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A study was conducted to determine to what extent student teaching behaviors can be changed as a result of participation in the Far West Laboratory Minicourse I, "Effective Questioning Techniques" (a program relying on microteaching, filmed instructional and model lessons, and on teacher planning and self-evaluation of his own videotaped lessons). It was hypothesized that there would be no difference in teaching behaviors for those skills developed in the course between student teachers receiving the entire course and a similar group receiving the course except for videotape feedback and microteaching. Subjects were 33 elementary education students beginning practice teaching. Each student was videotaped for 15 minutes before and after the course was administered; pre- and posttape evaluation scores were tabulated, t ratios computed, and analysis of covariance completed. The microteaching group made significant gains in the desired behaviors on five of the 11 scores as compared to four significant gains for the other group; the hypothesis was not rejected. It was concluded that the minicourse does change behavior of student teachers in their methods of developing questions and conducting discussion, but that the value of the microteaching and videotape feedback does not appear to be sufficient to be needed when the participant is a student teacher. (JS)

3239

EFFECTS OF VIDEOTAPE FEEDBACK AND MICROTEACHING AS DEVELOPED IN THE FIELD TEST OF MINICOURSE I WITH STUDENT TEACHERS

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EFFECTS OF VIDEOTAPE FEEDBACK AND MICROTEACHING AS DEVELOPED IN THE FIELD TEST OF MINICOURSE I WITH STUDENT TEACHERS[1]

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The Problem

The purpose of this study was to determine to what extent student teaching behaviors can be changed as a result of participation in the Far West Laboratory Minicourse I, "Effective Questioning Techniques."

A minicourse is a concentrated, self-instructional teacher training program which employs video tape feedback. The program relies on microteaching, filmed instructional and model lessons, and on teacher planning and self-evaluation of his own videotaped lessons. Briefly, Minicourse I requires teachers to demonstrate acquisition of more effective questioning skills in classroom discussion. The overall purpose is for teachers to stimulate higher levels of pupil thought during class discussion as judged by the types of responses given by students in class. Reducing the amount of teacher talk and increasing the amount of pupil talk are related objectives.

Initial use of Minicourse I with inservice teachers demonstrated high promise for changing teacher behavior in classroom discussion skills. (1) From these results, the question arose as to the effectiveness of the minicourse with pre-service student teachers.

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[1] The work reported herein was in cooperation with the Far West Laboratory for Educational Research and Development, Berkeley, as a part of a contract with the U.S. Department of Health, Education, & Welfare. Concomitant studies at two other institutions are reported in W.R. Borg, W.W. Kallenbach, M. Morris, and A. Friebel, "Videotape Feedback and Microteaching in a Teacher Training Model," Far West Laboratory for Educational Research and Development, Berkeley, unpublished manuscript, 1968.

The specific hypothesis tested in this study was:

There will be no differences in teaching behaviors for those skills developed in Minicourse I between student teachers receiving the entire course and a similar group receiving the course except for the videotape feedback and practice in the microteaching format.

Studies conducted at Stanford and San Jose State College indicate that the microteaching format has some advantage over practice in the whole class situation. Bush and Allen (2) suggest that microteaching permits the teacher to practice new skills and try new ideas in a less difficult context than the total class situation. Ramonda (4) and Kallenbach and Gall (3) show that randomly assigned elementary intern teachers in an on-campus microteaching program were found equally competent with a group of students enrolled in regular student teaching program.

There is an expectation that the role of videotape feedback might be a major factor in the success of the minicourse as it allows immediate and accurate feedback.

Procedures

This study was conducted at San Jose State College during the Spring, 1968, semester. It should be considered an exploratory study due to size of groups and levels of control. A group of 33 elementary education students beginning a first experience of practice teaching comprised the study group. This group was divided into two subgroups according to their student teaching assignments; those 4 or 5 students assigned to one school for a group of four college supervisors were designated the Microteaching Group. The balance were placed in an Observation Group. These student teaching placements were made by district administrators on an arbitrary basis.

The Microteaching Group (N = 17) received the regular minicourse including instructional films, model films, microteaching and videotape feedback, as

treatment. The Observation Group (N = 16) received a treatment consisting of minicourse instructional films and model films but omitting the microteaching and videotape feedback. Both groups viewed the instructional and model films together on campus. Handbook materials were modified for the Observation Group to allow observing resident teachers parallel to videotape feedback checklists. Both groups completed the same amount of classroom student teaching. Observation group members were encouraged to try the Minicourse I discussion skills in their student teaching classes. Each student participating in each group received one unit of course credit for participating in this study.

Each of the student teachers was videotaped for 15 minutes both before and after Minicourse I had been administered. These tapes were randomly ordered and judged, one skill at a time by highly trained evaluators, at Far West Laboratory, who had no other association with the study. Tapes were assigned using a double blind technique. The incidents of specific teaching behaviors presented in Minicourse I were tabulated for each group on pre- and post-lessons. t-ratios were computed to determine the significance between the treatment groups. Analyses of covariance were completed where deemed appropriate by the data.

Results

The results of the data analyses are shown in Table 1. The table reports pre-course and post-course mean scores as well as t-ratios between pre- and post-tape scores for each group. The one-tailed test and the .05 confidence interval were applied in testing the hypotheses.

As in the inservice study, one behavior, "Calling on volunteers and non-volunteers" was found to be unscorable. Two other behaviors, "Dealing with incorrect answers in an accepting, non-punitive manner" and "Refocusing the pupil's responses" weren't scored because the inservice field test videotapes

previously scored (1) showed virtually no variations in these behaviors.

A total of 11 scores was obtained from each tape.

Discussion

The first behavior that minicourse I attempts to change is the length of the student teacher's pause between stating his question and calling for a student response. The purpose for the pause is to allow the student to organize a better response. The Microteaching Group showed greater but not significant gains in this behavior.

The course also attempts to increase the number of times a student teacher uses redirection in the class discussion situation. This is a simple technique coming from Hilda Taba's work, in which the teacher frames questions in such a way that they can be referred to several students rather than one. Redirection has the advantage of increasing student participation and often leads to direct interaction among students in discussion. Both groups made gains in this behavior with the Observation Group gain being significant.

Another goal of the course is to train student teachers to ask questions which call for longer pupil responses and to ask fewer questions that can be answered by yes or no or with a single word. Significant results were obtained in this behavior by the Microteaching Group.

A main objective of Minicourse I is to develop teacher skill to develop questions that require students to use higher cognitive processes in replies. These questions often begin with such phrases as: why, compare, find similarities or differences, contrast, or similar quantifiers. All teacher questions identified on pre- and post-tapes were classified as either fact questions, higher cognitive questions, or procedural questions. Surprisingly, both groups showed losses in this behavior although both pre- and post-course means were high. In re-examination of the Microteaching Group tapes, it appears that this loss was

due to classification procedures. Several student teachers asked what should have been classified as opinion questions, which should not have been scored as higher cognitive skills. The results appear too confusing and need await replication studies before judging the effectiveness of the minicourse in developing this behavior. Two probing techniques, prompting and further clarification, can be used by teachers after the student's first response to a question to direct him to a more adequate reply. Both of these are covered in Minicourse I. Microteaching Group students made significant gains in further clarification. No significant results in prompting behavior occurred for either group.

Minicourse I also attempts to diminish the teacher's use of behavior inhibiting discussion: repeating the question, answering one's own question, and repeating the student's answer. Few student teachers in this experiment repeated their own questions and their behavior was at an acceptable level at the outset and continued to be so at the end of the experiment. Student teachers answering their own questions were also few at the outset. The Microteaching Group, in spite of this, significantly reduced this behavior.

Many teachers in the inservice study were found to repeat, automatically, pupil responses. (1) The frequency of this behavior was significantly reduced for both treatment groups. This would suggest that the minicourse can bring about significant changes in this behavior.

Among the more desired behaviors was to enhance student discussion in the reduction of teacher talk. As with inservice teachers (1), student teachers talk a considerable portion of the time during discussions. Both groups showed similar significant declines in this behavior. This would suggest that the instruction of the minicourse was effective in the area of this behavior.

Summary and Conclusion

The group that completed the entire minicourse, including microteaching and videotape feedback, did not consistently make more of greater changes in behavior than the Observation Group, for which the latter elements were omitted. The Minicourse Group made significant gains in the desired behaviors on five of the eleven scores as compared to four significant gains for the Observation Group. However, analysis of covariance, in which the final performance of the student teachers in both treatment groups was adjusted for their pre-course performance, revealed only one significant difference between the two groups. The Observation Group made significantly greater changes in redirection ($F = 7.66$). The hypothesis tested in this study is not rejected.

It was expected that student teachers would make equal or greater gains than inservice teachers in the behaviors in Minicourse I; yet, this did not occur. Interview and questionnaire data obtained from the subjects of this study suggest reasons for the lesser success of the course. Probably most significant were greater demands placed on student teachers as compared to inservice teachers. Since the course was offered daily, student teachers had to prepare for the minicourse along with their regular student teaching and other courses. This suggests the need for a longer pacing for the course when used with student teachers.

A final conclusion is that the minicourse does change behavior of student teachers in their methods of developing questions and conducting discussion. The value of the microteaching and videotape feedback does not appear to be sufficient to be needed when the participant is a student teacher. It would appear that the use of videotape feedback and microteaching do show some promise in providing student insight as revealed by questionnaire data. Additional studies are underway or planned to test the minicourse and its variations. For example, a grant application has been submitted to develop comparisons of use of audio-tape versus

video-tape feedback in achievement of minicourse behaviors and the contributions of pupil feedback versus video-tape feedback.

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3239-10

PERFORMANCE OF STUDENT TEACHER GROUPS ON THE BEHAVIORS COVERED IN MINICOURSE I

(t of 1.75 is significant at .05 level)

Skill or Behavior	Microteaching Group			Observation Group		
	Pre Course Mean	Post Course Mean	Pre vs Post t	Pre Course Mean	Post Course Mean	Pre vs Post t
1. Length of teacher pause in seconds	1.28	1.61	1.50	1.37	1.42	.35
2. Number of teacher redirections	23.64	26.52	.80	23.12	30.87	2.12
3. Number of words per pupil response	7.35	10.42	1.94	7.58	7.85	.18
4. Number of one word remarks	4.11	3.64	.32	4.31	4.18	.12
5. Percentage of higher cognitive questions	61.48	35.77	.82	39.88	33.82	1.14
6. Number of teacher prompts	2.70	2.35	.46	1.62	2.31	1.21
7. Number of times teacher seeks clarification	3.47	8.17	3.48	4.68	3.68	.89
8. Number of times teacher repeats question	3.00	3.00	00	3.00	2.06	1.08
9. Number of times teacher answers own question	1.23	.58	1.75	2.50	.75	2.43
10. Number of times teacher repeats pupil answer	16.23	9.41	2.18	17.37	8.25	2.60
11. Percentage of teacher talk	44.96	35.87	2.48	52.23	39.66	2.36