DOCUMENT RESUME

ED 050 557 EM 008 917

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PUB DATE 71
NOTE 16p.

EDRS PRICE EDRS Price MF-$0.65 HC-$3.29
DESCRIPTORS *Feedback, *Microteaching, *Peer Teaching, Preservice Education, *Student Teachers, Teaching Techniques, Training Techniques, *Video Tape Recordings

ABSTRACT

To gauge the effect of different microteaching variables on the effectiveness of microteaching, three treatment conditions were set up. In the oral group, oral evaluation by the supervisor was not available to the subjects (student teachers). In the video group, video recording or playback was not available. In the peer group, ninth-grade students, rather than fellow student teachers, were used as the "micro-class." Three regular microteaching groups served as controls for each treatment condition. Two evaluation forms, the Verbal Interaction Categories System and the Video Teaching Evaluation Form, were used to evaluate the performance of each student teacher in subsequent microteaching sessions. Results showed that only one variable, use of ninth-grade subjects rather than peers, significantly affected performance in subsequent sessions. In this condition, subjects were fairly uncomfortable with the task of teaching younger students and did not allow for student interaction during the microteaching sessions. Lack of oral or video feedback did not affect subsequent microteaching attempts. (JK)

THE EFFECT OF CONTROLLED VARIABLES IN MICROTEACHING

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Five years ago, Stanford University introduced the concept of microteaching to educators. (Allen and Fortune, 1966) Since that time a number of educational institutions as well as other professions have employed microteaching (video taping teaching behavior before small group of students) as a means of accurately observing and promoting specific behaviors. Microteaching seems to have become an essential tool of serious educators bent on improving teacher training methods.

The model used for microteaching on the Brigham Young University campus is: (a) subject presents a seven minute concept lesson to four or five of his peers; (b) the lesson is videotaped and played back; (c) the lesson is critiqued orally and in writing by the supervisor and peer "pupils".

Some of the advantages of microteaching have been listed as saving time, travel, and expense both for the supervisor and preservice teacher. Yet with all these advantages there still remain questions about the true usefulness of microteaching. Does microteaching with its expensive equipment produce significantly better trained teachers in the public schools than conventional student teaching programs? Allen and Fortune (1966) report that microteaching is a superior method of teacher training. Kallenback and Gall (1969) report that there are no significant differences in the two approaches except in the amount of time necessary to acquire the appropriate skills. This difference could be accounted

for by some of the more important aspects or attributes inherent in microteaching. Sedgwick and Miefeldt (1967) identified some of these specifically inherent attributes as feedback, visual contact, evaluators, amount of meaningful practice and the option of greater control and variation.

The purpose of this study was to take advantage of this last option, to isolate three specific variables of microteaching and compare their usefulness in the situation to any identical situation with the variables missing.

Method

Subjects

Ten subjects were randomly selected from each of three beginning teacher education classes taught by the same instructor. Each group of ten Ss was then divided into two groups of five Ss each and assigned to one of six treatments. One subject withdrew from the class and was dropped from this study. Two other students were not present when microteaching assignments were made and they subsequently thought they were to microteach at times when the experiment was scheduled. They attended the first session when the treatment was employed and were asked to return for the testing session for three reasons: (1) it was felt by the experimentors that they would not bias the study; (2) Eliminating them from the second session would possible increase the effect effect any "demand characteristics" would give; (3) the study was conducted without the knowledge of the participants and any explanations as to why the new students weren't in the second session would draw unnecessary and unwanted questions at this point.

Materials

Treatments were conducted in the Brigham Young University micro-teaching

studio. The studio consists of a large angular room equipped with blackboard and desks. Ss teach to four or five "pupils" while a video tape recorder and camera record their performance from the back of the studio. The studio is also equipped with a television playback unit for reviewing and critique.

The dependent variable evaluation materials consisted of the Verbal Interaction Categories System (Amidon & Flanders, 1963) and the Video Teaching Evaluation Form (Allred, 1971).

The VICS areas were classified into "appropriate," "inappropriate," or "neutral." The areas identified as "inappropriate" contained such behavior as extended teacher talk, teacher rejection, or confusion. The "appropriate areas showed extended pupil interaction or teacher acceptance. All other areas were deemed "neutral" and were not considered in the analysis.

The Video Teacher Evaluation Form identifies ten teacher behaviors on a six-point rating scale. These ten areas were: reassessment, appropriate exemplars, higher cognitive behavior, student involvement, reinforcement, appropriate composure, opportunity to apply concept, memorization primary response, classificati behavior required, and problem solving behavior required.

Design

The study consisted of six groups, three of which were exposed to one of the treatment variables. The remaining three groups served as controls for each treatment condition. Throughout the remainder of this paper the groups will be designated as follows:

1. Oral group - oral evaluation by the supervisor was not available to the Ss.
2. Video group - video recording or playback was not available to the Ss.
3. Peer group - ninth grade students, rather than peers, were used as the "micro-class."

The remaining three groups, oral control, video control, and peer control, were directed by the same supervisor who was responsible for each treatment group

respectively. To examine supervisor influence, the only difference between the control groups was the different supervisor.

Procedures

Microteaching at Brigham Young University occurs when four or five students come together in a studio containing chalk board, video camera and playback unit. Under the control condition the subjects taught their peers, concept lessons, which were recorded on video tape. Once the lesson was completed each "peer student" and the supervisor completed the Video Teaching Evaluation Form and critiqued the lesson while it was being played back on the monitor.

The oral group procedure was identifical to the control groups except the subject who taught received no oral evaluation by the supervisor or the peers. The video group procedure was identical to the control procedures except the Ss' lesson was not recorded and therefore not played back. The peer group procedure was the same except the Ss taught their lesson to ninth grade students.

Subjects were required to participate in two microteaching sessions. They were told only that their experience would be used in evaluating the usefulness of microteaching and they were encouraged to do their best. Each subject was required to present and evaluate a concept lesson within a seven minute time limit under one of the six conditions. The Ss were allowed to teach any concept from their major or minor academic areas.

The first microteaching session or treatment was conducted by one of three supervisors having had at least two years experience with microteaching. Thus, each treatment consisted of supervisor influence and/or a specific treatment variable.

One week after the treatment session of microteaching each group reconvened for the evaluation session. Again, each Ss was required to teach a concept lesson in seven minutes. Each Ss' lesson was permanently recorded for evaluation by independent observers, at a later time. Each S taught his lesson to his peers, watched the playback and received both a written evaluation and oral critique by the supervisor and the peer group.

After the last group had completed the second microteaching session the tapes were randomized and their identities were masked. Two assistant instructors were hired and trained in the use of one of the two evaluation tools. Each assistant used one of the evaluation forms to evaluate the Ss while viewing all tapes.

Results

Both a one-way analysis of variance and a two-way model were used in analyzing the data. The one-way analysis treated the three experimental groups and the three control groups as having individual treatment to measure supervisor effect alone. Results obtained from the VICS evaluation instrument showed a significant difference between groups ($F = 6.49$, $p < .01$) Tukey's post hoc procedure it was established that the Peer group and Peer control were rated as having more interaction in the inappropriate areas of the matrix. Table 1 presents the mean number of tallies for each group in the appropriate and inappropriate areas.

INSERT TABLE 1

ANALYSIS OF VARIANCE

The one way was computed for each of the areas of the Video Teacher Evaluation Form. Mean scores for each area presented in Table 2. The results indicate significant differences between groups on higher cognitive behavior ($F = 10.85$, $p < .001$), application of concept ($F = 3.29$, $p < .05$) and memorization as a response ($F = 3.11$, $p < .05$). Again the peer group was

significantly lower than the first two items and the Video control group was highest in requiring memorization behavior.

INSERT TABLE 2

In order to evaluate interaction effects a two way analysis of variance was computed, using the Experimental-Control as one dimension and the three supervisors as the second dimension, for the VICS Evaluation, but the results were non-significant in interaction as well as between treatments and groups.

The computation of the two-way analysis on the Video Teacher Evaluation Form shows a significant difference between supervisor effects ($F = 5.88$, $p < .01$). An examination of the data revealed that Peer Group and its control were significantly lower than the other two treatments.

INSERT TABLE 3

In sddition a two-way analysis was computed on each individual item of the Video Teacher Evaluation Form. Some interesting results appeared.

The item dealing with use of high cognitive behavior showed significant difference between experimental and control groups ($F = 10.11$, $p < .001$), between supervisors ($F = 12.49$, $p < .001$) and a significant interaction effect ($F = 9.51$, $p < .001$).

INSERT TABLE 4

Figure 1 shows that the largest difference existed between the Peer Group and its control. The oral group was rated higher than its control but the Video Group was rated lower than its control.

INSERT Figure 1

The fifth item of reinforcing appropriate behavior was significant between experimental and control groups ($F = 5.74$, $p < .01$).

INSERT TABLE 5

The seventh and eighth items, application of concept and memorization responses were both significant between supervisors with ($F = 5.32$, $p < .025$) and ($F = 6.12$, $p < .01$) respectively.

INSERT TABLE 6

INSERT TABLE 7

Discussion

The results of this study lead to two rather pertinent conclusions and give rise to some questions. Using the VICS evaluation form showed that the subjects who used younger students in their micro-teaching were more prone to use direct approaches to the students. The subjects were fairly uncomfortable with the tasks of teaching younger persons and didn't allow for student interaction during the micro-teaching sessions.

These results were supported by data from the Video Teacher Evaluation Form where the Peer Group received the lowest scores of all the groups on all items. This was especially true on Item 3 which measured the subjects ability to involve students in high cognitive behaviors. The Peer Group seemed to "talk down" to the students.

It is evident that using younger students was not beneficial to the subjects performance on subsequent micro-teaching sessions. However, consideration must be given to the fact that the Peer Group was teaching to unfamiliar students and similar results might have been obtained if the peer students used in the other groups were unfamiliar to the subjects or if the peer group had worked more often with younger students.

The question is raised, from these results, as to the transfer of using younger students in microteaching and actual teaching of students at this age level. In another study by one of the authors (Young, 1970) where microteaching with peers was manipulated it was shown that the microteaching had a significant effect on subsequent teaching performance. The question of whether youth students in microteaching or using unfamiliar peers would support the findings of this study is still unresolved. Finally, the present study used microteaching situations to gather dependent variable data while in the earlier study data was gathered in the public school. This difference in environmental situations may also have accounted for the results.

It is worth noting that of the three variables considered two, oral evaluation and video playback, are forms of feedback to the Ss. Two conclusions are proposed. First, some feedback was probably given informally by the peers in each group outside of the experiment. But the Peer Group only interacted with their younger students during the sessions. This situation could explain the lack of significant differences between the Video and Oral groups. Second, the findings are supported by Borg (1969) when he found that improvement can be shown without supervisor evaluation or video playback.

The question concerning the most effective method of microteaching will remain unanswered until all the relevant variables have been identified and examined. Since microteaching has been shown to be useful in at least one study it must be concluded that several variables interacting together are responsible for the improvement manifest by those having microteaching experience.

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TABLE 1

SUMMARY TABLE OF MEANS FOR

VERBAL INTERACTION CATEGORIES

	ORAL GRP	VIDEO GRP	PEER GRP	ORAL CONT	VIDEO CONT	PEER CONT
Appropriate	25.68	30.06	8.83	26.30	24.81	42.32
Inappropriate	89.05	83.38	107.62	84.61	87.49	67.89

TABLE 2

SUMMARY TABLE OF MEANS ON

VIDEO TEACHER EVALUATION FORM

ITEMS	ORAL GRP	VIDEO GRP	PEER GRP	ORAL CONT	VIDEO CONT	PEER CONT
1	2.3	3.8	2.2	2.5	3.2	2.2
2	3.5	3.3	2.8	3.7	4.4	2.4
3	4.2	3.8	1.6	3.8	4.2	3.8
4	4.2	2.5	2.8	3.8	4.2	4.0
5	3.3	2.8	2.0	3.3	4.0	3.8
6	4.0	2.0	2.6	2.8	3.0	3.2
7	3.5	4.0	2.0	4.2	4.2	3.4
8	..0	2.8	0.6	2.3	3.8	1.2
9	2.7	3.5	0.4	4.2	3.6	2.4
10	3.8	3.5	1.2	3.2	2.6	2.2

TABLE 3

ANALYSIS OF VARIANCE FOR VIDEO TEACHER EVALUATION FORM

SOURCE	dF	MS	F
Treatment	1	50.36	3.97
Groups	2	74.65	5.88*
Interaction	2	10.78	0.85
Error	25	12.69	

* $p < .01$

TABLE 4

ANALYSIS OF VARIANCE FOR ITEM 3 OF THE VIDEO TEACHER EVALUATION FORM

SOURCE	dF	MS	F
Treatment	1	0.89	10.11**
Groups	2	1.11	12.49**
Interaction	2	0.84	9.51**
Error	25	0.09	

** $p < .001$

TABLE 5

ANALYSIS OF VARIANCE FOR ITEM 5 OF THE

VIDEO TEACHER EVALUATION FORM

SOURCE	dF	MS	F
Treatment	1	1.55	5.74*
Groups	2	0.14	0.51
Interaction	2	0.43	1.58
Error	25	0.27	

* $p < .01$

TABLE 6

ANALYSIS OF VARIANCE FOR ITEM 7 OF THE

VIDEO TEACHER EVALUATION FORM

SOURCE	dF	MS	F
Treatment	1	0.86	4.12
Groups	2	1.11	5.32*
Interaction	2	0.18	0.88
Error	25	0.21	

* $p < .025$

TABLE 7

ANALYSIS OF VARIANCE FOR ITEM 8 OF THE

VIDEO TEACHER EVALUATION FORM

SOURCE	dF	MS	F
Treatment	1	1.48	3.09
Groups	2	2.94	6.12*
Interaction	2	0.07	0.14
Error	25	0.48	

* $p < .01$

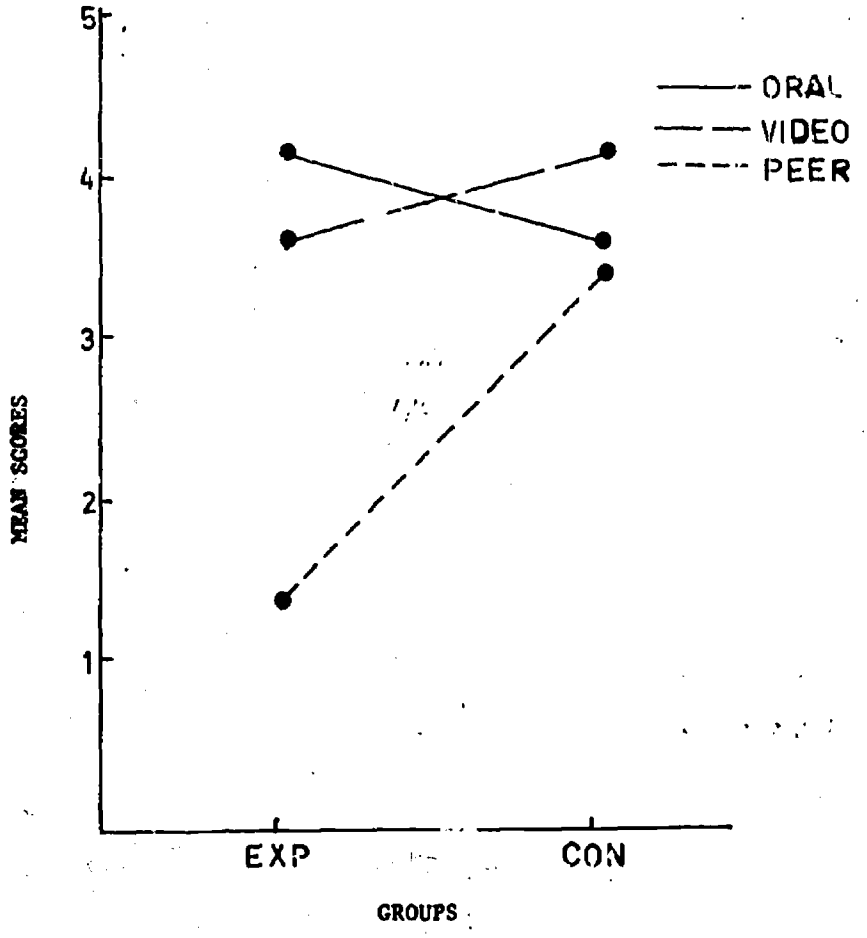

Fig. 1 Mean scores on Item 3 of the Video Teacher Evaluation Form

VICS

Teacher Initiated Talk

1. Gives information or opinion
2. Gives directions
3. Asks narrow questions
4. Asks broad questions

Teacher Response

5. Accepts ideas, behavior, feelings
6. Rejects ideas, behavior, feelings

Pupil Response

7. Response to teacher
8. Response to other pupils

Pupil Initiated Talk

9. Initiates talk to teachers
10. Initiates talk to another pupil

Other

11. Silence
12. Confusion

VIDEO TEACHING EVALUATION FORM

Teaching Episode Number _____ Evaluator _____

Conceptual Behavior Components:	Circle the appropriate number* Low High
1. Preassessment	1 - 2 - 3 - 4 - 5
2. Exemplars appropriate to the concept	1 - 2 - 3 - 4 - 5
3. Higher than lowest cognitive behavior required	1 - 2 - 3 - 4 - 5
4. Students involved in the learning activities.	1 - 2 - 3 - 4 - 5
5. Acceptable behavior reinforced	1 - 2 - 3 - 4 - 5
6. Composure maintained before the class	1 - 2 - 3 - 4 - 5
Post Assessment:	
7. Opportunity for students to apply concept . .	1 - 2 - 3 - 4 - 5
8. Memorization is primary student respons	1 - 2 - 3 - 4 - 5
9. Concept classification required for evaluation.	1 - 2 - 3 - 4 - 5
10. Problem solving is the terminal behavior sought	1 - 2 - 3 - 4 - 5

_____ Total _____

* Description of Ratings:

Evaluation suggests this student teacher had a(n):

5 = Superior use of this component

4 = Excellent approach to this component

3 = Good attempt to involve this component

2 = Fair utilization of this component

1 = Poor or non-use of this component