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ABSTRACT

It has been noted that students have an influential role in determining the nature of classroom events in the middle grades and that their teachers adjust their classroom behavior in response to the characteristics of students in the class. This paper analyzes instruction as discourse between teacher and students and the collaborative nature of their interaction. In considering reciprocity in instruction, the characteristics of high-quality instructional discourse are examined. These characteristics include: (1) authentic questions which seek a high input from the student; (2) the teacher's incorporation of a previous student answer into a subsequent question; (3) teacher response which validates the student's impact on the course of discussion; (4) questions eliciting nonroutine generalizations, analyses, or speculations; (5) encouragement of thoughtful student questions; and (6) high level of student participation. A discussion is presented on the effects of classroom organization on instructional discourse and the effects of instructional discourse on student achievement. A brief description is given of a pilot study conducted to examine the conditions of instructional discourse. A bibliography is included as well as data from the pilot study. (JD)

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A STUDY OF INSTRUCTION AS DISCOURSE[1]

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Introduction

What kinds of teaching most successfully promote academic achievement? Although this is one of the most obvious and frequently asked questions in educational research, the complexities of the answer -- or indeed even the question -- are not well understood. In this paper, we argue that to apprehend the link between teaching and learning, it is first necessary to develop a theoretical approach to classroom instruction. Such an approach must be guided by recognition of instruction's dynamic and reciprocal nature. Further, an adequate theory must not only propose a relation between certain instructional events and student outcomes; it needs to indicate how the relation comes about as well.

Studying the connection between instruction and learning is particularly important in light of the well-known finding that most of the variation in how much students learn occurs within rather than between schools (e.g., Jencks et al., 1972). That is, with respect to achievement rates, schools are much more alike than they are different; and students differ from others in the same school almost as much as they differ from those in other schools. Consequently, while new, promising approaches to detecting school-level effects on achievement have appeared -- such as a focus on organizational conditions including goals and leadership (see, e.g., Purkey and Smith, 1983, for a review) -- such efforts will never be able to account for more than a small fraction of the differences among students. It is potentially far more profitable to seek sources of achievement variation where the variation occurs: inside schools. Addressing questions of what teaching produces the most learning, and how, will help show why some students learn more than others, in the same school and elsewhere.

I. Views of Teaching and Learning

Many educational researchers have been concerned with the relation between instructional activities and student outcomes. Perhaps the greatest number of them have followed the approach known as the "process-product paradigm" (for reviews, see Dunkin and Biddle, 1974; Doyle, 1977; Brophy and Good, 1986). According to this perspective, student outcomes (the "product") result from instructional conditions (the "process"). Elements of instruction include a myriad of teaching activities, ranging from goal-setting, to teacher leadership (e.g., direct vs. indirect), to classroom management (e.g., clarity, firmness), and so on. One study reported correlation coefficients for some five hundred indicators of instruction (Brophy and Evertson, 1974).

In an insightful critique, Barr and Dreeben (1983) argued that the process-product approach lacks a clear conception of what teaching is and how it works. Variables considered by process-product researchers are not derived from a theoretical account of instruction. Instead, they are selected on intuitive grounds, or because they have been included in previous studies. Little attention is given to the problem of exactly how a given teaching behavior is supposed to produce outcomes. As a consequence,

> The studies can only be interpreted on an ad hoc basis, finding by finding. . . . And while the annals of process-product research undoubtedly contain important findings, the formulation itself is incapable of identifying which among the multitude they are or why they are important (1983, p.29-30).

Lacking a theoretical base, this type of research cannot cumulate into a coherent body of knowledge. While some empirical generalizations may be possible, they

fail to provide a penetrating, comprehensive understanding of the connection between teaching and learning.

As an alternative, Barr and Dreeben (1983) proposed that what matters most for student learning is the teacher's application of instructional resources in the classroom. For example, the more time available for instruction, and the farther students progress in the curriculum, the more learning occurs. This focus on resources reveals not only what contributes to achievement, but how achievement gets produced. Barr and Dreeben's argument, that learning occurs when teachers employ resources allocated by district and school administrators, provides a conceptual framework within which one can understand the production of schooling effects. An increasing number of studies supports the position that time and coverage raise achievement (Barr and Dreeben, 1983; Rowan and Miracle, 1983; Fisher and Berliner, 1985; Dreeben and Gamoran, 1986; Gamoran, 1986, 1987; Lockheed, Vail, and Fuller, 1986).

The focus on the use of resources is limited, however, by its inattention to variation in the activities with which time is spent and material covered. Although it provides valuable information on the breadth of instruction, less is known about the depth at which class content is analyzed. Indeed, recent work suggests that pressure for extensive coverage diminishes the cognitive level at which material is discussed (Newmann, 1988). Moreover, as students leave the primary grades, the character of classroom activities is likely to become as important as the resources used in those activities. Upon reaching adolescence, students assert themselves more, changing the nature of instruction from being entirely teacher-led to interaction that is still dominated by the teacher, but

influenced in fundamental ways by the reactions of students (see, e.g, Metz, 1978).

The need for more information on the flow of classroom events requires us to reconsider the analysis of instructional activities as found in process-product research. Unlike that tradition, however, we maintain that examination of instruction must result from an a priori theoretical account of teaching. Just as Barr and Dreeben (1983) developed a conceptually-grounded formulation of the use of resources in teaching, we have sought an approach to the activities of teaching guided by theoretical notions of the operation and consequences of instruction.

II. Teaching and Learning in the Middle Grades

Several recent ethnographers have described the influential role of students in determining the nature of classroom events in the middle school grades. Metz (1978) found that junior high teachers adjust their classroom behavior in response to the characteristics of students in the class. For example, teachers' demands on students in high-track classes differ from what they require in lower tracks. High-track lessons are more frequently characterized by oral work -- lecture, recitation and discussion -- whereas low-track students are given highly structured written assignments, such as worksheets. Teachers say these instructional differences are not only necessary to maintain control of the classes but are also preferred by the students: low-track students would rather avoid the public exhibition of oral recitation, and they like the structure and clear expectations inherent in worksheets.

In another junior high, Everhart (1983) documented student resistance to domination fostered by teachers and administrators. Although based on the work

of Willis (1977), who showed how working-class students' resistance to school authority results in cultural and economic reproduction, Everhart's students were not limited to those of working-class origins. Nonetheless, he found that students try to subvert the efforts of teachers in numerous ways. For example, they attempt to change the class agenda, delay the giving of assignments, cheat, and so on. Thus, Everhart suggested that

> The student was not simply a pawn in the classroom environment created by the teacher, but rather was an active participant in the dynamic interaction which made any one class what it was on any given day (Everhart, 1983, p. 197).

In the accounts of Willis and Everhart, student influences on classroom life detract from the school's academic goals. But in principle at least, this need not be the case. Students who attempt to change the class agenda do not always do so in order to subvert, but instead may wish to focus academic efforts on a subject of interest to them or about which they have some expertise. McLaren (1986) argued that schools must incorporate students' experiences in academic work. Teachers, he urged, should reduce their dependence on "overlord" or "entertainer" roles, and instead should draw upon students' knowledge and experiences to help them discover new knowledge. In observations at a Toronto junior high, he found this type of instruction to be rare, despite its potential for success.

The ethnographic works of Metz, Willis, Everhart, and McLaren indicate the importance of students' roles in shaping instruction. Any theoretical account of instruction will need to take this into account. In addition, such a formulation will need to indicate how various aspects of instruction are related to one

another, what their relation to achievement is, and how these associations come about.

III. Instruction as Discourse

Most models of instruction view learning as the result of what teachers plan for and provide students, i.e., what teachers do to students. Especially for writing and reading, instruction has been treated as a problem of curriculum, i.e., what to teach (Nystrand, 1986, p. 3-5). Adherents of this approach see instruction as a one-way transmission of knowledge from teacher and texts to students, and they typically assess students' knowledge for its congruence with curricular aims and objectives. In these terms, what students learn in school is like a Platonic imitation, of varying degrees of verisimilude, of textbook and teacher knowledge.

In our studies of instruction instruction in secondary school English and social studies, however, we have in mind not what teachers "do to students" in this sense but rather what teachers and their students do together, i.e., what Michaels (1987) calls "the day-to-day practice of a 'curriculum.'" In this sense, the actual curriculum -- as opposed to the ideal or intended curriculum (for example, as written up in a curriculum guide) -- is negotiated by the teacher and class. Superficially, this negotiation is visible in the give-and-take of classroom talk (e.g., Flanders, 1970). But such ostensible interaction is pedagogically less significant than the cognitive interaction that occurs--or does not occur, as the case may be -- between teacher and students. When this interaction takes place, the result is a series of temporarily shared understandings of subject matter among members of the class -- i.e., it is a social reality -- and the course of instruction, whether considered on any given

day or examined as a whole for an entire term, may be analyzed in terms of the modifications and expansions performed on this social reality. It is in this sense that we may speak of instruction as a negotiation of meaning by and between teacher and students.

One recent model of instruction has stressed the collaborative nature of instruction, viz. the work of Applebee and Langer on writing instruction (Applebee, 1986; Applebee and Langer, 1983; Langer and Applebee, 1987). These authors view effective writing instruction as a matter not of providing information and evaluating what students have learned, but rather of carefully orchestrating writing tasks of increasing difficulty and providing effective, collaborative support for the students. Building on work by Bruner (1978), Cazden (1980), Halliday (1977), and Vygotsky (1962) on early language development, they treat learning as:

> a process of gradual internalization of routines and procedures available to the learner from the social and cultural context in which the learning takes place. Typically, new tasks are learned by engaging collaboratively in tasks that would be too difficult to undertake alone but that can be completed successfully in interaction with the parent or teacher. In this interaction, the role of the parent or teacher is to provide the necessary support, or scaffolding, to allow the child to complete the task and in the process to provide the child with an understanding of the problem and of the strategies available for its solution (Applebee, 1986, p. 108).

In these terms, Langer and Applebee (1987, pp. 140-141) conclude that effective writing instruction requires that (a) teachers and their students share a common

understanding of the specific goals of instruction and (b) teachers and their students both treat instruction as collaborative interaction. Such collaborative interaction is possible, they contend, only if writing tasks encompass the students' as well as the teacher's purposes.

We believe this essentially social view of instruction can be extended to include not only writing but also reading and classroom discussion. A brief example from our observations of teacher questions in high- and low-ability classes shows more clearly what we mean by **curriculum negotiation.** Though teachers of low- and high-ability students ask very different questions, less than one percent, on average, of all the teacher questions we have observed have gone unanswered; only rarely do teachers ask questions which fail to get relevant responses. We can think of only one explanation for this remarkable success: as competent conversants, teachers astutely know what their students are capable and incapable of responding to, and ask questions accordingly. In this sense, the questions that teachers ask are only partly a result of what the teachers intend to teach. More to the point, they are the result of what teachers know they <u>can</u> ask, and their questions in effect bridge their own instructional intentions and their students' capabilities. In other words, even though only one person (typically the teacher) asks each question, the questions are nonetheless negotiated constructs between the speaker's intentions and the listeners' expectations and capabilities.

Put in other terms, teachers and their students understand each other to the extent that <u>reciprocity obtains between them</u> (cf. Nystrand, 1986). No human intercourse -- not even classroom interaction -- is possible without at least a modicum of reciprocity between the conversants. Hence, the questions teachers

ask, as well as the answers students give, must strike a balance between what the teacher intends, on the one hand, and what the students expect and can understand, on the other.

In far too many classes, teachers and their students go through motions that, though trivial as forms of discourse, are nonetheless in accord with the mutual expectations of the participants for school. In one English class we observed, for example, students engaged in several apparently open ended, imaginative writing tasks requiring them to write from the point of view of a pencil eraser or a bullet. Upon close inspection of these exercises and especially the teacher's responses to the papers, we eventually came to understand that, from the teacher's point of view, the content of student responses to these prompts-- imaginative or not -- was irrelevant; nearly the only thing the teacher responded to in his marginal comments was whether or not all the words had been spelled correctly. As it happened, the students in this class understood the operational rubric for this exercise and played their roles more or less suitably well, and so there was a kind of reciprocity between students and the instructor. But in point of fact the ostensible purpose (imaginative discourse) and the actual purpose (correct spelling) of the writing tasks significantly differed; the writers were not really speaking to a reader who was listening to what they were trying to say. Hence, the reciprocity of these tasks concerned procedures, not substance. In terms of Bloome and Argumedo (1983), these writing tasks were **procedural displays**; in terms of Britton et al (1975) they were **dummy runs**. For there to be full reciprocity in instruction, the ostensible and actual purposes of the discourse must be aligned.

More generally, we may say that reciprocity in instruction is most fully maintained when students, as well as teachers, have some input into and control over instructional discourse, including writing, reading, classroom talk, and when their previous learning significantly affects the course of subsequent learning. This concept has been implemented in some elementary reading instruction by Palincsar and Brown (1984) in what they call **reciprocal teaching.** In reciprocal teaching, students take turns being the teacher. In other classrooms where students do not play the role of teacher, the teachers nonetheless honor the terms of reciprocity when they avoid prespecifying answers to their questions so that student answers can potentially affect subsequent questions and discussion. When teachers ask genuine questions of this sort, they treat students as full-fledged conversants. In contrast to low-quality instructional discourse, in which reciprocity extends merely to procedures, **high-quality instructional discourse** is characterized by the following:

1. Authentic vs. Inauthentic Questions

In our research, we code questions as authentic if they are genuinely open-ended or if they have no prespecified answers. Authentic questions allow students considerable input into discussion. By contrast, inauthentic questions allow students no input into the course of the discussion since the agenda for questions and answers is set by the teacher before the class even begins. Hence, "What was the main cause of the Civil War?" is an inauthentic question if the teacher has a particular answer in mind, e.g., from the textbook. By contrast, "What do you think the author is trying to do here?" is authentic if the teacher is receptive to the student's opinion on this point and does not insist on a particular answer. (In a middle category, we also code quasi-authentic

questions; these are questions that allow some degree of student control over the flow of discussion, e.g., "What was one of the principal causes of the Civil War?" In this type of question, the student's answer [1 of n possible right answers] partially determines the teacher's next question and therefore the course of the discussion.) Inauthentic, quasi-authentic, and authentic questions can be distinguished conceptually in terms of the "degrees of freedom" they offer students in a discussion. An inauthentic question allows only 1 possible right answer, a quasi-authentic question allows 1 of n possible right answers (maximum: n-1), and an authentic question allows an indeterminate number of acceptable answers (which is not to say, of course, that all answers to authentic questions are acceptable). To the extent that question-and-answer exchanges between students and teachers are characterized by high proportions of authentic questions, the teacher becomes less able to predict the questions and answers in sequence. Consequently, authentic questions prominently underscore the character of instruction where students are "major players" in classroom question-and-answer sessions, where communication is not a one-way affair, and consequently where the terms of reciprocity are upheld not merely in procedures but in substance as well.

2. Uptake

Another manifestation of high-quality instructional discourse is uptake (Collins, 1982), i.e., the teacher's incorporation of a previous student answer into a subsequent question. Here is an example:

Teacher: What is a lobbyist?

Student: Someone who represents someone else.

Teacher: "Represents" for what purpose?

In this exchange the teacher's second question is an example of uptake because it incorporates and, in this case, actually quotes part of the student's response ("represents"). Uptake is often marked by the use of pronouns: "How did it work?", "What causes this?", and "What city grew out of this?" all exhibit uptake because in each case the pronoun (technically a deictic reference) refers to a previous answer. High-quality instructional discourse frequently manifests uptake because, like authentic questions, it accommodates considerable input from students.

3. Level of Response

We treat teacher responses to student answers as high-level discourse if (a) the student contributes something to the discussion that changes or modifies the topic or course of discussion in some way, and (b) the teacher certifies this contribution and modification. For example, the teacher might seek to draw out a student with a followup question, or the teacher might respond to a student by saying, "Good point. Could you say some more about that?" or "How does that point relate to what [another student] said just a minute ago?" For level of response to be high, the response must be more than "Good," "Good idea," or a mere repeat of a student's answer. We do not consider as high-level student

responses that trigger the teacher's introduction of new information or elaboration of a point; what is at stake here is the student's impact on the course of discussion. For level of response to be high, the teacher must validate the effect of the student response on the course of the discussion.

When teachers ask inauthentic questions, their purpose is often to check student understandings. This is typical of recitations, for example, in which teachers elicit reports of assigned readings. In such recitations, teachers often say no more than "No" or "Ok" in their evaluation of students' responses; often the teacher will actually say nothing but merely nod in the nonverbal equivalent of a checkmark. By contrast, when teachers ask authentic questions, their responses to student answers are often more sustained since their purpose is not to check student understandings but rather to entertain student ideas, analyses, and new information. Hence, we would expect high level responses to follow authentic questions.

4. The Impact of Authentic Questions on the Cognitive Level of Discourse

Normally the authenticity of a question bears no relation to its cognitive level. Some authentic questions elicit no more than a record of thinking, e.g., "How does it make you feel?"; others elicit merely a report of past thinking or affect, e.g., "Did you like the story?" Nonetheless, there is one noteworthy category of teacher questions in which authenticity is regularly associated with higher order thinking, by which we mean the novel application and organization of prior knowledge (cf. Newmann, in press), as in the elicitation of nonroutine generalizations, analyses, or speculations. Many inauthentic, low-level questions are transformed into higher order questions when they are asked authentically. Hence, "Why did the President order troops to Central America?"

is an inauthentic question eliciting a report if the intent of the teacher asking the question is to review material and points from a previous lesson or reading assignment which covered the president's motive explicitly. But virtually the same question elicits an analysis when it is asked authentically: e.g., "So why do you think the President ordered troops to Central America?" The second question makes clear, by the words "So why do you think," the teacher's intention to get students to do an on-the-spot analysis whereas the first, because it says nothing about what students think (and therefore makes someone else's thinking the focus of the question by default), makes clear the teacher's intent to check students' abilities to recite the thinking of this other person.

5. Locus of Control

If students are to have considerable input into a class discussion, they will, of course, need to ask many of the questions, and so our various measures examine this variable. But locus of control is important for a very special reason beyond this obvious one. Almost any inauthentic question that teachers can ask is authentic if a student asks it. This is due to the fact that students, unlike teachers, never prespecify the answers to their questions; they always need to know what they ask. (We did in fact one time note an episode of classroom discussion in which a student's questions were inauthentic. A second look showed why: the teacher had asked the student to "be the teacher" and ask the questions. Apparently one of the key token behaviors that typify teachers for students is asking inauthentic questions!)

6. Level of Participation, Frequency, and Quantity

Of course, high-quality instructional tasks can only affect achievement to the extent that students are continuously engaged in them. Hence, we collect data concerning not only authenticity, uptake, locus of control, and level of response but also (a) the frequency with which they occur; (b) the quantity of writing, reading, and classroom discussion exhibiting these characteristics; and (c) the level of student participation, i.e., the extent to which students are actually involved in such tasks.

IV. The Effects of Classroom Organization on Instructional Discourse

1. Peer Groups and Collaborative Learning

Some types of classroom activities and instructional tasks manifest higher degrees of substantive reciprocity than others. One such example is collaborative learning in small groups of peers. In normal talk, which typically occurs in small groups of peers working together, talk is authentic in the sense that the conversants don't quiz each other but exchange only that information they actually need to know. Uptake is also high so long as the conversants listen and respond appropriately to each other. Level of response is comparably high. Therefore, normal expectations for small-group work are: LOCUS: student; AUTHENTICITY: high; UPTAKE: high; and LEVEL OF RESPONSE: high. Apart from these variables, cognitive level and level of participation will normally vary from group to group, class period to class period.

2. Class Size

Class size is also a factor. Generally speaking, the terms of reciprocity are easier to honor more fully in small classes where teachers and students converse face-to-face. In our recent observation of one class of only four very

low-ability students, we were impressed with the quality of the talk, which consisted of a high-level analysis of a text with many authentic questions, a lot of high-level responses, and a very high level of participation. We think the high-quality of discourse displayed in this lesson would not have been possible in a more typical class where face-to-face interaction is avoidable.

3. Ability Grouping

Prior observational studies of ability grouping at the secondary level give us strong reason to anticipate that higher level groups will be characterized by more high-quality instructional discourse. Observers have noted that teachers of high-track classes typically introduce more interesting and complex material at a faster pace (affecting FREQUENCY, QUANTITY, COGNITIVE LEVEL); ask more critical-thinking questions (affecting COGNITIVE LEVEL, AUTHENTICITY, CONTIGUITY); and use more constructive criticism (affecting LEVEL OF RESPONSE) (Hargreaves, 1967; Keddie, 1971; Metz, 1978; Ball, 1981; Schwartz, 1981). At the elementary level, Collins (1982, 1986) found significantly fewer teacher uptakes in low-ability than high-ability reading groups. These instructional differences may account for achievement differences often found when comparing students in different ability-level classes (Gamoran and Berends, 1987).

Despite the consistency of these findings, it is not clear that such instructional differences are inherent in the nature of ability grouping. In principle, at least, it would seem possible to promote high-quality discourse in low- as well as high-level classes. In English, for instance, teachers may effectively manage high-quality discourse in low-ability sections through the use of journals, peer-group work, and other techniques that allow students some input into instruction. Taking journals as an example, the high quality of this kind

of discourse (very high values by definition of the genre for all of our discourse variables except, perhaps, cognitive level) largely results once the teacher acknowledges the personal knowledge of the student as legitimate and worthy of attention in school. By contrast, if teachers teach the very same titles to their low-ability groups in the same way as they do to their high-ability groups (same reading, same questions, same papers, etc.), the instructional discourse in the low-ability classes will probably be of low-quality since the students in these classes will not have the prerequisite knowledge to deal with the instructional tasks; and because they cannot understand the material, the terms of reciprocity will be severely strained, limited only to procedural displays and dummy runs.

It is not uncommon for English teachers of low-ability students to emulate the curriculum of high-ability classes by assigning 5-paragraph themes, sentence exercises, and various other sorts of pseudo-discourse all in the name of "writing" instruction; to teach abbreviated, fragmented versions of standard titles read in high-ability classes; and to "cover" these titles by asking students to memorize highly abstracted lists of "facts" from them, all in the name of "literature" instruction. The reason such approaches are ineffective and unengaging for low-ability students is that they violate the terms of reciprocity, and as a result the students are unable to cope except on a superficial, procedural level. A major effect of such pseudo-forms is to "filter out" or neutralize the potential benefits of the writing and reading that these students do engage in, hence giving students even less experience with writing and discourse than one might conclude from a cursory inspection of the

curriculum. This discourse deprivation, not surprisingly, yields poor achievement.

Reciprocity plays itself out differently in different ability groups. More specifically, the requirement for reciprocity in discourse configures different oral registers and written genres in different tracks, and this difference is no doubt a major reason why instruction varies from group to group, i.e., why different groups are involved in different kinds, amounts, and qualities of instructional discourse.

V. The Effects of Instructional Discourse on Achievement

Why should honoring the terms of reciprocity, in substance as well as procedures, promote significant learning? First, the character and tone of classroom discourse set important expectations for learning. When teachers ask genuine questions about what students are thinking (and not just to see if they have done their homework), they promote fundamental expectations for learning by treating students seriously as thinkers, i.e., by indicating that what students think is interesting and indeed worth examining. Hence, the quality of discourse is important because it establishes a climate for learning and communicates teachers' expectations for their students' thinking.

Good discourse facilitates learning, moreover, by promoting students' engagement with their studies. When teachers ask students to explain their thinking and not just report someone else's, they treat each student as a primary source of information, thereby giving them all an opportunity to deal with things in their own frames of reference. We may usefully categorize instructional discourse -- writing, reading, and talk -- by the extent to which students have an opportunity to balance what they do not know (i.e., new information) with what

they do (old or given information). Certain kinds of classroom talk and writing assignments (e.g., journals, drafts, "learning logs," and authentic questions) afford far more opportunity and flexibility than others (e.g., most exams and essays used for examining purposes) for students to contextualize and assimilate new information. These particular kinds of instructional discourse are therefore potentially engaging.

In an analysis of college writing instruction, Nystrand (1986, chapter 8) showed that students who participated in peer conferencing -- regularly presenting their writing to small groups of four or five classmates for discussion and review -- learned to write more effective expository writing than others who wrote only for the teacher. Those engaged in peer conferencing increasingly viewed their readers as collaborators in a process of communication and treated revision as a matter of reconceptualization, whereas the group writing for the teacher increasingly viewed their readers as judges and treated revision as a matter of editing. This study provides empirical support for the notion that instruction that is engaging and collaborative, involving give and take on both sides, will more successfully promote learning, at least in areas involving higher-order cognitive skills.

VI. Summary of Instructional Measures. To summarize, we argue that measuring the quality of instructional discourse requires data on the following activities, each representing a prominent component of instructional discourse:

1. Classroom discourse, including teacher-led discussion and group work;
2. Writing and revision, including seatwork, use of textbooks, homework, and tests and exams;

3. Reading, including seatwork, use of textbooks, homework, and tests and exams.

For each oral, writing, and reading activity, we have identified eight discourse variables:

1. **Quantity:** amount of discussion, number of writing and reading assignments, amount of revision;
2. **Frequency:** how often students discuss, write, and read;
3. **Level of participation:** extent to which students are on task, completing writing and reading assignments, and actively participating in classwork and class discussion;
4. **Locus of control:** extent to which students ask questions, choose reading selections, pick topics for writing tasks, and otherwise initiate discourse;
5. **Authenticity of discourse:** extent to which teachers avoid prespecifying answers to their questions and assignments (or avoid asking questions and giving assignments with prespecified answers) and, instead, ask questions and design tasks that elicit opinions and new information. When questions and tasks are authentic, the pedagogical and ostensible purposes of the discourse are identical;
6. **Level of response:** extent to which writer or author is treated as a primary or secondary source of information and opinion;
7. **Cognitive level:** extent to which discourse, on the following scale, involves:

    1: record [of an ongoing event];

    2: recitation and report of old information;

3: generalization;

4: analysis; and

5: speculation

These categories are derived from Applebee, 1981; Britton et al., 1975; Moffett, 1968.

8. **Contiguity:** extent to which individual activities and comments relate to other discourse activities and comments. This includes extent to which participants in discussion follow up each other's comments (uptake), the extent to which writing assignments relate to class discussion and/or reading assignments, the extent to which writing tasks allow for prewriting and rewriting, and the relation of teacher response to student work.

Each of these discourse variables is an important component of discourse quality and, as such, reflects an aspect of engagement in student learning; as a group they provide an index of discourse quality.

VII. Some Exploratory Analyses: Ability Grouping and Instructional Discourse

To examine the conditions of instructional discourse empirically, we have conducted a pilot study in three middle and two high schools in a mid-sized midwestern city. Classroom observational data for this paper come from nine English classes -- five in eighth grade and four in ninth. Each class was observed on four occasions. Students completed questionnaires as well as tests of literature and writing in seven of these classes. In addition, teachers of these and other classes filled out questionnaires on classroom reading, writing, and discussion activities.

The primary purpose of the pilot study was to explore the feasibility of assessing our formulation of instructional discourse. In this paper, we consider whether the data are consistent with our expectations for the links between ability grouping, instructional discourse, and achievement.

Results from student questionnaires show that students in low-ability English classes were required to submit writing assignments to their teachers 1.8 times more frequently than their high-ability counterparts (4.2 vs. 2.3 times per month). There were significant differences, however, in the character of this written work. Students in low-ability English classes did grammar exercises 2.6 times as frequently as did their high-ability counterparts, did reports 2.4 times as frequently, and filled in blanks 5 times as often. In addition, they answered true-false questions 4 times as frequently, and completed multiple-choice questions 4.1 times as often. In their responses to low-ability students' papers, teachers commented 2 and 2.3 as much about spelling (in marginal and terminal comments respectively), 1.8 as much about punctuation, and 2.0 much about grammar; but in their responses to high-ability students' papers, teachers commented 1.7 and 1.9 as much about content (in marginal and terminal comments respectively). And although they met both low- and high-ability students about as infrequently in writing conferences (1 vs. 1.1 times per month on average), they discussed spelling 2.6 as much with the low-ability students in these conferences, and they discussed content 1.9 times as frequently with high-ability students. These data are summarized in Table 1.

[TABLE 1 ABOUT HERE]

These data show that low-ability students, in contrast to high-ability students engage in far more clerical as opposed to compositional tasks; indeed

many of their so-called "writing" tasks, such as filling-in-blanks, are not discourse at all. Their writing is more formulaic, and the level of response to their writing is lower. In these low-ability classes, the terms of reciprocity are clearly limited to procedures and, in some cases, unobserved.

Table 2 presents differences between classes at different ability levels derived from classroom observations. Again, key aspects of instructional discourse favor high-ability classes: more students in high-level classes participate actively, and far fewer are off-task; students ask a larger share of the questions; more of the teacher's questions are authentic; teachers provide more high-level evaluations of students' responses; and the cognitive level of questions is lower in low-ability classes. Few of these differences are statistically significant, but in light of the small number of classes involved, the pattern of findings seems to support our initial expectations. However, neither the amount of uptake, nor the frequency or quantity of discussion, increase as class ability levels rise.

[TABLE 2 ABOUT HERE]

In Table 3, we present class ability-level differences for measures of writing and reading tasks taken from teacher questionnaires. The pattern of results here, too, tends to indicate higher quality discourse in high-ability classes. Many of the differences result in significant F-values (of course, the results in table 3 are derived from questionnaire data from many more classes than the results summarized in table 2.) Participation, locus of control, and authenticity vary directly with ability level. Level of response is also highest in high-level classes, but interestingly, response in low-ability classes is nearly as high. The cognitive level of writing tasks exhibits a similar pattern.

[TABLE 3 ABOUT HERE]

Table 4 displays correlations between the measures of instruction and students' scores on two achievement tests: a literature test, in which students were asked a series of questions about some stories they had read for class during the year; and a writing test, for which students wrote an essay about a topic they selected. The results suggest that, as we argued earlier, these aspects of instruction are linked to student learning. Authenticity, level of response, and cognitive level show particularly consistent positive relations with achievement on both tests. Student-centered discussion and writing are also associated with higher achievement, as are overall contiguity and some of the frequency, quantity, and participation variables.

[TABLE 4 ABOUT HERE]

Interestingly, several of the variables that are correlated with achievement are not among those related to class ability levels. Frequency of reading and writing, quantity of reading, and overall contiguity failed to show a relation to ability group level. In fact, low-group classes ranked highest in several of these. Moreover, in authenticity of teacher questions, response to student writing, and cognitive level of writing -- three areas that favored high-ability classes -- low-ability classes were not far behind.

This pattern of results has two important implications. First, it suggests that the instruction-achievement correlations are independent of class ability level in many cases. Second, it suggests that these aspects of instruction may be potent sources of achievement gains in classes at a variety of ability levels. Our data are too limited to test these hypotheses, but a larger sample would make such tests possible.

VIII. Factors Mitigating against the Quality of Reciprocity in Instruction

If we are correct about the nature of effective instruction, then we might hope to provide guidance to interested teachers on improving the quality of instructional discourse in their classrooms. However, several conditions common to current teaching practices mitigate against the terms of quality of instructional discourse. One is the pressure to cover a curriculum while conveying certain kinds of knowledge in certain timeframes (Newmann, 1988). As teachers favor breadth of coverage over depth, there is simply little time left at the ends of periods for the pursuit of authentic questions and high level responses.

Normative views of teaching may also work against high-quality instructional discourse in the classroom. As Mehan (1979) has shown, the usual structure of classroom discourse is tripartite: (a) the teacher asks a question, (b) a student answers, and (c) the teacher evaluates the answer. This pattern, with its third slot exclusively reserved for teacher evaluation, favors recitation over other kinds of discourse and is unlike any other kind of talk. It embodies a view of students as "empty vessels" that are to be "filled" by teachers and permits little opportunity for genuine exchange. This preference for "recitable information" affects low-ability classes even more negatively than their regular- and high-ability counterparts since low-ability classes typically get a refracted, watered down, and, particularly for the students, fragmented rendition of the regular curriculum; it is as if low-ability students must understand a book by dealing only with the index (Page, 1984).

In writing instruction, students are regularly exhorted to write for an anonymous, reified General Reader, one who never reads and who, unlike any real

reader, apparently has no actual purposes in reading; and five-paragraph themes are clearly favored over more authentic forms of written discourse such as journals and learning logs. Demands for regular assessment and testing of students also mitigate against high-quality instructional discourse. Indeed, the wide spread use of right-wrong, true-false, multiple-choice, and fill-in-the-blanks tests mitigates altogether against discourse of any kind.

IX. Conclusion

Viewing the character of instruction as a prime determinant of student learning has a strong intuitive appeal, yet theoretical understanding of how the connection occurs has been limited. Our approach starts with the notion that instruction can be seen as a form of discourse, and as such it is subject to the constraints inherent in any form of communication. On the basis of earlier work (Nystrand, 1986), we argued that instruction that fully honors the terms of reciprocity in discourse is likely to be successful in promoting learning. Thus, the effects of instruction on learning can best be understood by examining what teachers and students do together in classrooms, with a particular focus on such features as the authenticity, locus, contiguity, and cognitive level of discourse.

Although this formulation supposes that high-quality instruction is possible with students at all ability levels, it was not surprising to observe that in many cases, aspects of instruction that we expect to promote learning occurred more often in high-ability classes. Several measures of authenticity, level of teacher's response, locus of control, and level of participation favored these classes. Most of these variables were also positively correlated with achievement in literature and in writing. However, other dimensions of

instruction appeared more equitably distributed. Indicators of cognitive level and of overall contiguity, for example, were essentially unrelated to ability grouping and yet were still correlated with achievement. These findings may reflect the possibility that instructional quality varies independently of class ability level.

The findings of this pilot study raise a number of hypotheses which we hope to address in future work. Data from a much larger longitudinal sample will allow us to test the proposition that variation in the aspects of instruction explored in this paper contribute to differences in student achievement. Further, we hypothesize that variation in instructional quality accounts for a large portion of the variation in achievement between ability-group levels. Net of prior achievement, we suspect that students in high-ability classes learn more because on the average, they and their teachers engage in higher-quality instruction. Although these views are largely supported by the data in the present paper, they must await the results of the larger study which is presently underway for serious testing.

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TABLE 1. Selected Instructional Differences between High- and Low-Ability Groups

	LOW ABILITY	HIGH ABILITY	RATIO LO:HI
TYPE OF WRITING TASKS:			
# writing assignments per month	4.19	2.29	1.83
% of assignments: grammar	27.24	10.56	2.58
% of assignments: journals	10.61	20.59	0.52
% of assignments: reports	24.38	10.56	2.38
% of assignments: 5 paragraph themes	25.00	20.75	1.20
% of assignments for peers only	31.33	42.97	0.73
% of assignments/for teacher only	10.61	4.71	2.25
Frequency of filling in blanks (per month)	5.85	1.16	5.06
Frequency of answering true-false questions	5.11	1.28	3.99
Frequency of answering multiple-choices questions	4.75	1.16	4.11
Frequency of writing at least 1 page	3.57	1.25	2.11
ELABORATENESS OF TEACHERS' MARGINAL COMMENTS:			
% of comments that are abbreviations, symbols	21.11	37.50	0.56
% of comments that are single words	28.19	38.01	0.74
% of comments that are phrases	28.33	32.33	0.88
% of comments that are sentences	31.25	20.03	1.56
CONTENT OF TEACHERS' MARGINAL COMMENTS:			
% of comments about spelling	37.50	19.13	1.96
% of comments about punctuation	31.11	17.31	1.80
% of comments about ideas	29.72	49.40	0.60
ELABORATENESS OF TERMINAL COMMENTS: [0=none; 1=single word; 2=several words; 3=1-3 sentences; 4=4-7 sentences]	3.01	3.93	0.77
CONTENT OF TEACHERS' TERMINAL COMMENTS:			
% of comments about spelling	25.14	10.75	2.34
% of comments about punctuation	19.35	10.75	1.80
% of comments about grammar	16.90	8.70	1.94
% of comments about ideas	30.00	57.35	0.52
FREQUENCY OF WRITING CONFERENCES: (times per month)	1.01	1.13	0.89
Frequency of conferences about spelling	0.49	0.19	2.61
Frequency of conferences about content	0.40	0.77	0.52

TABLE 2. Observed differences in quality of instructional discourse across ability levels (means, with standard deviations in parentheses).

Variable	CLASS-ABILITY LEVEL High	Average	Low	ANOVA F-ratio
FREQUENCY:				
Number of question/answer episodes per observation	1.63 (0.18)	2.69 (1.21)	2.25 (0.43)	0.86
Questions per minute	1.43 (0.41)	2.05 (0.52)	1.93 (0.62)	0.48
QUANTITY:				
Length of question/answer episodes (in minutes)	12.24 (8.35)	9.68 (9.78)	12.38 (0.55)	0.13
PARTICIPATION:				
% students actively participating	42.80 (24.76)	45.18 (22.41)	20.62 (3.40)	1.59
% students offtask	0.29 (0.40)	3.79 (4.37)	12.79 (12.94)	1.71
LOCUS:				
Proportion of questions asked by teacher	0.75 (0.24)	0.89 (0.10)	0.97 (0.04)	1.93
AUTHENTICITY:				
Proportion of teacher questions authentic	0.37 (0.17)	0.10 (0.11)	0.26 (0.18)	2.51
RESPONSE:				
Proportion of high-level teacher responses	0.28 (0.34)	0.17 (0.14)	0.08 (0.04)	0.76
COGNITIVE LEVEL:				
Average cognitive level of questions	2.30 (0.34)	2.33 (0.11)	2.01 (0.43)	3.33
CONTIGUITY:				
Proportion of questions involving uptake	0.14 (0.07)	0.34 (0.14)	0.19 (0.19)	0.42
Number of classes:	2	4	3	

TABLE 3. Teacher-reported differences in quality of instructional discourse across ability levels (means, with standard deviations in parentheses).

Variable	CLASS-ABILITY LEVEL High	Average	Low	ANOVA F-ratio
FREQUENCY:				
Of writing assignments (times per month)	5.50 (5.20)	3.92 (2.94)	6.57 (3.21)	1.75
Of reading assignments (times per month)	5.25 (5.49)	7.58 (5.04)	12.36 (7.67)	2.43
QUANTITY:				
Of writing assignments (scale of 1 - 3)	1.86 (0.09)	1.82 (0.22)	1.39 (0.80)	2.67
Of reading assignments (pages per month)	36.75 (38.39)	49.37 (35.15)	85.25 (55.66)	2.48
PARTICIPATION:				
% students handing in writing assignments	100.00 (0.00)	85.79 (8.38)	65.71 (21.49)	11.36
% students handing in reading assignments	95.00 (10.00)	84.21 (8.38)	60.00 (16.33)	17.23
LOCUS:				
Student control over writing assignments (standardized scale)*	0.57 (0.39)	0.47 (0.26)	-0.32 (0.75)	8.52
Student selection of reading materials (times per month)	10.38 (11.12)	1.05 (1.36)	1.21 (0.91)	9.86
AUTHENTICITY:				
Frequency of authentic writing assignments (times per month)	3.19 (4.86)	0.79 (0.73)	0.68 (0.61)	3.33
RESPONSE:				
High-level responses to student writing (standardized scale)*	0.43 (0.26)	0.15 (0.34)	0.39 (0.21)	1.95
COGNITIVE LEVEL:				
Of writing assignments (scale of 1 - 5)	3.37 (0.20)	2.99 (0.40)	3.36 (0.06)	3.11
CONTIGUITY:				
Connection of reading writing, and discussion (standardized scale)	2.65 (2.79)	2.38 (2.00)	4.43 (1.65)	2.50
Number of classes:	4	19	7	

* Standardized scale indicates variable created as a linear composite of several items. Standardization computed with data from social studies as well as English classes; for that reason the means reported here do not necessarily center around zero.

Table 4. Relation between instructional variables and achievement: correlation coefficients. See Tables 2 and 3 for descriptions of variables (n=134 students).

Variable	Literature Score	Writing Score
FREQUENCY:		
Episodes/observation	-.48	-.32
Questions per minute	-.38	-.54
Writing assignments	.50	.38
Reading assignments	.45	.36
QUANTITY:		
Length of question/answer episodes	.20	.14
Writing assignments	-.01	.03
Reading assignments	.46	.37
PARTICIPATION:		
Students active	.01	.11
Students offtask	-.18	-.16
Students turn in writing	.40	.27
Students complete reading	.17	.16
LOCUS:		
Teacher questions	-.41	-.33
Student choice of writing	.42	.41
Student choice of reading	.09	-.04
AUTHENTICITY:		
Teacher questions	.45	.45
Writing assignments	.33	.26
RESPONSE:		
High-level oral responses	.41	.37
High-level responses to writing	.44	.21
COGNITIVE LEVEL:		
Oral questions	.20	.28
Writing assignments	.33	.15
CONTIGUITY:		
Uptake	-.10	.06
Overall contiguity	.45	.31