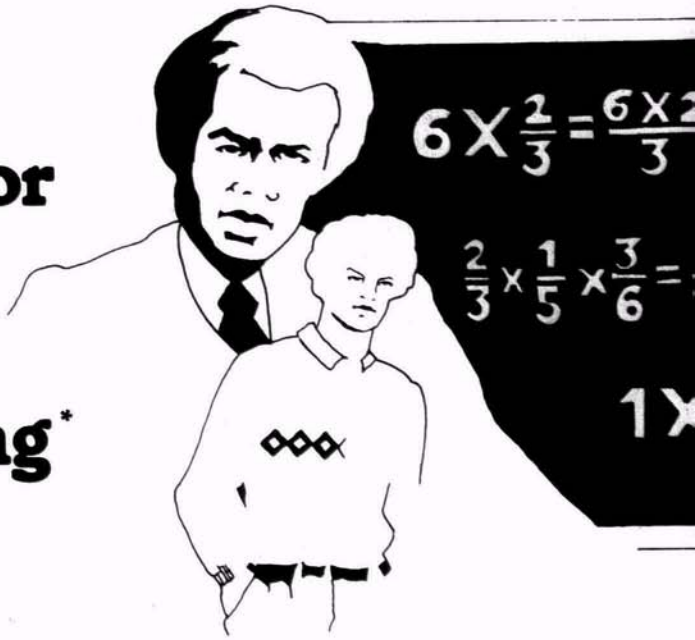
Teacher Behavior and Student Learning*



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Research in elementary schools is yielding detailed information about the organization and management of effective classrooms. The success of individualized vs. direct instruction varies according to grade and ability level and subject matter to be learned.

In recent years, several large scale field correlational studies have been conducted at various elementary grade levels (Stallings and Kaskowitz, 1974; Soar and Soar, 1972; McDonald and Elias, 1976; Tikunoff, Berliner, and Rist, 1975; Brophy and Evertson, 1976; Good and Grouws, 1977). These studies varied in the types of teachers and students included and the kinds of variables addressed and methods used, but there was sufficient overlap and replication to provide dependable knowledge about relationships between teacher behavior and student learning of basic skills in the elementary grades (see reviews by Rosenshine, 1976; Medley, 1977; Borich and Fenton, 1977; and Good, 1979). The data from these studies support what Rosenshine (1979) calls "direct instruction" as effective for producing student learning of basic skills. Critical aspects include: (1) teachers focus on academic goals; (2) promote extensive content coverage and high levels of student involvement; (3) select instructional goals and materials and actively monitor student progress; (4) structure learning activities and include immediate, academically oriented feedback; (5) create an environment that is task oriented but relaxed. Taken together, these studies provide strong support for the following generalizations:

1. Teachers make a difference. Certain teachers elicit much more student learning than others, and their success is tied to consistent differences in teaching behavior (Good, Biddle, and Brophy, 1975; and Rakow, Airasian, and Madaus, 1978).

2. Even so, there is no support for the notion of generic teaching skills, if these are defined as the types of very specific behaviors typically included in performance based teacher education programs. Few, if any, specific teaching behaviors are appropriate in all contexts. On the other hand, when data are integrated at a higher level of generality, several clusters or patterns are consistently related to learning gains.

3. One of these includes teacher expectations and role definitions. Teachers who believe that instructing students in the curriculum is basic to their role, who fully expect to conduct such instruction,

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and who set about to do so in their classrooms, are more successful than teachers who do not. More effective teachers allocate more of their time for teaching, and spend more of that time accordingly.

4. Another basic cluster includes such variables as classroom management skills, student engagement/time on task, and student opportunity to learn material. Effective teachers know how to organize and maintain a classroom learning environment that maximizes the time spent engaged in productive activities and minimizes the time lost during transitions, periods of confusion, or disruptions that require disciplinary action.

5. Another cluster indicates support for the various elements of direct instruction. First, studies of general approaches to instruction consistently reveal that students taught with a structured curriculum do better than those taught with individualized or discovery learning approaches, and those who receive more instruction directly from the teacher do better than those expected to learn on their own or from one another. Teacher talk in the form of lectures and demonstrations is important, as are the time-honored methods of recitation, drill, and practice. It appears that most forms of open education or individualized instruction involve unrealistic expectations about the degree to which students in the early grades can manage their activities and learn independently (See the studies referenced earlier, and also Gage, 1978; Inman, 1977; and Stallings and Hentzell, 1978).

The instruction that seems most efficient involves the teacher working with the whole class (or with small groups in the early grades), presenting information in lectures/demonstrations and then following up with recitations or practice exercises in which the students get opportunities to make responses and get corrective feedback. The teacher maintains an academic focus, keeping the students involved in a lesson or engaged in seatwork, monitoring their performance, and providing individualized feedback. The pace is rapid in the sense that the class moves efficiently through the curriculum as a whole (and through the successive objectives of any given lesson), but progress from one objective to the next involves very small, easy steps. Success rates in answering teacher questions during lessons are high (about 75 percent), and success rates on assignments designed to be done independently are very high (approaching 100 percent).

6. These specifics vary somewhat with context, particularly grade level and student ability level. Within any given grade level, teachers working with low ability students need to move at a slower pace and provide more repetition and individualized monitoring to make sure that overlearning is attained before moving on to objectives that assume prior mastery of present objectives, and to supply greater warmth, encouragement, and personalized teaching generally, but less challenge (although not less than the students can handle) and fewer demands or criticism (Brophy and Everston, 1976).

Current Progress

Current activities in the field feature two major trends: (a) integrating existing correlational findings and probing the limits of their generalization to contexts beyond basic skills instruction in the elementary grades; (b) experimental studies in which clusters of correlational findings are brought together into treatment packages and assessed for degree of implementation by teachers and for success in producing more learning than what is observed in control groups.

Direct Instruction

Good (1979) notes that whole class, direct instruction is often maligned by those who favor individualized and self-paced instruction, but like recitation, it survives. Good suggests, and I concur, that it survives because it has important advantages. It is easier to plan and manage, provides more modeling of correct thinking and responses for slower students, and avoids the elitism and labeling problems that can crop up when ability grouping is used.

Good notes that direct instruction seems clearly superior to open education for producing mastery of basic skills. It may not be the best approach for curricular areas that do not involve skill mastery, but instead seeks to promote appreciation, general familiarity, enrichment, or student personal development. (Open education is not necessarily effective here, either. In this connection, Good notes that open education advocates have put too much stress on things like free choice of tasks or free movement around the room, which are less vital to real-life application than things like developing skills for problem solving and self-evaluation.) In any case, some structure is needed for most educational activities, and relatively more is needed in the early grades, for low ability students, and for anxious or dependent students.

Classroom Management

Recent publications by Brophy and Putnam (1979) and Evertson and Anderson (1978) have elaborated knowledge about what constitutes effective classroom management and about how it interacts with effective instruction. Brophy and Putnam review studies on classroom management generally, not just those that link it with student learning. They note strong support for most of the variables stressed by

Kounin (1970): "withitness," overlapping, signal continuity and momentum during lessons, and variety and challenge during seatwork. They note that recent studies have not supported Kounin's variables of group alerting and accountability, which call for the teachers to be random and unpredictable in their questioning, to call on nonvolunteers frequently, and to require students to comment on one another's responses (to make sure that they pay attention to peers as well as to the teachers). These group alerting and accountability techniques either correlate negatively or show curvilinear relationships with learning gains. Apparently, teachers who do all the other things that Kounin stresses, and therefore are successful in maximizing student attention and engagement, should not need to use group alerting and accountability behaviors very often.

Evertson and Anderson (1978) have been exploring the specifics involved in organizing and managing the classroom, and the interactions between management and instruction. They observed heavily during the first three weeks of school, and periodically thereafter, in 28 third-grade classrooms, gathering information on what rules and procedures the teachers introduced, and how they did so. The next year they observed in junior high school classrooms. Preliminary results from the study strongly support two major generalizations: (a) classroom organization and management skills are intimately related to instruction skills; good instructors tend to be good managers; (b) at least at the third-grade level, good organization and management *is* good instruction. That is, successful classroom managers spend a great deal of time early in the year conducting semi-formal lessons to familiarize students with rules and procedures. This research is yielding rich, detailed information about procedures involved in setting up effective classrooms (Evertson and Anderson, in press).

Junior High and High School Studies

Several investigators are probing the limits to generalization of the linkages between direct instruction and student learning observed in basic skill instruction in the early grades. Stallings, Needels, and Stayrook (1979) studied reading instruction at the junior and senior high school level. Their findings are very much like the findings reviewed earlier for basic skills in the early grades: growth in reading skills is associated with maximizing time on task, instructing the total group most of the time, directing questions to specific students (rather than volunteers), regularly providing feedback, controlling negative behavior, encouraging positive behavior, and using guides and probing questions when students do not know the answer. Negative indicators include grading papers during the class period, socializing or allowing students to do so, allowing interruptions and intrusions into the class activities, and allowing negative behavior.

McConnell (1977) reported the following correlates of student learning in high school algebra classes: task orientation, clarity, frequent probing to improve student response, enthusiasm, and frequent teacher talk. Again, these are familiar aspects of the direct instruction approach.

Evertson, Anderson, and Brophy (1978) report the following correlates of learning math in seventh- and eighth-grade classrooms: considerable class time spent in discussion, lecture, and drill, and not just individualized instruction or individual seatwork; task oriented, businesslike instruction; much teacher time spent actively instructing and interacting with students; greater praise of good contributions (although praise was not frequent in an absolute sense); good classroom management; asking process (thought or explanation) questions as well as product (fact or memory) questions. (See also Evertson, Anderson, and Brophy, in press).

Evertson, Anderson, and Brophy (1978) obtained strikingly different results for seventh- and eighth-grade English classes, however. Significant relationships between classroom process variables and student learning in these English classes were infrequent, and there was little support for the direct instruction model. Several factors probably explain this finding, but the major one seems to be that basic skill mastery is not a primary goal of seventh- and eighth-grade English classes. The instructional objectives pursued in these classes are more numerous and variable than in math classes. Many, such as poetry composition, oral dramatization, or literature appreciation, are not easily or even appropriately pursued with the direct instruction approach.

One implication of recent work is that the findings concerning direct instruction do generalize to higher grade levels and different kinds of students, but only to the extent that basic skill mastery is the primary goal. Not everything generalizes, of course. Evertson, Anderson, and Brophy's (1978) positive findings for public praise of student contributions and for asking higher level questions in addition to factual questions are not usually observed in the early grades. Praise correlates sometimes positively, sometimes negatively, but usually not at all with learning, depending on context factors such as student ability levels, teacher vs. student initiation, and specification and elaboration of the praise itself (praise seems to be generally overrated, although it does seem important for low ability/anxious/dependent students, provided that it is genuine and deserved, and the praiseworthy aspects of the performance are specified).

Level of question or cognitive demand usually shows a negative correlation (although sometimes a curvilinear relationship) with learning in the early grades (Rosenshine and Berliner, 1978; Soar and Soar, 1978). The implication for the early grades seems to be: move in very small steps and overteach to the point of overlearning; move at a rapid pace, but do not challenge students beyond their ability to respond meaningfully.

Several recent studies indicate that the situation is somewhat different in the middle and upper grades (Evertson, Anderson, and Brophy, 1978; McDonald and Elias, 1976; Anderson and Scott, 1978; Trismen, Waller, and Wilder, 1977; Murnane and Phillips, 1978). Compared to the elementary grades, the later grades tend to have more large group and whole class activities; less frequent and less affectively toned dyadic teacher-student interactions; less recitation and drill and more discussion; more cognitive challenge and high level cognitive activity; less teacher centeredness and more student autonomy; more sustained concentration on academic activities; and a more rapid pace within these activities.

In the early grades, it is important for the teacher to elicit responses from and provide feedback to each individual student (this is a major reason why small group instruction is important at these grade levels). Later, this individualized (within the group context) instruction is no longer necessary, and it becomes more important for the teacher to keep the whole class together and move along at a good pace. Basic skills have been mastered, and learning objectives now involve higher cognitive activity, so challenging students with difficult or complex questions is more appropriate. Still, though, learning should be relatively easy—most questions should be answered and students should be able to complete independent work assignments correctly.

Eliciting student contributions, integrating them into the discussion, and praising the more noteworthy ones all become useful techniques that correlate positively with learning gains. In this connection, recent work has helped clear up the apparent discrepancies between the writings of Flanders (1970) and some of these data supporting the direct instruction model. There is continuing and increasing support for the effectiveness in the upper grades of certain aspects of what Flanders called "indirect teaching": praise, use of student ideas, and high frequencies of student talk (if it is focused on academic objectives; nonacademic student talk correlates negatively with learning).

These data must be placed in context, however. It appears that the really important determinants of learning at the higher grade levels are not the things that Flanders clustered under "indirect instruction," but instead are other aspects of teaching that Rosenshine includes under "direct instruction": frequent lectures, demonstrations, and teacher-led discussions (Barr and Dreeben, 1977). In the process of doing these things, teachers elicit frequent student contributions, which makes it possible for them to use student ideas and to integrate them into the discussion, as well as to praise them. In any case, eliciting them in the first place seems to be the crucial variable here, not praising them or integrating them into the discussion.

Experimental Studies

Recently, field experiments have followed up on earlier process-product work. Anderson, Evertson, and Brophy (1979) pulled together 22 principles of small group instruction derived from earlier work and organized them into a coherent treatment designed for first-grade teachers to use with their reading groups. Good and Grouws (1979) included a variety of principles drawn from their earlier correlational work into a systematic approach for teaching mathematics in fourth grade, and tested these principles in an experimental study. Each study produced statistically significant results favoring treatment teachers over control teachers in producing student learning gains on standardized achievement tests. Each also involved a strong observation component, so the teachers could be monitored for the degree to which they implemented the treatment (and control teachers could be monitored for the degree to which they spontaneously included treatment behaviors in their teaching).

Not all treatment elements were implemented properly, and not all of those that were implemented showed the expected significant relationships with learning scores. However, where the treatment behaviors were implemented sufficiently, and where significant results were obtained, the findings have been overwhelmingly positive, replicating previous correlational work and providing stronger evidence of a causal linkage between teacher behavior and student learning.

Most of these findings are quite prescriptive, although many of them allow for teacher judgment. This can be seen in the following examples drawn from the study by Anderson, Evertson, and Brophy (1979), all of which were well implemented by the treatment group teachers and were significantly related to learning gains.

1. Once in the reading group, the children should be seated with their backs to the rest of the class while the teacher is facing the class.

2. The introduction to the lesson should contain an overview of what is to come in order to mentally prepare the students for the presentation.

3. The teacher should work with one individual at a time in having the children practice the new skill and apply the new concept, making sure that everyone is checked and receives feedback during the lesson.

4. The teacher should use a pattern (such as going from one end of the group to the other) for selecting children to take their turns reading in the group or answering questions (rather than calling on them randomly and unpredictably).

5. When call-outs occur, the teacher should remind the child that everyone gets a turn, and he or she must wait his or her turn to answer.

6. After asking a question, the teacher should wait for the child to respond and also see that other children wait and do not call out answers. If the child does not respond within a reasonable time, the teacher should indicate that some response is expected by probing.

7. Praise should be used in moderation. The teacher should praise thinking and effort more than just getting the answer and should make praise as specific and individual as possible.

8. Criticism should also be as specific as possible and should include specification of desirable or correct alternatives.

Similarly, the work of Good and Grouws (1979) supports the following elements of fourth-grade mathematics instruction:

1. Concentrate on whole class (not small group) instruction.

2. Begin with review (lasting about eight minutes) of concepts and skills stressed in the previous homework.

3. Collect and check the homework.

4. Ask several mental computation questions during the review.

5. Spend about 20 minutes developing new content (orienting, explaining, demonstrating).

6. Include questions, opportunities for controlled practice, and review/elaboration in the development portion of the lesson.

7. Allow about 15 minutes for seatwork, preferably uninterrupted successful practice.

8. Hold students accountable by checking their work.

9. Assign homework regularly—about 15 minutes worth, which includes one or two review problems.

10. Conduct weekly and monthly reviews.

Taken together, recent studies provide an impressive number of guidelines for direct instruction

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in the early grades, the great majority of which are either overlapping or complementary (but not contradictory). Thus, in closing, I am happy to say that research linking teacher behavior to student learning is making significant progress in developing a scientific basis for teacher education.

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