

F.A.C.T.—FLEXIBLE ANALYSIS OF CLASSROOM TECHNIQUES

Willard H. Nelson, Ronald A. Newell, and F. Ward Brunson

Florida Atlantic University

This report describes a preliminary exploration of the possibilities for utilizing color slides of classrooms as indicators of student activity. Some preliminary work currently under way at Florida Atlantic University is discussed, and the efficacy of the analysis of sets of slides is considered.

Background Assumptions

Students' attention to "appropriate" activities is widely recognized as a necessity for effective classroom learning. When pupils are listening to the teacher or seem to be engaged in written work or other purposeful activity, an observer usually infers that effective learning is occurring. When he views other than focused attention, the observer tends to feel that little learning is underway. Simple ways to quantify the degree of student attention to appropriate foci are needed by researchers who are interested in exploring aspects of classroom learning. If researchers can obtain reliable indices of classroom attending behavior, they will have valuable independent variables at their disposal.

In addition, teachers will be more likely to direct students toward appropriate tasks if they can obtain accurate measures of how much of the time their students are actually attending to desired activities and how much time they are wasting. Such indicators, in turn, can be related to specific instructional strategies, methods, and materials in order to facilitate more effective attainment of instructional goals.

It is not the authors' desire to add yet another category system to the plethora of schemes of classroom behavior classification. Indeed, many such category systems focus on a *single* teacher working with the total class. Furthermore, they emphasize heavily, if not exclusively, patterns of verbal behavior which focus on the teacher and pupils working as a unit. With newer emphasis on individualized instruction, teachers spend less time reaching to the total class. Students are given more independent responsibility for directing their own activities. As a consequence students work at increasingly varied tasks at varying speeds. Because of this diversity, it is becoming more difficult for the researcher or teacher using indices of the aforementioned type to obtain meaningful data regarding classroom behavior.

A further integral limitation of this type of observation system is generally overlooked, but crucial. Each classification of behavior recorded within such a system refers to only *one* individual in the class at a time; e.g., teacher praises or encourages, student (one student) responds to teacher questions, etc. At the precise moment of data recording all behavior not subsumed under the category recorded is *de facto* lost. But what are other students doing, for example, when a student is answering the teacher's question? Many of the intervening effects of multiple and concurrent student activities upon learning outcomes are thus not assessed. It would seem that a great deal of unaccountable variance in classroom research may reflect such "loss" of data. To overcome this effect of excluding much, even most, of the data, the researcher needs ways of freezing classroom behavior so that the total behavior pattern reflecting every student's activities can be quantified. This in turn should give a more accurate indication of the classroom variables most effective in promoting desired outcomes.

The F.A.C.T. Approach For Recording Classroom Behavior Data

The authors attempted to record patterns of classroom activity within the complexities of an individualized mode of instruction by using a series of high-speed color slides. Preliminary results focusing only upon measureable degree of students on and off-task behaviors were encouraging, and appear to warrant our sharing them, although further refinements of measurement are anticipated.

Some fundamental questions regarding the utility of such a technique which were anticipated are as follows:

1. With what certainty is it possible to infer whether a given child was engaged in on-task behavior or not? Are sufficient clues provided by the still slides to make valid inferences?
2. Can inter-judge reliability be established?
3. Does a series of still pictures provide a valid sample from the universe of classroom behaviors?
4. Would the single-frame analysis approach warrant further refinement of its descriptive categories?

Preliminary work has indicated tentative affirmative evidence in response to each of the above questions. The procedures used to provide tentative affirmation are described below.

Equipment and Procedures

A 35 mm Leica camera equipped with a cable release and wide angle F2 lens was mounted on a sturdy tripod. The location in the classroom was chosen so as to encompass as much of the student population as possible (10 to 15 out of 20 students present were in the field at all times). The combination of high-speed color film and a quality lens produced a sharply defined slide which enabled judges to observe such details as student eye focus, subtleties of expression, etc., making it easier to infer on-task and off-task behaviors for each student.

Thirty slides were taken at 60-second intervals. The photographer snapped the shutter unobtrusively at a distance of 20 feet from the camera by using a long cable release. It was felt that his presence in the immediate vicinity of the camera would cause undue and unnatural student attention to the proceedings. Other timings of intervals, including predetermined random intervals, will be investigated.

Sets of sequenced slides were viewed by the judges independently. A count of students judged to be engaged in "appropriate tasks" was recorded for each judge for each slide.

Initial Evidence . . . Reliability and Validity

The issue of agreement among judges as to extent of on-task behavior was examined by correlating the judgments of paired judges. The obtained reliability coefficients ranged from .6 to above .9, with most being nearer the upper end of the range.

Variability among judges with varying degrees of training is still being explored.

Agreements between judgments of slides and judgments derived from video-tapes were also studied. Validity coefficients yielded by this approach ranged from an exceptional low of .4 to a high of .8. Further study is under way to supplement these preliminary efforts to assess the relationship between judgments derived from sets of slides and other approaches in representing what goes on in the classroom.

Implications

The F.A.C.T. approach offers much flexibility of analysis for the researcher and teacher. Instead of relying upon pre-determined classification schemes such as those used by Flanders and his successors, the researcher can select his particularly relevant activities. He is able to decide, from his special perspective, which classroom behavior categories are specifically relevant to his own perception of instructional goals.

This flexibility would seem to facilitate closer agreement between categories used for analysis and the unique traits of individual classroom populations and activities.