New Developments in Effective Teaching

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The author, a Professor of Education, tells of interesting developments in the measurement of effective teaching.

What is effective teaching?

This is a question which has plagued educators. Most authors dealing with the problem have tended to be either philosophical or hortatory, and empirical studies have produced little meaningful results. Until recently, the results of almost all of the studies could be summarized in terms of one hypothesis "nothing makes any difference." As late as 1959, Medley and Mitzel commented, with respect to positive findings relating particular teacher behaviors to increased pupil growth that "the amount of research, completed or under way, which can yield such evidence is, to repeat, astonishingly small."

Since that time, the nature of the results on teacher effectiveness have changed sharply. Positive findings relating aspects of teacher behavior to increased pupil growth have mushroomed. This upsurge of positive findings has paralleled the development of means for systematic observation and quantification of teacher-pupil behavior in the classroom. In this context, systematic observation is used as a group label to refer to a number of relatively objective systems for recording teacher-pupil classroom behavior. Such systems differ in two ways from the older methods of describing teacher behavior. Here, the attempt is to describe rather than to evaluate, and to measure, rather than to apply such adjectives as "warm," or "democratic," or "permissive." Such systems do not require value judgements on the part of an observer; they do not require prior agreement about the nature of effective teaching; problems of definitions of terms are minimized; and intensive statistical analysis is made possible. The system not only provides a framework for looking at classroom behavior and conceptualizing it, but provides a language for talking about classroom behavior, as well.

In general, methods of systematic observation have been used as data-gathering tools for research, and as training tools in teacher education and, at times, they are used simultaneously to train teachers and to measure the effect of training by systematic observation. Probably the method of systematic ob-

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servation used most often in research relating teacher behavior and pupil growth is the Flanders' system of Interaction Analysis. Accordingly, this discussion of research findings will focus on it, with brief reference made to other systems.

The original work with the system has been summarized by Flanders (1965). A more usable source for developing skill in using the system is that of Amidon and Flanders (1963). This system records only verbal behavior in the classroom, and assigns each statement or interaction by teacher and pupil, to a category, as indicated in Fig. 1. Seven of the categories reflect teacher activities; two, pupil activities; and the last is a miscellaneous category of silence and confusion. Four of the teacher categories are labeled indirect influence; that is, they tend to support and to expand freedom for pupils; and three are labeled direct influence in that they tend to direct pupils, to restrict freedom, and to convey a negative tone.

In using the Flanders system, an observer enters the classroom, spends a few minutes getting the feel of what is going on, and then begins to write, entering on his record every three seconds, the category number which best describes what is going on in the room at that moment. If the activity changes within the three seconds, a new category is recorded. As the observer categorizes, he records these numbers in a column, in sequence. After the observation is complete (usually 20 minutes), the numbers are transferred to a matrix, in pairs to show simultaneously what is occurring now (the column heading), and what occurred immediately preceding (the row heading). For example if the first two numbers the observer recorded were a 4 and an 8, (a teacher question followed by a pupil response to that question), this pair of numbers would enter the matrix as a tally in the cell corresponding to row 4, column 8. The critically important breakthrough in this procedure is the capturing, one step at a time, of the sequence of occurrences in the classroom.

From study of these records, one can obtain a ratio of indirect to direct teacher behavior (the I/D ratio). This places the teacher on a continuum of the extent to which he is directive to pupils, similar to Anderson and Brewer's (1945) integrative-dominative dimension. Or one may calculate the I/D ratio only for rows 8 and 9—teacher responses to pupil talk, that is, what does the teacher say after a student question, answer or comment. Another common measure is the incidence of drill activities in the classroom —indicated by a buildup in the 4-8 and the 8-4 cells; these cells represent the transition from question to answer and from answer to question, with neither lasting longer than three seconds. Or one can look for what Flanders calls the Vicious Circle—a buildup in the 7-6, 6-6, 6-7, and 7-7 cells. This represents the situation in which the teacher gives directions, the pupils drag their feet, the teacher criticizes them, gives more directions, and the pupils drag their feet some more.

The most important finding from the various research using this observation schedule is that *the more indirect the teaching* (that is, the greater the proportion of the teacher behaviors of asking questions, accepting, clarifying and using pupil ideas, praising and encouraging, and recognizing and accepting feelings), *the greater the amount of subject matter achievement that takes place in the classroom, and the more favorable the attitudes of the student toward school and toward the teacher*. Educators have long believed that this was the case, but it is only recently that empirical research has validated this belief. These findings have been replicated by enough studies, so that there seems little doubt about their validity; see, for example, Flanders (1965), Amidon and Flanders (1961), Furst (1967), LaShier (1966), and Soar (1966). The findings cited by LaShier are particularly relevant to teachers of biology, since his study was done with students taking a BSCS Laboratory Block. He found unusually strong relationships between indirectness of teacher style and both subject-matter achievement and favorableness of attitude on the part of pupils.

Additional findings from research by Soar (1966) extend the available data on the nature of teacher effectiveness. He found strong negative relations between the amount of criticism expressed by the teacher and the amount of subject-matter growth on the part of pupils. In addition, expression

of negative feelings between pupils was strongly related to lower subject-matter achievement. High subject-matter achievement was associated with a relatively leisurely pattern of teacher-pupil interchange; this is in contrast to the use of drill, which produced less than average learning. The cycle which appeared to be supportive of pupil learning was one in which the teacher posed a problem, provided a limited unit of information for pupils to respond to, then asked a question, followed by pupil answer or discussion which continued at some length, followed by a repetition of the cycle. An optimum cycle length has been demonstrated by Furst (1967).

There were also suggestions in the data that the more abstract the learning task, the more indirect was the teacher behavior which produced most growth. That is, for a relatively concrete kind of learning task (such as learning terms or definitions), teaching behavior could be relatively direct; but for the teaching of concepts, a more indirect teaching style seemed to be important. This result appears to square satisfactorily with theoretical expectations, and perhaps also accounts for the unusually strong relationship between indirectness and learning which LaShier found for BSCS material.

An additional finding from the Soar study was the carry-over from the classroom in terms of the amount of growth in pupils the summer following the class observation. The most extreme example occurred for vocabulary growth. Pupils who had had indirect, non-critical classrooms the preceding year grew almost twice as much the following summer as did pupils who had had more direct, less supportive classrooms. There have been scattered results reported in the earlier literature, in which continued growth of pupils over the summer has been noted, but none had examined differences in terms of classroom situation the preceding year.

Other findings, using other systems for recording teacher behavior, include the following: Miller (1964) found that a "responsive" style of teaching produced pupil discussion indicating deeper understanding. Taba, *et al.* (1964) showed superior concept learning for pupils taught by teachers trained to use an experimental program which combined curriculum units, teaching strategies, and systematic observation. Gallagher and Aschner (1963) showed that a modest increase in the number of divergent questions (questions inviting multiple alternatives) asked by the teacher produced a much larger increase in divergent thinking by pupils, i.e., thinking that is inventive and innovative. And Spaulding (1965) showed significant relations between classroom behavior and the way pupils view themselves.

Such research points strongly to the conclusion that measurement of the interaction of teachers and pupils in the classroom has advanced to a point where the nature of effective teaching can be identified with relative accuracy, permitting the reader to interpret the results in terms of his own criteria of effectiveness. Thus, the reader of the research can decide on what outcome he wants, and identify teacher behavior more likely to produce this.

Systematic observation is also useful in helping a teacher control his own verbal behavior in the classroom. Although research on this use is not as extensive as that concerned with the nature of teacher effectiveness, it also appears very promising. Probably the largest study is that of Amidon (1966). Although not complete, his work indicates that there are clear differences between teachers trained to use an observational system to gain feedback on their own behavior in teaching, and teachers who have not been trained in this fashion. During student teaching, student teachers untrained in interaction analysis are initially relatively indirect in their teaching style, but their behavior shifts steadily toward more direct teaching as the experience continues. In contrast, student teachers trained in an interaction analysis system resist this trend of becoming more direct, and they complete student teaching with essentially as indirect a teaching style as when they began it. In addition, such student teachers, when placed with more direct supervising teachers, were better able to resist the tendency to become more direct than were untrained student teachers. Perhaps trained student teachers have been given a way of examining their own teaching behavior, so that they are better able to evaluate what "good" teaching

is and the extent to which their own teaching style meets their own objectives, rather than being forced to rely on the model of behavior provided by another teacher, a model which may be less than ideal. There may be implications here for the frequently heard comment of the student teacher that his training simply does not work in practice. Perhaps what is happening is that understanding such a system provides teachers with a conceptual scheme which permits them to find ways of teaching they consider desirable. It also seems likely that knowledge of a systematic way of looking at the interaction of teachers and pupils heightens teacher awareness of the process which goes on between him and his pupils.

Taken all in all, the advances taking place in identifying effective teaching, and in teaching teachers to teach effectively (which appear to parallel the developing use of systematic observation of classroom behavior) offer real promise for the future. Perhaps it is not too much to expect that methods of systematic observation may be the means by which the theory of effective teaching is translated into the practice of effective teaching.

A Typical Workshop in Interaction Analysis

How does one prepare teachers to look at teaching behavior? A two- to five-day period is needed. Initially, teachers study the category system; then, in a large group situation, they listen to short tapes of class activity, and apply the categories to one teacher or pupil statement at a time. Discussion of differences in interpretation clarifies the meaning of the categories. Next, small groups, each aided by a person experienced in using the system, and each with its own tape recorder, listens to tapes to become more familiar with the categories. As this familiarity grows, the length of the interaction to be recorded is increased, so that after several hours of practice, the teachers record two- or three-minute stretches of classroom interaction, and then compare their results.

After the initial familiarization with the categories has been achieved, exercises will be introduced to increase sensitivity and involvement. Teachers are often presented with two brief teaching situations, one where only one-way communication (from teacher to students) is permitted, and the other, with two-way communication permitted. The instruction being communicated here is such

Fig. 1. Summary of categories for interaction analysis.

Teacher Talk	**Indirect Influence**	1.* Accepts Feeling: accepts and clarifies the feeling tone of the students in a non-threatening manner. Feelings may be positive or negative. Predicting or recalling feelings are included.
		2.* Praises or Encourages: praises or encourages student action or behavior. Jokes that release tension, not at the expense of another individual, nodding head or saying "um hm?" or "go on" are included.
		3.* Accepts or Uses Ideas of Student: clarifying, building, or developing ideas or suggestions by a student. As teacher brings more of his ideas into play, shift to category five.
		4.* Asks Questions: asking a question about content or procedure with the intent that a student answer.
	Direct Influence	5.* Lecturing: giving facts or opinions about content or procedure; expressing his own ideas, asking rhetorical questions.
		6.* Giving Directions: directions, commands, or orders to which a student is expected to comply.
		7.* Criticizing or Justifying Authority: statements intended to change student behavior from non-acceptable to acceptable pattern; bawling someone out; stating why the teacher is doing what he is doing; extreme self-reference.
Student Talk		8.* Student Talk—Response: talk by students in response to teacher. Teacher initiates the contact or solicits student statement.
		9.* Student Talk—Initiation: talk by students which they initiate. If "calling on" student is only to indicate who may talk next, observer must decide whether student wanted to talk. If he did, use this category.
		10.* Silence or Confusion; pauses, short periods of silence and periods of confusion in which communication cannot be understood by the observer.

*No scale is implied by these numbers.
Adapted from Flanders (1965).

that the accuracy of communication can be scored, and ratings of satisfaction of group members, accuracy of communication, and observations of the incidental behavior of the participants are compared for the two teaching situations. Typically results indicate that two-way communication takes longer, but that much greater accuracy and higher satisfaction of the student group emerges. As another example, samples of extremely direct teaching and of relatively indirect teaching are presented to the participants, and the differences in categories which are recorded are compared.

When the use of individual categories of the interaction system has become comfortable for the participants, the way in which the sequence of categories is tabulated into a matrix is explained, and the participants then tally their past observations into matrices. Following this, ways of interpreting the matrix are presented, and a number of the commoner measures are illustrated and discussed by the participants. As a part of this unit, participants will be asked to suggest questions they would like to ask of the data, and ways in which answers to the questions might be obtained from the matrix illustrated.

At a somewhat more advanced level, small groups of teachers are given assignments to role-play (i.e., act out) specific sequences of behavior as identified by the categories. For example, the assignment might be to produce several minutes of classroom interaction in which at least one-third of the teacher behavior is represented by category 3, "acceptance or clarification of pupil idea," or two participants might be asked to act out a drill session, identified by a high proportion of 4-8 and 8-4 sequences; another pair of participants might act out teaching which is more inquiry oriented, with a high proportion of categories 3-3, 4-4, and 9-9.

Probably this level of development would not occur until well into the training session, but by then, it would be possible to begin the analysis of tapes which teachers have made of their own classroom teaching. An increasing part of the training time during the latter part of the laboratory could then be given over to small group discussion of the teacher's goals for his own teaching, in relationship to the picture of his teaching which

emerges from the matrix he has tabulated from his own tape. In this way, norms of sharing problems and sharing ideas for the solution of them will emerge among small groups of teachers, using the language of interaction analysis as a means not only for getting a picture of classroom process, but also as a frame of reference for conceptualizing, and for communicating about teaching strategies.

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