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ABSTRACT

This paper reviews selected findings from two traditions of educational research--process-product research and sociolinguistic research. The first research method generally focuses on the teacher and identifies teacher behaviors (processes) that correlate with student outcome measures (products). Sociolinguistic research focuses on communicative interactions between the teacher and students and among students themselves. These research traditions are examined as lenses through which the classroom is viewed. Highlighting findings of several major research studies, a description is given of how each of these methods presents a different but complementary view of teaching in three areas: (1) teacher planning and decision making; (2) classroom management; and (3) academic instruction. These research perspectives illustrate two important dimensions of knowledge that are crucial for developing a more complete understanding of teaching and learning processes. The first is of the general processes and behaviors that relate to student learning across a variety of situations. The second, of equal importance, is knowledge that explains how those processes operate and function within specific contexts across time. It is pointed out that both perspectives are important in understanding classroom phenomena and in developing programs to improve teaching. A list of 138 references is appended. (JD)

RESEARCH ON TEACHING AND CLASSROOM PROCESSES: VIEWS FROM TWO PERSPECTIVES

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The search for knowledge to understand and improve the quality and effectiveness of teaching is an endeavor in which educational researchers have been engaged for decades. The focus of this search, however, has changed over time. It has shifted from efforts to identify teacher characteristics that were thought to result in improved student learning, to the development of strategies for training teachers to implement specific curricula, to the identification of classroom procedures and instructional processes that correlate empirically with greater rates of student academic achievement. The means by which researchers have collected data to guide the search have been diverse as have the theoretical constructs they have employed to focus their inquiry.

One question that runs throughout this line of research is "What is effective teaching?" Studies conducted in and before the early 1960's yielded for the most part disappointing answers to this question. Early reviews of this research regularly reported insignificant and contradictory findings (cf. Dunkin and Biddle, 1974). In the last 15 years, however, new approaches emerged from different disciplines, including psychology, sociology, linguistics, and anthropology, to address the issue of teacher effectiveness. Researchers have adapted constructs and methodologies from these disciplines and have developed new ways to study a wider variety of educational events. These advances have significantly expanded our aggregate knowledge of teaching and classroom processes.

Despite this expansion of knowledge, the question "What is effective teaching?" remains only partially answered. It remains so for several reasons. First, there are many questions about the nature and processes of teaching and

learning that have yet to be asked or to be investigated. Second, the different perspectives and methods employed to view and analyze classroom events often yield only fragments of classroom reality. Third, recent advances in knowledge coming from the various disciplines and research traditions that have engaged the issue of teaching effectiveness have been made in relatively uncoordinated fashion and have remained virtually unintegrated. As a consequence, we have been discovering more and more pieces of a complicated puzzle but we are not certain how those pieces might fit together or if they belong to the same puzzle at all. Therefore, to develop a more comprehensive understanding of teaching and classroom processes, it seems crucial to identify and to integrate knowledge derived from different traditions of research (see e.g. Bolster, 1983; Gage, 1985; Sergiovanni, 1984; Soltis, 1984).

In this chapter, we review selected findings from two traditions of educational research that have made significant contributions to our knowledge of teaching and classroom processes--process-product research and sociolinguistic research. We examine each of these traditions as lenses through which we view the events of the classroom. We shall describe each lens and contrast each focus. Then, highlighting findings of several major studies we consider how each presents a different but complementary view of teaching in three areas: a) teacher planning and decision making, b) classroom management, c) academic instruction. Our purpose extends beyond a comparative synthesis of research on teaching. In this discussion we attempt to make a broader agrument for an integrative perspective to draw together heretofore disparate bodies of knowledge.

Ryle (1949) suggests a useful point of departure for developing an integrative perspective. While we will not engage the debate of the logic behind the definitions or the reduction of his terms (see Hartland-Swann, 1956, Roland, 1961), Ryle's distinction between knowledge related to facts and

propositions--"Knowing that"--and knowldege related to process and practice--"Knowing how"--lead us to argue that we should be concerned with discovering, not only the relationships that exist between behavior and outcomes, but how particular relationships come about. In other words, we should be concerned with knowing not only <u>that</u> a particular relationship exists between behavior 'x' and outcome 'y' but with knowing <u>how</u> behavior 'x' functions in its relationship to 'y'.

Until now much of classroom research from the psychological perspective has been concerned with identifying normative models of teacher behaviors that relate to student outcomes across time and context. This approach has been in the mainstream of research on teaching for the last 15 years. It has served and continues to serve an important function of mapping unknown territory and identifying important general relationships <u>that</u> exist between teaching practices and student outcomes (Evertson & Green, 1986). However, in order to understand more completely classroom realities, we must, as Wittrock (1985) suggests, begin to enlarge the perspective of teaching-learning processes presented by educational psychology (see also Gage, 1985; Shulman, 1986). We must try to determine <u>how</u> the processes identified from the psychological persepctive function in specific contexts on an evolving basis. Sociolinguistic research provides one important way to gain this understanding. Together, sociolinguistic and process-product research provide equally important perspectives to construct and understanding of the <u>that's</u> and the <u>how's</u> of teaching and classroom processes.

This review is a first attempt and a first step toward looking across research traditions to knowledge and understanding of teaching. The findings we present are illustrative rather than inclusive. We chose to review and compare aspects of process-product and sociolinguistic research traditions not to imply that these bodies of knowledge present a complete picture of classroom events.

To the contrary, there exist other important bodies of research from sociological, psychological, and anthropological traditions that significantly add to our understanding of teaching and learning. Further, we do not propose to cover completely each of the traditions included in our discussion. We have, instead, been selective to show how two traditions examine in different ways different aspects of several of the same broad areas of classroom activity.

Two Lenses--Different Perspectives

The first tradition we examine has developed from what has been called the process-product research paradigm. Process-product research generally focuses on the teacher and looks across a large number of classrooms to identify teacher behaviors (processes) that correlate with student outcome measures (products). This can be considered a macro view of classrooms. Investigations using this approach are concerned with examining variation between groups and with developing a summary model of classroom teaching processes. They are less concerned with the specifics of context and variation within groups.

The second tradition is sociolinguistic research. This tradition is part of a broader area of research on communication (see e.g., Gumperz & Hymes, 1972; Hymes, 1974; Gumperz, 1982). It considers teaching and learning as linguistic processes. The focus of sociolinguistic research in classrooms is on face-to-face communicative interactions between the teacher and students and among students themselves. This approach looks within the structure of formal processes in single or small numbers of classrooms to examine contextual and functional features of everyday interactions, the meanings that participants attribute to those interactions, and how those interactions promote or constrain access to learning. As compared with process-product research, the findings from sociolinguistic studies we present provide a relatively micro view of events in the classroom.

In short, each of these research traditions may be considered a lens through which researchers view classroom events. Before we examine what is seen through these lenses, we consider further their construction and foci. Each lens--each research tradition--is based on different assumptions and constructs, poses different questions, and examines different phenomena. These differences yield complementary perspectives on what transpires in the classroom.

The Process-Product Lens

The process-product research tradition defines legitimate inquiry in terms of relations between overt, categorical teacher behaviors and student outcomes (Doyle 1977, Gage 1963, 1978, 1985). The studies we include here are based on a predictive model with roots in behavioral psychological research. In general, criteria of teacher effectiveness (student outcomes) are defined a priori , either by empirical criteria or by theory (Dunkin & Biddle, 1974). Then, the task of the researcher becomes the identification of the best "predictors" of the criteria. Those predictors--teacher behaviors--are most often defined a priori as well.

Rosenshine (1971) describes the basic stages of most process-product research:

1. the development of an instrument that can be used systematically to record frequency of certain specified behaviors;
2. use of the instrument in natural settings to record classroom behaviors of teachers and their pupils;
3. a ranking of classrooms according to a measure of pupil achievement adjusted for initial difference among the classes;
4. a determination of the behaviors whose frequency of occurrence is related to adjusted class achievement scores.

Once those relationships are identified, they may again be tested through experimental investigation (Rosenshine & Furst, 1973). In these studies,

experimental groups of teachers are trained to implement practices identified through correlational analyses. Then, changes in student outcome measures in classes of the experimental groups are compared to changes in outcome measures of control classes to further establish the influence of the behavior. Process-product research may also look in detail at teacher behavior in previously identified high-achieving classrooms and compare that behavior with teacher behavior in lower-achieving classrooms.

Process-product research has examined a number of outcome measures including student scores on standardized tests of academic achievement, student behavior (e.g., misbehavior, student engagement, time-on-task) and student attitudes. In this research tradition, student outcome measures are aggregated both at the classroom level and across classrooms. They are further examined across the variety of events and activities that occur across time and across the specific contexts of individual classroom settings.

Several assumptions underlie process-product research that bear directly on the view it portrays of classrooms (Doyle, 1977; Gage, 1963). First, this research tradition assumes teacher primacy, that teacher behaviors have a direct causal impact on student outcomes. The effects of teacher behavior on student outcomes is often assumed to be linear and unidirectional. Second, this research isolates frequency as the most salient dimension of teacher behavior. The implication is that the presence or absence of a behavior or the number of times that behavior occurs determines the magnitude of its effects. Third, the tradition generally assumes stability of teacher behavior across contexts and across time. Indeed, most process-product research seeks to control contextual variables rather than consider variations in teacher behavior and student outcomes within various contexts.

The Sociolinguistic Lens

Sociolinguistic research consists primarily of comparative descriptions of verbal and nonverbal communication used by people in interaction with one another (Peterson & Cherry-Wilkinson, 1984). Instead of focusing primarily on the teacher, as is characteristic of process-product research, the sociolinguistic approach considers both the teacher and students as participants in the communicative environment of the classroom. This approach is based more on theories of social group processes than on theories that view classroom activity as teacher-to-individual-student interaction. Sociolinguistic research seeks to understand the teaching-learning process by determining how language is used to establish and maintain goals and expectations for student behavior and academic performance, influence student participation in classroom tasks, and promote or constrain access to learning (Bloome & Green, 1984, Green, 1983b).

Of central importance to this research tradition is assessment of the context, function, history, and meaning of communicative interaction in the classroom (Carden, 1986, Green, 1983b). As Green and Wallat (1981) indicate, this tradition considers conversations as more than random strings of words whose purpose is the simple verbal exchange of ideas, opinions, and sentiments. Sociolinguistic research views conversations as complex interpersonal social phenomena that include nonverbal and social properties in addition to, or concurrent with, the verbal characteristics of the exchange. These properties have function and communicate meaning and goals to participants for both social behavior and academic performance.

Several constructs guide this line of inquiry as it relates to teacher-student interactions (Green, 1983a,b). First, classrooms are viewed as

communicative environments in which teachers and students are constantly assessing what is occurring and how it is occurring. There is an assumption of a recursive model of interaction among classroom participants. Second, interactions in the classroom are considered to be rule governed and goal oriented. This does not mean that teachers and students follow fixed scripts or that conversations and activities do not vary. Rather, "rule governed" means that expectations for performance exist that are determined by the culture of the classroom. These expectations guide participation in conversation and activities toward goals and act to constrain the options of what can and will occur in classrooms. Further, expectations for conversation and participation in activities vary from one activity to another and differ by groups of students within the classroom. It is the task of the teacher and students to monitor different demands, shift ways of participation, and change behaviors to meet each different situation. The third construct that guides sociolinguistic research is that meaning from communication is derived from context and that contexts are continuously constructed and reconstructed during interactions. In all, then, the sociolinguistic perspective considers events in classrooms as parts of a dynamic interactive process that requires both structural and functional communicative knowledge and skills on the part of teachers and students (Peterson & Cherry-Wilkinson, 1984).

Sociolinguistic research has examined a number of student outcomes similar to those measured in process-product studies. These outcomes include student attention and participation in classroom tasks and activities, student responses in communicative interactions, and student perceptions and attitudes. What distinguishes the sociolingistic tradition from the process-product tradition is in its view of outcomes. Sociolinguistic research examines outcomes in relation to the specific contexts in which they are identified. In addition, sociolinguistic research views student outcomes in relation to a

myriad of factors including the teacher, the social and communicative dynamics of the classroom, and the history, function, and meaning of discourse and interaction. As noted above, process-product research views student outcomes as a direct result of teacher behavior and most studies in this tradition seek to control for contextual variation.

Sociolinguistic researchers use a variety of approaches to study events in classrooms including ethnography of communication and sociolinguistic analysis (Green, 1983b, Green & Wallat, 1981). These approaches are quite different from those traditionally applied in process-product research. The object is to look within classrooms in systematic, principled ways for recurrent patterns of language use, to observe how messages are received and responded to, to identify typical cases of interaction within and across various classroom activities.

The primary investigative technique in sociolinguistic research is long-term participant observation. Each study begins with a mental grid composed of a series of assumptions derived from theory and previous research (see Green, 1983b). These assumptions guide initial, general participant observation in the classroom. Once observations are under way, initial questions become refined as the observer explores them in specific activities and contexts. The phenomena under study become more focused as does the researcher's understanding of when, where, and how they occur within and across a variety of activities and contexts. The investigation can be narrowed in a variety of ways. For example, participant observation can be topic-centered (e.g. a focus on literacy, reading groups, or classroom processes). It can also involve observation of natural experiments used to explore what has been identfied topic-centered observation. Such explorations, therefore, can move from topic-centered observation in situ to natural experiments back to topic-centered observation in a cyclical manner (Green & Bloome, 1983). This

allows identification of naturally occurring phenomena and close exploration of those phenomena (Cook-Gumperz, Gumperz & Simons, 1981). Data collected through observation are analyzed in a variety of ways such as mapping (see Green & Wallat, 1981; Weade, 1985; Green & Rasinski, 1985) and may also be used for secondary analyses.

Looking Across Traditions

Taken as lenses, these two research traditions provide a dramatically different view of events in classrooms. It is not that through these lenses we see the same events differently. Rather each looks at the nature of classrooms in different ways, exposes different kinds of events, and views student outcomes differently.

In the following sections of this chapter, we present examples of the views of classrooms from each research tradition in three areas of teacher activity: (a) planning and decision making, (b) classroom management, and (c) academic instruction. In these sections, we present representative findings from each tradition that illustrate the differences in views. Our reviews of the literature are not comprehensive. They are not intended to be. Rather, we seek to present sufficient findings to illustrate the views and to make the case that an integrative approach is required for a more complete understanding of teaching.

As an introduction to our discussion of the research, Figure 1 presents the primary foci from each tradition in each of the three areas of teacher activity. In the areas of planning and decision making, process-product

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Insert Figure 1 about here

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researc[illegible] preactive measures that teachers take to plan the learning environm[illegible] academic work. Sociolinguistic research examines

moment-to-moment responsiveness of teachers and students during classroom activity. In the area of classroom management, process-product research focuses on the formal rules and procedures that teachers implement to structure the physical aspects of the classroom, manage resources, and control student behavior. Sociolinguistic research, on the other hand, examines functional rules and expectations that create communicative context, govern conversation and behavior in classrooms, and determine who has access to classroom discourse. Finally, in the area of academic instruction, process-product research identifies a sequence of teacher instructional behaviors. Sociolinguistic research looks within several of these behaviors to examine patterns and functions of language used in instruction, and ways language use and understanding influence participation in tasks, access to learning, and teacher evaluation of student performance.

Both traditions examine the importance of student attention and differentiation in instruction among groups in classrooms. These are two of several points where the traditions seem to converge. While the overall purpose of this chapter is to compare different perspectives of these traditions, we include findings in these areas of overlap because they relate directly to findings in several other areas we address.

Planning and Decision Making

Most research to date on teacher planning and decision making has grown out of studies of human decision making and problem solving. This work primarily examines the cognitive processes that underlie teachers' judgments and decisions. It considers the functions of those judgments and decisions and how they relate to teacher behavior in the classroom. While this area of research is critically important to understanding teaching, it falls outside the scope of this review (see Shavelson, 1976, 1 Shavelson & Stern, 1981; Shulman & Elstein, 1975; National Institute of Education, 1975 for

comprehensive reviews of this literature). Here, we examine a more limited group of studies that explore relationships between different aspects of planning and decision making and student outcomes measures, and the role of decision making in the communicative environment of the classroom.

Process-product and sociolinguistic studies view different aspects of teacher planning and decision making. In general, process-product research focuses on the formal steps teachers take to prepare for classroom activity. Few attempts have been made in process-product research to examine teacher decision making during classroom activity and its relationship to student achievement. On the other hand, sociolinguistic research looks primarily at the more informal, moment-to-moment judgments and decisions teachers make during that activity.

The preactive plans teachers make provide frameworks for what is possible or even likely to occur in classrooms. In practice, these frameworks do not function as rigid scripts for teacher and student activity. Instead, they seem to set directions and establish boundaries within which moment-to-moment decisions occur (Clark, 1983).

The Process-Product Perspective

Few process-product studies examine specific elements of teacher planning and decision making. Rather, most infer the importance of certain types of plans and decisions that seem necessary for teachers to behave and for classrooms to function in academically productive ways. These types of plans and decisions include: (1) preparing the learning environment, and (2) planning academic work. Where applicable, we highlight the little work that has been done directly relating specific aspects of planning and decision making to student outcome measures.

Preparing the learning environment. Process-product research suggests that establishment of a classroom environment that facilitates student learning

begins with advance preparation. Studies of academically successful elementary school classrooms point to the importance of planning for the management of physical space and preparing the classroom for use by students to help maximize the degree to which they benefit from learning activities (Brophy & Putnam, 1979; Evertson & Emmer, 1982; Good & Brophy, 1978). In these classrooms, plans are made before the school year begins to arrange furnishings to accommodate anticipated instructional activities, to facilitate smooth and quick transitions between those activities, and to promote the teachers' abilities to monitor student work and behavior. Also, plans are made to place and store equipment, instructional materials, and students' personal belongings to facilitate easy access. Before the school year begins, routines and traffic patterns are developed for the physical movement of students around and in and out of the classroom. In addition, procedures are developed for the efficient completion of paperwork and other routine nonacademic class business, including record keeping, so that instructional time can be maximized (Evertson & Emmer, 1982; Kounin, 1970).

In structuring the social environment of the classroom, academically successful elementary teachers develop rules for establishing and maintaining appropriate student behavior throughout the year (Brophy, 1983). As we shall see in our discussion of the process-product view of managing student behavior, these teachers teach rules and standards for appropriate behavior to students at the beginning of the school year. The importance of such planning and instruction is seen in the relatively few incidents of disorder in these classrooms. In less well-managed classrooms, teachers appear to struggle throughout the year to maintain order (Emmer, Evertson, & Anderson, 1980).

Process-product research identifies the importance of planning the learning environment in secondary classrooms as well (Evertson & Emmer, 1982; Evertson, Weade, Green, & Crawford, 1985; Moskowitz & Hayman, 1976; Sanford &

Evertson, 1981). These studies also suggest that preparing for the effective use of space and for the physical movement of students are key elements of successful management. Although teachers in secondary classrooms generally need not place as much emphasis on teaching students appropriate social behavior as teachers in elementary classsrooms, it is no less important at the secondary level that before the school year begins teachers plan rules for student behavior to establish classroom norms and expectations as well as plan strategies for maintaining appropriate student behavior throughout the school year (Evertson, et al., 1985; Moskowitz & Hayman, 1976).

Another area of planning the learning environment is decisions teachers make about grouping students for instruction. The ways teachers group students in classrooms have important consequences for student learning and social development (see Good & Marshall, 1984). These findings indicate that academically and socially productive grouping requires careful preparation. Such preparation includes accurate assessment of students' academic abilities and learning needs (a topic we examine later), choice of academic work appropriate to the group, and consideration of how students within groups will work and interact with one another. As students complete activities and learning progresses, group assignments need to be reassessed and, where appropriate, new assignments to groups made. Research on grouping suggests that without this type of planning and reassessment, groupings become static, often to the detriment of academic progress (Eder, 1982; Rist, 1970).

Planning academic work. Process-product studies have generally found little relationship between the time that teachers spend planning academic work and student academic performance. Indeed, one experimental study reveals a negative relationship between additional time spent planning and student achievement (Peterson, Marx & Clark, 1978). This study also found no consistent relationships between student achievement and attitude and the

relative attention teachers gave to planning lesson objectives and content, instructional processes, and materials.

Although the relative amounts of time teachers spend planning may not relate directly to student outcome measures, other process-product studies indicate that in one way or another specific elements in the conducting of academic work be considered. The first consideration in planning for academic work is assessment of student ability and learning needs. Studies that address methods of assessment reveal that teachers assess students in many ways, ranging from checking for understanding during review of class work and question and answer activities, to checking daily seatwork and homework assignments, to more formal measures of evaluation, such as periodic written tests and examinations. Studies that investigate methods of assessing students find them related to student achievement (see e.g. Evertson, Anderson, Anderson, & Brophy, 1980; Good & Grouws, 1979; Stallings, 1980). Indeed, the need for systematic student assessment is illustrated by other findings showing that the sequencing and pacing of instructional activities have important relationships to student learning (Barr, 1975, 1980; Good, 1983; Rosenshine & Stevens, 1986). Appropriate sequencing and pacing of instructional activities require that teachers accurately determine students' levels of understanding and skill before students are allowed to progress to the next more difficult level. Student assessment provides important information that teachers need to make this determination.

A second crucial element of planning for academic activities is selection of subject matter to be taught (Berliner, 1982). There is a clear relationship in process-product research between coverage or emphasis on subject matter and student achievement. The opportunity to learn a given content area is one of the most potent factors in accounting for differences in student achievement in that area (Berliner & Rosenshine, 1977; Cooley &

Leinhardt, 1980; see also Fisher et al., 1978). Basically, students do not learn what they are not exposed to. The choice of subject matter, therefore, becomes an important component of planning for instruction.

The research in this area indicates that despite state and local curriculum and textbook requirements, teachers are final arbiters of what is taught in classrooms. Schwille et al. (1981) found, for example, that perceived effort required to teach particular subject matter, the perceived difficulty of the subject matter for students, and personal feelings of enjoyment while teaching a particular subject matter influence the teacher's choice of content. As Berliner (1982) notes, decisions to emphasize, deemphasize, or exclude particular content from classroom instruction are only casually made and often based on personal disposition (see also Buchmann & Schmidt, 1981).

A third important element of planning involves allocating appropriate amounts of time for instructional activities and the correct pacing of those activities. Teachers in academically successful classrooms seem to plan both how to maximize instructional time and how to divide it appropriately among different instructional activities and subject matter areas. These teachers also seem to plan the implementation of activities that minimize time when students have nothing to do. In addition, effective planning of instructional activities includes determining the pacing of those activities consistent with students' learning needs and with subject matter skills to be learned. A more elaborate discussion of time and the pacing of instructional activities is found in the later section on classroom management.

The importance of decision making in adjusting and adapting lessons is strongly inferred but remains virtually unexamined in process-product research. One of the primary correlates of student outcomes identified in research on classroom processes is the smooth flow of instructional activity (Brophy, 1983;

Kounin, 1970). The failure of previously planned activities introduces classroom disruption, management problems, and, potentially, reduced learning (Kounin, 1970). When students' attention to the task is interrupted, or when the instructional activity itself fails, teachers must be able to make decisions to change or adjust plans to maintain the flow of instructional activity and to maintain student cooperation.

The one process-product study that did examine the relationship between teacher decision making during instruction and student achievement presented interesting findings (Peterson & Clark, 1978). In this instance, teachers were asked to evaluate decisions they made to continue or change their behavior during a lesson. In general, when teachers perceived the lesson going well and made decisions not to change their behavior, positive correlations were found with student achievement. When teachers perceived that the lesson was not going well and then chose to continue the lesson in the same manner anyway, negative correlations with achievement were found. Interestingly, when teachers perceived that the lesson was not going well and decided to change behaviors, positive correlations were found with abstract achievement but negative correlations were found with factual and concrete achievement. While this study seems to raise more questions than it answers, we have discussed it here to show the limited inquiry of process-product research into in-class teacher decision making. We now turn to the sociolinguistic research that provides a more detailed picture of this teacher activity.

The Sociolinguistic Perspective

Sociolinguistic analyses of teacher planning and decision making focus on the moment-to-moment responsiveness of teachers to students during classroom activity. As Green (1983b) has noted, the sociolinguistic perspective views teacher decision making as extending beyond the preactive stage focused on in process-product research. Instead, teacher decision making is considered an

ongoing process in which teachers continuously make judgments while they are teaching (Cole, Griffin, & Newman, 1978-1981). According to this perspective, the decision-making process for teachers occurs within lessons and is based primarily on teacher assessments of student responses during interactions.

The findings of this research related to teacher decision making rest on two assumptions. First, teachers continuously make judgments during lessons and those judgments are triggered by teachers' ongoing assessments of student responses. Second, the judgments teachers make are revealed in their verbal and nonverbal behavior and in their differentiated behavior toward different students in the classroom. In general, the findings point to factors teachers consider when they make decisions and how they differentiate their communicative exchanges, presumably on the basis of those judgments. However, this research has not directly examined the process by which teacher perceptions and assessments are translated into behavior.

The following discussion is divided into two sections. The first identifies types of information teachers consider during moment-to-moment decision making. The second section outlines various areas of behavioral differentiation. We consider this topic again in our discussion of academic instruction later in this chapter.

Inputs to decision making. The primary source of information for teacher decision making is student responses during classroom discourse (Green, 1983b). These responses may take many forms including answers to questions, the questions students ask, and comments during lessons (see DeStefano & Pepinsky, 1981). Another type of student response is level of attention. Levels of student attention are gauged on the basis of observed cues from students including eye gaze, body movement and orientation, inability to respond to questions, talking, and interference with others' activities (May, 1981). Such responses provide a basis for teachers and make judgments about

student interest and academic performance during teaching (Cole, Griffin, & Newman, 1978-1981).

These bits of information are generated and gathered throughout the course of a lesson and seem to be considered in conjunction with other information that teachers have before the lesson begins, such as knowledge of student academic abilities and learning needs (Cole, Griffin, & Newman, 1979, 1981), the teacher's theories of pedagogy (Petitto, 1982), and the purposes and structures of the activities implemented as part of the lesson (Merritt & Humphrey, 1981). In evaluating students' language ability, teachers also appear to compare student responses to an adult model or an ideal model of discourse (e.g., narrative structure) (Cook-Gumperz & Worsley, 1981; Michaels & Cook-Gumperz, 1979).

Differentiation in teacher communication. Sociolinguistic research has uncovered different ways that teachers change or differentiate their communication in response to the information they receive and the decisions they make during class activities. In general, differentiation in teacher communication has been observed and reported in relation to the different levels of academic ability of students in the classroom.

Teachers differentiate the amount of content covered according to the academic ability of student groups in the classroom. They require different levels of thinking on the part of students and hold students accountable in different degrees for errors made in academic work. Where differentiation occurs, teachers are likely to cover more content and require higher levels of thinking from higher-achieving students (Cole, Griffin, & Newman, 1978-1981; Collins, 1981; Cook-Gumperz, Gumperz & Simons, 1981; McDermott, 1976, 1978). In contrast, they are more likely to hold lower-achieving students accountable for errors in factual and concrete knowledge (Collins, 1981; Eder, 1982). Finally, teachers have been found to differentiate their use of praise,

positive and negative behavioral sanctions, and reprimands (Cahir & Kovacs, 1981; Erickson, Cazden, Carrasco, & Guzman, 1979-1981; Guzman, 1981).

Classroom Management

Process-product and sociolinguistic research traditions emphasize the importance of management functions in the classroom. Both traditions deliver a clear message: teachers play a crucial role in creating classroom conditions that influence student learning. However, these views of classrooms differ. In general, process-product research focuses on formal stated rules and procedures that are constructed a priori and implemented to structure the learning environment, manage resources, and control student attention and behavior. Sociolinguistic research, on the other hand, examines the functional rules and expectations that govern communicative interaction in the classroom. These rules are constructed and evolve during interaction, shifting and changing according to task. While the focus of process-product research is often on the form of rules and procedures, sociolinguistic research examines the development and function of rules, norms, and expectations within the context of specific classroom activities.

The Process-Product Perspective

Process-product research has found at least moderate positive relationships between student achievement and teachers' abilities to manage their classrooms and keep students productively engaged in academic activities. Through the process-product lens, academically successful classrooms appear to be orderly, students seem cooperative and well-focused on academic tasks and activities, and there appears to be a smooth and continuous flow of instructional activity (Brophy, 1983; Brophy & Evertson, 1976; Good, 1983; Kounin, 1970).

According to process-product research, the relationship between

managing the instructional setting and student learning pivots on the effective use of class time. The amount of time allocated for instruction as well as how that instructional time is used are significantly correlated with student achievement (Berliner, 1979; Denham & Lieberman, 1980; Good, 1983; Karweit, 1983; Stallings 1980; Walberg, Schiller, & Haertel, 1979). The opportunities for teachers to devote significant portions of class time to instruction and to use that instructional time in productive ways is determined in large part by the rules and procedures teachers implement to structure and maintain their classroom environment.

In this section, we discuss the findings of process-product research related to five general areas of organization and management: (1) structuring physical space in the classroom, (2) managing physical movement, (3) developing procedures and routines for handling nonacademic class business, (4) managing student behavior, and (5) managing instructional time.

Structuring physical space in the classroom. Process-product studies of well-managed elementary and secondary classrooms find that teachers arrange furnishings to accommodate different types of planned activities, minimize disruptive movement around the classroom, and facilitate teacher monitoring of student work and behavior (Emmer, Evertson, & Anderson, 1980; Evertson & Emmer, 1982; Moskowitz & Hayman, 1976). Further, teachers locate instructional equipment, materials, and students' personal belongings so that they are readily accessible to both teacher and students.

By arranging classroom furnishings and student seating, disruption of ongoing instructional activities can be minimized and teachers can devote more time to students' academic needs. Easy access to equipment and materials facilitates smooth transitions between activities and preserves instructional time. Further, routines established wherein students take primary responsibility for obtaining and returning equipment and materials for

instruction increase the opportunity for teacher instructional time with students (see Good, 1983). Other studies show that changes in the physical environment of the classroom can bring about changes in students' choices of activities (Morrow & Weinstein, 1982; Nash, 1981; Phyfe-Perkins, 1979; Weinstein, 1977).

Managing physical movement. As with managing physical space, studies of classrooms at both the elementary and secondary levels indicate that routines for physical movement promote smooth and quick transitions between learning activities and thus relate to increased amounts of time available for academic work (Brophy, 1983; Emmer, Evertson, & Anderson, 1980; Evertson & Emmer, 1982; Moskowitz & Hayman, 1976; see also Arlin, 1979; Kounin, 1970). These routines are related to lower rates of disruption that may lead to student behavior problems. They further relate to continuity of instructional activity and to maintenance of student task engagement (Arlin, 1979).

Procedures and routines for nonacademic class business. Process-product research identifies a clear negative relationship between the time teachers spend completing nonacademic business during class and the time available for instruction (Evertson & Emmer, 1982; Stallings, 1980). Procedures and routines to minimize class time spent completing paperwork, taking roll, making announcements, records keeping, and other classroom business relate to increased amounts of time available for instruction.

Managing student behavior. There are negative relationships between the number of behavioral sanctions required of teachers during class instructional time and student achievement (Berliner, 1979; Brophy, 1979; Cooley & Leinhardt, 1980; Rosenshine, 1979; Stallings, 1980). When teachers must deal with disruptive behavior it is at the expense of instructional time. More and less effective classroom managers, however, react to instances of student misbehavior in much the same way (Kounin, 1970). What distinguishes

the more effective managers is their use of preventive techniques (Brophy, 1983).

In successful elementary classrooms, appropriate behavior is taught early in the school year. Further, it is modeled by teachers for their students and practiced with them until that behavior is learned. Studies of well-managed secondary classrooms reveal less emphasis on formally teaching appropriate behavior to students. However, effective secondary teachers do introduce rules and procedures to students at the beginning of the year in a clear and systematic way (Evertson & Emmer, 1982; Sanford & Evertson, 1981).

Successful behavior management also depends on the following-through on expectations for appropriate behavior. Teachers in well-managed classrooms continuously monitor student behavior; they remind students of rules and reintroduce or reteach them if necessary (Brophy, 1983; Emmer et al., 1980; Evertson & Emmer, 1982). Teachers who manage their classroom well detect inappropriate behavior and act before it becomes a problem (Kounin, 1970).

Managing instructional time. Process-product research has consistently found significant relationships between time spent on learning and student achievement (e.g., Anderson, 1976; Bloom, 1974; Fisher et al., 1980; Stallings, 1980; Walberg, 1982). However, this body of research indicates that how instructional time is used is more important than the amount of time spent on academic activities (Karweit, 1983; Stallings, 1980). The amount of time students spend engaged in academic tasks that they perform with high success rates has been found to be more significantly related to academic achievement than the amount of time spent per se on those tasks (Bloom, 1976; Borg, 1980; Fisher et al., 1978; Sirotnik, 1982; Walberg et al., 1979).

Among the most important factors in the effective use of class time is good classroom management (e.g., Arlin, 1982; Good, 1983). Teachers who take steps to increase the amount of time spent on learning activities and ensure

that the time that is spent on those activities is continuous and relatively free of disruption are likely to be more successful academically with their students. These teachers also ensure that students' attention is well-focused on academic tasks during instruction and that downtime is minimized (Brophy, 1983; Kounin, 1970). Other management functions related to effective use of classroom time are as follows:

1. Explaining learning goals and activities to students. Several studies have found that clearly communicating learning goals to students and explaining directions for learning activities relates positively to student achievement (Berliner, 1982; Fisher et al., 1980). Both student attention rates and achievement improve when teachers spend more time communicating goals and giving directions (Berliner, 1982).

2. Pacing instruction and student work. Another important aspect of managing instructional time is appropriate pacing of classroom instruction and student work (Barr, 1975; Berliner, 1982). Pacing can account for as much as 80% of the difference in achievement among high and low performers (Barr, 1980). Effective pacing requires a match between students' achievement levels and the difficulty of the instructional activity (see Brophy, 1979). For example, high-achieving students require a faster pace of work with a higher degree of challenge while low-achieving students require a slower pace with an opportunity to overlearn (Rosenshine & Stevens, 1986). With appropriate pacing, teachers know when to move the class along while still maintaining a critical balance with successful completion of academic activities (Barr, 1975; Brophy, 1979).

3. Maintaining student focus of attention. Effective teachers take steps to engage student attention and then to maintain that attention throughout the course of instruction (see Anderson et al., 1979; Brophy & Evertson, 1976; Bruner, 1981; Emmer et al., 1980; Fisher et al., 1980;

Rosenshine, 1979). Students are more likely to attend to academic work if full attention is required when important information is presented. This seems to be particularly important when teachers explain learning goals to students and give directions for the completion of learning activities. Once students' attention is focused and they are engaged in learning activities, continuous, active monitoring by the teacher is necessary to detect signs of confusion or inattention. If students become inattentive or disengaged from their work, teachers should act quickly to refocus student attention by using cues (e.g., variations in voice, movement, pacing, and/or gesturing) and questions, or by implementing contingency plans in substitution for unsuccessful activities.

These strategies to engage and maintain students' attention on learning activities are reinforced by the creation of physical conditions in the classroom that reduce the likelihood that students' attention will wander. We have mentioned several of these conditions above. Another factor related to increased student attention is the selection of activities and materials that hold students' interest. Activities and materials should be challenging but allow for student success. Academic work should also be varied within any given instructional period (Anderson & Scott, 1978; see also Bossert, 1979).

The Sociolinguistic Perspective

According to the sociolinguistic tradition, the rules and expectations that govern classroom communication comprise participation structures. These structures provide a framework for communicative interaction and serve to constrain the options for what can and will occur during classroom discourse. As Green (1983b) has pointed out, rules and expectations for interaction are communicated throughout class time. Management of communication occurs simultaneously with academic instruction. Within a lesson, a teacher not only presents academic subject matter but also orchestrates participation in conversation to maintain the flow of classroom activity.

Norms and expectations for conversation create communicative contexts that provide meaning for classroom participants. These contexts are not static. They are continuously constructed and reconstructed by teachers and students as they engage in face-to-face interactions. The teacher, as instructional leader, is ultimately responsible, however, for what occurs during classroom discourse (Green, 1983b). Throughout the course of conversation, the teacher's expectations dominate. As the teacher and students interact, the teacher guides the flow of activity, and signals rules and expectations for when students can talk, how they are to talk, and how they are to interpret the meaning of the interaction. Still, even though rules and expectations exist and are communicated, this research finds that interactions cannot be predicted with certainty. There is great potential for variation in the flow of conversation, which makes classroom communication a dynamic process.

In this section, we examine participation structures and how rules for speaking are communicated during classroom activity. Then, we present findings from two other areas of sociolinguistic research related to classroom management--teachers' use of sanctions and the nature of student attention.

Participation structures. Participation structures are defined in sociolinguistic research as the demands and expectations for participation in communicative activity and the varying rights and obligations that can occur within and across activities (Green, 1983b). Research on participation structures has demonstrated that they vary within classrooms across different activities. Indeed, they range from being ritualistic (e.g., calling roll and collecting assignments) to being almost spontaneous (Erickson, 1982). An individual lesson may be divided into parts with each part setting different expectations and rules for participation (Cook-Gumperz et al., 1981; Florio & Shultz, 1979; Green, 1977). As the lesson progresses from one activity to

another, requirements and obligations for participation shift for students in the classroom (Cherry-Wilkinson, 1981; Erickson, 1982; Green & Harker, 1982; Gumperz, 1977, 1981).

Demands for participation are set by rules for speaking. Before we discuss those rules and how they are communicated, it is important to note that appropriate performance within participation structures depends on how a student reacts to the demands of that structure. Failure to read the demands correctly can lead to inappropriate performance (Green & Harker, 1982). And, performances within a participation structure relate directly to teacher evaluation of student ability and to student achievement (Michaels & Cook-Gumperz, 1979). These findings underscore the importance of how norms and expectations for speaking are communicated and how student competence to perform within structures is developed.

Rules for speaking. Rules for speaking are culturally determined expectations for how and when to speak, to whom, and for what purpose (Hymes, 1974). These rules form frames of reference and create contexts for participants in face-to-face interactions on both a general level and for specific activities (Green, 1983b).

In general, rules for speaking function to regulate access to classroom discourse. They signal appropriate ways to enter conversations, such as taking turns, waiting to be called on, raising hands, and waiting until another person is finished speaking (Merritt & Humphrey, 1981; Michaels & Cook-Gumperz, 1979). They also determine the appropriate content of present interactions (Merritt & Humphrey, 1981). Classroom participants usually bring to a given conversational situation frames of reference developed from participation in past similar situations. However, in the dynamic linguistic environment of the classroom, the specific rules and expectations for performance in each conversation are signaled by participants as they interact and build on each

other's messages (DeStefano & Pepinsky, 1981; Erickson & Shultz, 1981; Green, 1983b; Merritt & Humphrey, 1981). In this way, frames of reference that regulate classroom discourse and create communicative context are in a state of constant flux.

Rules for speaking are signaled both verbally and nonverbally through what are referred to as contextualization cues (Erickson, 1982; Green, 1983b). These cues may be explicit statements of literal meaning or they may be implicit and require participants to infer meaning. Implicit cues may be signaled through choice of vocabulary, order of words, verbal pitch, rhythm, and intonation. They may also be signaled through eye and body position and movement (Cook-Gumperz & Gumperz, 1976; Erickson, 1982; Erickson & Shultz, 1981).

Contextualization cues are signaled continuously throughout the course of conversation. They may reinforce existing rules applied to a specific situation or they may serve to amend or create new rules. Apart from those that carry literal meaning, students must actively interpret cues and infer their meaning (DeStefano & Pepinsky, 1981).

The development of meaning of rules and expectations for interaction seems to be influenced by several factors. The first is the frame of reference an individual brings to the conversational situation. The second is how participants view the "local history" of the situation (Green, 1983b). In other words, the development of meaning for any given situation will be influenced in part by events immediately preceding that situation. Finally, making inferences can be complicated by different messages sent concurrently in an individual interaction and by multiple functions of single messages (Green, 1983b).

As we mentioned earlier, frames of reference classroom participants bring to and construct in interactions are modified as interactions occur.

Such modification comes from both overt and covert feedback during conversation and serves to maintain the flow of activity (Frederiksen, 1981; Tannen, 1979). However, when one participant's frame of reference changes and another participant's does not, or when two participants bring or hold different frames for the same situation, a frame clash can occur (Elkind, 1979; Green & Harker, 1982; Heap, 1980; Mehan, 1979). These clashes, when translated into conversation, signal to the teacher inappropriate behavior on the part of the student. As such, frame clashes often lead to negative evaluations of student performance and may result in teachers' use of sanctions (Griffin, Newman & Cole, 1981; Michaels & Cook-Gumperz, 1979).

Use of sanctions. Sociolinguistic research identifies six categories of sanctions used by teachers during whole class instruction (Merritt & Humphrey, 1981). The first category includes placement sanctions. These sanctions are used in response to student talk that occurs in wrong places during the lesson, such as when another student or the teacher is talking or when a student responds out of turn. The second category includes delivery sanctions where the placement of student talk is correct but the manner of utterance, such as volume or tempo, is inappropriate. Responsive sanctions comprise the third category. In these responses, the teacher corrects inappropriate placement of student talk but acknowledges the content of the student's utterance. The fourth category is composed of what are termed double-takes. Here, the teacher first sanctions student talk because its placement is incorrect. Then, the teacher revises the sanction in response to an emergency signaled in the interaction. The fifth category includes curt responses in which the teacher responds to the content of a student's talk, but the curtness of the response indicates the teacher's dissatisfaction with the placement. The final category is behavior sanctions. This category includes teacher sanctions of inappropriate student behavior rather than with a

particular utterance. Other types of sanctions associated with individual student work time have also been identified. These include sanctions to rechannel interactions to other participants, differ attention to a later time, and squelch inappropriate talk (Merritt & Humphrey, 1981).

While process-product research focuses primarily on teacher behavior to control and sanction overt student misbehavior, sociolinguistic research suggests that behavioral sanctions comprise a very small proportion of the total sanctions issued by teachers during class time. Indeed, the vast majority of teachers' sanctions appear directed toward the management of the flow of conversational discourse. For example, one study found that almost 95 percent of the sanctions used by teachers related to the management of communication (Merritt & Humphrey, 1981). And, of these sanctions, 90 percent were directed toward the inappropriate placement of student talk.

Managing student attention. Process-product research stresses the importance of having students focus on and engage in academic work. Sociolinguistic research provides a different perspective on the nature and management of student attention.

According to the sociolinguistic perspective, the teacher and students do not begin an activity with a shared understanding of the rules and requirements for attention. The teacher's role is to direct student attention to the activity and the relevant rules. As our earlier discussion suggests, when the teacher fails to communicate the relevant rules, students may draw on rules that relate to different activities and inappropriate performance, including inappropriate levels of attention, may result (see DeStefano & Pepinsky, 1981; Merritt, 1982).

Sociolinguistic research indicates that the role of attention is not always clear. Not all learning requires constant attention, and attention requirements differ across various types of classroom activity (May, 1981).

For example, attention requirements may differ during the presentation of new learning material, making assignments and giving directions, independent seatwork, tests, and free time. An additional consideration is that attention and inattention may be masked by different types of overt behavior. For example, a student may appear inattentive (e.g., with head on the desk) but may actually be attending to what is being said in the classroom. Further, students can give attention without understanding what is happening during an activity (May, 1981) and cover up that inattention through the use of procedural displays that allow students to appear as if they are behaving appropriately (Bloome & Argumedo, 1983).

Teachers' decisions to tolerate different levels of inattention relate to the individual student in question, the group of which that student is a part, the activity at hand, and the teacher's goal for that activity. Furthermore, teacher tolerance of inattention relates to the type of inattentive behavior exhibited by the student. Generally, teachers tend to ignore inattentive behavior that can be ignored. However, when inattentive behavior involves loud talk or student movement from one place in the room to another without permission, lasts a long time, or disrupts the attention of other students, teachers usually act to sanction behavior and refocus attention (May, 1981).

Academic Instruction

We have seen in our reviews of both process-product and sociolinguistic research the importance of planning, decision making, and classroom management for establishing the conditions of learning. In this section, we consider a third area of teacher activity--academic instruction. The two research traditions focus on different facets of instructional processes in classrooms. Process-product research examines various types of instructional behavior,

while sociolinguistic research investigates the patterns and functions of language use in instruction.

The Process-Product Perspective

Over the past 15 years, process-product research has examined relationships between instructional processes and student learning (see Brophy & Good, 1986, and Rosenshine & Stevens, 1986, for reviews). This research has not identified one instructional method that consistently relates to improved student achievement. However, it does reveal a pattern of instructional behaviors that are related to higher levels of student learning.

Central to this pattern of instructional behavior identified in process-product research is the concept of interactive teaching. Interactive teaching takes many forms including presentation and explanation of new material, questioning sessions and discussions, and monitoring seatwork where the teacher actively moves from student to student, provides feedback and reteaches material if necessary. The time teachers spend interacting with students is positively related to student learning. Also the amount of student-teacher interaction is positively associated with student task engagement (Evertson & Emmer 1982, Fisher et al., 1978, Stallings, 1980). And, as we have described above, the amount of time students are off-task is negatively associated with learning.

Findings from a number of process-product studies of classroom teaching show a general picture of instructional behavior (Rosenshine & Stevens, 1986). That pattern contains the following elements:

1. review of the previous day's work
2. presentation of new academic material
3. initial student practice, feedback and correctives
4. independent student work
5. daily, weekly, and other periodic reviews.

While many of these elements of instruction were first identified in studies of basic skills instruction in elementary grades, subsequent research has found them (with minor variations) in secondary classrooms as well. We describe each of these elements below.

Reviewing the previous day's work. Significant relationships have been found between beginning instructional activities with a review of relevant work from the previous day and student learning gains (Rosenshine & Stevens, 1986, Good & Grouws, 1979). This type of review allows teachers to check for student understanding of prerequisite content and skills for the day's activities. Process-product research identifies several ways that these review could be conducted. Teachers can ask questions orally, check homework with students, or review the previous day's presentation or seatwork. In areas where students are having difficulty, the material may be retaught or additional practice can be provided to ensure student understanding. While teachers may conduct these reviews in different ways, the importance of this activity is that these types of reviews be carried out, particularly if learning new material is predicated on the mastery of formerly presented content and skills. Experimental studies show that reviews of previously presented material relate to student achievement gains at both elementary and secondary levels (Emmer et al., 1983, Good & Grouws, 1979).

Presenting new learning material. Process-product research identifies three characteristics of effective presentation of new learning material to students. First, research at both elementary and secondary classrooms finds that teachers who are successful in promoting learning gains spend proportionately more time presenting instructional material to their students than their less successful counterparts (Evertson, Emmer & Brophy, 1980; Good & Grouws, 1979). Successful teachers used additional presentation time to provide explanations, used a variety of examples, checked for student

understanding, retaught learning material when necessary, and generally gave sufficient instruction so that students could complete independent seatwork activities with minimal difficulty (Rosenshine & Stevens, 1986). Second, the clarity of teachers' presentations is related to student learning gains (Bloom, 1976; Fisher et al., 1978; Kennedy, Bush, Cruickshank & Haefele, 1978; Stallings, 1980). Third, effective presentation involves appropriately sequencing hierarchical learning materials to ensure that students first master material they will need to apply to subsequent learning tasks (Good, 1983, Rosenshine & Stevens, 1986).

Rosenshine and Stevens (1986) have identified several components of effective classroom presentations from process-product research (see also Gage, 1978, Kennedy et al., 1978). These components include:

1. clarifying goals and main points in lessons by
   a) stating the goals or objectives of the presentations;
   b) focusing on one point (direction) at a time;
   c) avoiding digressions;
   d) avoiding ambiguous phrases and wording.
2. presenting material step-by-step by
   a) organizing and presenting the material so that one point is mastered before the next point is given;
   b) giving explicit, sequential directions;
   c) presenting an outline when material is complex.
3. providing specific and concrete procedures by
   a) modeling the skills when appropriate;
   b) giving detailed and redundant explanations for difficult points;
   c) provide students with concrete and varied examples.
4. checking for students' understanding by

a) being sure that students understand one point before proceeding to the next;

b) asking the students questions to monitor their comprehension of what has been presented;

c) having students summarize the main points in their own words;

d) reteaching the parts of the presentation that students have difficulty comprehending, either by further teacher explanation or through students tutoring each other.

The importance of pacing and evaluation is explicit in these components of classroom presentation. Teaching lower-ability students often requires that new material be presented in smaller steps, whereas higher-ability students might progress in larger steps at a faster rate (Brophy & Evertson, 1976; Evertson, 1982; Rosenshine & Stevens, 1986).

Providing initial student practice, feedback and correctives. Findings from process-product studies show that in more academically successful classrooms, presentation of new material is followed by initial teacher-led student practice. During initial student practice, teachers conduct question/answer sessions or assign practice problems or exercises to check for student understanding. It is important that all students have opportunities to respond to questions or exercises in this period (Anderson et al., 1979; Brophy & Evertson, 1976; Good & Grouws, 1979; Fisher et al., 1978; Kennedy et al., 1978; Stallings & Kaskowitz, 1974; Stallings, 1980). Teachers in more academically successful classrooms monitored student work closely and provided immediate and frequent content-specific feedback to students about their performance in contrast to undirected praise or criticism (Brophy, 1979; Rosenshine, 1979). They moved quickly to correct individual student errors by rephrasing questions, providing clues and prompts, and reteaching material if error rates were high (Anderson et al., 1979; Stallings & Kaskowitz, 1974; Good

& Grouws, 1979).

An important part of interactive teaching is the detection and correction of errors before students practice mistakes for a long period of time (Good, 1983; Rosenshine & Stevens, 1986). Findings suggest that initial student practice should probably continue until students demonstrate understanding and make few errors (Fisher et al., 1978).

Assigning independent student work. Process-product studies conducted in academically successful classrooms found that after students demonstrated reasonably high success during initial student practice, teachers assigned independent seatwork so that newly acquired skills could be practiced. The most common forms of independent work were individual seatwork and homework. However, unless these independent work activities are well-monitored, problems can occur. Studies conducted in elementary and secondary classrooms indicate that students spent more time working alone at seatwork than any other activity; estimates range as high as 75% of class time (Evertson, Anderson et al., 1980; Evertson, Emmer et al., 1980; Fisher et al., 1978; Stallings, Cory, Fairweather, & Needels, 1977). This research further indicates that students were less engaged during seatwork than they were during other types of instruction. For example, the Beginning Teacher Evaluation Study found that average student engagement was 84% during teacher-led discussion but only 70% during unsupervised seatwork (Fisher et al., 1980).

Seatwork is more effective if it is well distributed across class time. Students seem less likely to get off-task if they are not exposed to one activity for too long a period. In addition, these findings suggest that for seatwork or any other form of independent work to be beneficial, students must be adequately prepared. This preparation includes clear, explicit, and even redundant instructions for the completion of independent. In addition, teachers must monitor student work and provide substantive instruction,

feedback, and explanation when students experience difficulty. Effective teachers actively circulate around the classroom, monitor student work, ask questions, and give explanations during independent seatwork. All these teacher activities related to increased levels of student task engagement that is in turn related to student achievement (Evertson, Emmer, Sanford & Clements, 1983; Evertson et al., 1985; Fisher et al., 1980; Good & Grouws, 1979).

Conducting periodic reviews. Effective instruction includes periodically reviewing instructional routines and reteaching material in areas in which students experience lapses (e.g., Emmer et al., 1982; Good & Grouws, 1979). These reviews provide additional opportunities for teachers to check for student understanding and to ensure that students have adequately learned material necessary as a foundation for future knowledge and skills. Reviews also provide teachers with the opportunity to assess the effectiveness of learning activities and materials selected (Rosenshine & Stevens, 1986).

Process-product research identifies two other areas that relate to each of these elements of instruction and have an impact on student academic outcomes. These areas are teacher expectations for student learning and accountability for academic work.

Communicating expectations for student learning. Process-product studies have consistently found relationships between teachers' expectations for student academic performance and student achievement in basic skills. When teachers set high but attainable goals for student performance, achievement usually increases; when teachers set goals for performance that are low, achievement usually declines (Berliner, 1982; Brookover, Beady, Flood, Schweitzer & Wisenbaker, 1979; Brophy & Good, 1974; Cooper, 1979). The likelihood that teachers' expectations will become self-fulfilling prophecies for student learning is greatest when those expectations are inaccurate and inflexible.

Process-product research has identified several ways that teachers communicate expectations for student learning through differentiation in their instruction behavior. For example, some teachers have been found to tolerate more behavioral interruptions when working with low-achieving than with high-achieving students (Evertson, 1982). And, as indicated by other process-product research, the number of behavioral interruptions that occur in the classroom is negatively related to student achievement (e.g. Cooley & Leinhardt, 1980; Stallings, 1980). Teachers sometimes provide low achievers fewer opportunities to perform academically than high achievers and thus give fewer opportunities for low achievers to receive the necessary corrective feedback for learning. In addition, some teachers require more seatwork of low than of high achievers, while devoting more interactive teaching time to high rather than to low achievers. When called upon to answer questions, some teachers give low achievers less time to answer than high achievers, and when given incorrect answers, some teachers prompt high-achieving students more than low-achieving students in the proper direction (Brophy & Good, 1974; Cooper, 1979). While these differential teacher behaviors may serve to keep any activity ongoing in the classroom, they seem to communicate low expectations for academic performance to low achievers, that, in turn, contribute to further low achievement and to widening the achievement gap among students.

Establishing accountability for academic work. Several process-product studies found that teachers in high-achieving classrooms consistently held students accountable for academic work. Accountability appeared to be conveyed through teachers' expectations for student learning, through their efforts to make effective use of instructional time, and through maintaining student focus on learning activities. Another way teachers demonstrated that students were accountable for learning was by requiring that work be completed on time (Brophy, 1983; Good, 1983). Teacher expectations and

classroom work procedures appear to be significant influences on establishing an accountability system that increases student cooperation in academic activities that, in turn, relate to achievement gains (see Emmer, Evertson & Anderson, 1980; Evertson & Emmer, 1982; Moskowitz & Hayman, 1976).

The Sociolinguistic Perspective

From the sociolinguistic perspective, teaching is more than academic instruction. We have seen that during the course of lessons, teachers also present information to students about rules and expectations for participation and norms for behavior (Erickson, 1982; Green & Harker, 1982; Wallat & Green, 1982). In the linguistic environment of the classroom, instructional, and managerial communication occur simultaneously.

Sociolinguistic research asserts that the language used by teachers and students provides information about the teacher's implicit instructional goals and implicit theories of pedagogy (Cook-Gumperz & Gumperz, 1982; Green & Harker, 1982; Hymes, 1981). The ways that teachers interact with students within and across various activities, the types of feedback and sanctions given to students, both literally and tacitly communicate to students what is expected of them academically and socially and how instructional activity is to progress.

We examined how rules and expectations for participation and norms for behavior are established and communicated in our discussion of classroom management. In this section, we present findings from sociolinguistic research that relate more specifically to various aspects of academic instruction. Findings that relate to academic instruction fall generally into two broad categories: (1) patterns and functions of language use in instruction and (2) differentiation in language use and function among groups of students during instruction. Like process-product research that has focused primarily on

teacher instructional behaviors, the findings from sociolinguistic research reveal behaviors as they relate to instructional interaction. However, sociolinguistic research goes further to identify the functions and meanings of various types of instructional communication in classrooms.

Patterns of language use in instruction. According to the sociolinguistic perspective, instructional communication is framed within academic task structures (Erickson, 1982). These structures serve to organize academic work for students by presenting a logic for the subject matter taught, designating steps for the presentation of subject matter, and providing cues and strategies for completing instructional activities (Green, 1983b). In general sociolinguistic research finds that certain types of teacher-directed lessons begin with a relatively high density of one-way communication in which the teacher designates and enforces the order and structure of the lesson and explains the activities that will follow (DeStefano & Pepinsky, 1981; Guzman, 1980; Morine-Dershimer & Tenenberg, 1981). Then, throughout the course of the lesson, instructional communication is dominated by teacher-initiated exchanges. The greatest proportion of teacher talk centers on concrete information rather than discussion of process (DeStefano & Pepinsky, 1981).

Sociolinguistic research examines in detail a variety of types of communicative exchanges. Two types ofteacher-student communication that have been related to student achievement will be discussed here. The first type is teacher questioning. According to this perspective, questioning serves a variety of functions including instruction an evaluation. The exploration of the relationship between questioning and student learning is limited. However, Morine-Dershimer & Tenenberg (1981) found a positive relationship between individual student participation in classroom discourse and academic achievement. Further, they found that student responses and participation are influenced by the ways questions are asked and student perceptions of the

functions of those questions.

Morine-Dershimer and Tenenberg (1981) also focused on student perceptions of classroom language. Students reported that they generally answered questions because "someone asked." However, their rates of responses to questions were usually greater when the same question was asked of a number of students or when the teacher asked a series of questions to one student for clarification or evaluation. Students also reported that their responses were more salient to both themselves and the teacher when teachers initiated exchanges.

Students' perceptions of the function of questions also related to the frequency of their participation in discussions. The more students perceived questions as instructional and informative, the more likely they were to participate (Morine-Dershimer & Tenenberg, 1981). In general, students perceive the use of questions to teach or tell (Green, 1983b). However, students of higher-academic achievement, who had higher academic status with their teacher and peers, more frequently viewed questions as instructional. Students of lower status tend to attribute no particular function to questions teachers ask.

This difference in perceptions may be attributable to the ways teachers differentiate language use and behavior among higher- and lower-achieving students. As we have seen, teachers sometimes require less of lower-achieving students. Such differentiation may relate to differential student perceptions of teachers' communications, to their participation in academic discourse, and, in turn, to their academic performance.

Sociolinguistic research indicates that the instructional function of questioning is not only served during students' direct interaction with the teacher. Students learn from other students' answers to questions. During question-and-answer sessions, students listen to their peer's responses to find

out the correct answers and to check their own answers (Morine-Dershimer, 1981). Their attention rates to responses are higher when peers answer lower level convergent and higher level divergent questions (Morine-Dershimer & Tenenberg, 1981).

The second type of exchange examined by sociolinguistic research is teacher praise. Like other areas of communication, praise is a differentiated linguistic phenomenon. Praise functions to focus attention and confirm and reward appropriate behavior (Green, 1983b). Morine-Dershimer and Tenenberg (1981) found that strong praise (1) was highly salient, (2) was recalled more frequently by students, even though its actual occurrence was less than other forms of communication, and (3) was more likely to be distributed among higher-achieving, high status students than lower-achieving, low status students.

One important outcome of differentiated praise for student learning is again related to student participation in classroom discourse. Students who believe that praise is deserved--for example, for good ideas or good answers--are more likely to participate in question-answer sessions and discussions (Morine-Dershimer & Tenenberg, 1981). And, as we have indicated, such participation is related to student achievement. These findings are one more indication that differentiation in the instructional language of teachers has important implications for student learning. We now examine other ways that teachers differentiate their instructional communication.

Differentiation in instruction. Teachers differentiate instruction within lessons for high-and-low achieving groups of students (Guzman, 1980). They also vary feedback about rules for participation in discourse and expectations for student performance (Cherry Wilkinson, 1981; Collins, 1981; McDermott, 1976; Stoffan-Roth, 1981). Other studies have found that the amount of content teachers cover is usually greater for higher-achieving groups (Cole,

Griffin & Newman, 1981; Petitto, 1982). In lower-achieving reading groups, teachers place greater emphasis on pronunciation, grammatical errors, and single word decoding. Less emphasis is placed on reading for content and meaning (Collins, 1981). However, in high-achieving groups, teachers encourage students to develop meaning. While emphasizing higher level thinking, teachers often ignore errors in pronunciation, grammar, and decoding of higher achieving students (see also Allington, 1983, and Eder, 1981).

The differentiation of language use within lessons reflects differences in teacher instructional style (Erickson, 1982; Green & Harker, 1982). Indeed, differences in instructional approaches to different groups of students may be due to differing theories about the instructional needs of students. Rather than applying a single theory of pedagogy, teachers shift instruction according to their perceptions of different student needs (Petitto, 1982).

Conclusion

We have presented findings from two research traditions that illustrate different but complementary ways to look at classroom teaching. Each tradition views classrooms in different ways. Process-product research focuses on the teacher and looks across a large number of classrooms to identify teacher behaviors that correlate with student outcome measures. This tradition assumes teacher primacy and that teacher behaviors have a direct causal relationship to student outcomes. The relationship between teacher and student is considered linear and unidirectional and contextual variables are generally controlled. Sociolinguistic research, on the other hand, looks within classrooms to determine how language and face-to-face communicative interactions function in the teaching-learning process. This research focuses on communication between the teacher and students and among students themselves and is based on a recursive model of interaction among classroom participants. Classroom social group context, goals, and expectations are central to the sociolinguistic

tradition.

Each research tradition exposes different classroom events. In the area of planning and decision making, process-product research focuses on preactive measures that teachers take to plan the learning environment and academic work. Sociolinguistic research examines the moment-to-moment responses of teachers and students during the course of classroom activity. In the area of classroom management, process-product research identifies the formal rules and procedures teachers implement to structure the physical aspects of the classroom, manage resources, and control student behavior. Sociolinguistic research explores the functional nature of rules and expectations that create a communicative social context, govern conversation and behavior, and determine access to classroom discourse and, thus, access to learning. Finally, in the area of academic instruction, process-product research focuses on sequences of teachers' instructional behaviors. Sociolinguistic research focuses on patterns and functions of language use in instruction.

These research perspectives illustrate two important dimensions of knowledge that are crucial to develop a more complete understanding of teaching and learning processes. The first is of the general processes and behaviors that relate to student learning across a variety of situations. Of equal importance is knowledge that explains how those processes operate and function within specific contexts across time. It is important to develop these two bases of knowledge about phenomena and to distinguish between knowing that relationships among them exist and knowing how those relationships function. Studying phenomena from the process-product perspective has provided useful information that addresses the that's; research from the sociolinguistic perspective is useful for understanding the how's . Without both perspectives we are left with a partial understanding of classroom phenomena that limits

efforts at program and policy development, and programs to improve teaching.

Without a view that looks across classrooms, we cannot identify the broad frameworks of behavior and activity that seem to promote learning. Without a view that looks within classrooms, we cannot anticipate how interventions and innovations will function. As research on change and innovation makes clear (e.g., Fullan, 1982), it is at the classroom level that efforts to understand teaching and ultimately to improve teaching will either succeed or fail.

Figure 1. Primary focus of research traditions by area of classroom activity

Area of classroom activity	Foci of research traditions	
	Process-product	Sociolinguistic
Planning and decision making	Preactive measures to plan the learning environment and academic work	Moment-to-moment responsiveness during classroom activity
Classroom Management	formal rules and procedures implemented to structure the physical aspects of the classroom, manage resources, and control student behavior	functional rules and expectations that create communicative contexts, govern communication and behavior, and determine access to classroom discourse
Academic Instruction	frequencies and sequences of teacher behavior	patterns and functions of language use in instruction and influence on instruction, participation, and access to learning.

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