put the letter "R" before the notation.

The coding of specific data as it was recorded in the fieldnotes allowed for more effective review when I left the classroom. This coding was helpful not only for the daily

reviews but also for the final analysis of data which took place after phase two. I could quickly review the field-notes and pick out the codes and corresponding phrases. I eventually developed codes for all of the patterns of activities and behaviors under observation as directed by the guiding framework. These strategies for taking fieldnotes remained essentially unchanged for the observational phase of the research.

Phase Two

The second phase of the study focused on revealing the participants' views about the activities and behaviors that I observed in phase one. This documentation was accomplished by interviewing the teacher and her students. Audiotapes were made of all interviews. Of the twenty-two students in Mrs. Powell's class, sixteen students were interviewed. Only those students who returned a parental release form were allowed to participate in this phase of the data collection. One of the three special education students was excluded from the interview as he was not mainstreamed for academic instruction. Each of the sixteen students were interviewed individually and all interviews were audiotaped. The student interviews lasted about twenty minutes and were conducted at times when students were not engaged in academic instruction (e.g., recess, physical education, library). Students could reschedule their interview if they did not want to miss the class activity.

All of the questions used for the interview phase of this study (see Appendices A & B) were generated from a preliminary analysis of the data gathered in phase one and were designed to test the hypotheses developed from this analysis. While the majority of questions were formulated prior to the interview process, I was very aware that the teacher and her students needed to feel free to expand beyond the information originally intended by a given interview question. For example, in several situations the interviewee (student or teacher) gave information which did not relate directly to the interviewer's question but was, nonetheless, informative. In these situations I took care to let the teacher or student express these views and not feel restricted to the original question. Periodically the information gained as a result of a given student interview would lead me to add or revise a question for an upcoming interview. For the most part all interview questions were developed prior to the beginning of phase two data collection.

One example that will illustrate this point relates to an interview that took place early on in phase two. During one student interview an unsolicited comment was made that the student sometimes would ask another classmate a question rather than ask the teacher. Using this new information I later included a new question in upcoming interviews asking students, "Do you ever ask other students a question instead of your teacher?"

This sensitivity to incoming data was also reflected in my use of probes to help the student and/or teacher reveal their perspective. For example, during the teacher interview of March 12th the teacher was asked, "What do you feel you do to facilitate and/or inhibit student questions?" After several examples the teacher said "Oh golly!" indicating she could not think of any more examples. I then asked "Do you want some help?" Mrs. Powell replied that she did and I stated "You stop at students' desks...." This probe reflected observable behavior documented during phase one data collection. The probe was meant to stimulate the teacher's thinking without overly directing her into a specific interpretation of the behavior.

During phase two the classroom teacher was interviewed on three separate occasions. Each interview took place after school and lasted approximately forty-five minutes. The same flexibility that was afforded the student interviews was built into the teacher interviews. As the interviews progressed I revised my original list of future interview questions. In order to obtain the most relevant information the interview questions were not formulated until immediately before the teacher interview was to be held.

According to Spradley (1979), the most important elements of an interview are: its purpose, explanations, and questions. Prior to the actual interview I was careful to establish this clarity and to gradually guide the teacher

and the students toward that purpose. In addition, I had an obligation to explain or inform the teacher and students as the interviewed progressed. The most basic aspect of this explanation was to clarify to the students and the teacher the meaning of certain interview questions.

It was also essential to let the students and teacher know that their conversation was to be recorded. At the beginning of the interviews I deliberately engaged the students and the teacher in a warm-up conversation in order to set them at ease with the recording device. I also encouraged the speakers to talk freely without concern for a right or wrong answer. As directly stated at the beginning of each interview, the purpose of the interview was to reveal how the speaker personally viewed the activities and behaviors associated with the generation of questions within the classroom.

The focus of the questions used in this interview process were of three major types. They included: (1) descriptive (e.g., "Could you tell me what some of the classroom rules are that are associated with asking questions?"), (2) procedural (e.g., "What are some ways you might ask your teacher a question?"), and (3) contrasting (e.g., "Do you think you ask more or less questions than other students in your class?"). Throughout the interview I used certain types of questions to prompt or guide the flow of conversation. For example, on several occasions it was necessary to ask a contrasting question to help a student

focus his or her thoughts on a particular aspect of behavior.

In this situation, and many others throughout the interview process, I tried not to overly prompt students to the extent of putting words into their mouths. For many students prompts were not necessary, as descriptive questions would send them off into a lengthy response resulting in a wealth of useful information. The audio recording of the interview allowed me to retrieve the verbatim language produced by the speaker. Not only did this allow for a more detailed account of the answer but it also preserved the answer in the native language of the speaker.

A crucial aspect of the interview process was the establishment of a friendly and receptive atmosphere. Because I had spent several months in the classroom prior to the interviews the students entered the interview situation feeling comfortable. Following a short initial conversation prior to the actual interview, and after sensing that the student was at ease and comfortable with the presence of the recorder, the interview was initiated.

Methods of Analysis

I conducted an initial analysis of data collected during the orientation phase of my study. As previously noted, one reason for this initial analysis was to allow for the development of a coding system for efficient and

accurate recording of the frequency of student generated questions. In addition to this initial analysis it was necessary to carry out an analysis of all data collected in phase one prior to data collection in phase two. This analysis was conducted in order to develop relevant interview questions used in phase two.

After completing the collection of data during phase one, the analysis of the data was rather straight forward. I reviewed the observational fieldnotes and audiotapes in order to discover the daily academic routine (including deviations), and teacher and student behaviors associated with the generation of questions. During this analysis I also reviewed data to identify the patterns associated with the frequency of student questioning (e.g., by subject-matter and instructional setting), the linguistic forms of these questions, and their possible functions.

The final intensive analysis of all data (e.g., observational fieldnotes, audiotapes of classroom interactions, and fieldnotes and audiotapes of participant interviews) was conducted after leaving the research site. Using the relevant literature and original research questions to develop specific categories of focus (e.g., academic activities, examples of functions of questions, explicit and implicit teacher behaviors indicating rules governing questioning), small batches of data were reviewed. As these data were reviewed I was careful to note patterns within data.

In addition to the patterns, I paid careful attention to any disconfirming evidence, that is, evidence that would prove to be an exception to a given pattern previously revealed. All of this information was then listed under the appropriate category. After a large portion of data was reviewed the patterns were analyzed and assertions were formulated. These assertions sought to address the common significance of related patterns. For example, during the intensive analysis of data relevant to the behavior of the classroom teacher, I noted a pattern which appeared to be related to the norms governing student questioning during academic instruction. During this review these behaviors fit into various patterns (e.g., teacher directly asks for students to raise their hands).

Upon further review of data, it was clear that certain patterns were related. For example, I discovered various teacher behaviors associated with controlling or governing the questioning behavior of her students. I then formulated an assertion based on these patterns: there were explicit and implicit teacher behaviors that were intended to control the questioning behavior of her students. This assertion was formulated based on the various patterns of behavior documented in the observational fieldnotes and audiotapes. After further reviewing data relevant to this category this assertion was eventually amended in order to reflect the exceptions to the norms or rules that were evident within these data.

This process continued for each major area of focus. Using the original research questions and the relevant literature to direct this process, all of the relevant data (e.g., observational fieldnotes and audiotapes of classroom events and interviews) were reviewed. Patterns were noted and key assertions were formulated. After these assertions were formulated I continued to review the data in an attempt to test the validity of each assertion. As confirming and disconfirming evidence was reviewed, assertions were revised and/or new assertions were formulated in an effort to account for all relevant data. The repeated review of data served to provide for the final formulation of key assertions which were founded on the greatest depth of evidence, both supporting and refuting. These final assertions were utilized in the presentation of data which are detailed and discussed in the following chapters.

CHAPTER FOUR

AN INTRODUCTION TO THE CLASSROOM

Overview

In order to best understand the context in which I was conducting my research I sought to preserve the "big picture" of classroom life while simultaneously recording isolated aspects of the context (e.g., subject-matter presented, specific instructional methods and materials, etc.). I will begin this chapter with an overview of the daily routines of Mrs. Powell's classroom and conclude with a presentation of the characteristics associated with instruction. As a result of this presentation I will address the first research questioning which guided my study: What are the salient features of the classroom? This chapter provides an introduction to the classroom and serves as a foundation for the presentation of data included in Chapters Five and Six.

The Daily Routines

The school day began for students when the first bell rang at 8:40 a.m. Mrs. Powell greeted the students at the classroom door as they entered the building. After the

majority of students had entered the room (some were delayed due to safety patrol duty), Mrs. Powell seated herself at a round table at the front of the room. From this location she began the business activities of the day; the taking of attendance, collection of lunch tickets and homework, etc.

On some mornings there were worksheets already on the students' desks when they arrived. This "seatwork" was generally a review of a lesson taught the previous day. More typically Mrs. Powell directed the students in an informal discussion about current events or played a game called "Who Am I?". During this introductory period students were also engaged in other activities, such as peer socializing, drawing, completing their homework, or recreational reading.

At 8:50 a.m. the school bell rang again. At this time many of the students in Mrs. Powell's class were dismissed to attend other classes for reading. Great Lake Elementary operated under a Joplin plan for reading whereby all 5th and 6th graders were placed in homogeneous ability groups. Mrs. Powell had the highest level reading group in the school. Reading took place daily from 8:50 a.m. until 10:00 a.m., at which time the school bell rang again and the visiting students returned to their homerooms where they received the remainder of their academic instruction.

The next academic subject was English/Language Arts, scheduled for 10:00 - 10:45 a.m. This subject area was observed eight times during the course of data collection.

The topics presented on these occasions included the introduction and review of subject-predicate parts of sentences, identification of nouns, pronouns (including singular and plural) verbs, and helping verbs and adjectives.

Physical Education was held daily from 10:45 - 11:10 a.m. Mrs. Powell held P.E. in the gymnasium of the school. All activities were teacher-directed and included volleyball, pin-ball, basketball games, and related team sports. Occasionally Mrs. Powell's class would challenge or be challenged by another class to play a large group organized game such as pinball.

11:10 - 11:25 a.m. was called "swing time" by Mrs. Powell. Students could use this time as a study hall period to finish their English assignments or homework from their reading class. At 11:25 the bell rang for lunch and the children were dismissed.

The afternoon schedule began at 12:15 p.m. At this time each day the entire school was engaged in fifteen minutes of reading. Typically Mrs. Powell chose to spend this time reading orally to her class. During this time students were seated at their individual desks. It was also observed that the students were able to select their own reading materials and use this time for independent silent reading. During this time students serving on safety patrol were finishing their afternoon duties and reentering the classroom. Afternoon attendance was taken following the

reading period to allow these students to arrive back in class.

The first academic instruction of the afternoon was Mathematics, which took place from 12:30-1:30 p.m. each day. The topics covered during my eleven observations included the addition, subtraction, multiplication, and division of decimals. The next subject taught from 1:30-2:30 was either Social Studies or Science. Only one Science lesson activity took place during the observational phases of this study. The topic for this Science lesson was the properties of flight. Social Studies was observed six times and the topics presented included: Black Heritage, changing language in Turkey, George Washington, and people who speak two languages. On each Wednesday students went to the library during the 1:30-2:00 time period and returned to read their books until 2:30.

Daily recess was held from 2:30-2:45. If weather permitted the class went out and played a teacher organized activity such as kick-ball. When recess was held indoors, the students would play a game of quiet ball or engage in other quiet activities (e.g., checkers, art, etc.). These indoor activities allowed for individual, small group, or large group formats. If a large group (total class) activity was organized (usually on the basis of a class vote) all students were expected to participate.

At 2:45 p.m. recess was over and the teacher directed students to activities such as quiet independent reading or

homework. Often Mrs. Powell would end the day playing a game of "Who Am I?" She also conducted mental math games (problems stated orally by teacher and solved without paper by students). Students were dismissed after they were able to correctly identify the subject in the game "Who am I?" or could answer the mental math problem. The dismissal bell rang at 3:00 p.m. and students left to catch their bus or walk home.

The Characteristics of Instruction

In this section I will detail the most salient characteristics of instruction existing within Mrs. Powell's classroom. This presentation will focus on: (1) methods of instruction, (2) instructional materials and activities, and (3) student grouping during instruction. In Chapter Six I will discuss how the classroom teacher's explicit use of these instructional features influenced her students' questioning behavior. Because instructional methods and materials were directed by the classroom teacher it is appropriate to revisit these issues when discussing characteristics of the teacher.

Methods of Instruction

The term "methods of instruction" is used to represent how academic information was presented to students by their teacher. The three methods of instruction documented during my observations were: demonstration/discussion, guided

practice, and independent practice. These particular methods were based on a lesson plan format called "Instructional Theory into Practice" (ITIP), which was developed by Madeline Hunter and adopted by Great Lakes Elementary School. The major aspect of the ITIP format is to organize and deliver instruction in a logical and systematic manner based on sound principles of learning theory. As documented by my observations in Mrs. Powell's class, this process included introducing each lesson with a teacher-directed demonstration and/or discussion. This type of presentation was typically followed by a teacher-guided practice activity which led into an independent instructional practice activity for the students.

Demonstration/Discussion

Within this instructional method Mrs. Powell would introduce academic subject-matter information. Lessons were introduced within this demonstration/discussion format by Mrs. Powell engaging in some type of novel activity designed to capture attention and motivate the students. For example, Mrs. Powell introduced an English lesson (a review of acting verbs) by pantomiming various words such as lifting, tapping, clapping, etc. Following this demonstration Mrs. Powell asked her students to guess what it was she was doing. This type of demonstration activity was typically followed by a teacher-question aimed at leading the students into a discussion of the topic for the day. Mrs. Powell

would ask students, "How many of you can recall an acting out verb?" As a result of the teacher engaging in a visual demonstration, followed by accompanying questions and opportunity for student discussion, the specific subject was introduced.

In another example of the demonstration/discussion teaching method, Mrs. Powell used the front board to directly present information relevant to the daily lesson (e.g., the multiplication of decimals). During the demonstration of this Mathematics lesson she computed a problem on the board as she verbally explained to the class each step she was using to achieve the correct answer. Mrs. Powell would typically follow this type of presentation with a question such as "Do you understand why I moved the decimal point here?" After this demonstration/discussion portion of the lesson, Mrs. Powell would move into "guided practice" activities. During the demonstration/discussion portion of the presentation, student participation was minimal and the main focus was to capture the students' attention, motivate them for the upcoming lesson, and clarify the learning objective of the lesson.

Guided Practice

Within this format the students moved into more of a participatory role as they worked together as a class guided by their teacher through specific tasks. Unlike the demonstration/discussion format, where the teacher was the

primary actor, during guided practice activities required student's participation in a variety of ways. Following a demonstration/discussion about verbs, Mrs. Powell moved into a guided practice activity and solicited group participation by instructing students to raise their hands and signal using fingers. She told the class, "Raise three fingers if you can remember three action verbs, two fingers if you can remember two, and so on."

At another time, Mrs. Powell directly solicited individual student participation by asking the class, "Give me the definition of an action verb." Mrs. Powell then called on a volunteer who had his/her hand raised or she might call on a student without a raised hand. Another guided practice activity in Mathematics began by Mrs. Powell writing several problems on the board. The class worked the problems together, with the teacher asking guiding questions such as, "What do we have to do first?"

A fourth type of guided practice activity I observed involved having the students solve one or two problems on their own with paper and pencil. After a short period of time, allowing the majority of students to complete the problems, Mrs. Powell would have one student come to the board and solve the problem and tell how he or she arrived at the answer. A number of variations on this activity were also observed. One variation was where a student, after solving a problem at his/her seat on paper, would verbally explain his or her answer without coming to the board.

Another variation involved Mrs. Powell giving the class a chance to solve the problem on their own and then soliciting a group, oral response to the problem.

Regardless of the specific nature of the guided practice activity, the students were given an opportunity to actively engage in instructional activities which were designed to provide group practice for that particular subject area objective. These guided practice activities always followed demonstration/discussion activities. According to Mrs. Powell, the students' participation during guided practice activities provided her the opportunity to check their level of understanding and, if necessary, provide additional large group instruction. Directly following the guided practice activities Mrs. Powell would usually give her students a written assignment which was to be completed independently at their seats.

Independent Practice

During my observations, independent practice typically consisted of a paper and pencil activity to be completed by the students at their seats, working independently of their peers. The typical independent practice activities were very similar to the activities modeled by the teacher during demonstration/discussion and engaged in by the entire class during guided practice. For example, directly following the demonstration/ discussion and guided practice activities in English (using action verbs), Mrs. Powell gave students

verbal directions for an independent practice activity they were to do on paper. Mrs. Powell introduced the independent practice activity by telling them, "I want you to write the letters of the alphabet down the side of your paper and come up with a verb for each letter." This independent activity directly followed Mrs. Powell's pantomiming of action verbs and discussion of the topic of the day with students (i.e., demonstration and discussion) and the teacher's request for students to give examples of action verbs (i.e., guided practice). On another occasion, during instruction in Mathematics, Mrs. Powell introduced an independent practice activity the students were to do from their text book and then told them, "Do problems 1-12 on page 190 in your new math books." As in the previous example, this independent activity followed Mrs. Powell's demonstration/discussion and guided practice activities.

Directly after the introduction of an independent practice assignment Mrs. Powell would often implement what I will call a "transition" technique of instruction. With the class still attending as a large group Mrs. Powell would call on an individual student to tell what they were to do as their assignment, for example, "Bobby, tell me what you're going to do." On another occasion, Mrs. Powell might ask a student to give the first answer to the assignment: "Rodney, can you give us an example of a verb that begins with the letter a?" During this transition from guided practice introduction into independent practice I also

observed Mrs. Powell directly asking her students if they understood the assignment or had any questions.

During independent practice students were required to remain seated and if they needed help they were to raise their hand. During this time Mrs. Powell walked around the room, stopping to answer directly solicited student questions (i.e., those indicated by a raised hand, or other explicit signal to the teacher) as well as monitoring the work of all the other students (i.e., those students who had not directly solicited assistance from their teacher).

Instructional Materials and Activities

In this section, I will detail the types of instructional materials and activities used during the various instructional methods. Because of the close relationship between instructional materials and the activities in which they were used, these two features of the classroom will be presented together. Based on my observations during Mathematics, Social Studies, Science, and English/Language Arts, the most typical instructional materials and activities were: subject-matter textbooks, commercially prepared worksheets, boardwork, and teacher-student communication.

Subject-Matter Textbooks

The majority of instruction centered on the use of commercially published textbooks. In each subject area

observed (e.g., Mathematics, English/Language Arts, Social Studies, and Science), students had their own textbooks which were used to read from (orally or silently) and/or to complete specific assignments. For example, in Social Studies it was commonplace for students to be given pages to read. This activity was often followed by a guided practice and then an independent assignment requiring the students to answer specific questions. Although Mrs. Powell might, on occasion, develop her own questions for the students to answer, students were usually asked to answer the questions which were imbedded in the text or at the end of the chapter.

Using the textbook materials, Mrs Powell might vary the way in which the materials were used. For example, instead of silent reading Mrs. Powell had the students take turns reading the pages orally, as was done within the guided practice format of her teaching method. On another occasion, Mrs. Powell had students follow along reading silently while she played an audiotape of a section of text. In each of these activities students depended on the textbook to receive information about the daily topic. In only one lesson did the teacher supplement the textbook materials with other materials. During a Social Studies lesson on Black Heritage, Mrs. Powell brought in pictures of those individuals mentioned in their text.

While still using the textbook, Mrs. Powell would vary the activity slightly. In other Social Studies lessons

students were given a few directions prior to their silent or oral reading. Instead of waiting until the end to receive their questions, Mrs. Powell would tell them in advance. For example in reading about Turkey Mrs. Powell told students, "As you read the story decide whether you think Ataturk's actions were right or wrong." During another Social Studies lesson, as students were reading orally, Mrs. Powell called on students to answer her questions and/or discuss what they read. In this manner, Mrs. Powell would move from a reading activity into a discussion activity.

The only exception to the use of formal textbook materials for silent or oral reading was observed during an English/Language Arts session. During my research study Great Lakes Elementary was engaged in a drug education unit. Mrs. Powell used the time usually set aside for English or Social Studies to work on this program. Instead of a textbook, students read silently from a commercially prepared comic book.

Commercial Worksheets

Along with the textbooks, Mrs. Powell frequently used commercially prepared worksheets. For example, after reading a story about "Tall Bunyan" for Language Arts, the students were asked to complete a worksheet. The worksheet was made up of ten incomplete statements related to the story. The students were expected to complete the sentence

based on what they had read (e.g., "In sixth grade, Tall Bunyan learned so much in one day that the teacher decided to_____.").

Another example of the use of commercially prepared worksheets was observed during an English lesson. After a guided practice activity on personal pronouns, students were asked to complete a worksheet in which they had to substitute a proper noun phrase in a sentence with the correct personal pronoun (e.g., "Miss Smith is the coach of our baseball team" was to be rewritten as "She is the coach of our baseball team"). Following another English lesson, on adjectives, students were given a commercially prepared worksheet (a picture of a full jelly bean jar with words written on each jelly bean) in which they had to color the words that could be used to describe jelly beans.

During my observations in Mrs. Powell's class, commercially prepared worksheets were used only during the English/Language Arts subject area. In each instance the use of these worksheets directly followed a guided practice activity. In all lessons where worksheets were used as instructional materials students completed these within the independent practice format.

Boardwork

During my observations I noticed that Mrs. Powell often used the chalkboard to provided examples of problems or concepts under discussion for a particular subject area.

The use of the chalkboard as method for presenting material for instruction was most evident during demonstration/ discussion and guided practice. The most common use of the chalkboard was observed during Mathematics. As Mrs. Powell was explaining how to solve a problem, she would put a sample problem on the board and demonstrate to the students how to find the solution. For example, during a demonstration/discussion of the multiplication of decimals, Mrs. Powell worked through the problem, step-by-step, on the board at the front of the room. As Mrs. Powell moved into the guided practice method of instruction she would continue her work at the board and would select students to come to the board to work out a problem. One variation of this use of the board was observed as Mrs. Powell would ask students to tell her, from their seats, how to solve a given problem. As a student gave step-by-step instructions, Mrs. Powell carried them out on the sample problem written on the board.

Mrs. Powell also used the chalkboard during English lessons. For example, during a guided practice session on nouns, where students were asked to give examples of nouns, Mrs. Powell wrote the words on the board as the students dictated. When the guided practice activity was completed students were asked to add these words to their "noun bank." Students wrote the list of words down in a folder which they kept in their desk.

In the previous examples, the chalkboard was used by Mrs. Powell to either demonstrate how to solve a problem or

to record information provided during guided practice activities. This specific use of the board was observed during English and Mathematics instruction. Mrs. Powell also used the chalkboard more casually during independent practice activities. For example, during Mathematics when several students were having difficulty solving a problem on their own, Mrs. Powell went to the board to demonstrate how to work through the problem.

Teacher-Student Communication

During my observations in Mrs. Powell's classroom information was often presented verbally by the teacher, as in the demonstration/discussion and guided practice formats. Within these instructional methods, verbal information was presented as a supplement to a text or in place of a formal text. As mentioned in the previous section on textbooks, Mrs. Powell often interspersed her own personal insights during oral reading sessions. During such sessions Mrs. Powell would ask students if they had any personal information they wished to share related to the subject under study. For example, during one Social Studies lesson, on the topic of "People who speak two languages," a discussion took place during the guided practice activity. As students were taking turns reading aloud from the text which dealt with the difference between dialects and accents, Mrs. Powell stopped the reading activity to interject a personal experience related to accents that she

and her husband had during a trip out of the country. Mrs. Powell then asked students to share some of their knowledge and/or experience about accents and dialects. From this initial request the teacher and her students began to discuss how people from different states have accents different from their own. In this manner Mrs. Powell used teacher-student interactions to supplement the information contained in the textbook.

Grouping of Students during Instruction

During my observations, students worked in either large group settings or independently. As detailed in the section on methods of instruction, students worked in a large group setting during demonstration/discussion and guided practice. This grouping was maintained regardless of the materials used during activities. During independent practice students worked individually at their desks while completing written instructional assignments. On occasion, I observed that several students who were seated in close proximity of each other would interact during independent activities. Although Mrs. Powell did not reprimand these students if they were on task, she also did not structure the seating so that the students were formally placed in small groups to complete the written tasks.

Summary

In the preceeding pages I have provided an introduction to the classroom. As a result of the presentation of data associated with the daily routines (including the subject-areas taught and the time schedule of events) and the characteristics of instruction (including the methods and materials), I have set the stage for the presentation of data and the discussion which takes place in Chapters Five and Six.

CHAPTER FIVE

THE NATURE OF QUESTIONING AND THE CHARACTERISTICS OF THE STUDENTS

Overview

In this chapter I will detail the nature of student questioning behavior (including the perceptions of the teacher and her students regarding the frequency, form, and function of student-generated questions) and describe a variety of characteristics associated with the students in Mrs. Powell's classroom. This chapter concludes with a discussion of how specific student characteristics influenced the nature of questioning behavior. This two-tiered presentation (i.e., a detailed account of relevant evidence followed by an interpretive discussion) is designed to provide the reader with a clearer understanding of how student questioning was influenced by specific features within the classroom.

The Nature of Student Questioning

As discussed in Chapter Three, my original observational data collection procedures were expanded following the orientation phase of my research to include

remote audiotaping of teacher and student verbal interactions during instruction. This modification proved to be significant as I was then able to document studentquestions which were generated within a private setting.

During this phase of my research I observed and audiotaped student and teacher interactions which occurred during the academic subjects of English, Mathematics, and Social Studies. These observations and audiotapings serve as the bases for reporting on the nature of student-generated questions. In addition, this information was supplemented with the data collected as a result of student and teacher interviews. In the following sections I will present data associated with the linguistic forms, semantic functions, and frequency of student-generated questions.

The Function and Form of Questions

Based on my analysis of the relevant data, various patterns emerged regarding the forms and functions of student-generated questions. With respect to the functions or purposes served by student questions, I found that students generated questions for a variety of reasons. Although they are not exclusive categories, I was able to organize these questions into a taxonomy reflecting their purposes. I found that students generated questions for the following reasons: (1) to request content information, (2) to request procedural information, (3) to obtain

confirmation of content or procedural information, and (4) to gain attention. Except in the instances where student's questions were generated for the purpose of gaining attention, the primary motivation underlying students' generation of questions was to acquire information which would enable them to successfully complete required instructional activities.

In addition to the numerous functions of student-generated questions, I also discovered that students utilized a wide variety of linguistic forms to express these functions. These linguistic forms included: (1) direct questions (i.e. revealed through surface structures such as interrogatives or tag questions) and (2) indirect questions (i.e., revealed through less obvious linguistic structures such as inflected forms and declarative statements).

The Functions of Students' Questions

Although it is necessary to address linguistic form and semantic function together as I present these data, my emphasis here will be on the function or purpose underlying the students' generation of questions during academic instruction.

As will be evident throughout this section, I was not able to determine the function of a question merely based on its surface structure. In order to determine the function or intent of the speaker the linguistic form of the question was analyzed along with the context in which it was

generated (i.e., associated verbal and nonverbal behaviors by the speaker). In addition, I sought clarification of these functions from the students themselves and their teacher. This process was in keeping with the guidelines discussed in the literature presented in Chapter Two.

Requests for content information. The following examples typify students' requests for content related information. These requests can be characterized as utterances which reflect that the speaker does not have a specific concept or is unclear about specific concepts and/or processes associated with subject-matter information.

During a large group guided practice activity in English Mrs. Powell told the class, "I would like you to select a noun from your noun bank and then give me a sentence." One student, Bobby, called aloud, "I don't get what you what you mean." Mrs. Powell replied to Bobby, "A noun Bobby is a person, place, or thing." Directly following Mrs. Powell's response Bobby declared, "Oh." In this example Bobby's utterance, and his acknowledgement following Mrs. Powell's reply, indicated that he did not know what was meant by the term "noun."

During an independent silent reading assignment in Social Studies, where students were to independently read and answer the questions in their books, Barbara raised her hand and asked Mrs. Powell, "What does illiterate mean?" Mrs. Powell redirected the question to the entire class and

called upon another student to supply the definition for Barbara. Although presented in a more direct form, Barbara's question was similar to Bobby's in that her utterance also indicated she did not know what a particular word meant.

On another occasion, during a large group guided practice activity in Mathematics, Mrs. Powell was reviewing division of decimals. This activity directly preceded the independent written assignment, where students were to solve similar problems on their own. After completing sample problems on the board with the entire class, Mrs. Powell asked, "Does anyone have any questions?" Stacy raised her hand and asked, "Um. On the first one how come you put the decimal after the fourteen?" Mrs. Powell responded, "Remember if you move the decimal here [indicating the divisor] you have to move the decimal here [indicating the dividend]." Stacy's question and her apparent satisfaction with Mrs. Powell's answer (based on my direct observation of her nonverbal behavior and subsequent performance on the independent written activity) indicated her confusion with the concepts or processes underlying the divisions of decimals.

In addition to my direct observations which support this function of student-generated questions, Mrs. Powell and her students were able to comment on the functions of student-generated questions. When I asked Mrs. Powell to tell me why she felt students questioned she stated, "the

kind that would come during class time, well I think [they] are to reinforce their understanding. [This function] probably [occur] more so than anything else."

When I asked a similar question to students ("Why do you ask questions?"), their answers did not directly indicate that they asked questions to obtain content information. Generally, I received more indirect comments, such as Katrina's, which was that she asked questions "When I don't understand." Other students made such comments as "I'd ask [Mrs. Powell] to explain it to me" or "I need help." Stacy M. was a little more direct in her response when she told me that she asked Mrs. Powell, "would she go deeper into it, because I don't understand it very well."

With respect to the linguistic forms used to express requests for content information, it was clear from my observations that students used both direct and indirect linguistic structures to pose their requests for content information. Additional examples of these linguistic forms will be described in more detail later in this section.

Requests for procedural information. These requests can be characterized as utterances which reflect that the speaker needs information about directions for task completion. For example, during a large group guided practice activity in English, Mrs. Powell asked Rick, "Name a person, place or thing." Rick responded, "I gotta do all of 'em?" Unlike Bobby's utterance, which reflected

uncertainty about the meaning of the word "noun," ("I don't get what you mean"), Rick's request was for information clarifying the expectations for his performance. This comparison between Rick's and Bobby's utterances exemplifies the difference between a request for concept/process information and a request for procedural information. Unlike Bobby's request, which related directly to a concept, Rick's request was less directly related to the content and more generally related to task completion.

Another example of a student's request for procedural information was observed during Mathematics. After Mrs. Powell explained the procedures for a guided practice activity, James called out loud to Mrs. Powell, "Do we need our books?" Mrs. Powell responded, "No, we will do some problems on the board together before using our books." Like Jerry, James' question was posed for the purpose of obtaining clarification or information regarding the performance of the task rather than requesting information about the concepts or process underlying the assignment.

One final and very typical example of the use of questions by students to request information related to directions was observed after Mrs. Powell gave an independent written assignment in Social Studies. Almost immediately after giving directions several students called out. Pam asked, "Can we use erasable pen?" James asked, "When is this due?" Ricardo followed with "Do you have to

incorporate the question in the answer?" and Ronnie inquired, "Do we have to write the question down?"

The following teacher comments reveal that Mrs. Powell was aware that students asked questions to gain procedural information. In response to an interview question, asking Mrs. Powell to comment on what she believed to be the purpose underlying the questions her students asked, she stated, "Now types of questions just on subject-matter, you didn't get an awful lot. You get 'What were the directions again, Mrs. Powell?' They're very limited [in terms of information requested]. [Requests for procedural information] represent poor listening skills and the confusion possibly of a student who finds academics and remembering, sequence, and so forth, problematic. I think they're increasing."

In addition to Mrs. Powell's statement that she felt the number of procedural questions were increasing, she also commented on how she felt about these types of questions. During this same interview session Mrs. Powell said that procedural questions are "exasperating questions. I've shown directions visually, where in a book or written on the board, and I still get questions. I'm not sure where to go other than to go back to the individual child at the desk and point it out."

When asked to comment why she believed these types of questions were on the increase, Mrs. Powell stated, "In this particular case I have my suspicions, but I can't prove it.

When you've done ditto pages for so long, then kids get an assignment in a book and you skip around ...it's very structured. When you alter it a bit it's very, very difficult and you get all kinds of questions...I realize sometimes it's a concentration problem or a listening problem. Then there are kids who anticipate what the assignments are going to be and they start. They're doing it before you're through with directions and then they're stumped. They went through a whole page and you wanted them to do every other one."

Mrs. Powell had additional comments about the existence of procedural questions. She stated that when students asked these types of questions, especially when they were obvious (e.g., she just finished giving the directions), she is turned off and "I want them to know that turns me off." When asked to expand on her perspective Mrs. Powell went on to say that "Procedural questions probably come from those children who have not developed a high degree of listening and concentration. Now I'm getting myself into trouble because there are some very bright children who do not listen particularly well in class but they know where they're going and they know where you're going. They choose not to listen because they already know."

Students were also able to comment on their use of procedural requests, although they seemed more hesitant to admit that they did generate these types of questions during instruction. Typical responses are captured in the

following answers to my question to the students, "When are times when you ask questions?" Wendy told me, "Um, if I don't know what problem we're on," and James stated that he would ask questions when "I don't know what we're doing."

Based on my observations, students used both the indirect forms of questioning (i.e., inflected forms like Rick's "I gotta do all of 'em?") as well as direct interrogative linguistic structures (i.e., "When is this due?") in their requests for procedural information.

Requests for confirmation. These requests can be characterized as utterances which reflect that the speaker has some level of understanding about the content or procedures related to a given task but feels unsure about his/her level of understanding.

The distinction between requests for content information and requests for confirmation is difficult to understand without considering issues related to the context. This distinction can be seen through the following example. During an independent written English assignment on action verbs, Jerry raised his hand and asked Mrs. Powell, "Is freezing a verb?" Initially, this question appeared to me to be a request for content information, that is, a request for Mrs. Powell to define the meaning of the term "verb." Upon further analysis of the student's behavior immediately following his question, I arrived at another interpretation for this question, that of requesting

confirmation of content information. The focus of my continued analysis included Mrs. Powell's response to Jerry's question and Jerry's nonverbal behavior. When Jerry asked, "Is freezing a verb," Mrs. Powell asked him, "Well, what do you think?" Jerry nodded his head (indicating that yes, freezing is a verb). Because I was seated in close proximity to Jerry I could see that he had already written the word down on his paper. Based on this observation, and Jerry's response to Mrs. Powell, it seemed possible to me that he asked this question to seek confirmation of information about which he was unsure. Given this observation, I then looked for other evidence that students might generate questions for the purpose of confirming information.

During my observations, few requests for confirmation were obvious. In order to reveal whether an utterance could be intended as a confirmation it was essential to consider the behaviors of the student and the teacher associated with the original request. The following examples represent other instances where I discovered that students generated utterances for the purpose of seeking confirmation of information.

During an independent writing assignment in English (students were to select the adjective within a sentence and then write it on the line next to the original sentence), Bobby pointed to the answer on his paper and asked Mrs. Powell, "Is that how you do it?" Mrs. Powell

responded, "What does 'difficult' describe?" Bobby replied, "Golf." Mrs. Powell told Bobby, "Good, that's it."

On another occasion, while observing a guided practice activity in Social Studies (students were taking turns reading from their text books), Mrs. Powell asked, "Ronnie, will you read the next paragraph?" Ronnie responded, "Starting with Attiturk?" Mrs. Powell confirmed his answer by telling him, "Yes." In another guided practice activity, this time in Mathematics, Mrs. Powell asked the students to work out a problem requiring the division of decimals. After a short amount of time Mrs. Powell called on Joel, "Joel, how are you doing?" Joel responded to Mrs. Powell's inquiry, "I got 14.23, is that right?" Mrs. Powell confirmed his answer by tell him, "Yes it is."

In each of the examples provided above, the student's utterance reflected some level of understanding with respect to the activity at hand. For Jerry, Bobby, and Joel, the request for confirmation reflected some level of knowledge about the concepts and/or processes underlying the activity. For Ronnie, the request for confirmation reflected some knowledge about the procedures or directions regarding where to start reading. In all four cases, students did not seem to be requesting new information or clarification of the concepts, processes, or procedures but rather their utterances indicated they wanted reassurance from the teacher regarding their understanding of the information.

Mrs. Powell was also able to comment on the existence of these types of requests. When asked to discuss the function of student questions, Mrs. Powell said that a common reason students questioned was "for instruction. To reinforce what they think. Just to make sure [they understand] is probably more important. Joel, if he's on the wrong track, he'll get frustrated. He won't ask a question he knows the answer to but you'll find that he knows more than he'll give himself credit for. Joel is looking for reassurance rather than just 'Hey everybody, I know the answer.'"

Mrs. Powell went on to identify other students who repeatedly ask confirming type questions. "Ricardo will do that. Kim is another one, not as much but a little. Wendy will do that one-to-one when I'm going around [monitoring during independent work]. Barbara will not ask a question but say 'I know this now.'"

The students were more clear about this function of questions than almost all others. When I asked James if he sometimes asks questions even though he is pretty sure of the answer he replied, "Well, because of course that's right, but maybe it's not. Maybe this is right. Well, I just make sure." During this same interview session I brought up an observation to James. I told him that I observed he frequently says "what" or asks a question when it appears to me that he already knows the answer. James told me, "Uh, I was just makin' sure. Just ta, you know,

instead of like hearin' half of it, 'go to the store and buy a can of beans and corn' then, then I'd go and buy beans or whatever. I was just makin' sure...Well I just make sure most of the time."

A statement made by Mrs. Powell about James' constant need for reassurance also helped accurately identify James' request as one of confirmation and not a request for information or attention. During one interview session I shared with Mrs. Powell the observation that James asked a lot of questions that seemed to reflect his need for reassurance. Mrs. Powell stated, "Well if you met his mother you'd understand." It seemed that Mrs. Powell's perception of James' mother was that she was a perfectionist and demanded the same from her children.

Other students besides James were able to comment on their requests for confirmation. When I asked them if they ever ask a question even though they are pretty sure of the answer, I received replies such as Mauricio's, "Yeah, when you got the answer but you're trying to make sure it's the right answer." Barbara also confirmed this function: "Like one time I was doing my math, I had the problem already done. I just wanted to make sure I had it all right." Wendy summed it up quite well with her statement, "Sometimes I just want to see if its really right or something."

In the examples provided above, students' requests for confirmation of information were expressed either through the use of direct linguistic forms (i.e., interrogative such

as "Is that how you do it?") or through more indirect forms (i.e., inflected forms, such as "Starting with Attiturk?").

Requests for attention. Requests for attention were the most difficult types of questions to analyze because they often masqueraded as other types of questions. It was only after repeated analysis of interview data that I realized some students were generating questions not for the purposes of requesting content or procedural information or confirmation of information but merely to gain the attention of the teacher and/or their peers. The following examples illustrate these requests for attention and the process involved in determining this purpose of student questions.

Following a brief guided practice review session with the entire class, Mrs. Powell gave students an independent writing assignment in English. They were to find as many verbs as possible using the letters of the alphabet (one verb for each letter). As students worked independently on their assignments Ricardo called out to Mrs. Powell, "Do all verbs end in ing?" Before Mrs. Powell could respond, James called also out, "Could 'nose' be a verb? Like in 'nose' around the house, not 'knows'?" Without waiting for Mrs. Powell to respond Ricardo asked, "Would 'love', like in tennis, be one? How about 'frame'?"

At face value, these questions seemed to me to be requests for content or, at least, requests for confirmation of information. In my attempt to understand the true

function or reason why these students asked these questions it was necessary for me to review some statements made by these students during their interviews. I had anticipated that their answers to interview questions would reveal more about their motivation than was revealed in the surface structure of their utterances.

One of the questions I asked students during their interview was, "Do you ever ask a question even though you are pretty sure you know the answer?" Ricardo told me he did. When I asked him why he did this he responded, "Just because I want Mrs. Powell to know I know the answer." This response confirmed my suspicion that students sometimes do ask questions for reasons other than obtaining information or requesting confirmation of information. Ricardo's answer to my question confirmed that, on occasion, he did ask questions for the purpose of gaining attention from the teacher.

As a result of my conversation with Ricardo I discovered that his purpose in asking questions during the English activity was very different than James' purpose. Based on the linguistic surface structure, James and Ricardo seemed to be generating very similar types of questions. Only after my interview with these students was it clear that Ricardo's questions were generated for the primary purpose of seeking attention from his teacher while James' primary purpose was to receive confirmation of information.

Mrs. Powell also indicated during one interview session that she believed there were students who asked questions which were generated to seek attention. When I asked Mrs. Powell, "Do you think there are things that the kids do to try and get you to attend to their questions?" she responded, "Ron's a good example of that. There are times when he wants attention and he'll ask a borderline question, and I think he knows what he's doing." When asked to explain what she meant by "borderline" Mrs. Powell told me, "A borderline question is, 'What page did you say Mrs. Powell?' But he'll word it in such a way as to not incur wrath. He'll word it so it doesn't appear to his peers that he's been out in left field. You can't ignore [the question]. I'm sure sometimes that if he didn't get an answer he could still function."

In Mrs. Powell's response there is evidence that one cannot always be sure if a student is asking a question because of wanting attention or genuinely desiring specific information. Just as I needed to consider the context, Mrs. Powell related that she needed to know her students in order to accurately determine why they are asking a specific question. For example, when asked to comment on the differential nature of her responses to some students (e.g., answering one student but ignoring another with the same question) Mrs. Powell indicated that she perceived some questions as honest requests and others as attempts to gain attention. Mrs. Powell stated, "It's a little different at

the beginning of the year because you don't know (the students). But, after the first conference, and you meet the parents and you get to know a little about their home life and the expectations, then I think that it all kind of weaves into a fabric that dictates how you're going to handle those questions?" Mrs. Powell was referring to what she believed were students' sincere requests for information, versus requests for attention.

I was curious to find out if other students, in addition to Ricardo, were aware of the existence of questions asked for the primary purpose of gaining attention. In order to find this out I reviewed the rest of the student's answers to my question, "Do you ever ask a question even though you are pretty sure you know the answer?" In answering this question students seemed less willing to admit that they themselves engaged in this type of questioning. I then asked students directly, "Do you ever ask a question just to get attention?" Several students did admit to this behavior. Mauricio told me he did this himself "to get attention, to try to make other people think you know all the answers." Ron told me he did "sometimes," and Rodney said, "In a way yeah, a little bit." Most of the students said they themselves did not ask questions to gain attention but they were aware that other students did this. Rick told me "yes" others did this. When asked why he said, "For other people to show off." Stacy M. also indicated that she was aware others engaged in

this type of questioning because "they want to let other people know they're smart or something." Pam said that others did this "maybe cause they want attention."

As with the other examples of linguistic structures used to pose questions, students used both indirect and direct forms of questions in order to gain attention from their teacher or peers.

The Linguistic Forms of Student-Generated Questions

In the preceding section much of the data regarding linguistic forms of student-generated questions was presented; however, the emphasis was on the functions or purposes underlying students, questions. In this section I will focus more specifically on the patterns of these linguistic structures and provide a detailed summary of the various linguistic structures used by students. As mentioned earlier, students' questions fell into two major categories: (1) direct questions (i.e., questions represented by obvious linguistic structures such as interrogative ["What page are we on?"] and tag forms ["It's Turkey, right?"]) and (2) indirect questions (i.e., questions represented by less obvious linguistic structures such as declarative ["I need help."], imperatives ["Help me."], and inflected forms ["The girls?"]).

As I present the data which supports my findings with regard to the forms of student questions, I will discuss each type of linguistic structure separately. This

presentation, based on my observations and audiotapings of teacher-student interactions during instructional activities, will be followed by a summary which incorporates the perceptions of the teacher and her students based on my interviews.

Interrogative. An interrogative is characterized as a linguistic structure which functions as a question based on obvious surface structure. I considered these utterances to be a direct use of questions. Students used this structure to generate requests for content information, procedural information, confirmation of information, and attention. The following exemplify students' use of interrogative structures to request content information. During a silent reading activity James asked Mrs. Powell, "What does declare mean?" While engaged in guided practice activities in Mathematics, several students posed questions of this type. Stacy asked, "Why does the 4 go above the 2?" Ronnie asked, "How come we put a 6 up there?" Pam asked, "Why does it go in 6 times?" During independent English assignments many students asked interrogative questions, such as Rodney's question "How do you spell bazooka?" or Jerry's question "How do you make a capital J?"

Students also used this form to request procedural information. Immediately following Mrs. Powell's directions for an independent written assignment, it was common to hear questions like the following: Rick called out, "What are we

doing?" and Ronnie raised his hand to ask, "What page are we on?" Other students would pose similar questions such as "What do we do if we get one wrong?" or "When is this due?"

As discussed in the previous section on the function of questions, it was often difficult to tell when a student was generating a question for the primary purpose of gaining attention. Based on the confirmation I received from students such as Ricardo, I was able to uncover that students did utilize interrogative structures to generate their requests for attention. Ricardo's question posed during the English assignment on verbs, "How about frame?" is one example of this type of linguistic structure used to request attention from the teacher and/or peers.

Based on the observational data it can been seen that students used this particular linguistic form or structure most frequently to represent three functions: to request content information, to request procedural information, and to seek confirmation of content or procedural information. Based on my observations and student and teacher responses to my interview questions, it was also evident that students also used interrogatives to gain attention from the teacher and/or their peers.

Tag questions. The next linguistic form to be discussed is the tag question, which I also considered to be used for direct questioning. Structurally, this type of

utterance is characterized as an introductory declarative statement (related to a specific aspect of information-content or procedural) immediately followed by a word or phrase which reflects that the student was requesting confirmation of this information (e.g., "We're on page 64, aren't we?"). The "tag" following the declarative statement can be a yes/no interrogative (e.g., "aren't we?" "isn't it?"), or a reduced version of the interrogative (e.g., "right?"). The following are additional examples of students' use of tag questions.

During one demonstration/discussion session in English, Mrs. Powell asked Jerry, "Can you give me a pronoun?" Jerry responded, "'She,' right?" Mrs. Powell told Jerry, "That's right, good." In this situation Jerry responded with a declarative statement in answer to Mrs. Powell's request. The inflection in his voice when he uttered the word "right?" signaled to Mrs. Powell that Jerry was not sure he had given the correct answer and was seeking confirmation about the content related to the task. In this example we see where a student utilized a less direct form of questioning (i.e., declarative plus inflected form) to generate his request.

In another situation, at the beginning of another English lesson, Ronnie was asked by Mrs. Powell, "Ronnie, what are we doing now?" Ronnie responded, "We're correcting the papers, aren't we?" In this interchange Ronnie's response of a tag question was put forth to confirm the

procedural information he had about the given task. In this example Ronnie's declarative statement, "We're correcting papers" is followed by a more direct or obvious linguistic question marker, "aren't we"?" In both examples the students ended their declarative statement with a word or phrase indicating uncertainty about the information.

From these examples, it is clear that tag questions were used primarily for the purpose of seeking confirmation of content (e.g., "It's Turkey, right?") or confirmation of procedural information (e.g., "I'm done now, aren't I?"). No example was found where a tag question was used to request unknown content information. This makes sense given the definition of a tag question, which assumes some amount of information is known and reflected in the introductory declarative statement.

Declarative. The next linguistic form to be discussed is the use of declarative utterances which can be characterized as statements made by students. While their surface structure indicates that they are simply statements of information, the accompanying behavior suggested to me that they were actually indirect forms of questions used to request information. Students used many declarative statements in their attempts to request content and procedural information. Statements such as Mauricio's, "It's hard" or Ronnie's "I don't understand this" or "I don't get what you mean" reflected the student's desire to

obtain additional information about content information necessary to complete the task.

Often times, a student's declarative statements were made as Mrs. Powell was at or near a student's desk. Mrs. Powell responded to the students' requests in a variety of ways, for example, "Yes it can be hard, show me what part you don't understand," "Many times you won't understand it the first day," or "Okay, let's do a few on the board so you can see the problem."

Students also used declarative statements to obtain procedural information. These statements looked very much like the requests for content information, however, there was an indication based on the context of occurrence which led me to believe that they were after information about how to get started. For example, many of these statements were made just a few minutes after the teacher had given the directions for a guided practice activity or an independent assignment. The following examples reflect students' requests using a declarative. Ronnie stated out loud, during an oral reading activity, "I don't know where we are." About five minutes after Mrs. Powell gave the directions for their independent Mathematics assignment Rick called out, "I don't know what we're doing."

Based on my observations and analysis of audiotapes, I was able to document this use of a declarative for only two purposes, to request content or to request procedural

information. I did not observe students using a declarative to request confirmation or attention.

Imperative. The use of an imperative was another linguistic form generated to request information. This form is categorized as an indirect use of a linguistic questioning structure. Based on the surface structure, an imperative appeared very much like a declarative in that both do not have an obvious marker like that of the interrogative utterances. The imperative differed from declarative statements in that the speaker was directly requesting that the listener (in this case the teacher) engage in some type of action. For example, in comparing a declarative statement such as "I don't get this" to an imperative statement, such as "Help me", one can see that the student in the second example is more directly requesting assistance from the teacher than is revealed in the first utterance. This request for action is subtle but still evident in the surface structure of their utterance. Very few of these types of questions were observed during academic instructional activities.

On two occasions I did observe students requesting information using imperative forms. Just prior to an independent written mathematics assignment Rick called out to Mrs. Powell, "Tell me the page." On another occasion, during a guided practice activity in English, Pam called out to Mrs. Powell, "Spell that word again." Mrs. Powell made

no reply and Pam looked over on another student's paper and copied the word.

I did not observe students using the imperative form to request procedural information or confirmation of content or procedural information. This linguistic structure was not used to request attention, based on my observations and analysis of audiotapes.

Inflected forms. The final linguistic structure to be discussed is the inflected form. Inflected linguistic structures can be characterized as utterances which appear to be simple declarative statements. For this reason, I considered inflected forms of requests to be indirect forms of student questions. Unlike declarative statements however, where the speaker's pitch gradually drops throughout the utterance until reaching the lowest pitch at the end, a speaker using an inflected form raises his or her pitch either in the middle or at the end of the utterance. It is this inflection in his/her voice which indicates he/she intends this as a question. As was the case with tag forms, there had to be some level of knowledge about content or procedural information on the part of the student generating the utterance in order to pose the inflected form of the question.

I was able to document only one clear use of the inflected form used during my observations and analysis of audiotapes. During a lecture/discussion session on subjects

and predicates in English, Mrs. Powell asked Lupe, "Lupe, what is the subject in this sentence?" Lupe replied, "The girls?" Mrs. Powell responded, "That's right, good job Lupe." In his utterance Lupe did not simply state "the girls" in a tone reflecting he knew this was the answer but rather the pitch of his voice was raised at the end indicating he was taking an educated guess at the answer. Given the uncertainty in his voice, I interpreted his utterance as a request for confirmation, which the teacher gave.

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In an attempt to reveal the participant's view of how student questions were linguistically formed, the teacher and her students were asked for their insights. This was one area where the participants were less able to articulate awareness about this issue. Perhaps the lack of data in this area was due to my not asking the right questions during the interview. However, it is also likely that the students and their teacher were not aware of how they phrase their questions.

During one of the interviews with Mrs. Powell I asked, "Can you recall some of the ways in which students ask you questions during academic instruction?" Mrs. Powell replied with a short list of examples which reflected interrogative and declarative forms. "Oh they'll say 'How long has this got to be?' or 'Do you have to use all of the words in the

assignment?' They may also say something like 'I've never done this before' or 'I can't do this.'"

The teacher was also asked to respond to my observation that many kids seemed to never really ask their question directly. Mrs. Powell's response indicated that she was aware of this behavior and she provided some additional insight about which students were most likely to use forms other that obvious question forms (e.g., interrogative, tag, or inflected). "Bobby has not broken from [asking for information indirectly]. He'll say 'I didn't get this.' Stacy M will say, 'I've gotten this far...' when they don't know what to do next."

When asked why she thought the students attempted to get information in this way, Mrs. Powell replied, "I think some are overwhelmed with the whole process; sequencing [the question]. They don't know where to start. Sometimes I think you can only give out so much and maybe we give out too much for some kids."

The students themselves had very little to say about how they typically asked questions. During the student interviews all of them were asked, "Can you give me some examples of how you would ask Mrs. Powell a question?" The following answers reflect very little variety of linguistic forms to represent questions. James was one of the few students who gave me an example of the type of question he might ask. During our interview he said he might "raise my hand and ask, 'What are we doing?'"

Most student answers to my interview question were like the following examples. Jerry told me that he would tell Mrs. Powell "I don't understand this." Stacy M. told me she would ask Mrs. Powell, "Would she go deeper into it because I don't understand it very well. I think I usually ask the teacher would she explain more about it." Ronnie told me he would tell Mrs. Powell, 'I need help on the questions.' Raise my hand and say when she comes, 'I need help on this problem.'"

According to the students' comments it would seem as though they only asked for information by making declarative or imperative statements. However, the observational evidence revealed that students had a much wider repertoire for requesting information.

The Frequency of Questions

One of the major limitations of previous research on student questioning has been the failure to document the questions generated in a variety of settings. As a result of equipping Mrs. Powell with a remote microphone I was able to hear and record the questions which were generated by students within private, one-to-one settings. This access proved to be signifant to my study. In order to obtain a detailed account of the distribution of questions over subject area, instructional activity, and student grouping, I focused on three days of remote audiotaping when all subject areas of focus (e.g., English, Mathematics, and

Social Studies) were taught. During these three days Mrs. Powell provided all three methods of instruction for all three subject areas.

Table 3 reflects the frequency of student questioning by subject, the amount of total instructional time devoted to the subject, and the amount of time devoted for each instructional method.

Table 3

Frequency of Student-Generated Questions
(Three consecutive days of observation)

Subject Area	Total Quest.	Total time of instruction	Questions by instruction*		
			A	B	C
Math	99	180 minutes	7	16	76
Eng	52	135 minutes	6	18	28
Soc. Stu.	19	180 minutes	1	4	14

*A=demonstration/discussion B=guided practice
C=independent work

In terms of subject area, the greatest number of questions occurred during Mathematics. The second highest number of questions were generated during English, with Social Studies ranking third in overall frequency of student-generated questions. Clearly, students generated more questions during independent activities than they did during any other instructional activity. Students generated more than three times as many questions during independent activities in Mathematics, Social Studies, and English over guided practice activities in these subject areas.

Overall, the greatest amount of student-generated questions occurred during the independent activities in Mathematics. Except for one guided practice activity in English, students generated more questions during all types of Mathematics instruction than any other subject area. There was also a consistent pattern of the frequency of student-generated questions throughout each subject area. This pattern is reflected in the lowest frequency of questions generated during demonstration/discussion, an increase in questions during guided practice, and the greatest number of questions generated during independent activities. Students worked in a large group setting during the teacher's demonstration/discussion sessions and guided practice activities.

In addition to the evidence gathered through observation and remote audiotaping, I also asked the classroom teacher to share her perceptions of frequency of student-generated questions. During one of our interview sessions I asked Mrs. Powell to rank order, by subject area, what she believed to be the times students' generated the greatest amount of questions. Mrs. Powell responded, "Math seems to be the one they ask questions in. Math is a very high question area, very specific questions." I then asked Mrs. Powell why she believed students ask the most questions in Math. Mrs. Powell replied, "[Science and Mathematics] are the most exacting. They're not creative. They are strict disciplines. In Mathematics and Science [the

students] know there's a right and wrong answer." In terms of questions generated during other subject areas, Mrs. Powell stated, "I tend to be the one who asks the questions in Social Studies. In English they don't ask questions."

During this interview, Mrs. Powell also commented on the nature of instructional activities which seemed to produce the most questions in her statement, "If you're getting [the students] to write down a list of ideas, rather than a discussion, that seems to go much better" in generating questions.

During my interviews with the students I asked them "When do you tend to ask questions?" I did not ask students to rank frequency of questions by subject-matter, instructional methods or materials and, as a result, I was not able to support my observations with student preceptions. However, the answers I did receive to this question revealed a great deal about the student's attitudes regarding questioning. For this reason I will briefly summarize the findings here, as I will go in considerable depth on this topic in the next section.

The major considerations related to the frequency of student questioning during specific subject-matter area were the student's enjoyment and/or familiarity with the material presented. For example, Pam told me that she would not ask many questions in Social Studies "because Social Studies isn't one of my favorite subjects." Maria informed me that she would not ask questions in a subject "if I know it [the

material]." Wendy gave a similar answer regarding the area of Math. She said she would not ask questions "cause I would know it pretty good and I wouldn't need any help on it."

Three students, Rodney, Lupe, and Wendy told me that they were not comfortable asking questions in front of the class, in large group situations. The remainding thirteen students interviewed indicated that they were somewhat comfortable asking questions in large group situations, although most said they felt more comfortable asking questions in a one-to-one situation with the teacher. In the following section I will provide additional insight into the perceptions of the students on this and other related topics as I describe in detail a variety of characteristics associated with Mrs. Powell's students.

Characteristics of Students

The relevant literature indicates that in order for students to pose effective questions (i.e., utterances which elicit an appropriate response from a listener), they must possess various attributes. These include specific linguistic skills and cognitive and metacognitive abilities (i.e. means-ends relationship and awareness of ones own knowledge). Although these competencies are necessary for the generation of effective questioning they are not sufficient. The literature also suggest that student

attitude, comfort, personal interest, familiarity with content, and awareness of the social norms which govern questioning also operate to influence the questioning behavior of learners.

During the course of my research I did not directly evaluate the linguistic, cognitive or metacognitive competence of Mrs. Powell's students. I did, however, select this sixth-grade classroom with the assumption that students of this age would already possess these prerequisite skills. Documentation of students' verbal and nonverbal behaviors, as well as student and teacher interviews, confirmed that students did posses these prerequisites.

I was able to document, through interviews with the students, that they (1) held a positive attitude toward questioning, (2) could comment on how their feelings of comfort influenced their questioning behavior, and (3) were able to discuss how interest and familiarity with instructional content affected their motivation to generate questions during academic instructional activities. In addition, as will be detailed in Chapter Six, the students were also aware of the rules or procedures which governed the generation of their questions. In the following pages I will present the salient characteristics of the students and then discuss how these features influenced the frequency and function of their questions.

Student Attitudes/Values toward Questioning

Near the end of my interview with each student I asked them if they felt it was important to ask questions. Every student told me that he/she felt that asking questions was important. The following examples reflect reasons why they felt this was an important activity. Jerry told me, "Yeah, it's okay to ask questions, but it depends on what it is. If you don't understand it [it's okay] so you can help so you will (understand)." Rick also felt asking questions was important "cause you get the answer and you can start understanding how to do this." Ronnie said, "Yeah, it's very helpful to ask questions when you don't understand the problem." When I asked him "What if you didn't ask?" he told me, "I probably wouldn't understand it and get the problem all wrong."

During the last five student interviews I began to ask, "Do you think it causes you any problems in school because you don't ask questions?" I asked this question to get additional insight into the importance students had for their questions. Barbara told me that her questions were important "like when I'm doing my math, and I don't really understand, but then I go ahead and do it and then when it's wrong, then I feel, well, I should've asked the question." Rodney felt his questions were important because "you wouldn't learn it. Then when you have a test or something, it would be hard to do it right."

Based on these direct comments from the students it was clear that they held a positive attitude about questioning during academic instruction. Specifically, students appeared to value questions which would give them content or procedural information and allow them to successfully complete their academic assignments. Also, as previous evidence has shown in the presentation of the data on frequency of student questioning, there was ample evidence reflecting that students did ask questions of their teacher. They asked during large group discussion and lecture presentations, and privately during independent academic practice.

Student Comfort

Another issue I was able to document was the level of student comfort in asking questions. As a result of my interviews with the students, I was able to understand how student comfort was related to the development of a positive attitude toward questioning. During my interviews with the students I asked several questions which dealt with the student's level of comfort in asking questions. One of the first questions I asked students was very direct, "Do you feel comfortable asking questions in class?" If they told me no, I then asked them why not? Of the sixteen students interviewed only three told me that they were not comfortable asking questions. Rodney said that he was not always comfortable: "If it's something I know I should know

it, and I say [the question], it's kind of embarrassing." Lupe answered this question by saying, "No. Sometimes I don't want to tell her because she might not tell me or she might not come over and she might tell me 'Why didn't you listen?'" Wendy told me she was not comfortable asking questions "'Cause everyone starts looking at you and you feel sort of embarrassed."

The remainder of the students answered that yes, they did feel comfortable asking questions. This affirmative answer is a bit misleading, however, considering the additional information I received from subsequent questions dealing with student comfort. My very next question to students was, "Are there situations in which you feel more comfortable asking questions?" This question was designed to obtain more information about their levels of comfort related to grouping of students during instructional activities. If students gave me a brief answer of yes or no, I followed this up with a prompt, asking them, "How do you feel asking questions during large group discussions, or one-to-one?"

The following answers are typical of the variation in comfort levels as felt by the students. Joel felt asking questions in large group discussion was "okay" but one-to-one "was the best time." Katrina supported Joel's feelings by telling me she was uncomfortable in class discussions because "I'm kinda shy?" Of those students who felt most comfortable asking questions in private, Lupe's and Stacy

M.'s comments capture the reason most clearly. When I asked Lupe if he felt comfortable asking questions during a large group discussion, he said, "When I raise my hand and tell the whole class, they make fun of ya." Stacy M. told me that it depended on the group if she would ask a question: "If people make you feel left out, like you shouldn't be in this group or you don't belong, then I wouldn't ask."

There were also students who said they felt comfortable asking questions during any time, large group discussion or privately one-on-one. Jerry's answer was very specific to the nature of the question: "If [the question] private then I don't like to say it in front of the class. But if its really nothin', just asking for some help or something, I would ask." Jerry went on to add that he felt comfortable this time of year asking questions in front of the rest of the class because he knows the kids. He told me that it was different the beginning of the year "it's always like that when I go to a different school, I don't ask questions." Stacy M. agreed with Jerry that his comfort with other students was important in asking questions during large group activities. Stacy said she was comfortable asking questions in large group "because a lot of people can hear a question and you don't have to be afraid because you already know everyone in the classroom."

Other students felt comfortable asking questions in large group activities but for reasons other than feeling at ease with their peers. Pam's comment revealed that she felt

she was doing the teacher and other students a favor by asking her questions in the large group because when you are asking in private then "you ask that question then she goes to someone else and that person asks that question then she has to answer it more and more times. When you're in a big group one person asks the question and she can just answer it to everyone." Ricardo told me he was pretty comfortable asking questions in any setting. "Well, I don't really care if it's in front of the class. I just ask questions if I think that they're not so good, like what page, I wouldn't ask. I don't feel comfortable asking dumb questions." Since Ricardo felt procedural questions such as what page were dumb, I asked him "What do you do if you didn't hear the directions?" He told me "I just look over to Pam or Bobby."

Another question I asked students which related to their level of comfort in asking questions was "Do you ever have a question but decide not to ask the teacher?" If they answered yes, I then asked them why. Several students answered yes to this question and told me such things as Katrina, who said, "Maybe someone else will ask it." Stacy R. said she might be "embarrassed. Probably be the only one that's asking that question. Everybody else probably knows the answer. They might laugh at you while you're doing it." Barbara said sometimes she doesn't ask a question because "It's just that I'm shy." Kim told me that she might not ask "'cause I don't really feel it's much of a question, not

important." Pam said, " Because I feel like it's not that important and I don't have to waste Mrs. Powell's time to ask."

James' answer brought up an issue similar to Pam's and Kim's, that is, they would not ask a question, not because of being embarrassed, but because it was not appropriate or important. James told me that sometimes he does not ask a question because "it's not the right time, or right thing to say." When asked to give me an example, he related this story. "Like one time, when she came in with curls for Halloween...like you know 'teacher, why do you have that in your hair?' that would be an inappropriate question."

During one interview session with Mrs. Powell, she commented on the fact that some students do not ask questions in certain situations. When I asked why, she indicated that she felt students were less likely to ask questions in large group discussion situations (e.g., Social Studies) She also stated that some students may never ask questions. Some students are "shy, they just don't ask questions of anybody in any room under any circumstances. I think it's shyness. I don't think a kid will sit here all year and not ask questions because he doesn't care. I can't buy that, but I can buy that they're shy. There is peer pressure. I think that would be a big part of it.

From the comments of the students and their teacher, I discovered that student questioning was influenced by a personal level of comfort. Some students expressed a

concern about asking questions if it was in front of their peers while other students said they felt comfortable asking in any situation. Several students stated that they would be embarrassed to ask in public because they would be admitting they did not know something that perhaps their peers knew. Some students stated that they were too shy to question in front of others but would ask the teacher privately. Students also admitted that they felt uncomfortable, especially in large group settings, asking certain types of questions (i.e., procedural) since they would have known the answer if they had paid attention to directions.

Student Interest

In addition to the issues of comfort, and private settings versus public large group settings, students also seemed to be aware of the importance or appropriateness of specific questions and this had an influence whether they would question. Several students also identified another issue, personal interest. Pam told me that she did not ask many questions in Social Studies "because Social Studies isn't one of my favorite subjects." In addition to her being influenced by interest she said, "I would just rather try to find it myself instead of asking the questions and going through it. When I go through it I can learn more." When I asked Pam when she would ask questions, she said, "In

Science, 'cause it's my favorite subject and I want to learn more about Science than Social Studies."

Ricardo informed me that he too was influenced by his interest in the subject or activity. When I asked Ricardo when he felt most comfortable asking questions he said "It depends on what subject it is." Rodney told me that he might have a question but decide not to answer, "like when it's close to gym time or when we do a subject that I want to hurry up and get done with."

Student Familiarity

One final reason students stated for not asking questions included the obvious one that they did not need additional information. Maria stated that she would ask a question in Mathematics if Mrs. Powell was teaching something new but did not ask questions if "I know it (the material)." Wendy said she would not ask questions in Mathematics "cause I would know it pretty good and I wouldn't need any help on it." Ricardo stated that he would ask few questions when "I already know this or that." James indicated he asked fewer questions compared to other students "cause most of the work we do I just do it, it's easy..." Rodney also stated that he asked few questions because "most of the things we're doing I know what I'm doing."

Consistent with the findings related to comfort and interest, student comments reveal that their questioning

behavior was affected by their level of familiarity with the topic or the learning task. As with the other student associated characteristics, this level of familiarity would vary from student to student based on their own experiences and abilities.

How Student Characteristics Influenced Questioning

Student Attitudes/Values

Discussing exactly how student attitudes affected their questioning behavior is difficult because this characteristic is closely related to other student-associated features (i.e., comfort, interest, and familiarity). The following discussion will clarify the relationship among these characteristics.

There is clear evidence that students in Mrs. Powell's classroom had a positive attitude toward questioning and they felt their generation of questions was important in helping them. The interview statements from the students reveal that they felt asking a question was important because they were able to obtain necessary content or procedural information and/or clarify their understanding of content or procedural information. Several students stated that if they were unsure of information or a procedure, and they did not ask questions, they might not be able to do an assignment correctly. Their awareness of the possible inability to correctly complete a given task was a clear indicator to the students that they should ask a question.

Students also told me that not only did they benefit from asking questions but other students might benefit as well. This perception was most clearly reflected in Pam's comment regarding asking questions in a public forum: "When you're in a big group [and] one person asks the question, and [the teacher] can answer it to everyone." This perception was reinforced by Mrs. Powell's behavior as she often instructed students to listen to other people's questions because they may be asking a question you need to know the answer to as well.

In closer examination of the major functions of the questions generated by students during academic instruction (i.e., requests for content information, requests for procedural information, and requests for confirmation of content or procedural information), there is additional support for the assertion that students valued questions as an effective strategy for academic success. It was this value which played a contributing role toward influencing the frequency of student generated questions. In addition, since students stated that the major value for asking questions was to understand and successfully complete an assignment, it is also clear that this attitude or value also influenced the functions of the questions generated during academic instructional activities.

Student Comfort

Very closely related to the student's attitude or value toward questioning was the comfort level they felt in generating questions during various academic activities. Dillon's (1981) work points out that the frequency of student questioning can be affected by how students believe their questions will be received by their teacher and peers. For example, if students feel that their questions will be perceived as dumb or inappropriate, this will cause the student to feel uncomfortable generating questions. This discomfort or even fear of being viewed as incompetent could even override a students desire for needed information. In this manner, personal comfort to generate questions is linked to the frequency with which students pose questions. If students experience discomfort in asking questions to their teacher, student questioning would, most likely, be inhibited even in private settings where the interaction occurs only between the student and his/her teacher. If the discomfort is more generalized to one's peers, then the student's questioning behavior would be inhibited in the more public forums which occur in classrooms.

As I have detailed previously there was variability among Mrs. Powell's students with respect to their level of comfort in generating questions. Some students told me that they were comfortable asking questions in any situation, that is, large public situations in front of their peers (i.e., demonstration/discussion or guided practice) as well

as in private situations (i.e., independent practice) between the teacher and themselves. Of the students who indicated they felt comfortable asking questions in front of peers, various issues were addressed. One student raised the issue about how their feeling of comfort slowly developed in the classroom setting. This comment indicates that students may not feel comfortable right away asking questions in front of their peers, but as the academic year progresses, and they get to know and trust their teacher and their peers, their feelings of comfort increase.

Other students informed me that it would depend on the membership of the group how comfortable they felt. Stacy M.'s comment, "If people make you feel left out, like you shouldn't be in this group or you don't belong, then I wouldn't ask," reveals that students could discriminate precise settings in which they would feel more or less comfortable. In other words, it might not have been the fact that the setting was a large or small group but the issue may have been the attitude of the other students or one student's perception of this attitude in that group toward the questioner that ultimately influenced student comfort and thus affected the frequency with which students generated questions.

Feelings of comfort were also linked to the function of the questions. One student who said he felt comfortable asking questions in any situation did add that he wouldn't feel comfortable asking a question if it was just to ask

what page. Ricardo said, "I don't feel comfortable asking dumb questions." Ricardo interpreted procedural types of questions as dumb, and so he would not want to ask these in front of the entire class and reveal he wasn't paying attention, or could not remember directions. Ricardo said that if he did need this type of information he would ask another student. Pam told me that she felt comfortable asking questions in almost any situation unless the questions was not important. She said she did not want "to waste Mrs. Powell's time to ask [the question]."

From these examples one can see that student comfort influenced the frequency of their questioning behavior. Students who felt comfortable asking questions in any type of academic instructional setting would be more likely to generate a higher frequency of questions than students who only felt comfortable asking questions in private one-on-one settings with their teacher. Given that students did spend a great deal of instructional time in large group settings of demonstration/discussion or guided practice activities, many of the students who felt discomfort in these settings would be inhibited from generating questions even if they required content or procedural information. My observations of the independent activities which usually followed these large group activities supports this assertion and showed that many more students asked questions in private when perhaps they were not embarrassed by having to perform in front of their peers.

In addition to comfort influencing the frequency of student questioning behavior, several comments of the students indicated that comfort also influenced the function of questions they would generate. As previous discussion pointed out, students' highly valued questions were directly associated with acquiring content or procedural information or confirming content or procedural information. It also appears that students felt the most comfortable asking these types of questions. Some students pointed out an exception concerning which types of questions were most valued. As Pam and Ricardo stated, if they did not feel the question was important they would not ask them in public. These students did not feel that procedural questions were highly valued by them or their teacher and therefore they would not ask them in public. As the discussion on norms showed, many students knew that their teacher did not value procedural questions and that they might be criticized for posing them since this was an indicator that they had not paid attention. Like Pam and Ricardo, rather than be embarrassed in front of their peers, they would choose to ask the teacher these questions in private or would ask a peer.

Based on the data presented on the frequency of student generated questions, it is clear that students felt more comfortable asking questions in private. While there were several students who also felt comfortable asking in front of the class, or for that matter in any situation, their numbers were few. Student comfort was not the only reason

however, since students also indicated that their familiarity with the content of a subject and/or their interest in the subject-matter also influenced their questioning behavior. Generally, students stated that if they knew the information and could do the work on their own, they would not ask their teacher a question. This relates to the finding that the major reason students asked questions was to obtain information which would allow them to complete a given task.

Student Interest

Another student-related characteristic which influenced questioning behavior was related to interest. Several students told me that even though they knew questions were important for knowledge acquisition, and they felt comfortable asking questions, they might not because they just were not interested in the topic. The comments of several students revealed that their frequency of questioning behavior was also influenced by what subject or activity was presented. Rodney added another dimension related to his lack of interest in a given topic. He said that he might not ask a question even if he needed information, "like when it's close to gym time or when we do a subject that I want to hurry up and get done with." This comment shows that student interest to move to the next activity or a lack of interest in the current subject or activity might override their desire to ask their questions,

even if the questions was viewed as important to them. Although I did not analyze the types or amount of questions student's asked in one subject as compared to another, it might be fair to hypothesize that the frequency and function of questions in subjects or activities of interest to the student would be affected. I would expect that students, if they felt comfortable and had a need or an interest to acquire information, would have asked more questions in subjects which they enjoyed.

Student Familiarity with Content

In addition to comfort and interest, the comments of the students revealed that their questioning behavior was also influenced by their level of familiarity with the content of the topic presented. The study by Miyake and Norman (1979) identified how familiarity with content or a task influences the frequency of student questioning behavior. It may appear obvious, but if students have the knowledge necessary to understand the content presented, or the procedures for completion of a task (depending on the goal of the instructional activity), then there is little need on the part of the student to pose a question. Statements made by several of Mrs. Powell's students confirm this assertion. Many of them made statements like Wendy's. When asked to tell me if there were situations in which she would not ask questions, she said she would not in

Mathematics if "I would know it pretty good and I wouldn't need any help on it."

As Miyake and Norman (1979) and others point out, when students are presented with familiar or simple materials their curiosity or need to know is reduced. This lack of curiosity or disparity between prior knowledge and new knowledge reduces the need for student questioning. In this manner, the students in Mrs. Powell's class supported this assertion by telling me that they did not generate questions if they knew the content and/or understand how to do a given task. During one interview session with Mrs. Powell, she briefly mentioned that she felt students asked more questions when they were unfamiliar with the content presented or the task assigned. When asked during a later interview to expand on her perception, she presented an experience that occurred during an English assignment. Students were asked, following a teacher-directed discussion, to write a poem about what is "old." After the independent writing assignment was given students had a lot of questions. According to Mrs. Powell this was "because they were insecure. They hadn't had a chance to [write about the concept of old]."

Mrs. Powell went on to explain why she felt this activity produced a lot of student questions. "Well a lot of the kids were caught off guard, they really were. We were talking about a time-line and we were using the word ancient and I said, 'Well, what is old? It's not in the book.' This

is my own thing that I want to bring out. So they were caught off guard. It just didn't relate. I saw a couple of them searching through the pages [of their English books] looking through like 'Is this something coming up, or is this something I can find the answers to in the next couple of pages?' Not many kids went to the dictionary. They all felt they knew the definition of old."

According to the perceptions of the teacher, the students felt they knew or were familiar with the word "old." When it came time to use their knowledge to write a poem many students were "caught off guard." Their questions indicated to their teacher that they did not know as much about this word as they had first believed. Just as the students indicated they would ask fewer questions when they were familiar with the subject-matter and or understood how to complete a task, Mrs. Powell's example reflects how the questioning behavior of the students increased when they were presented an activity with which they were unfamiliar.

CHAPTER SIX

CHARACTERISTICS OF THE TEACHER AND THE INFLUENCE OF INSTRUCTION

Overview

In this chapter I will continue with the presentation of the salient features of the classroom, including the presentation of the perspective of the participants, and a discussion of how specific features influenced student questioning behaviors. This chapter will focus on the characteristics associated with the classroom teacher.

The presentation of relevant data and related interpretive discussion will also include a section on the characteristics associated with instruction, as detailed in Chapter Four. Because instructional methods and materials come under the direction of the classroom teacher, this specific feature of the classroom is appropriate to address within this section.

Teacher Characteristics

As detailed in Chapter Two, the following teacher characteristics are considered to have the potential to influence the frequency and function of student questioning

behavior: (1) teacher attitude and value toward student questions, (2) teacher behaviors (including explicit and implicit communications to her students), and (3) the teacher-generated rules or procedures regulating student questioning. In this section I will detail the nature of these characteristics and discuss the role these salient features played in influencing student questioning behavior.

The Teacher's Attitudes/Values toward Student Questioning

In my attempt to understand how Mrs. Powell's attitude or value toward questioning influenced student questioning behavior I was particularly interested in the following: revealing the attitude of the classroom teacher, understanding how this attitude was explicitly and implicitly communicated to students, and discovering what affect these communications had on the generation of student questions.

During my interview sessions with Mrs. Powell, she made numerous comments revealing her philosophy regarding student questioning. For example, in my final interview session with Mrs. Powell (after observational evidence revealed that she directly solicited student questions) I asked her to tell me why she felt questioning was important. The following illustrates the value the teacher placed on student questioning. "Well it goes back to learning through communicating and reinforcing that communication in a positive way. That is what good questioning does and a

child will learn more regardless of his capabilities if he feels that communication is positive, good, and beneficial. I think, whatever the academic level of a child is we learn by doing. I think that's what's hard, to do everything on a computer. I think that reassurance and clarification, and that support, back and forth [between teacher and student] is important."

According to Mrs. Powell, the student-teacher interaction which results from a student's questions promotes positive inter-personal relations. In addition, Mrs. Powell stated that through these interactions the teacher can reassure and support the student's knowledge. Mrs. Powell attributed special importance to this personal payoff. In response to a follow-up interview question when I asked Mrs. Powell to tell me more about this issue of personal reassurance, she told me that this was important to the learning process. In order for learning to take place the teacher needs to give students this personal reassurance. She described this interaction as "the warm fuzzy."

In addition to the overall importance of questioning as a facilitator of learning, Mrs. Powell also stated that she enjoys and learns from the students' questions. In answer to my interview question asking her to tell me why student questions are important in the classroom, Mrs. Powell responded, "Student questions are often a reflection of my unclear directions, particularly at the beginning of a

lesson. They sometimes represent poor listening habits of the classroom. Sometimes it's because they've been absent and missed a foreground or introductory lesson that I've given and sometimes it's a curiosity beyond what you were normally covering in the class. Some of these marvelous questions extend the meaning or idea further than you can go with it. You didn't want to go too far with the varied interest level. You might want to do that on a special one-to-one or a small group. But it's kind of fun to get a question that initiates a new fact that you could go into. It's nice to have the children initiate rather than the teacher always initiating through a question. So these are the avenues I consider." Mrs. Powell went on to state during another interview that student questions also "give me an idea of their perception of the world, possibly their family interest."

In addition to revealing the teacher's attitude about student questioning, I was also interested in discovering if the students were aware of the teacher's attitudes about student questioning behavior. Specifically, I was interested in discovering if the students felt Mrs. Powell valued questioning. In order to find this out I asked students, "Do you think Mrs. Powell feels it's okay for you to ask questions?" Without exception the students told me yes, they felt Mrs. Powell wanted them to ask questions.

As students elaborated on their answer I discovered that they had definite ideas about why their teacher felt

questioning was important. Typical reasons stated by the students for why Mrs. Powell may think questioning was important can be seen from the following comments. Jerry told me it was important to ask questions "so you know the answer later." and Ronnie added that questions were important "so that she can help us and we learn a lot more." and Lupe told me "yeah" Mrs. Powell thinks questions were important to "learn more." These answers confirmed that students were aware that Mrs. Powell valued questions because they helped clarify their understanding and/or aided their learning. Jerry's answer was an indicator that he was aware that Mrs. Powell also liked questions because of the social interaction. Jerry told me that it was okay to ask questions "if you need help. Well really, if it's something like sports, which she likes, she likes [questions]. They're okay." From these answers it was apparent that at least Jerry was aware that all questions were not valued just for learning potential but also for the personal interaction they initiated.

Since Mrs. Powell told me that she valued questions because she learned from them, I decided to ask students to tell me what Mrs. Powell could learn from their questions. I discovered that they brought up the same issues identified by Mrs. Powell during our interview. For example, Ronnie's statement, "She might learn that I'm learning, that I'm doing pretty good" and Rodney's answer, "[A question] makes it easier for her to know who's thinking what," indicated

that they were aware their teacher used student questions to evaluate their learning. Barbara summed it up when she told me that Mrs. Powell might discover "that you're lacking some communication in one part of work or you don't understand it."

In short, the students' comments reflect that they were aware that Mrs. Powell felt it was good for them to ask questions. In addition, the students appeared to be aware that their teacher actually learned something from their questions. According to the students their teacher learned what they were thinking, if they were interested and learning, or if they needed additional information.

Teacher Behaviors Related to Student Questioning

In addition to the attitude or value held by the teacher with respect to questioning, I was interested in documenting what behaviors she felt she displayed in support of this attitude. As a result of my observations and remote audio taping I was able to document that Mrs. Powell communicated her attitude to students explicitly and implicitly through various behaviors which were incorporated throughout academic instructional activities. These specific teacher-related behaviors included: (1) the direct solicitation of questions during instruction and the provision of wait-time to allow for student response, (2) effective teacher response to student inquiries including modeling of effective questioning, (3) reduction of

authoritarian role, (4) accessibility of teacher to students during instructional practice activities, and 5) the establishment and enforcement of classroom norms governing student questioning behavior.

During one of my interview sessions with Mrs. Powell I asked to her tell me what she felt she did to facilitate or inhibit student questions. Mrs. Powell told me, "I ask for questions. You know sometimes it seems so trite. It's not just something that I say rhetorically, but gee, I never get much of a response."

As discussed in Chapter Two, the literature also indicates that the nature of the teacher's response to questions may have an influence on the generation of student questions. Given this possibility I asked Mrs. Powell to comment on the nature of her responses to student questions. In answer to my question, "How do you typically answer student questions?" Mrs. Powell responded, "Lots of times with an example, and that takes time. That's probably what Rodney doesn't like. 'Yes or no lady,' or 'knock off the other stuff.' I guess I tend to grab the chalk and go to the board. I try to make it visual. Quite often, it's very seldom just a short [answer]. I'll sometimes ask them a question. If it's in their reading book, read it and see if you can't find the answer on your own. I want the kids not to depend upon me for all the answers because they know they're not going to have somebody around to give all their answers."

In trying to reveal additional behaviors of how the teacher felt she promoted student questioning during academic instruction, I continued to probe the teacher using brief statements which were based on my own observations. For example, I told her I observed some behaviors (e.g., teaching activities, monitoring students during independent practice, location of teacher in the room, etc.) which to me seemed like they might have an impact on student questioning. Based on my prompting, Mrs. Powell was able to provide additional examples of the behaviors she perceived as having an influence on student questioning behavior. "I sit down in a student's seat to be just one of the group, one of the bunch. To not be so authoritarian. I very seldom sit at my desk and that's for a reason. It's just that I don't want to be known as a teacher at a desk. You don't teach at a desk. I want to be free to be effective wherever I am in the room. Whether I'm in the bathroom hollering out the door I want them to know I'm here. I've always operated that way."

Related to this teacher behavior of reducing role of authority, Mrs. Powell made several statements including "I'm close by and available. It helps me in discipline too." She seemed especially sensitive to making her students feel at ease as is evident in the following statement: "I think in my first five years I might have been a little more threatening...I put myself [as a child] in a threatened position...you just don't ask a stupid question

or whatever. The kids use to, as a group, go to the board and do long division problems in front of everybody. I look back and think how that's not good. That's not the kind of practice that they need. Now they do it at their desk and I walk around. I guess with age comes sensitivity. Without this [independent practice] you might shut [questions] off."

Mrs. Powell went on to relate her own experiences with respect to how the role of authoritarian teacher can impact students. "I put myself in the position of being threatened because of the fact that my dad was a superintendent. I don't think my Mom and Dad did [threaten], but my brother and I sure felt that. You just didn't ask a stupid question or whatever. Now I really think that affected my teaching for a good deal."

In addition to wanting to understand what Mrs. Powell felt she did to promote student questions, I was also interested in learning whether the students were aware of the fact that their teacher directly and indirectly asked for their questions. During the student interviews, I asked, "Does Mrs. Powell do or say anything that makes you feel it's okay to ask questions?" The following comments indicate a strong affirmative answer to this question. It was also clear from their comments that the students were aware of a variety of teacher behaviors, both explicit and implicit, designed to solicit student questions. Stacy M. told me "Yeah, she answers, she listens. She asks for questions directly." Pam stated that Mrs. Powell "stands in

front of the class and says, 'If you have any questions then please ask.'" Lupe was aware that "She asks you questions so it'll get to you asking her questions," and Ricardo agreed with Lupe's impression by telling me, "I just feel that way. She always asks for questions." According to these student comments they were aware that their teacher solicited questions from them. In addition, Lupe's comment reflects that he was aware of her more implicit behavior of encouraging student questions through her own modeling of questions to her students.

In order to find out how various types of responses by Mrs. Powell were perceived by the students, I asked them, "How does your teacher usually respond to your questions?" Student comments revealed that they believed Mrs. Powell's requests for questions were sincere because, quite simply, she listened and answered their questions. Jerry said, "She'd probably um, she'd probably help me with it and um, so I'd understand it but she wouldn't give me the answer. She'd just help me understand it." Stacy M stated that "She answers nice. Sometimes she tells to go back and read over and we can find our answer from there." James answer was consistent with the others: "Well, you know, if I go 'What's the answer to this?' she goes, 'Well, what do you think it is?' and she'd help us work it out or whatever. And eventually now you get it!" Barbara told me "It all depends on what I'm doing, she explains it to me, sort of gives me the answer, but she comes over and explains it to me and

tells me how to work the problem out to get the answer. She'll go 'What times what will give you this answer?' or something like that." These comments reveal that the students felt their teacher did give them useful responses to their questions, and they appreciated this type of response. It was also evident that the students were aware that Mrs. Powell was not supplying them with simple, direct answers, and yet they still found satisfaction in her responses to their questions.

I wanted to know more about how students felt about the way Mrs. Powell responded to their questions and so I asked them "Why do you think Mrs. Powell answers you this way?" Katrina told me, "If she just answers your question all the time you don't get any smarter." Jerry said, "So we learn something out of it," and James remarked, "Well if she just goes 'B' and you go Okay, what's this answer, B? Just keep going and people you give an inch and they'll take a mile." Ricardo's statement clearly captures the sentiment of the majority of students when he told me, "Well, if she just gives me the answer then I don't know how to do it, but if she explains it then I would know how."

I completed this line of inquiry by asking the students, "Do you think Mrs. Powell is helpful in answering your questions?" When asked this question, all students but Mauricio answered yes (although in a previous question he did indicate that he was aware that she did not directly answer questions because "She wants us to learn"). Comments

by Maria and Wendy typified the remarks made by the rest of the students interviewed. Maria told me that she did think Mrs. Powell's responses were helpful, and "she might even teach you an easier way to do something." Wendy said that Mrs. Powell "describes [the problem] and then gives clues."

During my observations I was able to document the various teacher-related behaviors and communications which were intended to facilitate student questioning. There was a great deal of observational evidence in support of the Mrs. Powell's solicitation of questions. In addition to her directly asking for students questions during large group lecture/discussions, demonstration activities and guided practice, Mrs. Powell made herself available to students by monitoring the students as well as providing personal contact during the students' independent practice sessions.

I observed, in every subject area and throughout all types of instructional activities (e.g., demonstration/ discussion, guided practice, and independent practice) Mrs. Powell directly asking students for questions. She would ask students, "Do you have any questions? If it isn't making sense, raise your hand and I'll be around to help you," or "If there are any questions ask them now. I want you to understand fully." These comments were typical of the direct solicitation posed by Mrs. Powell throughout my observations. The following examples illustrate ways in which Mrs. Powell indirectly solicited students questions. During a large group demonstration/discussion activity in

Math, a student asked a question. Mrs. Powell responded to the whole class, "Excuse me, I want you all to hear. Other questions are helpful to you too." After a student's presentation was cut short by the bell, Mrs. Powell stated, "Maybe we can review this article tomorrow so people will have a chance to ask questions."

What was of great interest were the number of ways that Mrs. Powell indirectly solicited or reinforced student questioning. The following examples provide a sample and range of this teacher behavior. During a large group discussion in Social Studies Ronnie asked Mrs. Powell a question which was not directly related to the topic under discussion. Mrs. Powell responded, "Remember your question. I'll remember it too. We don't have time to get into it now." The following day, at the beginning of Social Studies, Mrs. Powell redirected herself to Ronnie's question and gave him an answer. During another large group Social Studies discussion on bilingual countries, Mrs. Powell asked Pam a question. After Pam took what appeared to be several wild guesses in an attempt to answer the question, Mrs. Powell stated, "Say 'I don't know.' There's no big deal about saying I don't know. That's my signal that hey, here's something that we can help you out with."

During another group Social Studies discussion on dialects, accents, and different alphabets, Roddy asked, "In China, when they get a letter wrong, how can you tell?" Mrs. Powell told Roddey, "A good question. A very good

question." During independent Math practice, while Mrs. Powell was monitoring the students' work, Lupe told Mrs. Powell, "I don't get it." Mrs. Powell responded, "You need a little help. Once in a while we all do."

In reviewing my observational notes and audiotapes there were many examples of how Mrs. Powell responded to student-generated questions. The following examples focus on those responses identified by the teacher and students as being most typical and helpful as answers to the student-generated questions. After Mrs. Powell gave her students an independent writing assignment in English in which they were asked to write one verb for each letter of the alphabet. Following the presentation of directions, Mrs. Powell asked if anyone had any questions. Kim raised her hand and asked, "What if you can't think of a verb?" Mrs. Powell responded, "That's a good question. What could you do?" Kim then said, "I need a dictionary." During a Social Studies discussion about President Lincoln and his wife, Maria raised her hand and asked, "I thought Nancy Hanks was Lincoln's mother's name. How come her name isn't Lincoln?" Mrs. Powell responded, "Hanks was her maiden name, she was Nancy Hanks Lincoln." During a Math session, where the teacher was leading a guided practice activity, Stacy M asked, "Um, on the first one how come you put the decimal after the fourteen?" Mrs. Powell responded, "Because fourteen is a whole number. Supposing I wanted to sell my bike at a garage sale and I wanted to know how much it was

and I wanted to sell it for fourteen dollars. Now if I put [.14], it could be fourteen cents. I've just been real sloppy so if I wanted to get fourteen dollars for my old bike I would do that, [14.00]. The decimal point would be right there and I would add my zeros."

Another example of Mrs. Powell's response to student-generated questions occurred during an independent Math assignment. While Mrs. Powell was walking around monitoring students' work, Lupe told Mrs. Powell as she was by his desk "I don't get it." Mrs. Powell, looked at his math problem and asked Lupe, "How many times will 34 go into 78?" When Lupe did not respond, Mrs. Powell prompted him by asking, "How many times will 3 go into 7?" Lupe told her, "Two times." Mrs. Powell said, "Um huh, so that means 34 will go into 78 about that number of times so put it up there and multiply to see if it will fit." Lupe continued to work and Mrs. Powell went on to work with other students.

These student-teacher interchanges exemplify and support the students' perception that Mrs. Powell did not usually give them direct answers to their questions/requests for information. In addition, one can see that the responses by Mrs. Powell were intended to help the student to understand the task. In the situations presented above, when Mrs. Powell did indeed give a direct answer, she also went on to expand on the answer. Except for a few occasions when Mrs. Powell did respond to a procedural question (e.g., "What page?"), I did not observe any situation where a student's

question was responded to with a simple, direct answer without following up with a more detailed explanation.

Mrs. Powell also indicated that she promoted student questions by reducing her authoritarian role in the classroom. She said she did this, in part, by seating herself near the students (as opposed to at the teachers desk) and by walking among her students, "to be just one of the group." During the entire time I observed in the classroom, Mrs. Powell was never seated at her desk. On occasion, when she would sit down, it was at the round table located at the front of the room. When she was seated at this table it was usually to take morning or afternoon attendance or the lunch count. Usually Mrs. Powell stood at the front of the room (leading a discussion or guided practice activity) or monitored students' work by walking up and down the aisles between students' desks. Mrs. Powell sometimes took a seat at a student's desk to watch a student present to the rest of the class. This observational evidence supports the perception that Mrs. Powell did indeed attempt to make herself part of the group by physically placing herself near them.

Another behavior closely related to the desire of the teacher to deemphasize her authoritarian position was reflected in her statement that she tried to remain close by and available. Again, the observational data supports this perception. Mrs. Powell spent a large amount of time each day engaged in one-to-one monitoring of the students while

they were engaged in independent assignments. As part of the ITIP structure, this monitoring allowed the teacher to informally assess the progress of the students. It also allowed the teacher to have personal interactions with each child as she visited them at their seats. During my observations I noticed that Mrs. Powell stopped at the desk of students while they were working independently, even if they did not have a question. When I asked Mrs. Powell during an interview what she was doing during these visits she stated, "I comment about their papers, pat them on the back or kick 'em in the pants, point out mistakes, catch up with kids who have been absent, personal contact." During an interview with Mrs. Powell I asked her if she felt that she might be facilitating the students' generation of questions as she monitored their work. Mrs. Powell commented, "Without this walking around you might shut off [student questions]. I've had problems when I get too many questions. Then you might as well go back to the board and do guided practice. When you interview the students it will be quite interesting. Because of the frustration level some kids might say they don't get their questions answered as often. Like Bobby, whose frustration level is very, very low. If he can't get immediate help he will wad up his paper sometimes." The importance of this one-to-one contact was first noted in the presentation and discussion of the nature of student questioning. It was this private setting

which actually produced the greatest frequency of student generated questions.

During my observation and remote audiotaping I was able to record the comments made by Mrs Powell as she monitored students during independent work activities. The following exemplify the kinds of comments she made to students: "Lupe, Mrs. Veatch, [the school aide], tells me you're doing a good job in math. Keep it up!" "Bobby, how are you doing? Can I help?" "Maria, do you know that word? (illiterate) It's okay to say I don't know" "Any questions Joel?"

Classroom Norms/Rules

As a result of my attempt to understand the context of the classroom, I also sought to identify organizational structures which were under the control of the teacher and served to influence student questioning behavior. Specifically, I wanted to learn more about how students' questions were inhibited or facilitated by the norms or rules of the context. In using the term "norms" I refer to the various verbal and nonverbal communications which were explicitly or implicitly directed to the students by Mrs. Powell for the purpose of informing her students about specific classroom rules and procedures. The identification of such norms was made as a result of my inferring their existence based on direct observation and student-teacher interaction. Following this identification I sought

confirmation of the existence of these norms by conferring with the teacher and her students.

Based on the analysis of data, gathered through observation, remote audiotaping, and interview sessions with the students and the teacher, the following norms associated with questioning were identified: (1) there were appropriate times for students to ask questions, (2) there were appropriate questions to ask during instruction, and (3) there were appropriate ways for students to ask questions.

Appropriate Times for Student-Generated Questions

During my observations of various large group demonstration/discussion activities, Mrs. Powell often gave explicit instructions to students to hold their questions until she had finished discussing the topic and/or giving directions about an upcoming assignment. The form this direction took included such explicit, verbal statements as "I'll answer questions when I'm finished." Mrs. Powell also made indirect or more implicit statements in support of this rule governing questioning during academic instruction. During the teacher's instructions for an assignment in English, Ron asked, "Do we do each one once?" Mrs. Powell responded, "You'll see," and went on to finish giving the instructions. On another occasion, during the presentation of information about how to divide decimals, a student raised her hand. Mrs. Powell looked over to the student and told her "Later." The student put her hand down. After

Mrs. Powell finished her explanation she returned to the student and asked, "Now, did you have a question?"

During an interview session with Mrs. Powell she told me that students should ask questions during specific times of academic instruction. In response to my question, "When was it appropriate for students to ask questions?" Mrs. Powell stated, "Let me say my piece, and then if there is anything I haven't answered, then your questions will be welcomed. Yeah, otherwise you could be interrupted all day and I don't like them swinging their hands while I'm talking."

During the interviews with the students almost every student was able to articulate the existence of this norm, that there were appropriate times to ask questions. The following are examples of the responses to my interview questions asking students to identify what they believed to be classroom rules related to questioning. Katrina told me "Wait until she's done explaining would work better than while [she is] teaching." Jerry agreed with Katrina's perception and told me, "Don't ask when the teacher's talking...not during a lesson." James also said that "You're not supposed to ask questions when the teacher is talking and stuff. Wait 'til she gets it done."

Appropriate Student-Generated Questions

I observed both explicit and implicit communications from Mrs. Powell to her students regarding what types of

questions were permissible during academic instructional activities. Generally speaking, appropriate questions were considered inquiries which related directly to the topic or activity being presented. The following are examples of my observations of the teacher's direct responses to student questions which were off the main topic.

During the presentation of an independent Math assignment several students began to ask questions about junior high school (they had an upcoming visit scheduled to their new schools). Mrs. Powell said, "We'll answer those after. We need to get back to Math." In another situation, after Mrs. Powell just finished her instructions for an independent assignment in English, Ronnie asked a question, "Are we going to be able to fly our airplanes during gym today?" Mrs. Powell ignored his question and then asked, "Does anyone have a question about their assignment?" Based on these observations student questions were explicitly and implicitly discouraged by Mrs. Powell when they were not directly task related.

During my observations I also noticed that requests for procedural information were often ignored by the teacher. Sometimes these questions were acknowledged by Mrs. Powell but not answered directly. The following are examples of Mrs. Powell's reactions or responses to these types of questions. After Mrs. Powell gave the directions for an English assignment, Roddy asked, "When is this due?" Mrs. Powell responded, "What did I say?" During this same

activity Rick asked, "How do we list them?" Mrs. Powell responded, "I gave you two ways." After Mrs. Powell gave the directions for a Mathematics assignment Bobby asked, "What are we doing?" Mrs. Powell told Bobby, "Think about what you are suppose to do." Several students called out "What page?" directly following Mrs. Powell's direction to turn to page 137 in their Mathematics book. Mrs. Powell responded, "I want to see if you can remember this yourself since we just went over it before, and don't ask your neighbor, figure it out for yourself."

In each of these situations Mrs. Powell acknowledged the student but would not directly answer his or her question. At other times Mrs. Powell would completely ignore these questions. On numerous occasions, during a variety of academic subjects, students would raise their hands and ask questions about the assignment (e.g., "What page are we on?" "Do we do all of the problems?" "Do we turn this is at the end of the day?") and Mrs. Powell totally ignored the students' requests for information.

As can be seen from these examples, Mrs. Powell would often not directly answer questions which were asked for the purpose of obtaining information she just provided. At times she chose to ignore the question entirely, at other times she redirected the student and reinforced the fact that the information was provided and it was his/her responsibility to find it out since it would not be repeated. Although Mrs. Powell did not explicitly communicate this as a rule

(i.e., she did not tell them "I will not answer your questions regarding procedures"), the message to the students was clear that they had a responsibility to pay attention and that procedural information was not repeated by the teacher.

During one interview session with the teacher I asked her about off-task questions. Based on classroom observations I told her that when a student asked the teacher a question off the topic she often told them, "We will come back to that." Mrs. Powell replied, "Yeah, that's touchy sometimes depending upon the individual, especially if they don't accept that. I make them stick to the subject. It's got to be Math during Math and then between classes if they want to talk about their sister's sandwich or whatever...that's the basic structure." During this same interview Mrs. Powell told me, "Sometimes I refuse to answer a question on purpose. That is a technique I use." As presented in my discussion of the various functions of the students' questions, Mrs. Powell viewed procedural questions as exasperating, stating "I want them to know that [a procedural question] turns me off."

During my interviews with the students I asked them an open-ended question which was designed to reveal if they were aware of how their teacher responded to their questions when the question was not directly related to the subject-matter. This question was used as a prompt to elicit more specific knowledge about their understanding of the norms

governing student questioning. Only two students were able to give me specific information regarding this issue. Jerry told me, "Sometimes she'll answer a question if she's at my desk [during independent work], but then she gets right back to Math." James replied, "She'll usually ignore you."

When I asked students more directly about how Mrs. Powell responded to questions that related to procedures or directions, students told me that it was permissible to ask questions about directions only "after the teacher is done talking." Students were also aware they were not supposed to ask too many procedural questions. As Stacy M. explained to me, "Mrs. Powell would get mad [about procedural questions] because I did not listen carefully." Ronnie also revealed his awareness of Mrs. Powell's dislike for procedural questions by telling me that he was expected to "listen to instructions the first time." Joel's answer confirms his awareness of this rule also. When I asked him about rules in general he told me, "It's not okay to ask for directions after she's already given them 'cause she usually says you weren't paying attention."

Appropriate Ways to Pose Questions

The third norm identified during my observations was that there were appropriate ways to ask questions during academic instruction. There were numerous examples of the existence of this norm being enforced by Mrs. Powell. The most explicit use of this norm related to students having to

remain in their seat and raise their hand as a signal to tell the teacher they had a question. During presentation of information by Mrs. Powell a student called out a question. Mrs. Powell stated, "If we have something to say, we use our signal, raise our hand." Another time a student got up out of his seat to approach the teacher. As he approached asking his question, Mrs. Powell told him, "I'm not going to answer you unless you signal from your seat."

In addition to these explicit verbal communications to students, Mrs. Powell also implicitly communicated this norm using nonverbal signals. During academic instruction a student called out a question. Mrs. Powell looked at the student and raised her hand (modeling the correct signal) without saying anything. The student immediately raised her hand and Mrs. Powell called on her. On another occasion a student left his seat to approach the teacher during independent work. Mrs. Powell caught the student's eye as he was on his way up to her and signaled with her finger (in a gesture pointing back to his seat) for the student to return to his seat. Once seated the student then raised his hand and Mrs. Powell went over to his desk.

The rule that students must signal with a raised hand while in their seats was in effect during all academic instructional settings, that is, during large group activities and while students were engaged in individual assignments at their seat. The following examples of this were observed during independent assignments. Immediately

following Mrs. Powell's instructions for the upcoming assignment, she stated, "Raise your hand if you have a question and I will be around to help." During an individual assignment activity, while Mrs. Powell was monitoring students, Ronnie approached Mrs. Powell while she was at another student's desk. Mrs. Powell told Ronnie, "When you have a question raise your hand and I will answer it at your seat. I'm helping Fred now so don't let your questions dribble around your desk."

Mrs. Powell also told me that there were appropriate ways for her students to ask questions. "Well, the signal is important, a raised hand. The hand gives me a signal." Mrs. Powell's students were aware of this norm governing questioning. In response to asking the students to tell what were the rules governing questioning, many of them told me that it was expected that they stay in their seat and raise their hand. Ronnie told me that one rule associated with generating questions was "Raise your hand. If you ever shout it out you have to go out in the hallway." Rick told me when he wanted to ask a question he would "Raise my hand and she'd come over and ask me what's the problem." Barbara said that "You're suppose to raise your hand and don't yell out." Ricardo was also very aware of this norm and he told me that although he did, on occasions, get out of his seat to ask a question, "that's a rule, not to get out of your seat just to ask a question."

Variations of Classroom Rules

During my observations I did notice that there were exceptions to the enforcement of these norms governing student questioning. The following examples illustrate the nature of these exceptions. During a Social Studies lesson Lupe called out without a raised hand, "What page?" Rather than ignoring Lupe, Mrs. Powell directly responded to his request for procedural information by stating, "I haven't given it yet Lupe." Directly following the teacher's directions about an English assignment, Jerry called out with his hand raised, "Do we put out name on the paper?" In previous situations Mrs. Powell may have redirected Jerry's question to make him responsible for remembering but this time she answered him, "Yes." On another occasion, while the students were working on a Mathematics assignment independently at their seats, Jerry got up out of his seat to ask Mrs. Powell a question. Instead of sending him back to raise his hand, Mrs. Powell answered Jerry's question. During a large group English guided practice activity Ronnie called out a question. Mrs. Powell responded, "You are talking out of turn." She then continued, however, to give him a direct answer: "Listen carefully, I'll go over it one more time."

During my interviews with Mrs. Powell she acknowledged that neither she nor her students follow all of the rules or customs in all situations. Mrs. Powell stated that Ron frequently asked procedural questions. While she stated

that she did ignore many of these, she admitted that it was difficult to ignore him because "He'll word it in such a way as to not incur wrath. He'll word it so it doesn't appear to his peers that he's been out in left field. You can't ignore that."

Mrs. Powell stated that Lupe also broke the rule regarding raising his hand as he usually called out his question. Mrs. Powell said she believed Lupe's immediate desire to know was sincere, and so she would usually answer his questions even if he did call out. When asked in an interview if she felt she responded differently to students Mrs. Powell replied, "Oh yeah. I guess maybe I'm prejudiced. If the kid is trying I don't care what their academic level is, my heart goes out to a Lupe or whatever and I'll probably spend more time with them because I feel they need it more. With Brett I will say to Brett, reread that. Lupe, I can't. It's pointless. He needs a different type [of response]. I guess it's the seriousness, the dedication of the student to the material. As the years progress I get to know who's sincere about their questions. That's why I like the self-contained classroom, because you get to know the child and you can answer the child in a more meaningful way."

I also asked the students if they felt there were exceptions to the rules. The following comments reflect their awareness of certain exceptions. Joel told me "No hands when just having a discussion. Out of my seat is okay

when Mrs. Powell is around my desk." Rick said that asking a question "Out of my seat is okay if it's an emergency." Kim admitted, "Sometimes getting out of my seat is alright 'cause I feel Mrs. Powell doesn't see me."

How Teacher Characteristics Influenced Student Questioning

In the preceeding presentation I provided evidence related to Mrs. Powell's attitudes and values toward questioning and her behaviors which served to communicated these attitudes and values; including the norms which were implemented to regulate student questioning. Although there was ample evidence that Mrs. Powell valued questions and intentionally utilized various explicit and implicit behaviors to communicate her positive attitude toward student inquiry, I do not know for certain what affect this attitude or related behaviors, such as direct solicitation of questions, had on the function or frequency of student questioning. I do know, however, that this solicitation was intentional by the teacher and was perceived by the students as an indicator that their teacher valued questions. The following discussion will highlight the evidence which suggests a pattern of influence of how specific teacher related characteristics influenced the nature of student-generated questions.

Teacher Attitudes

It is clear that Mrs. Powell sought to establish an atmosphere of inquiry in her classroom. She told me that she felt students learned by doing and student questioning was an effective form of active participation in the learning process. She felt that student learning was enhanced as a result of this involvement and that she was able to provide information, clarify their understanding, and give reassurance as a result of the students' inquiries. Furthermore, Mrs. Powell stated that she also benefitted from student questions as they allowed her to learn about the students' interests and their level of understanding, and they gave her insight into her own teaching. Based on the evidence I would say that Mrs. Powell's attitude and value served to promote the frequency of student questioning, particularly student questions which were requests for content and/or confirmation of clarification of content.

Teacher Behaviors

In addition to the teacher's attitude toward questioning, Blank and Covington (1965) and Carin and Sund (1971) have stated that teachers need to provide students with the opportunity to pose questions if they wish to establish an atmosphere of inquiry. Associated with this opportunity to question, Goody (1978) and Rowe (1978) pointed out that teachers also need to provide sufficient

wait-time for students to formulate their questions. As revealed by the relevant data, Mrs. Powell contributed to this establishment of an atmosphere of inquiry as a result of her direct solicitation of student questions and the allotment of adequate wait-time which allowed her students to generate questions. Mrs. Powell also took the opportunity to point out to her students when one of their peers generated an effective question. As Marksberry (1979) pointed out, this modeling and instruction in effective questioning communicates a positive teacher attitude and promotes student questioning behavior. The teacher's explicit and implicit solicitation of questions and adequate wait-time also served to promote the frequency of student-generated questions.

Along with these behaviors, the literature states that the teacher's response to students' questions can also affect the frequency of their generation. According to Helfeldt & Lalik (1976) and Mehan (1979), issues such as teacher enthusiasm to student questions and equity of response help the teacher communicate to her students that their questions are valued. As revealed by my observations and the students' own perceptions, Mrs. Powell's responses to students' queries were sprinkled with honest enthusiasm. With the exception of implementing norms, which will be discussed, Mrs. Powell responded to all students in an equitable manner.

In addition, Mrs. Powell also promoted students' questions as a result of the content of her response. As the evidence suggests, Mrs. Powell responded to students' questions in ways that went beyond a simple answer to their questions. According to Mrs. Powell, she was attempting to help students understand what they were doing, not just give them the answer. Through these student-teacher interactions Mrs. Powell sought to provide the students with support and reinforcement as well as provide them with strategies for learning by asking appropriate questions which would make them think and problem solve on their own. Mrs. Powell's responses were well received by her students, as was documented during my interviews with them. As a result of this behavior, the teacher was able to influence the frequency of student questioning behavior.

Mishler (1975 a,b) described a variety of behaviors, such as a positive teacher attitude and provision of the opportunity to question, as the status awarded to the students by the teacher. Inherent in this awarding of status is the notion that students have the right of equal access for communication. In a classroom where students are granted equal status with the teacher they are able to have reasonably free communications with the teacher. This manifests itself in the student being able to pose relevant and appropriate questions as they deem necessary. Through the use of this equal status, teachers reduce their role of authority in the classroom and allow students more comfort

to question. Mrs. Powell was very aware of this need to reduce her role of authority in the classroom and this was evident in various ways. In addition to her awarding her students the status to question during various instructional activities, Mrs. Powell told me that she tried to be accessible to students. She felt that her students needed to know that she was available, even if she was in the bathroom. Mrs. Powell felt that by making herself available to student's questions and then responding in a non-threatening manner she was reducing her authoritarian role and acting to promote student's questioning.

Classroom Norms/Rules

Mehan (1979), and Wilkinson & Calculator (1982) have stated that in order for children to be effective questioners, they must have a clear understanding of the organizational structures which exist within their classroom. The awareness and understanding of the rules and procedures associated with student questioning assist students in knowing such things as when it is and is not appropriate for them to pose questions. Mrs. Powell utilized various explicit and implicit messages to her students to let them know that there were appropriate and inappropriate times for them to ask questions. As a result of these communications she directly influenced the frequency of the generation of students' questions. By providing these communications to her students, Mrs. Powell

was establishing a structure within the environment of her classroom which would facilitate student questioning while at the same time informing students that there was an appropriate time and place for them to pose their questions.

The way in which this norm or rule promoted student questions was to allow them clarity and predictability about when their questions would be accepted by their teacher. Because Mrs. Powell enforced this rule with some standard of consistency, students could feel comfortable knowing that if questions arose during instruction, they would have the opportunity to present their inquiry to their teacher in the appropriate time, that is, following her presentation of information.

Mrs. Powell's enforcement of this rule also served to inhibit questions. If students posed questions while Mrs. Powell was talking she would issue a verbal or nonverbal directive to wait until she was finished. If students interrupted another students to ask their questions their questions were often ignored or they were told to be polite and listen and ask again later. Again, the consistency with which Mrs. Powell enforced this rule provided clarity and predictability to the students.

Mrs. Powell also communicated to her students that there were appropriate questions to ask during academic instruction. Generally, Mrs. Powell promoted questions which were directly related to the topic or activity presented. In this manner, she directed the function of

student questions toward task-related questions and away from off-task questions. This norm, which governed the function of student questions, was directed at promoting student questions which were requests for content information or requests for confirmation of content. However, Mrs. Powell did not promote all content-related questions. When students posed on-task, content-related questions which revealed that they had not paid careful attention, Mrs. Powell would redirect the question back to the student to reinforce the idea that they should pay more careful attention.

Students also generated off-task questions and questions requesting procedural information during academic instructional activities. These requests were often responded to by Mrs. Powell in a negative manner. For example, if a student asked a question which was a request for procedural information, Mrs. Powell would often tell them to try to remember what the directions were. If a student asked an off-task question, Mrs. Powell was likely to ignore it or ask the student what the question had to do with the topic under discussion. In this way, Mrs. Powell attempted to influence the functions of students' questions and to direct them toward on-task content related information.

The third norm documented was that there were appropriate ways for students to pose their questions. This rule had the strongest implication for how students were to

signal their teacher that they had a question and, as a result, had an impact on the frequency of the generation of student questions. Mrs. Powell was very clear that students' were to raise their hands and remain in their seats if they wished to pose a question. If students were working on independent assignments, and she was in close proximity to their seats, they were allowed to ask their question without a raised had but they were expected to remain seated and not interrupt her if she was engaged in conversation with another student at his/her seat. Again, like the other rules, this one was both explicitly and implicitly reinforced by the teacher.

Through the enforcement of this rule, Mrs. Powell promoted student questions which were consistent with the norm and sought to inhibit questions which were not in keeping with the rules. Of all of the norms observed and enforced, this last one was the one in which I noted the most exceptions tolerated by the teacher. Students often called out their questions during demonstration/discussion activities and got out of their seats during independent assignments. Despite this deviation from the norm, Mrs. Powell would often answer their questions. The overriding norm governing this exception seemed to be that the student did not interrupt the teacher or another student in order to pose his/her question. Mrs. Powell stated that if she felt the student was sincere about his/her question, then she

would be more willing to bend the rules to provide the information for the student.

While a positive teacher attitude and related behaviors were necessary prerequisites for the promotion of student-generated questions, they alone were not sufficient for facilitating this behavior. For example, Mrs. Powell made a comment during an interview that written activities, done during guided practice or independently played a critical role in facilitate student questions. When I asked her what specific aspects of this activity she thought facilitated student questions, Mrs. Powell responded, "If you're getting them to write down a list of ideas rather than a discussion, that seems to go much better. Better than if you are doing a discussion and not writing anything down." When I followed this up by asking her if she felt it was accurate to say that the subject isn't as important as the task they are doing, Mrs. Powell replied, "Yes I would definitely say that. I've done that (incorporate written activities) in just about every subject area over a period of years."

During another interview with Mrs. Powell, when I asked her to explain what she felt she did to facilitate or inhibit student questions, she mentioned that she provided specific types of instructional practice. Since instructional activities come under the direction of the teacher, it is necessary to reexamine this feature of the classroom, first introduced in Chapter Four.

The Influence of Instruction

There are various studies which help shed light on how the frequency and function of student questioning may be influenced by various classroom features related to instruction. Specifically, previous research has focused on characteristics associated with instructional methods, materials, purpose and grouping of students.

Methods and Materials

Research focusing on the role of instructional practice, which relates most directly to methods and materials, suggests that students ask more questions when they are directly involved with learning through the manipulation of materials or objects versus observation and limited interaction as occurs during demonstration-type instruction. Torrance (1970b) and Robinson and Rackstraw (1975) found that students who were actively involved with a lesson generated a higher frequency of questions than those more passively involved. Active involvement also produced more causally oriented questions by students ("Why is that green?") than did demonstration/discussion activities. Students involved in the more passive instruction asked more concrete, descriptive questions ("Is that green?").

Other related literature (Marksberry, 1979; Rowe, 1978; Susskind, 1979) on this topic asserts that as students become more actively engaged with the content presented by a teacher they become more attentive and their curiosity is heightened. As a result, students are more motivated to

exercise their curiosity by asking questions. The underlying premise, as presented in this body of literature, is that student questioning increases as students actively participate in learning. In addition, the function of their questions moves from a need for descriptive concrete information, as when presented with verbal descriptions of an object, to more causal inquiries, as when presented with and allowed to manipulate or become involve with the actual object.

As I observed within Mrs. Powell's classroom it was apparent that there were certain instructional methods and materials which promoted more student action than other methods. For example, during demonstration/discussion the teacher was the primary actor and students were usually expected to listen and attend to her presentation. During demonstration/discussion activities students and had little direct involvement with the activity, other than to respond to the teacher's questions. In contrast, I observed that independent written assignments, such as answering in writing specific math problems, required more student involvement. Guided practice activities, which usually occurred between demonstration/discussion and independent practice, allowed students more involvement than straight demonstration/discussion but less than independent practice. In other words there was a progression from the teacher-centered activity of demonstration/discussion to the more

student-oriented activity of guided practice to the most student-centered activity of independent practice.

As Mrs. Powell's students became more directly involved in the actual learning process, the frequency of their questions increased. As previously reported in Chapter Four, students asked the greatest number of questions during written independent practice activities and the least amount during demonstration/discussion. Based on these data it was clear that the frequency of student questioning was influenced by the type of instructional methods and related materials employed by the teacher.

During my observations in Mrs. Powell's classroom students did not ask causal-related questions during any of the various instructional methods employed by the teacher. Because of this I can not compare findings with that of the literature which addresses the relationship between instructional methods and function of student question. However, I did document that students asked all types of questions (i.e., requests for content, procedure, confirmation, and attention) during guided practice and independent work. As noted, very few of any type of student questions were generated during demonstration/discussion.

I also discovered that students asked the greatest amount of questions at the beginning of guided practice and independent activities. Although student questioning was present throughout both types of instructional practice, the greatest concentration occurred within the first five to ten

minutes of practice. My interpretation of this phenomenon is that as students became more actively involved in the learning process, through having to actually carry out an assignment as was required during guided and independent practice, their need for information (e.g., request for content, request for confirmation, or procedural information) was greater than at any other time. During demonstration/discussion students were not actually being asked to perform but rather the teacher presented information, asked questions, or demonstrated a task. The primary role for the student during these activities was to pay attention. As students became more responsible for applying the content and competing a task, through guided practice or independent written work, it was more critical for them to understand the procedures associated with the successful completion of the task.

I believe it was this "need to know" on the part of the student which accounts for the higher frequency of student questioning during these times. In order for students to successfully complete the task, they had to be sure they understood what they were expected to do. This conclusion is consistent with the position taken by Miyake & Norman (1979). These authors believe that as learners realize what they know and do not know they become aware of their need for additional information. This disparity between known and unknown information creates an ideal situation for the generation of a question.

The variation among students in generating questions during guided or independent practice (i.e., the range of within 5-10 minutes) may be explained by the variation among students in the time it took them to engage in the task itself. For example, after Mrs. Powell assigned a Math problem for students to solve on their own during guided practice, I noticed that some students would begin work right away while others would spend several minutes locating a piece of paper and/or a pencil. Until the student actually was ready to engage in the work, they had little idea if they needed information.

Instructional Purpose

In addition to my interest in discovering how methods of instruction and related materials influenced the nature of student-generated questions, I also wished to understand how the purpose of the instruction, as communicated by the teacher, affected this behavior. The work of Doyle (1982) and Rogoff (1982) suggests that there may be a strong relationship between the goal of instruction and the frequency and function of student-generated questions. The major issues addressed by these authors include the match between the goal of the task, as intended by the teacher and perceived by the student, and the students' desire to be accountable for this goal or their productivity. Rogoff proposed that the successful match between teacher intentions and student perceptions related to student

motivation. She stated that as students become more clear about the purpose of instruction they will be more likely to ask questions, questions which reflect functions related to this goal.

According to Mrs. Powell, the purpose of instruction was essentially task related. That is, regardless of the specific content presented, the teacher wanted students to be able to apply their knowledge to a given task. This desire for successful task completion was the common element which drove all of her instructional activities: (demonstration/discussion, guided practice, and independent practice). Upon further reflection, it seems clear that the instructional model employed by the teacher (i.e., ITIP) was implemented for the purpose of providing students with sufficient information, demonstration, and guided practice to allow them to successfully complete a given independent assignment.

During one of our interview sessions I asked Mrs. Powell to rank order, by subject area, when she believed students generated the greatest number of questions. Mrs. Powell responded, "Math seems to be the one they ask questions in. Math is a very high question area, very specific questions." I then asked Mrs. Powell why she believed students asked the most questions in Math. Mrs. Powell replied, "[Science and Mathematics] are the most exacting. They're not creative. They are strict disciplines. In Mathematics and Science they (the students)

know there's a right and wrong answer." In terms of questions generated during other subject areas Mrs. Powell stated, "I tend to be the one who asks the questions in Social Studies...In English they don't ask questions." Perhaps it was in the subject area of Mathematics where the pupose of the task was most clear to students and they were most able to evaluate if they were successfully meeting this purpose. For this reason (i.e., the focus on attaining correct answers), students were influenced to pose questions.

Evidence from my study clarifies that students were aware that the main purpose of their instruction was related to task completion. This position is support by the evidence related to characteristics of student questioning and students' attitude toward questioning. As these data reveal, students asked four main types of questions: requests for content, requests for confirmation, requests for procedural information, and attention-getting. Except for those questions posed for the purpose of obtaining teacher or peer attention, the major function underlying student-generated questions was directly related to the acquisition of information which would allow them to successfully complete a required instructional activity. This interpretation was supported by the teacher and her students during interviews, in which they revealed their own perceptions of why it was important to ask questions during academic instructional activities. Along with the explicit

comment from Mrs. Powell that "the task is their goal," student statements revealed that they asked questions so they could get correct answers, avoid doing something wrong, and/or understand how to do problems.

In addition to confirming the general purpose underlying student-generated questions, these comments by the students suggest that they felt accountable for the information and had a strong desire to perform satisfactorily on their assignments. As suggested by Doyle (1982), this accountability on the part of students did have an effect on the types of questions generated by the students during academic instructional activities. Specifically, the goal of instruction was to understand and complete a given task. This goal resulted in the promotion of student-generated questions which served the primary function of promoting this goal (i.e., requests for content or procedural information, and requests for confirmation of information).

Student Grouping

Teaching methods, instructional materials, and goals were not the only characteristics related to instruction which had an affect on the frequency of student-generated questions. Student grouping during various academic activities also had an impact on this behavior. An early study by Smith, in 1933, first directed attention to the role of student grouping and frequency of student-generated

questions. Later, Torrance's study (1970a) confirmed Smith's finding that large group instructional settings do not yield high numbers of student questions. These authors asserted that one possible reason for this is that large group instructional settings reduce the opportunity for direct student-teacher interaction. When students are part of a large group (i.e., defined by Torrance as six or more), they do not have the ease of accessability to their teacher. This reduced physical and verbal interaction proximity to the teacher serves to inhibit the student's generation of questions.

As these data on frequency of student-generated questions clearly reveal, students asked the greatest number of questions during independent practice. It was during these times, while students worked at their seats and their teacher was physically accessible as she monitored their work that Mrs. Powell was available for private, verbal engagement by students. This was the setting in which students had the greatest opportunity to pose their questions. As I discussed previously in the section on teacher accessibility, this grouping situation served to promote the generation of student questions.

Summary

In this chapter I presented and discussed a variety of characteristics associated with the classroom teacher. Based on this evidence it is clear that Mrs. Powell held a

positive attitude toward "appropriate" student questioning (i.e., content-related inquiries) and she utilized a variety of explicit and implicit behaviors to communicate this position to her students. Some of these behaviors were directly related to the way she asked and responded to students' questions while other behaviors related more directly to her use of various instructional methods and materials. In addition, there were various classroom rules, developed and enforced by Mrs. Powell, which served to reinforce her attitude toward student questioning behavior.

CHAPTER SEVEN

SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS,

Overview

This research was undertaken as a beginning line of inquiry which would add relevant knowledge to our current understanding of student questioning behavior. As a result of conducting this study, new information has been acquired regarding: (1) The influence of the context on the nature of student questioning behavior, (2) the relationship between the nature of student questioning and the goal of instruction, and (3) the frequency of student questioning during academic instructional activities. In this final chapter I will briefly summarize the findings of the research, address how the findings of this study contribute to current theory and inform classroom practices, and discuss my recommendations for future research on student questioning behavior.

Summary of Findings

In Chapters Four, Five, and Six I presented and discussed the research findings from a rather simplistic perspective which assumes that individual features within Mrs. Powell's classroom operated as independent entities to

influence student behavior. While this perspective is useful in guiding the presentation of relevant data, it does not capture the complexity of the environment and, as a result, does not provide a complete or accurate account of how student questioning behavior was influenced by the context in which it occurred. In order to fully understand how student questioning behavior was influenced by the context, it is necessary to consider how individual classroom features may have operated interactively, not independently, to influence the frequency and function of student-generated questions. In the following pages I will discuss the research findings from this "interactive" perspective which assumes that features within the context (i.e., characteristics associated with the teacher, instruction, and the students) operated together to influence the frequency and function of student questioning behavior. The nature of this interactive perspective can be most clearly understood by reexamining the salient features of the context in which the greatest frequency of student-generated questions occurred: independent written work in Mathematics.

As previously detailed, Mrs. Powell held a positive attitude toward student questioning and most highly valued student questions which were closely associated with successful task completion (e.g., requests for content or procedural information and requests for confirmation of content or procedural information). Although there were

minor exceptions and variations in these patterns, as Mrs. Powell modified her behavior to best meet the individual needs of her students, I was able to document that Mrs. Powell: (1) directly and indirectly solicited student questions, (2) remained accessible to her students during instruction, (3) took special efforts to reduce her role of authority, (4) gave responses to her students' questions which were well received, and (5) established and enforced classroom norms which promoted specific types of student questioning.

These particular patterns of teacher-related behavior did not exist in isolation of each other but rather operated together in a variety of combinations to communicate and support Mrs. Powell's attitude and value toward student questioning. In addition, Mrs. Powell intentionally selected instructional methods, materials, and student groupings which would facilitate the generation of student questions, particularly questions related to successful task completion.

Within the instructional activity of independent written work in Mathematics, students were required to be directly and actively engaged. Mrs. Powell provided explicit and implicit communications to her students that the goal of this activity was for them to successfully apply their knowledge, and that this goal would be evaluated by their performance on the given task. As I have documented previously, students were clearly aware of this goal.

In addition to the instructional method and materials utilized within this setting, the actual grouping of students served to support the generation of students' questions. As a result of Mrs. Powell's monitoring of the student's progress during independent instructional activities, she remained accessible to them and provided ample opportunity, within a comfortable, one-on-one setting, for them to pose their questions. On occasion, Mrs. Powell would also directly ask students if they had any questions as she stopped at their desk.

Based on this evidence, it is clear that Mrs. Powell made specific instructional decisions which, in turn, were intended to promoted student-generated questions which would facilitate successful task completion. The teacher's decisions and resulting actions may have also had an influence on the development of the students' attitude and value toward questioning. According to the students' comments obtained during my interviews, they also had a positive attitude toward questioning and valued this behavior as a strategy for acquiring information and for assistance in their successful academic performance.

Students also possessed the necessary cognitive, metacognitive, linguistic, and sociolinguistic skills which enabled them to pose effective questions (i.e., questions which would result in the acquisition of information or action). Students' indicated that their feelings of comfort within particular instructional settings had an influence on

whether they would pose a question. They also told me that their level of familiarity with the required task and their interest in the instructional activity combined with other student-related features to influence their questioning behavior.

For example, within the instructional setting of independent written assignments in Mathematics, students were required to come to activities with a certain amount of prior knowledge. This level of cognition served to facilitate their understanding of new information. As students became actively engaged with the new material, through their written assignments, they became aware of what they knew and what they did not know. It was this metacognitive process (i.e., awareness of one's own knowledge) which enabled them to clearly identify how much and what type of information they would need in order to successfully complete the task. In addition, while some students said they felt comfortable asking questions in any setting, private or public, the majority of students stated that they felt more comfortable asking questions in private, when their peers would not be able to overhear. During my interviews several students stated that they were not likely to ask a question, within any instructional setting, if they were not particularly interested in the academic task at hand (i.e., they may want to get the task over with so as to go on to a more interesting activity, such as gym) and/or

they were very familiar with the task and had no need to acquire additional information.

The findings of this study suggest that not only did students need to possess necessary prerequisite skills (e.g., cognitive, metacognitive, linguistic, and socio-linguistic), but they also had to feel comfortable, as well as to have an interest in the task and a need to question (i.e., not too familiar with the material) before they would pose a question to their teacher. It was this interaction among the student-related characteristics which influenced the frequency and function of their questions.

As a result of reexamining the relevant data it is apparent that there are complex interactions which occur among all of the features found within classrooms. The evidence supports the assertion that the teacher's attitude and value toward student questioning provided a foundation for the promotion of students' questions. In addition, the teacher's attitude and behaviors most likely contributed toward the development of her students' attitude and value toward questioning. This influence resulted from the teacher's explicit and implicit behaviors as well as from her development and implementation of instructional practices. The students also brought to the instructional situation their own personal preferences with respect to comfort as well as individual levels of interest in and familiarity with the task. These preferences and levels of interest were also subject to the influence of the classroom

teacher as she manipulated various instructional methods, materials, and the grouping of her students.

The Implications of the Findings to Current Theory

How Questioning Is Influenced by Context

Previous research studies on student questioning have utilized methods of data collection and analysis which reflect a rather simplistic perspective of how human behavior is influenced by context. These studies, with few exceptions, have documented how individual features within a given context operated independently to affect student questioning. This simplistic perspective adopted by this body of research has had a major impact on how we think about student questioning behavior.

My research provides evidence which supports a more complex perspective that there are a variety of features within a given context which operate interactively to affect student questioning behavior. As a result of comparing how each of these perspectives can be applied to practice, it is clear how the interactive perspective may change the way we think about the relationship between student questioning behavior and the context in which it occurs.

As I have detailed in Chapter Two, the literature is filled with a variety of suggestions aimed at promoting effective student questioning. Most all of these suggestions, however, are based on research studies which have failed to consider the complexity of learning

environments. One example of a strategy proposed in the literature is to promote student questioning through the increase use of "student-centered" instructional activities. These are activities which require students to be activity involved in learning. While this suggestion is based on sound principles supported by a variety of research, including my own, it is too simplistic to be useful. While instructional materials do appear to play a role in influencing student questioning behavior, simply increasing student involvement in learning is not sufficient to change student behavior. If the teacher's explicit and implicit behaviors do not also facilitate questioning (e.g. remaining accessible to students, providing effective responses, etc.), and the students do not value or feel comfortable generating questions (or they are not interested in the subject, or have a need to question), there will, in all likelihood, be little change in student questioning behavior, despite the use of student-centered learning activities. In order for any strategies to be successful in the promotion of effective student questioning behavior, they must reflect an integrated approach, which is directed at modifying a variety of salient features within the classroom.

The Relationship between Questions and Instructional Goal

During the course of my study of Mrs. Powell's classroom I discovered that the primary goal of instruction

was successful task completion. This goal was clearly communicated to the students by their teacher and was, in turn, clearly perceived by the students. In addition, an analysis of the functions of student-generated questions revealed that three out of the four types of questions generated were directly associated with this goal of successful task completion. These findings led me to the conclusion that there is a relationship between the goal of instruction and the function of questions generated by students.

While scholars such as Doyle (1977) have already suggested there is a relationship between the goal of instruction and student questioning behavior, he did not have the evidence from classroom-based research to support his conclusions. The findings of my study provide support for this conclusion. By examining the application of this finding to practice we can more clearly understand how this information adds relevant knowledge to current theory.

The impact of the conclusion that there is a relationship between instructional goals and student questioning is well documented by Parker (1983), among others. One of the essential issues addressed in this body of literature is how we should organize the goals of instruction so that we promote and facilitate effective questioning on the part of our students. It has been argued that one of the major problems with today's educational system is the over emphasis on performance or task

completion, rather than the processes of learning or gaining of information. As supported by the evidence of my own study, the emphasis on instruction does appear to be heavily weighted on the side of task completion.

Rather than attempt to settle this debate, I would argue that we must seek a more equitable balance between these goals. I would agree that educational practices must begin to recognize that performance is not the sole purpose of education. I would argue, however, that it is unlikely that our educational system will operate without measures of performance. Therefore, I would suggest that if further research supports the link between the purpose of instructional goals and the function of student questioning, student learning would benefit from educational practices which stress knowing as well as doing. It may follow that an increased emphasis on knowing would result in an increase in epistemic questions on the part of students.

The Frequency of Student Questioning

As a result of conducting this research I discovered that students generated questions during a variety of academic instructional activities. The highest frequency of student questioning was generated during independent written work, especially in the subject-area of Mathematics. This finding was of particular value since previous observational research conducted within classrooms has consistently found a low frequency of student-generated questions. The

researchers conducting these studies did not access questions which were generated during the private, one-on-one interactions between a student and their teacher. Despite the incomplete data base of this body of research, these studies have stood as evidence for the formulation of various conclusions regarding student questioning behavior. For example, citing this evidence, educators such as Parker (1983) and Dillon (1981a) have asserted that the atmosphere within today's classrooms serves to inhibit student inquiry. While the evidence in my study does, in part, support this assertion (e.g., large group instructional settings did not facilitate student questioning), there is also evidence which supports the assertion that there are features which do facilitate this behavior (e.g., student accessibility to their teacher). In other words, until now we have formulated conclusions and assertions based on incomplete and inaccurate evidence.

As suggested by the results of my study, students do in fact generate a high frequency of questions during certain types of instructional activities. Based on this conclusion I would assert that there are specific features which operate interactively (e.g. instructional methods and materials, student grouping, and teacher behaviors) to facilitate student questioning. This assertion allows us to examine, with more accuracy, how specific features within classrooms operate in combination to inhibit or facilitate student questioning. As a result of this documentation we

can arrive at a more valid understanding of student questioning behavior within classrooms.

Adding to my earlier discussion regarding the interaction of classroom features, the finding that students generated a higher frequency of questions during independent written instruction supports the assertion that it is not a single feature, such as student grouping. which affects behavior but rather it is the interaction among the various features which serves to promote student questioning.

Implications for Classroom Practices

My study has direct application for all classroom teachers. As stated in the literature, if a teacher wishes to facilitate the generation of students' questions during academic instruction, it is essential that he/she establish an atmosphere of inquiry within the classroom. This atmosphere is created as a result of the teacher's explicit and implicit behaviors. While the details of these behaviors were presented in the preceding section (summary of findings), I will review them here with a focus on their application for practice.

First, and foremost, it is clear that in order for teachers to effectively promote student questioning, they must possess a positive attitude toward student inquiry. As part of this attitude, teachers must value student questioning as an important part of the learning process. However, it is not enough for teachers simply to hold a

positive attitude; it is also necessary for teachers to communicate this attitude to their students. As part of this process, teachers must award their students equal status in the communication process. This means that during the course of instruction, teachers need to be willing to reduce their authoritarian role and allow students to have access to, and help direct, classroom interactions.

For a teacher to successfully create this atmosphere, he/she will need to employ a number of strategies in the classroom. One of the more obvious strategies is for teachers to directly tell their students that they welcome questions. Teachers need to support this communication with the direct solicitation of students' questions during academic instruction, along with the provision of adequate wait-time to allow students to formulate their questions.

Teachers also need to provide students with direct instruction in how to formulate effective questions and teach when it is appropriate to pose questions. This reference to the appropriateness of posing questions relates to classroom rules which may govern questions (e.g., students must raise their hand and wait for the teacher to call on them). As part of this direct instruction, teachers will need to model a variety of effective questions for their students.

Another aspect of teacher behavior which has an influence on students' generation of questions is the nature of the response to students' questions. Students need to

feel that their teacher will make an honest attempt to answer their questions. Teachers can accomplish this by directly providing students with the type of information they requested, or an explanation of the processes involved which would allow them to effectively obtain their own answer to their questions.

In addition to these explicit communications, teachers wishing to promote student inquiry must also employ a wide variety of behaviors which serve to implicitly communicate their attitude toward questioning. These behaviors include the use of instructional methods, materials, and group settings which support the promotion of student questions.

Instructional methods and materials which motivate students to be actively involved in the learning process are more likely to create opportunities for student inquiry than methods and materials which allow the student to be a passive spectator. This instruction must also be at a cognitive level that is neither too demanding, nor too easy for the students. If students are overwhelmed at the amount or nature of the content presented, they will be too confused to formulate effective questions. On the other hand, if students are too familiar with the material presented, they will have little reason to pose questions.

The classroom teacher must also realize that students are less likely to pose questions within a large group setting. The provision of small group learning activities (i.e., fewer than six students), as well as one-on-one

teacher-student interactions, will provide greater opportunity for students to feel comfortable to generate questions. Because many students feel most comfortable asking questions within a one-on-one setting, it is imperative for teachers to be accessible to their students and provide for these "private" interactions. Although there are other features of the classroom which influence student questioning, and are not always under the direct control of the teacher (e.g., student motivation, interest, and familiarity with the subject-matter), it is clear that teachers can employ a wide variety of strategies during academic instruction which will result in the promotion of student-generated questioning. It is important to emphasize that no single strategy will result in the development of an atmosphere of inquiry, but rather, it is the combined use of a variety of strategies which will serve to facilitate the generation of student questioning behavior.

Recommendations for Future Research

I have two suggestions for future research on student questioning behavior. First, there is a need for a clearer understanding about the relationship between the goal of instruction, as communicated by the teacher and perceived by the student, and the function of student-generated questions. Specifically, how do different instructional goals, that is, process versus product goals, influence the types of questions generated by students? For example, if

an instructional goal is task completion (the emphasis on product), will students' questions be different from instructional goals which emphasize concept acquisition and comprehension (the emphasis on process)?

In my study, Mrs. Powell clearly communicated to her students that the goal of instruction was task completion (the emphasis on task completion or product). It would be of value to determine how much this goal, and the instructional methods and materials utilized by the teacher to reinforce this goal, influenced the functions of the questions generated by her students.

My second recommendation is for future research to examine the relationship between the "quality" of student questioning and academic performance. As I discussed in Chapter Three, the original focus of my study was to document students' use of epistemic questions (i.e., questions whose function is to obtain causal information). The rationale for wanting to focus on these types of questions was based on the assertion that student learning is most closely associated with the generation of these type of questions, as opposed to procedural questions.

While there is wide spread acceptance for this assertion, we do not have empirical data to support this position. I was able to provide a new perspective on the frequency of student questioning behavior; however, one limitation of my study was that I was unable to address issues of "quality" of student questioning, since the

student-generated questions in Mrs. Powell's class did not reflect true causal inquiry.

One possible explanation for not observing epistemic questions in Mrs. Powell's classroom may be that the definition I used was too specific (i.e., epistemic defined as true causal inquiry). Future researchers should consider a broader definition which would include requests for content information (e.g., "What does illiterate mean?") in addition to causal inquiry. This issue of definition may be critical in addressing how academic performance is influenced by student questioning, due to the relationship which may exist between content knowledge, or concept acquisition, and causal inquiry.

The information which might result from these two related lines of inquiry would add relevant information regarding how learning is positively influenced by students' effective use of questioning. Regardless of the particular focus developed by future studies, it is essential that researchers utilize methods of data collection and analyses (qualitative and/or quantitative) which address how multiple features, within a given educational context, operate in combination to influence student questioning behavior.

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