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ABSTRACT

The responses of first-grade students to seatwork assignments were studied through detailed narrative records, copies of seatwork performance, and informal conversations with the students about their work. Two distinct groups of students were identified for comparisons: those whose responses to seatwork were frequently poor (low attention and low performance) and those whose responses were generally adequate (high attention and high performance). After this classification, it was determined that every poor responder was a member of a lower level reading group, and every adequate responder was a member of a higher level reading group, suggesting that seatwork was a qualitatively different experience for lower achievers than higher achievers. Further analyses of the narrative data revealed that poor and adequate responders also differed in terms of the fluency of their answers and the appropriateness of the strategies they used to do the work. These data suggest why achievement differences widen over time. Lower achievers (who were likely to be poor responders) were spending less of their seatwork time in beneficial ways than were higher achievers. (Author/BW)

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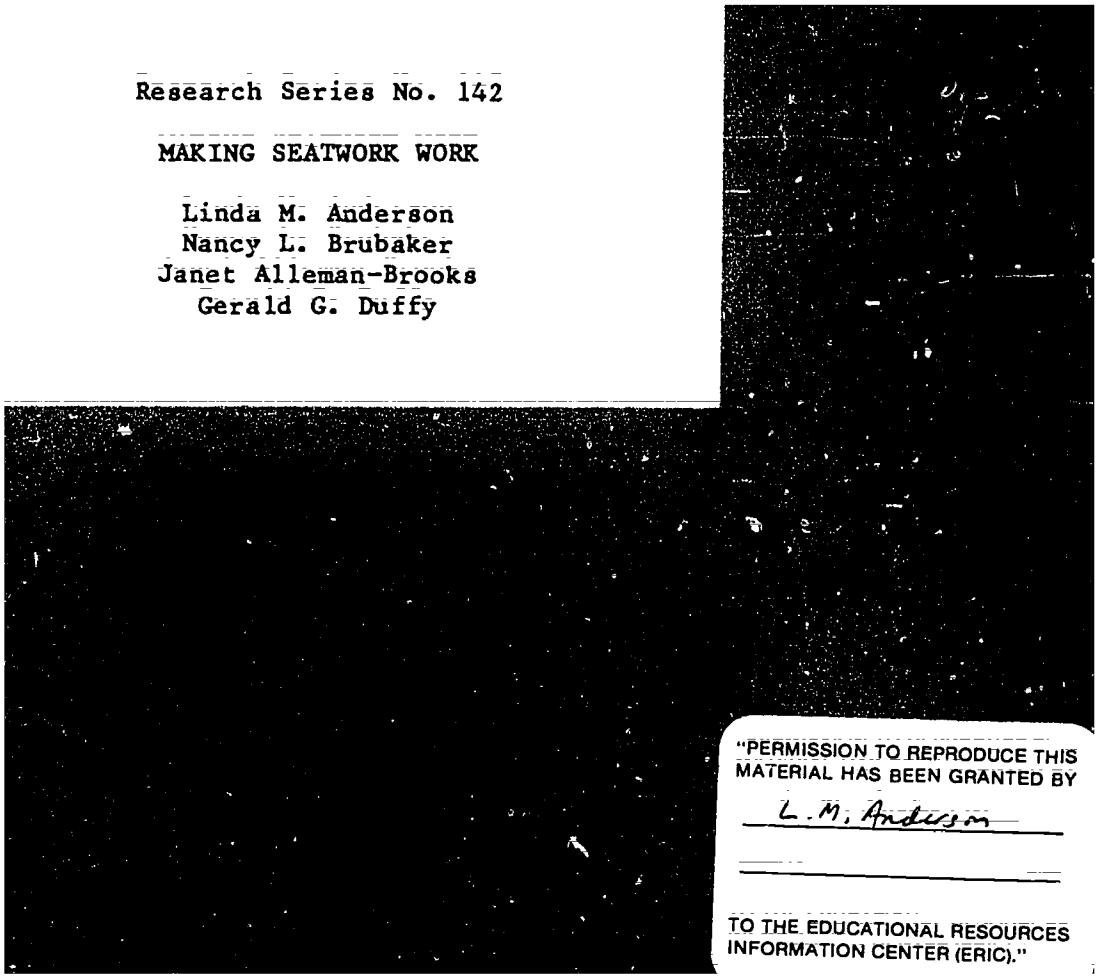

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Abstract

The responses of first-grade students to seatwork assignments were studied through detailed narrative records, copies of seatwork performance, and informal conversations with the students about their work. Two distinct groups of students were identified for comparisons: those whose responses to seatwork were frequently poor (low attention and low performance) and those whose responses were generally adequate (high attention and high performance). After this classification, it was determined that every poor responder was a member of a lower level reading group, and every adequate responder was a member of a higher level reading group, suggesting that seatwork was a qualitatively different experience for lower achievers than higher achievers. Further analyses of the narrative data revealed that poor and adequate responders also differed in terms of the fluency of their answers and the appropriateness of the strategies they used to do the work. These data suggest why achievement differences widen over time. Lower achievers (who were likely to be poor responders) were spending less of their seatwork time in beneficial ways than were higher achievers. Perhaps the lower achievers were learning as a result to expect school tasks not to make sense. Such expectations could interfere with development of learning-to-learn strategies as well as subject matter achievement. Suggestions are made about modifications in teacher routines for selecting, explaining, monitoring, and evaluating seatwork to allow greater teacher access to information about students' cognitive processing that could be useful in preventing poor response patterns.

MAKING SEATWORK WORK[1]

Linda M. Anderson, Nancy L. Brubaker, Janet Alleman-Brooks, and Gerald G. Duffy[2]

Elementary school teachers do an incredibly complex job. Each teacher must see that 20 to 30 pupils learn several subjects within a limited number of hours and within the limitations of the teacher's time, energy, and knowledge. Perhaps the most complicating feature teachers face is the range of individual differences among students--their entering level of achievement, learning rate, orientation to school tasks, and self-control of behavior. In a group setting, how can teachers take these differences into account and maximize learning opportunities for everyone?

Teachers have developed strategies for coping with the complexities of their job and for providing equitable treatment toward all students. One common strategy, revealed in studies of time use in elementary schools, is creating time for working with small groups by having other students work independently. In many classrooms, students spend up to 70% of their instructional time doing independent seatwork assignments (Fisher, Filby, Marliave, Cohen, Dishaw, Moore, & Berliner, 1978).

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[1]This work is sponsored in part by the National Institute of Education (Contract No. NIE-G-80-0073). It will appear in a forthcoming issue of *Elementary School Journal*.

[2]Linda M. Anderson, who coordinated the now-completed Student Responses to Classroom Instruction Project, now co-coordinates the Socialization Outcomes Project and is an assistant professor of teacher education in MSU's College of Education. Nancy L. Brubaker, now a research assistant with the General Mathematics Project, also worked on the Student Responses Project, as did Janet Alleman-Brooks and Gerald G. Duffy. Alleman-Brooks is a professor in MSU's Department of Teacher Education. Duffy now co-coordinates the Teacher Explanation Project and is a professor in MSU's Department of Teacher Education.

In this paper, we present descriptive data from a study of how well this arrangement works for different achievement groups. Before we present and discuss the data, we describe the goals of seatwork and this study's rationale.

The Goals of Seatwork: Desired Student Responses

Seatwork can fulfill both managerial and instructional goals. One managerial goal is to engage students in a task so they don't need the teacher's attention for a predictable period of time. Then, the teacher would have a smaller number of students (such as a reading group) to deal with directly. Another managerial goal of seatwork is to have students engage in tasks that will not increase the noise and activity level during seatwork time, allowing them all to work without distraction. An instructional goal of seatwork is to have students practice skills and concepts that are new to them or that are still being solidified. Another instructional goal of seatwork is to have students develop "independent work skills," including learning to use resources (such as dictionaries), checking their work, and pacing themselves through a set of assignments.

When these goals are met, what is the immediate result? That is, what student responses occur when seatwork is "working" for both students and teacher? How can a teacher know when goal criteria have been met? Progress toward managerial goals is relatively easy to assess on the spot: Students refrain from interrupting the teacher as s/he works with other students, and the classroom noise and activity levels are not disruptive. Assessing progress toward instructional goals of seatwork is more difficult, however, because student thought processes are at the heart of these instructional goals. How does a teacher know that a student correctly practiced a procedure or meaningfully used a concept when s/he was not present? Students' written responses, one source of information, do not reveal the thought processes used

to get the answer. Some important findings of the present study reveal ways that students (especially lower achievers) can arrive at "correct" answers without actually practicing the skill or concept that the assignment presumably reinforces. Similar examples have been offered by others (c.f., Erlwanger, 1973). Knowledge of student thought processes is even more important when students have made errors (Clinchy & Rosenthal, 1971).

Thus, teachers who use seatwork as part of instruction, want students to find it meaningful, and use seatwork to facilitate management, face a dilemma: While teaching small groups of other students, how can they gather the information necessary to find out if instructional goals and management goals are being met for students doing seatwork? The most easily available cues to teachers are observable behaviors. For example, are students engaged with tasks rather than being off-task? Are assignments completed? Are answers correct? Cues about thinking processes, however, are more difficult to gather because student thinking is invisible, and teachers have limited time to focus closely on students who are doing seatwork. Out of necessity, then, teachers often infer from minimum behavior and performance cues how much students understood and how they arrived at answers during seatwork tasks. Based on these inferences, teachers then decide if seatwork meets instructional goals for the students and what should be maintained or adjusted in later assignments.

Given the difficulty for teachers of gathering information about thought processes while students are doing seatwork and given the amount of time that students spend in the activity, we wanted to know whether and how managerial and instructional goals were realized for students doing seatwork. In order to address these questions, we assumed a role that teachers cannot assume (unless they have an alter ego to take over the classroom for a time). We sat in the back of the room and intensively watched selected students as they dealt with

seatwork assignments. We saw, in much greater detail than teachers can, how different students approached seatwork tasks, and we were able to seize opportune moments to talk with students about their thoughts and strategies during particular assignments. We hope that the observations reported here will provide teachers with useful ideas for analyzing their own classrooms and perhaps rearranging some seatwork routines to allow them more access to information about students' thought processes.

Background of Study

This study focused on students' immediate responses to instruction as important short-term outcomes of teaching. Most researchers of teaching effects have used long-term outcome measures as criteria (e.g., achievement tests). In this study, students' daily responses, both behavioral and cognitive, were viewed as immediate indicators of instructional effects. We assumed that learning from classroom instruction can occur most readily when students respond to instructional stimuli in a cognitively active and generally successful manner. We were most interested in these student responses to seatwork: (1) the apparent focus of the students' attention, (2) the nature of the students' involvement with instructional stimuli (e.g., how they approached a written assignment), (3) initiative taken by the students to seek help when confused or unable to answer, (4) the level of success on daily seatwork assignments, and (5) student perceptions of how and why they were doing daily seatwork tasks.

Two lines of conceptual and empirical work directed our study. The first line concerns students' cognitive processing, students' mediation of instructional effects, and students' perceptions of classroom events, an area of much recent interest (c.f., Corno & Mandinach, 1983; Doyle, 1977; 1979; Peterson & Swing, 1982; Winne & Marx, 1977; 1983). The major question addressed by work in this tradition are "How do students think about what is going on in

classrooms?" and "How do cognitive responses to instruction influence learning outcomes?" The second line of research, in contrast, has focused more on teachers and emphasized the teacher effectiveness question: "What do teachers do that affects students' learning in classrooms?" (Brophy & Good, in press). This latter work focused primarily on teacher behavior and long-term student outcomes such as annual gains on achievement tests. These two lines of research converged in the design of this study, and the major research question became: Given that individual students' behavioral and cognitive responses will determine what they learn from seatwork, how do teachers and instructional conditions influence those student responses?

Methodology

We observed in six first-grade classrooms in four Title I schools in a midwestern city, beginning in October 1980 and continuing through April 1981. All six classrooms were self-contained, and each was taught by one teacher, although some of the teachers had aides for part of the day. Within each of these six classrooms, we selected four target students for observation: a male and female high achiever and a male and female low achiever. During September, teachers reported the initial reading group assignment or reading level of all students. From these highest and lowest reading groups within each class, we selected children from a pool of students for whom parents had given written permission. Complete data for 23 target students in six classrooms are available (one student moved during the year).

We observed each target student during five half-day visits to each classroom. During any one visit, the observer focused on one or two students for the entire morning or afternoon. All visits were scheduled for the half-day in which most of the reading instruction took place and most of the students' time was spent in seatwork. In the field notes, the observer described what the

child did, what s/he seemed to attend to, how s/he approached his/her seatwork, what the student did when s/he encountered a problem, and how successful s/he was. We obtained copies of the seatwork or detailed descriptions of it, we audiorecorded teachers' explanations of assignments.

Informal observational data supplemented the conversations with each target student about work done during a half-day. The conversations tapped each student's understanding of how and why s/he was doing the work. For example, the child might have been asked to "show me how to do this page" or "How did you know to choose this word instead of that word?" Questions designed to elicit the child's understanding of the purpose of the work were "What are you learning about when you do this work?" and "Why do you think your teacher wanted you to do this page?" The teachers were also interviewed about seatwork. More information about methods may be found in Anderson, Brubaker, Alleman-Brooks, and Duffy (1983).

Data Analysis

First we analyzed the data to identify distinct groups of students who frequently responded to instruction either adequately or poorly. Then we reviewed the narrative records of those students to identify differential instructional conditions that might account for different patterns of responses. Initially, we limited the definition of adequate and poor response patterns to those observable indicators available for all target students, because data on student cognitive processes could not be collected in as systematic a manner. Earlier work (e.g., Brophy & Evertson, 1976; Fisher et al., 1978) had identified student attention to task and successful daily performance as predictors of long-term achievement, so we first identified students who were both attentive and successful and students who were often neither attentive nor successful. Although judgments of attention based on observations are not always accurate

(see, for example, Peterson & Swing, 1982), we felt that a rating of apparent attention was appropriate as a starting point because teachers frequently made judgments based on their observations of students, and one purpose of the study was to learn more about information that is potentially available to teachers about student responses.

Procedures for Rating Student Attention and Performance

Within each distinct episode of academic activity, raters assigned a score on a scale of 1 to 5, with 1 representing almost no attention paid to the task or instruction, 3 representing attention to the task for about half of the episode, and 5 representing attention to the task for essentially all of the time during the episode. If the rater felt that the narrative contained insufficient data to make a rating, that episode was not scored. Narratives were not rated by the observer who had written them.

Paired raters achieved agreement within one point on 88% of 113 episodes, and no disagreements occurred greater than 2 points on a 5-point scale. After obtaining this level of agreement, raters worked alone. Each separate seatwork assignment received a performance rating. Student performance was rated 5 if 100% of all answers were correct, 3 if 50% of all answers were correct, and 1 if none or almost no answers were correct. If performance had not been noted or could not be rated, no score was given. Paired raters scored 81 assignments and achieved 99% agreement within one point. After this they worked alone. As we did with the attention ratings, the person who observed a child did not rate that child's performance. Means and standard deviations for attention and performance ratings for all target students are presented in Table 1.

Table 1

Students' Attention and Performance Ratings

Students	Response category	Student characteristics		Attention ratings			Performance ratings		
		Sex	Initial reading group	Mean	S.D.	% of ratings below 4	Mean	S.D.	% of ratings below 4
Classroom A									
Student 1	Poor	M	Low	3.98	1.18	21	4.11	.96	26
Student 2	Poor	F	Low	4.38	.96	18	4.33	.96	23
Student 3	--	F	High	-- Student Moved		--	--	--	--
Student 4	Adequate	M	High	4.75	.57	6	4.89	.32	0
Classroom B									
Student 5	Mixed	F	Low	4.72	.84	7	3.70	1.42	40
Student 6	Mixed	M	Low	3.89	1.12	30	4.69	.48	0
Student 7	Adequate	F	High	4.75	.45	0	4.78	.67	11
Student 8	Poor	M	High	3.62	1.56	47	3.50	1.43	40
Classroom C									
Student 9	Poor	F	Low	4.30	1.02	17	2.78	1.72	56
Student 10	Mixed	M	Low	4.50	.69	11	4.00	1.41	21
Student 11	Adequate	M	High	4.69	.60	6	4.82	.53	6
Student 12	Adequate	F	High	4.61	.73	14	4.92	.28	0

▪ standard deviation

Table 1 (continued)

Students' Attention and Performance Ratings

Students	Response category	Student characteristics		Attention ratings			Performance ratings		
		Sex	Initial reading group	Mean	S.D.	% of ratings below 4	Mean	S.D.	% of ratings below 4
Classroom D									
Student 13	Poor	M	Low	3.55	1.05	45	2.71	1.50	71
Student 14	Poor	F	Low	3.73	1.03	34	4.35	.93	20
Student 15	Mixed	M	High	4.18	.72	18	4.31	.60	6
Student 16	Adequate	F	High	4.78	.42	0	4.60	.60	5
Classroom E									
Student 17	Poor	F	Low	3.47	1.07	63	4.25	.97	17
Student 18	Mixed	M	Low	3.48	1.03	58	4.83	.51	6
Student 19	Adequate	M	High	4.54	.58	4	4.91	.30	0
Student 20	Adequate	F	High	4.75	.45	0	4.86	.36	0
Classroom F									
Student 21	Poor	M	Low	4.17	1.19	25	4.33	1.32	22
Student 22	Poor	F	Low	2.74	1.41	68	insufficient data		
Student 23	Adequate	F	High	4.71	.78	10	4.50	.67	8
Student 24	Mixed	M	High	4.32	.98	21	4.55	.93	9

Selection of Distinct Groups of Poor and Adequate Responders

Earlier research on effective teaching and learning suggests that students learn most easily when they are attentive and reasonably successful most of the time. In terms of the rating scales we used, this would mean that most of the time, students would have ratings of either 4 or 5 on both scales.

In order to find students who met this criteria and those who did not, we computed the percent of each type of rating that was 3 or below. This information appears in Table 1. The higher this figure, the less time the student was responding in a way likely to promote learning. For example, Student 13 had 71% of his performance ratings below 4. This means that most of the time, he succeeded on only half (or fewer) of the items on his seatwork assignments. In contrast, Student 12 had no assignments rated below 4. This means that she was always observed performing at or above a level of 80% of all items correct.

With these data we identified students that demonstrated either poor, mixed, or adequate patterns of response to instruction. We defined a poor response pattern as one in which more than 15% of the performance ratings and more than 14% of the attention ratings were 3 or below. An adequate response pattern was one in which fewer than 12% of the performance ratings and fewer than 15% of the attention ratings were below 4. A mixed pattern was one in which only one condition was satisfied for classification in a distinct group (i.e., attention and performance ratings were not congruent). These criteria were based on frequency distributions and natural breaks between clusters of scores. Because student or class identity was not attached to the scores when we determined the criteria, selection of students for distinct groups was not influenced by knowledge of student and teacher. When we applied these criteria,

we identified a group of eight poor responders and eight adequate responders (see Table 2).

Analysis of Narrative Data for Adequate and Poor Responders

At weekly meetings during the year of observations, the research staff generated several hypotheses about relevant dimensions of student responses during seatwork that might distinguish patterns of adequate responses from patterns of poor responses. Three key dimensions provided a framework for a systematic review of the narratives of students in distinct groups.

Easiness of response and awareness of difficulty. Much of the learning emphasized in first grade is the basis of later learning (hence, basic skills of reading, writing, and math) and must be used fluently in other tasks. Therefore, one dimension of successful performance, in addition to objective accuracy, is fluency and automaticity of response. The second factor that may be related to success is the awareness of how easy or difficult a task is for oneself. An awareness that they do not understand something is necessary before students can seek overt help or covertly search for a new strategy. Both of these responses interested us.

Strategies for doing work. A student may be on task but applying an inappropriate strategy for answering questions on a seatwork assignment, or failing to use a strategy that would greatly simplify the task. An important question was what type of strategy did students use to complete their seatwork assignments.

Attention to finishing and awareness of purpose of assignments. Observers noted many instances when students commented on their desire to get work finished, yet at times this seemed to interfere with their involvement with the

Table 2

Frequencies of Students with Poor, Mixed and Adequate Response Patterns Classified by Achievement Level and Sex

	Poor	Mixed	Adequate
Reading group at start of year			
High	1	2	8
Low	7	4	0
Student sex			
Male	4	5	3
Female	4	1	5

Note. N = 22 students. One student originally classified as a low achiever had too few seatwork assignments available for scoring to justify classification.

content. Therefore, we wanted to determine if this pattern was indeed prevalent and if one group of students demonstrated it more than another (e.g., male vs. female, high vs. low achievers). Related to this was student awareness of the content-related purpose of assignments. Throughout the year the observers questioned students informally, when time and opportunity permitted, about their perceptions of the purposes of various assignments.

Review of Narratives

With these three dimensions in mind, we re-read the narrative records of the poor and adequate responders noting all instances that provided information about the three dimensions. Because of the qualitative nature of the data, we did not directly compare students, but conducted case studies that allowed comparisons between the groups of students. Examples drawn from these case studies are given below. The final report (Anderson et al., 1983) includes eight full case studies.

Results and Discussion

Two types of results are reported here: (1) frequency of poor and adequate responders for different classes and for gender and achievement groups, and (2) qualitative differences between the two response groups.

Classroom Differences

Each of the six classrooms had at least one target student classified as a poor responder and at least one target student classified as an adequate responder (see Table 1). Five of the six classes had at least one target student who showed a mixed response pattern. This suggests that none of the six teachers was uniformly successful or unsuccessful in influencing students' responses to seatwork.

Gender Differences

As Table 2 illustrates, male and female students were equally represented in the poor responders category and almost equally represented in the adequate responders category ($\chi^2 = 3.13$, $p < .10$). Therefore, gender did not predict patterns of responses to seatwork.

Achievement Group Differences

Frequencies, given in Table 2, indicate a strong association between response group and reading group assignment at the beginning of the year ($\chi^2 = 14.53$, $p < .001$). With one exception, all of the poor responders had been classified originally as low achievers. That one exception (Student 8) was moved from the high reading group to the second lowest group (out of four) early in the year, so that the original assignment was misleading. Thus, all eight of the poor responders spent most of the year in lower-achieving reading groups. All eight of the adequate responders, originally assigned to the highest level reading groups, remained there throughout the year.

We found that the better readers were more likely to be attentive to classroom activities and sucessful on their daily assignments than students who were poorer readers. Other studies show similar patterns. Lower achievers are often less attentive than higher achievers (Good & Beckerman, 1978; Gambrell, Wilson, & Gantt, 1981), and teacher ratings of "good work habits" are positively associated with achievement levels (Brophy & Evertson, 1981). Because such data are correlational, one cannot argue which comes first, the pattern of student responses or entering level of achievement.

If it could be demonstrated that lower achievers inevitably lack attentiveness and perform imperfectly on seatwork, then the correlation would be of little importance. However, the qualitative analyses of the narrative

records from this study suggest that more factors contribute than entering differences in attentiveness and ability. Indeed, the narrative records reveal that poor and adequate responders experience a qualitative difference in seatwork assignments. Poor responders/lower achievers more often found difficult the work assigned to them, while the adequate responders/high achievers more often worked on assignments that were at or below their independent level.

Both groups of students were expected to work independently and persist until they finished the work. The adequate responders/high achievers accomplished this easily because they possessed the skills and strategies necessary to do the job quickly. For them, seatwork may not have been challenging (and perhaps often bordered on "busy work"), but it could be taken as a matter of course as part of the school day. The poor responders/low achievers, on the other hand, frequently lacked necessary skills and strategies but were also expected to complete their assignments independently. As a result, poor responders often developed strategies for getting work done that did not contribute to practicing and learning the content that ostensibly was the basis of their seatwork assignments. We reached these conclusions from qualitative analyses of the responders' narrative records according to the three dimensions identified during initial reviews of the narratives.

Ease of Answering and Awareness of Difficulty

By definition, the poor responders succeeded less often with their work. Perhaps the students did not try very hard or were careless about what they wrote, or perhaps the work was too difficult for them. The narrative data revealed the latter, that poor responders often stumbled and hesitated on reading text in seatwork, more often appeared unable to coordinate several steps

in a procedure that led to the answer, and more often operated from an inadequate conceptual base. The following anecdotes illustrate this trend.

Randy (Student 8) could not read all of the words used in the standard board assignment, which involved copying sentences with blanks and selecting a word from a list of options. Every time observers noted him doing this type of assignment, he became "stuck" (his word) because he could not decode the key words to make the choice and proceed.

Beth (Student 9) could only read about a third of the key words in a Weekly Reader article that students read in order to answer questions that they copied from the board. She could not read all of the questions either.

On a ditto with nine pictures of seasonal activities, Sean (Student 1) was to cut out and paste on the name of the season that matched the picture. After he quickly completed the assignment, the observer questioned him about it. He had matched only two out of eight correctly, he could not read any of the season's names, and he was not sure in what season one sledded, flew a kite, went camping in a tent, or went swimming outdoors.

Aaron (Student 13) was to compose sentences with new vocabulary words listed on the board. He could not read some of the words, he could not spell most of the words he wanted to write, and he soon bogged down and stopped attending to the task.

In contrast, consider these examples of the adequate responders' performance.

Dexter (Student 4) composed and wrote a story about his family very quickly and easily, sounding out reasonable spellings for words he did not know. He was enthusiastic and told the observer, "This is fun!"

Annette (Student 12) already knew all of the new St. Patrick's Day vocabulary included on a word search puzzle introduced by the teacher. She was

one of the few students in the class who did. For her, the task was one of looking for familiar words rather than remembering letter patterns of unknown words.

These examples suggest that the adequate responders not only performed more accurately but that they achieved that accuracy through fluent cognitive processing. Because they had already practiced so many more concepts and skills to the point of overlearning, they performed the seatwork tasks using those concepts and skills almost automatically. In contrast, the same seatwork tasks often imposed a more complex information processing load on the poorer readers. Unable to automatically recognize words and read with implicit prediction of text, a task like selecting one of three similar words to go into a blank is a very difficult one, because students' short-term memory is quickly filled before they process enough relevant information to make a decision about the answer. Gambrell et al. (1981) offered comparable data and explanations for oral reading performance when reporting higher success and fluency rates for high achievers than low achievers, even when reading materials supposedly matched their reading level.

When we reviewed the narratives we considered whether the poor responders might be less knowledgeable about what was difficult or less aware that they had encountered difficulty and should seek help. However, poor responders often appeared aware that something was hard for them or that it did not make sense. For example, Randy (Student 8) explained to the observer that in the standard board assignment, the teacher would include new words but "I always get stuck on them." (He was right, he often did.) Sean (Student 1) told the observer that he found the ditto page on the seasons (described above) hard to do. Thus, some of the poor responders seemed aware at least some of the time when something did not make sense or come easily to them, but this awareness did not usually lead

to an effective strategy for clarifying their understanding, as described in the next section.

Students' Strategies for Doing the Work

Observations of the adequate responders revealed little about covert strategies, although students usually worked through their assignments quickly and accurately. Whenever we observed evidence of a strategy or a student reported a mental strategy, it seemed to be an appropriate one. For example, all of the adequate responders at some point talked to themselves about the task as they progressed through it (although many of the poor responders also did this). Annette (Student 12) explained that she did the word search puzzle by looking "backwards, frontwards, diagonally, and then cross it off." For the most part, however, the adequate responders gave few visible signs of the mental strategies they used to arrive at the correct solutions.

In contrast, the poor responders frequently provided evidence of a strategy, although in most cases the objective of their strategy seemed to be to get an answer down but not necessarily to understand the task. This most often occurred for assignments they found difficult. Consider the performance of poor responders to the tasks described in the preceding section.

Randy (Student 8) could not read some of the words on the board assignment. Even when he did read some, he tried to decide on a word to go in the blank as soon as he came to the blank in the sentence, even if it was the second or third word. That is, he did not read the entire sentence to provide a context for the choice. When he did not figure out the answer immediately, he asked another child for the answer. In this manner, he often received most of the answers from others and completed this assignment without learning to read the new vocabulary words (ostensibly the purpose of the task).

Beth (Student 9), unable to read enough of the Weekly Reader articles necessary to answer the questions, simply copied the questions and wrote answers that seemed logical to her, without consulting the articles. In the one instance when she did look, she searched for a number word to answer "How many legs does a grasshopper have?" She came to the phrase "five eyes" in the article and copied the number five.

Sean (Student 1), who could not read the names of the seasons or match them to pictures of seasonal activities, tried at first to sound out the words (as suggested by the teacher when introducing the assignment). Although he sounded the initial letters, he couldn't remember seasons that started with those letters. In spite of this, he quickly pasted the labels on the pictures without seeking help. When his answers were marked wrong, he asked no questions and made no visible response.

Aaron (Student 13), who found composing sentences with vocabulary words from the board difficult, wrote one sentence (which was meaningless to the observer because the spelling was cryptic), then stared into space for a while, then stayed in the bathroom for five minutes. Later, the teacher helped him get started on the second sentence, but he relapsed into staring soon after she left. Soon after that, the bell rang and Aaron went home.

Each of these examples shows how the poorer responders reached short-term goals. Randy and Beth's strategies allowed them to complete the assignments and thus go to lunch with the class. (In both of these classrooms, failure to finish morning seatwork meant being late to lunch.) In Sean's case, finishing assignments was the necessary prerequisite for playing games in the room. No particular consequences befell Aaron for failing to finish that day, but his avoidance tactics meant that he did not spend as much time facing a frustrating task. Despite the immediate rewards to the children, their approaches to the

tasks did little to further long-term learning of the content and skills that were part of the assignments.

Attention to Finishing and Awareness of Purposes of Assignments

We also considered whether one group was more aware of an assignment's goals than another, whether poor responders may have been concentrating only on getting finished, while adequate responders approached their work more thoughtfully because they were more aware of the content-related purposes of seatwork. Although data were not collected systematically on this (i.e., it was not possible to question students about purposes of assignments during every visit), available evidence suggests that the hypothesis is not supported, although some poor responders occasionally appeared to focus on finishing, as illustrated in the following examples.

Randy (Student 8) exclaimed with delight, "It's done!" when he finished a paper. Later he told the observer that he did not like assignments to write stories because "it takes so long, and then I can't play."

Beth (Student 9) kept comparing progress on boardwork with her neighbor as they engaged in a competition to finish the copying assignment first. Whenever she reached the end of a sentence, she raised her hands in a silent cheer.

Richard (Student 10) finished a worksheet and said to himself,"I don't know what it means, but I did it." We occasionally observed adequate responders comparing their progress with other students, but this did not occur as frequently for them. They worked through their assignments steadily, and their approach did not suggest a desperate preoccupation with getting done.

We found little evidence that adequate responders understood more about the content-related purposes of assignments than poor responders. No student consistently explained assignments in terms of the specific content. Instead, the adequate responders told observers that "it's just our work" or "we learn to

read." In those few instances in which students were more specific about content, both poor responders and adequate responders were represented.

It appears that the poorer response patterns of the lower achievers may perpetuate their low achievement and frustration with classroom learning tasks. The long-term poor response patterns affect both subject-matter achievement and the development of more general metacognitive strategies.

Instructional research in classrooms suggests that basic skills of reading and math are acquired most easily when most practice is at a high level of success and new material is introduced in small steps at a gradual rate, with time and practice enough to solidify new skills and concepts (Brophy & Good, in press). Yet in these six classrooms, the students who needed the most instruction in reading were the ones whose seatwork often had the exact opposite characteristics: The seatwork was difficult because the gaps between the students' knowledge and the knowledge required for the task were too great for them to bridge independently. Thus they spent a large amount of their allocated instructional time in seatwork that contributed proportionately little to their reading growth. Some of their assignments did provide practice at a reasonable level of difficulty, but at least 15% (and often more) of their seatwork time contributed little to their learning about reading skills.

Another long-term outcome, metacognition, may be influenced by the seatwork experiences of poor responders, especially metacognitive strategies that help students to identify difficulties and make sense of new or unknown situations. Metacognition is knowledge and awareness of one's own thinking and learning processes, the ability to reflect on, monitor, and deliberately modify one's thinking while it occurs. An example is the feeling that a passage in a text doesn't "make sense," leading the reader to reread, seeking clarification (Brown, Bransford, Ferrara, & Campione, 1983).

Combining too difficult assignments and emphasizing staying busy to complete work may lead students to define successful seatwork in terms of task completion and the appearance of working hard, instead of understanding. This definition of success may occur for all students, but more likely will be detrimental to students who have difficulty with much of their work. High achievers, usually more successful at seatwork, probably gain more from the practice opportunities afforded by seatwork, such that the high achievers (compared to lows) may have come to *expect* their reading seatwork to make sense to them, because it was at their independent-work level more often.

If this pattern continues, it may help the high achievers to develop adaptive learning-how-to-learn skills throughout their schooling, because when something does not make sense or seems confusing, it will be an unusual event, salient, and likely to trigger action to reduce confusion and/or add necessary information. This highlighting of unexpected misunderstanding may help further the development of metacognitive skills (which trigger information seeking to reduce confusion), even though formal classroom instruction seldom focuses on the development of such skills.

On the other hand, low achievers, who more often experienced assignments as difficult, may be less likely to expect their work to make sense. Because they don't expect sense or meaning, a lack of sense (i.e., recognizing that you do not understand) is not unusual. If something is not unusual, then it is less likely to signal that something is wrong and needs resolution. However, other elements of classroom life are probably more predictable to low achievers than assignments making sense. For example, Leinhardt (1983) found that both high and low achievers very accurately described procedural details of math class (e.g., what types of activities were done when), but differed in math content skills. In this study, the rewards and sanctions attached to finishing work and

covering content were very predictable and seemed to be understood by all students. Given unpredictability about how easily assignments can be comprehended, it is not surprising that low achievers may focus their immediate goals while doing seatwork on the predictable elements, such as the need to "get it done" and move on. Over time, this approach may interfere with the development of metacognitive skills that allow students to become better guides of their own learning.

The key point here is that the history of a student's experiences with school tasks may influence expectations that assignments, text, and instruction can and should make sense. These expectations in turn may influence a student's responses to difficult or novel situations that determine what is learned from many academic (and other) experiences. Higher achievers, then, are more likely than lower achievers to learn more about how to learn from their independent assignments as they progress through school, contributing to a widening gap between higher and lower achievers over time. Certainly seatwork is not the only way in which students learn about sense making, but given its widespread use, its potential influence should not be ignored.

Implications for Practice

Although we collected data on teaching practices during this study, too few differences between the six classrooms existed to support data-based conclusions about more and less effective instructional practices. However, discussions of the data with classroom teachers and among the research staff generated some suggestions that may help teachers prevent or circumvent poor responses to seatwork.

One of the most difficult aspects of classroom life for teachers is the multiplicity and simultaneity of classroom demands on their attention (Doyle, 1979). They cannot possibly observe students as continuously or as intensely as

can an observer with no other responsibilities. For this reason, it is not surprising that these teachers frequently did not see the responses reported above. Indeed, seatwork is typically conceptualized as a necessarily independent work activity that occupies one group of students so that a teacher will be able to devote her/his full attention to another group. Our findings do not deny any of the above teacher perspectives. However, they do suggest that the way some basic instructional tasks were construed and carried out minimized rather than maximized some students' chances for making adequate responses to seatwork because the routines associated with these functions often did not help teachers obtain from students important information about their seatwork or provide information to students at the best time.

Instructional Tasks Related to Seatwork

Teachers select, explain, monitor, and evaluate seatwork. Except for selection (which occurred during planning time before students were present), we observed each teacher engaged in the typical routines by which the other three tasks were accomplished. Such routines serve an important function for teachers by reducing the complexity and number of decisions that must be made about how to teach (Yinger, 1982). We suggest some adjustments in routines that might make more information available to both teachers and students about seatwork.

Selection of seatwork assignments. At first glance, the student performance data suggest that the cause of poor responses is an inappropriate match of task and student ability. Although systematic data on teacher planning routines were not gathered, data were available on the frequency of whole class assignments (i.e., everyone gets the same assignment) versus reading-group assignments (i.e., different achievement levels have different assignments). We hypothesized initially that most problems occurred when low achievers were

working on whole-class assignments. Although many examples of poor responses did come from whole class assignments, instances of poor responses by low achievers occurred during reading group and even individual assignments. In fact, in one classroom (not included in these analyses for several reasons), students worked through the same workbooks in what was considered an individualized, self-paced program. However, as many instances of poor responses among the low achievers occurred in this room as in the more traditional rooms. Finally, no significant correlation ($r = -.07$) resulted between low achievers' performance ratings and type of assignment (whole-class versus reading group).

These findings suggest that providing different assignments by ability level is not the only answer to the problem of too difficult work for some students, although teachers who frequently assign whole-class work should be especially alert to the poor response patterns described in this research. However, an equally important source of the problem seems to be that teachers do not get enough information about what makes a task difficult for a given child, and therefore cannot provide the necessary assistance at the most appropriate time. This situation is due in large part to the routines called into play after assignments are planned, as discussed in the sections below.

Presenting seatwork assignments. Throughout the year, we audio-recorded teacher explanations for about half of all assignments given. After the student data revealed inadequate strategies for some students and a lack of clarity about content-related purposes for most students, we analyzed these teacher explanations for information about strategies and purposes of assignments. Many explanations included some procedural directions (42%) and/or isolated hints to help students, such as "Pay special attention to the words in italics" (37%). However, fewer explanations (5%) included explicit statements of content-related

purpose, such as "This will help you practice the new rules about sounding out words with *ou* in the middle, so you can get faster at that and read more new words on your own." Even fewer explanations included explicit descriptions of the cognitive strategy to be used to do the assignment (1.5%). These latter two components of an explanation are certainly not necessary for all assignments, especially if the skill is familiar, and thus lower percentages are reasonable. However, the low performance ratings for some low achievers and the maladaptive strategies they evolved on their own suggest that additional detailed information about strategies could be useful to low achievers for many assignments. A study by Duffy, Book, & Roehler (1982) demonstrated that second graders who were given more explicit information about purpose and strategies in reading lessons more ably articulated both purpose and strategy when interviewed after the lesson. Taken together, these data suggest that teachers could add reminders of strategy and purpose as a regular part of their explanation routines with assignments that may pose difficulty for some of the students. This might take the form of teachers' modeling through think-aloud techniques (like those advocated by Duffy et al., 1982) with one or two examples of each assignment. Even when such information has been provided in an earlier lesson, low achievers may need reminders in order to make the pertinent connections between what has been taught and what is being practiced.

Monitoring assignments. The instructional task of monitoring seatwork is perhaps the most difficult to perform adequately, because it must occur when the teacher's attention is focused primarily on another group. For this reason, most routines for monitoring students' seatwork that we observed were geared to gathering information on student behavior and attention to task, rather than student understanding and performance. A teacher can determine from a distance something about student behavior, but monitoring progress and student

understanding require a teacher's focused attention and proximity and would necessitate the teacher's frequent absence from the other group's instruction. If students almost always worked independently, needed little assistance during seatwork, and experienced successful practice as a result, a teacher occupied with another group would need to monitor seatwork students only infrequently from his/her position. However, as the student data revealed, low achievers did have trouble with independent seatwork and their behavior did not always reveal the problem, suggesting that some changes in monitoring routines may be necessary.

Sometimes a teacher cannot predict when problems will arise during seatwork, especially with lower achievers. For example, Osborn (1982) analyzed commercial workbooks and pointed out several examples in which students could become confused by format, illustrations, or slightly different vocabulary than they encountered in the corresponding lesson. Moreover, even when a teacher provides a complete explanation, it is hard to predict when some students with poor listening comprehension will fail to encode and store the necessary information or will have trouble knowing when to apply it. Such difficulties arise not because the student does not pay attention, but because the directions and task simply are more difficult than can be followed without intermittent reminders and cues while working. Sometimes students misread a key word that changes the meaning of a sentence and generate incorrect answers as a result.

Helping students in such situations requires diagnosing the source of the error or misunderstanding, which is most easily done while the student is doing the assignment, not later when the thought process cannot be reconstructed. It is also desirable to learn early in an assignment if it is too difficult for the child, so that it can be discontinued or modified before it becomes a

frustrating and/or meaningless experience (as is exemplified in some of the anecdotes for poor responders given earlier).

But what can teachers do when they want different groups working simultaneously and do not want seatwork to claim most of their instructional time? Some suggestions generated by teachers and the research staff include the following adjustments to monitoring routines.

1. Do not start a group lesson immediately after a seatwork assignment is given. Instead, spend five minutes circulating among students, especially noting the performance of the lower achievers or anyone else who has had difficulty on similar tasks. The small group should be convened only after knowing that everyone has at least gotten started on the first assignment.

2. Instead of calling up the next group immediately after dismissing the previous group, take another few minutes to circulate among students at their seats, again concentrating most on students who may have problems. If a pattern of errors is detected for someone, the teacher can either give a quick reexplanation, modify the assignment, or tell the student to delay that work until later when more assistance can be given.

3. When circulating among students during these brief troubleshooting rounds, occasionally (but regularly) ask students to explain how they got certain answers, whether correct or incorrect. This provides the teacher with more information than just the answer on the paper, and may also force students to become more reflective of the processes being taught. This also conveys that the process of thinking, not just the answer on the paper, is valued by the teacher.

4. Establish clear systems through which students can get help while you are busy teaching others. Some teachers have set up buddy systems after carefully teaching their students that helping someone does not mean giving the

answer. Other teachers have a system whereby children with a problem can let them know that they want help when the teacher can leave the group. This might be accomplished through "help cards", which students prop on their desk, in anticipation of the teacher's next chance to provide assistance. (With such a system, students must learn to go on to another item or assignment in the meantime.) Another system that we observed some teachers already using was to have the student approach the teacher at work with a small group; the teacher would give a hand signal, either one for "Come whisper your question to me" or one for "I can't stop now, but I know that you need help as soon as I can, so go back to your seat." Although the teacher must carefully teach students about the differences between appropriate and overly dependent help seeking, such a system can help ease his/her monitoring burden once students are capable of recognizing for themselves when they do not understand something.

5. Recognize that the need for intensive monitoring may change over the course of the school year. If the teacher ultimately wants students to spend a lot of time working independently, it will be worth spending a lot of time in the fall and early winter training students to recognize when they do not understand, seek help appropriately, and articulate processes of getting answers, and for the teacher to learn which students are likely to find certain tasks difficult. Such close monitoring early in the year also has payoffs in terms of better selection of seatwork assignments and knowing when more explicit explanations will be needed.

Evaluating seatwork. In the six observed classrooms, seatwork teachers usually checked and returned work to students fairly quickly. Sometimes checking occurred in the student's presence immediately after the seatwork was done, and sometimes it was checked and returned the next day. Each teacher checked seatwork in a predictable, routine way.

Although the timing varied, in most observed instances, the teacher based feedback and evaluation primarily on accuracy and sometimes neatness, and usually communicated through a cursory statement or comment (e.g., a star, 100%, a check, "-2"). When we asked teachers what they looked for in students to judge progress, with one exception, they emphasized persistence, effort, and independence more than students' sense making and comprehension of assignments. (This conclusion is based on teacher interview analyses discussed in Anderson et al., 1983.)

Cursory feedback is appropriate in some situations, when students can recognize what was wrong and know what to do to correct errors. Similarly, an emphasis on effort, persistence, and independence is also appropriate when students are able to control their own efforts and succeed through them. However, the student data for the poor responders suggested that when assignments were too difficult, they could not do better simply by trying harder, and an emphasis on persisting until finished led to the use of strategies such as asking other students for the answer or blind guessing. When errors were marked on the poor responders' papers and they were asked by the observer to explain why the teacher had marked it wrong, they usually indicated they didn't know. In short, with evaluation, as with explanation and monitoring, the poor responders were not getting adequate information about their performance, and the teacher was not getting information from them about their thinking processes that led to errors. Instead, the checking routines were designed for maximum efficiency for reviewing answers in limited time. Thus, the issue of how to improve the information conveyed during evaluation becomes one of time management by the teacher: Can the time be found without sacrificing something else important?

One way to resolve the problem is to more effectively select seatwork, explain its purposes and procedures, and monitor students' progress. These

steps would lead to greater student success and early identification of problems. However, when problems have not been eliminated through these means, some teachers have improved their evaluation by setting up times when students are engaged in learning games or centers, and the teacher can review work and talk to students who need personalized feedback.

The preceding suggestions were based on analysis of student data, especially instances in which the information flow was lacking between teacher and student about the thought processes involved in seatwork. Rather than concluding from the student data that the teachers were somehow at fault, analysis of probable cause of poor responders' problems has revolved around instructional routines. Routines help teachers simplify their complex tasks, but sometimes have unintended consequences, like those described here. We have proposed that solutions to problems surrounding seatwork come from redesigning or adjusting routines for explaining, monitoring, and evaluating seatwork in conjunction with ongoing concern for selection of appropriate assignments.

As long as seatwork remains an integral component of many classrooms and as long as entering differences in students make some of them less likely to make sense of tasks by themselves, the questions raised by this study deserve attention, and teachers, by improvements in instructional routines, can benefit both themselves and their students. We hope that this investigation encourages classroom teachers and other educators to analyze the potential risks and gains inherent in this common instructional setting.

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