Instructional Video Tapes in Teacher Education[1]

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There is an increasing and encouraging tendency on the part of instructional specialists to weigh the effectiveness of instruction in terms of results with pupils. This point of view is evident in the several reports of the Joint Committee on Programmed Instruction and Teaching Machines of APA-AERA-DAVI. Even the definition of a "program" recently advocated by Lumsdaine (2, p. 385) has as an essential ingredient the statement that a program accepts responsibility for accomplishing a specified behavior change. Yet in the field of teacher education, few instructional vehicles exist which have proven their value in modifying the behavior of prospective or inservice teachers.

A recent progress report (1, p. 24) of a prominent national committee strongly endorsed the preparation of films "to reach rapidly and effectively large numbers of people in preservice programs and in new programs of inservice education." The group recognized the considerable difficulty of this undertaking:

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To make such films will require a large initial investment of time and money. The techniques for making this kind of film have not been thoroughly explored. An initial investment in equipment and facilities must be made, and an opportunity provided to try to find a successful formula, and perhaps to fail repeatedly before finding it. In the long run, however, the costs will be small compared to the returns (1, p. 26).

The real problem in teacher education, of course, is to modify the actual instructional behavior of teachers in desired directions. Most teacher educators believe that changes in the teacher's knowledge or attitudes will be accompanied by subsequent changes in his classroom behavior. Even though this may be so, there are few instructional materials, e.g., texts, programs, films, which have been *demonstrated* to be capable of bringing about changes in the teacher's professional knowledge or attitudes, *even* changes which can be assessed by paper-and-pencil tests.

OBJECTIVE

The research described in this paper was designed to test the efficacy of four video taped instructional sequences in bringing about certain test behavior changes in prospective teachers which are relevant to the teacher's classroom behavior(3). During the summer of 1965, a series of four instructional video tapes was prepared dealing with the following topics: (1) appropriate practice; (2) perceived purpose; (3) reinforcement principles; and (4) discipline.

INSTRUCTIONAL ARTIFACTS

The instructional programs under investigation were four video tapes, each approximately one-half hour in length. The title and general content of each program is given below:

1. *Appropriate practice.* This program illustrates the principle that pupils should be given an opportunity to practice the behavior implied by the instructional objectives. Two different forms of appropriate practice (equivalent and analogous) are treated, as is the topic of prerequisite tasks.

2. *Perceived purpose.* This program deals with the establishment of learning sets whereby the learner is encouraged to perceive the purpose of the instruction he is undergoing. Four different techniques for establishing such learning sets are treated, namely, extrinsic rewards, exhortation, deduction, and induction.

3. *Reinforcement principles.* This program treats four different misuses of reinforcement principles which sometimes occur in the classroom. The four errors are (a) failure to provide reinforcement, (b) use of general rather than specific reinforcement,

(c) unintentional reinforcement of undesired behavior, and (d) failure to individualize reinforcement.

4. *Discipline.* This program illustrates the application of 15 different classroom disciplinary techniques.

Each program consisted of approximately 20 minutes of instruction followed by a posttest of 10 minutes' duration. Essentially, the instructional section of the program provided the learner with opportunities to make discriminations between instances or noninstances of a given principle or of different forms of that principle. All of the instructional and posttest situations involved simulated classroom settings wherein professional actors (teachers) along with 10 local high school students portrayed small sequences of planned classroom activity. For instance, in the case of appropriate practice, the viewer was given an opportunity to identify whether certain forms of appropriate practice were present in several short classroom vignettes. In the posttest, the same procedure was employed; that is, the viewer was obliged to identify which, if any, of the principles under discussion were present in each of a series of classroom scenes.

These four programs were produced during the summer session of 1965 under the technical direction of the UCLA Academic Communications Facility. The cost was approximately $5,000, including the funds expended on equipment rental, professional staff, materials, etc.

Subjects for the experiment were 124 students enrolled in a required preservice course in UCLA's Department of Education during the fall semester of the 1965-66 school year. The students were typically seniors or first-year graduate students who were preparing to teach at the secondary level. The particular class involved was a course in curriculum and instruction taken immediately prior to student teaching.

METHOD

The general method was to set up a three-group design such that for the four different video tape programs, one group of subjects would not view the program, a second group would receive only modest written or audio taped instructional material on the same tape, and the third group would receive the written or audio taped instructonal material *plus* the specially prepared video tape programs. This design permitted contrasts between individuals who received (1) no instruction, (2) brief instruction, and (3) brief instruction plus video tape programs.

MEASURES The chief measure used to assess the influence of the video tape programs was the posttest provided by the programs themselves. Approximately 40 minutes of test situations were yielded by the four 10-minute posttests at the end of each program. As described earlier, these posttest situations asked the learner to identify whether certain principles were present in each of the instructional situations. Because of the nature of the subject matter, certain of the posttests provided for more questions than others. More specifically, there were 9 items in the appropriate practice test, 16 items in the perceived purpose test, 20 items in the reinforcement test, and 60 items in the discipline test. A second measure consisted of a paper-and-pencil test regarding the four instructional principles. These items were of a standard objective type and were administered as part of the midterm examination of the course.

PROCEDURE The experiment was conducted during the 1965-66 fall semester. The 124 subjects were randomly assigned to three groups. Originally these groups were equal in number, but absences during the experimental period reduced the number in Group I to 43, in Group II to 43, and in Group III to 38.

The total time involved in the experiment was three days. On the first day, Groups I and II met together and were given audio taped instruction regarding the topics of appropriate practice and perceived purpose. They were also given printed instructional material regarding the reinforcement and discipline topics. On the same day, Group III, the control group, viewed a video tape recording of a classroom session from a nearby high school. The video tape recording seen by Group III was not designed to provide instruction relevant to either of the criterion measures used in the investigation.

On the second day of the experiment, Group I viewed the instructional segments of the appropriate practice and reinforcement video tape programs. Group II viewed the instructional segments of the perceived purpose and discipline video tape programs. Each instructional segment, exclusive of the posttest portion of the program, lasted approximately 20 to 25 minutes. At the same time, Group III listened to an audio tape of a speech by an educational philosopher. As on the first day of the experiment, this activity was not considered to be instruction relevant to the study's criterion measure.

On the third day, all three groups were given the posttest sections of the video tape programs. These four tests had been edited so that all four were presented consecutively on one video tape. Two months later, the regular midterm examination for the class was administered to all subjects.

ANALYSIS

Differences among the groups representing the three treatment conditions were tested by a one-way analysis of variance on both of the criterion measures. That is, an analysis of variance was applied to each of the four video tape posttests and to the four written subtests from the midterm examination.

RESULTS

Considering the performance first on the video tape posttests, significant F values were obtained for all four measures. Means, standard deviations, and analysis of variance F values for all four analyses are presented in Table 1. An inspection of Table 1 will reveal that the order of the test means is the same on all four measures; i.e., the lowest performance was achieved by the no-instruction control group, the next highest by the brief-instruc-

TABLE 1
Means, Standard Deviations, and Analysis of Variance F Values for Three Treatment Conditions on Four Video Tape Posttests

Treatment	n	$\overline{X}$	s	F
Appropriate Practice (9 items)				
No instruction	38	4.4	1.3	
Brief instruction	43	4.8	1.5	5.3*
Brief instruction plus video tape program	43	5.4	1.5	
Perceived Purpose (16 items)				
No instruction	38	10.5	1.7	
Brief instruction	43	11.4	1.3	8.8*
Brief instruction plus video tape program	43	11.9	1.6	
Discipline (60 items)				
No instruction	38	47.2	3.0	
Brief instruction	43	48.7	3.5	18.9*
Brief instruction plus video tape program	43	51.1	2.1	
Reinforcement (20 items)				
No instruction	38	14.3	2.1	
Brief instruction	43	14.8	1.8	5.8*
Brief instruction plus video tape program	43	15.8	2.0	

*$P < .01$.

tion group, and the highest by the group viewing the video tape programs. The probability of this consistent order in all four situations is, of course, extremely rare ($P<.001$).

Performance on the paper-and-pencil tests administered several weeks after the treatment revealed no significant differences among the groups on any of the four tests. Extremely high test means existed for all three groups on each of the separate tests.

DISCUSSION

The chief target behavior sought in the programs was the student's ability to identify the presence of certain instructional principles in video taped teaching situations. It was assumed that this stimulus was closer to a real classroom situation than written descriptions of such activities. Apparently, instructional programs can be devised which significantly increase the probability that the student will acquire this ability. The lack of significant group differences on the paper-and-pencil measures was attributed to the low test ceilings on those tests evidenced by consistently high performance by all three groups.

It is important to note that the brief printed or audio taped instructional materials were not sufficient, in themselves, to produce the level of terminal behavior secured through the use of the video tape programs. This, of course, is consistent with the principle of appropriate practice advocated in one of the four programs, namely, the learner should be given an opportunity to practice the terminal behavior (discriminations from video taped teaching solutions) prior to the criterion examination.

REFERENCES

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