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ABSTRACT

A study examined the effects on teacher performance and attitudes of several manipulations of the conditions under which the microteaching supervisor provides feedback: he bases his critique on (1) a videotape of the microteaching lesson which he views with the microteaching teacher (VT group); (2) an audiotape instead (AT group); (3) his experience with the live lesson (LL group); or (4) the responses of the microteaching student to the Stanford Teacher Competence Appraisal Guide (STCAG) (SR group). All students in a basic educational psychology course (N=37) were randomly assigned to eight groups, two groups randomly assigned to each treatment. Data was obtained from STCAG scores and an attitude scale measuring attitudes toward various aspects of the microteaching experience. Analyses of covariance indicated significant differences in students' ratings of the performance of subjects within the four treatments on all 13 variables. Major findings: The AT treatment appears to be the strongest, resulting in the greatest amount of change as measured by student ratings and also being highly valued by the microteaching teachers. The SR treatment effectively produced change in teacher performance but was not highly valued. The VT treatment appeared relatively weak in producing change yet was highly valued. The LL treatment appears least effective and tends to be lowly valued. (JS)

The Effect of Mode of Feedback in Microteaching

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Microteaching as a technique for teacher training is being adopted by more and more institutions. "Microteaching currently has the same promise and danger that newly devised research and training techniques have always had: the promise of opening entirely new avenues, perspectives, and alternatives to human exploration; the danger of locking in too early on a first alternative which arose purely out of chance and convenience (Allen & Ryans, 1969, Preface)."

Allen and Ryan (1969) describe microteaching as " a practice setting for instruction in which the normal complexities of the classroom are reduced and in which the teacher receives a great deal of feedback on performance (pp. 1-2)." They state five essential propositions which are at the core of microteaching. First, microteaching is real teaching. Second, microteaching reduces the complexities of normal classroom teaching. For any one microteaching lesson class size, scope of content and time are all reduced. Third, microteaching focuses on training for the accomplishment of specific tasks involving instructional skills, techniques of teaching, and mastery of curriculum materials. Fourth, microteaching allows for the increased control of practice. Fifth, microteaching involves a considerable amount of knowledge-of-results or feedback. Evaluation of the characteristics within this general model of microteaching is needed to determine their individual contributions.

The sources of feedback which are present in the usual microteaching program include the microteaching supervisor, the students who are taught in the microteaching session, the teacher's own reflections, and the

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playback of video tape. The reflections of the microteaching teacher are relatively difficult for an experimenter to control. Informal and spontaneous feedback from the students is also hard to control. The conditions under which the microteaching supervisor provides feedback to the teacher can be manipulated. Likewise the use of videotape is under the experimenter's control. Given that feedback is an essential aspect of microteaching, an assessment of the effects of manipulations of feedback conditions is an important step in eventually increasing the effectiveness of microteaching.

This study examines the effects on teacher performance and attitudes of several manipulations of the conditions under which the microteaching supervisor provides feedback. The conditions are: 1) the supervisor bases his critique on a videotape of the microteaching lesson which he views with the microteaching teacher (the VT group); 2) the supervisor bases his critique on an audiotape of the microteaching lesson to which he listens with the microteaching teacher (the AT group); 3) the supervisor bases his critique on his experience with the live lesson (the LL group); and 4) the supervisor bases his critique on the responses of the microteaching students to the Stanford Teacher Competence Appraisal Guide (STCAG; the SR group). It should be noted that two of the other three sources of feedback which have been mentioned are still present for the teachers in all four groups, namely, student feedback and the teacher's own reflections. One experimental group only views videotape, the VT group. All of the experimental groups receive supervisor feedback, but the bases for this feedback changes across groups.

If the other sources of feedback are sufficient to provide the teacher with the needed feedback, then one could dispense with the videotape and/or supervisor altogether. This would effect a considerable savings in time. For this reason the SR group is included. Tuckman and Oliver (1968) present evidence to suggest that student feedback is used by teachers to effect positive changes (changes in the desired direction) while supervisor's ratings resulted in negative changes (changes opposite to the desired direction). When supervisor's ratings were used in conjunction with student ratings the overall effect was positive. In the Tuckman and Oliver study it was suggested that the reason for the negative changes caused by the supervisor's ratings was that teachers didn't feel that the supervisor had enough information to rate them fairly, etc. Varying the basis for the microteaching supervisor's critiques could result in different responses on the part of the teachers to these critiques.

METHOD

Subjects. All the students in a basic educational psychology course were randomly assigned to eight groups. Two groups were randomly assigned to each of the four treatments. Several students did not attend the first meeting of their group and were not included in the experiment. The number of subjects not included in the experiment differed greatly across groups. However, since the subjects had no way of knowing which treatment their group would receive until after the first microteaching session, attrition cannot be ascribed to treatments. The factors causing more students to drop out of some groups than others are not known to the authors. Thirty-seven students attended the first meetings

of their groups and were included in the experiment. There was no attrition within experimental groups once the treatment began.

Procedures. Each of the experimental groups participated in a micro-teaching experience. Each subject in each experimental group taught a short lesson, had his performance critiqued by the supervisor, and then taught the lesson again. However, the basis for the supervisor's critiques varied.

In the AT group (n = 13) the critique was based on an audiotape recording of the lesson. In this experimental group the supervisor listened to the audio tape recording of the lesson with the teacher and critiqued the teaching performance on the basis of the audiotape recording.

In the LL group (n = 7) the supervisor was present during the actual presentation of the lesson and critiqued each teacher's performance on the basis of his direct observation of the teaching performance.

In the SR group (n = 5) the critique was based on the students' ratings of the teacher's performance as measured on the STCAG. In this group the supervisor reviewed the students' ratings and critiqued the teaching performance on the basis of these ratings. For example, if the students' ratings showed that the teacher was weak in evaluation techniques, the supervisor asked the teacher to review the evaluation procedures used in the lesson and then the supervisor made general suggestions.

In the VT group (n = 12) the critique was based on a videotape recording of the teaching performance. In this group the supervisor viewed the videotape recording with the teacher and based his critique of the teaching performance on this videotape recording.

Instruments. The data for analysis were obtained from two sources. The STCAG measured students' perceptions of the teacher's aims, planning, performance, and evaluation of the teach and reteach phases of the microteaching experience. On this instrument each scale has seven stations ranging from weak to truly exceptional. The second instrument was an attitude scale measuring attitudes toward various aspects of the microteaching experience. A five-point scale ranging from extremely valuable to worthless was used.

Analyses of the Data. Microteaching as a teacher training technique is based upon the procedure of teach-analyze-reteach. Through feedback in the analyze portion the teacher attempts to facilitate a positive change in her teaching behavior. To assess this change in behavior gain or difference scores or adjusting statistically for any initial differences in the teach scores can be used. Gain or difference scores, however, will not control for initial differences in the performance scores. Analysis of covariance is an indirect or statistical control which can be used as a means to permit valid treatment comparisons using observations on one variate (reteach performance scores) after removing the effect of a second variate (teach performance scores). Thus, for the reasons listed above, analysis of covariance was used in this study.

Analysis of covariance (Winer, 1962) was used to analyze the data obtained on each of the 13 items of the teaching performance scale (STCAG). The scores from the first session (teach performance) were used as the covariate and the scores from the second session (reteach performance) were used as the criterion. If the analysis of covariance

showed that the groups differed, comparisons of individual means were made.

A one-way analysis of variance was used to analyze the data obtained on each of the 56 items on the attitude scale. If the obtained F-ratio was significant at the .05 level or beyond a Duncan's multiple range tests for ordered means was run. A .05 level of significance was used for all statistical tests. The means and standard deviations of the scores used for the analysis are available from the first author upon request.

RESULTS

Performance. The analyses of covariance on the performance scale indicated significant differences in students' ratings of the performance of subjects (the microteaching teachers) within the four treatments on all thirteen items. These items are listed in Table I.

In general the performance of subjects (the microteaching teachers) was most effected by the supervisor's critique as evidenced by students' ratings on the STCAG when the supervisor's critique was based on an audiotape of the microteaching lesson (the AT group) or students' ratings of the microteaching lesson (the SR group). The performance of the microteaching teacher was least effected by the supervisor's critique when it was based on his actual observation of the lesson presentation (the LL group). In general when the supervisor based his critique on a videotape of the microteaching lesson (the VT group) the performance of the microteaching teacher was effected more than in the LL group but less than in the AT and SR groups.

Attitudes. The analyses of variance of the attitude data indicated that of the 56 items measuring attitudes toward the microteaching experience and other course characteristics, the ratings of the four groups differed significantly on 12. These items are listed in Table II.

In general the attitudes of the AT and VT groups were significantly higher than the LL and SR groups toward the microteaching experience.

When considering the potential value of the microteaching experience for them as future teachers, the AT group rated the microteaching experience significantly higher than the SR and VT groups.

When considering the value of the microteaching experience with respect to the amount of course material learned, the SR group rated microteaching lower than the AT, VT, and LL groups.

When considering the value of the microteaching experience as a way of preparing them for course examinations, the VT group rated the microteaching experience higher than did the AT, SR, and LL groups.

When considering the usefulness of the microteaching experience for assessing oneself as a teacher, the AT group rated the microteaching experience highest, the VT group next highest and the LL and SR groups lowest.

When considering the percent of the total amount learned in the course attributable to the microteaching experience and the percent learned in the microteaching experience which will aid in future teaching, the AT group had higher ratings than the SR group. The LL and VT groups were not significantly different from either the AT or SR groups.

DISCUSSION AND SUMMARY

The treatment resulting in the greatest amount of change as measured by student ratings on the STCAG is the AT treatment. A possible explanation for this outcome is that most of the skills focused upon in the microteaching experience were verbal skills and the teaching method most often used was the lecture method. Thus the AT treatment resulted in the bulk of the critical information being reviewed by the microteaching teacher and the supervisor. The AT treatment was also valued highly by the microteaching teachers except in the area of preparing them for course examinations. Within the limits of this study the AT treatment appears to be the strongest treatment.

The SR treatment was also effective in producing a change in teaching performance. Tuckman and Oliver (1968) have demonstrated the power of student ratings in effecting teacher behavior. The SR treatment induced the microteaching teachers to focus most of their attention on the student ratings, thus increasing the likelihood of their causing changes. The supervisor's stress on teacher reflections also increased the likelihood of this source of feedback being used by the microteaching teachers. It was surprising to note that even though the SR treatment greatly effected teacher behavior, it was not highly valued by the microteaching teachers.

The VT treatment appeared to be relatively weak in producing changes in teaching performance. Since, as pointed out above, most of the critical information needed to critique the performance of the microteaching teacher was verbal information, the addition of the video medium constituted irrelevant information. In this particular case

the irrelevant information was very attention-getting. People are interested in seeing themselves. Much of their reaction to the videotape appeared to be centered around how they looked rather than to the critical aspects of their teaching behavior. Thus the attention paid to the aural information was probably less. Also the feedback from student ratings and the teacher's own reflections was probably overshadowed. It is interesting to note that the VT group valued the microteaching experience more highly than the other three groups as a means of preparing for course examinations. With respect to the other categories of responses (Potential value for future teachers, amount learned, etc.) the VT group also tended to value the microteaching experience highly though the differences between the VT and AT groups were not usually significant.

The LL treatment appears, within the limits of this study, to be the least effective in producing changes in teaching performance. Tuckman and Oliver (1968) showed that supervisor's ratings tend to effect teachers' behaviors to a very slight (even negative) extent. Since in this treatment the focus was upon the supervisor's reflections of the treatment session, the force of the students' ratings and the teacher's own reflections was probably weakened. Not only did the LL treatment result in the least amount of desired change in performance but also the LL treatment tended to be lowly valued by microteaching teachers.

The possibility exists that a single supervisor may have introduced some bias into the results of the experiment by praising one form of feedback over another or by presenting the microteaching teachers with

different kinds of information in the critique sessions. However the supervisor consciously tried to control such possibilities by adhering to the task of providing feedback only on the microteaching teacher's performance as evidenced by the various feedback conditions.

It thus becomes apparent that the less expensive audio method of feedback may be substituted for the more expensive video method for inducing positive behavioral changes in teaching performance. It may even be possible to dispense with both audio and videotape and focus attention upon the ratings of the students.

Table I

Student Ratings of Microteaching Teachers' Performance

Variable	ANCOVA F-Ratio	Ordered Means ($p < .05$)
Clarity of purposes	$F(3,30)=22.83$, $p < .0001$	AT,SR > LL,VT *
Difficulty and appropriateness of the aims	$F(3,30)=14.79$, $p < .0001$	AT,SR > LL,VT
Organization of parts and whole of lesson	$F(3,30)=24.61$, $p < .0001$	SR,AT > VT > LL
Appropriateness of content for aims, class level, and teaching method	$F(3,30)=24.29$, $p < .0001$	SR,AT > VT > LL
Evidence of relation between materials and content	$F(3,30)= 8.00$, $p < .001$	AT,SR,VT > LL
Tendency of pupils to come to attention and direct themselves to the task	$F(3,29)=14.67$, $p < .0001$	AT > SR >> VT > LL
Presentation of content understandable using different points of view	$F(3,29)=27.29$, $p < .0001$	AT,SR > VT > LL
Movement from topic to topic governed by class tempo	$F(3,28)=12.64$, $p < .0001$	AT,SR,VT > LL
Attentive class and participates when appropriate	$F(3,29)= 6.31$, $p < .01$	AT > VT,LL
Attempt to connect chance and planned events to immediate and long range aims	$F(3,28)=11.21$, $p < .0001$	AT > VT > LL and SR > LL
Teacher-pupil relationships harmonious	$F(3,30)= 3.14$, $p < .05$	N.S.D. between individual means
Use of a variety of procedures to evaluate progress	$F(3,29)=15.29$, $p < .0001$	AT > SR > VT and AT > LL
Teacher and pupils review evaluations for improvement purposes	$F(3,29)=15.07$, $p < .0001$	AT > VT,LL,SR

*AT,SR > LL,VT means that groups AT and SR are not different from each other but are rated significantly higher than groups LL and VT on the variable described. Groups LL and VT are also not different from each other. Similar notation will be used for all 13 variables.

Table II

Attitudes Toward the Microteaching Experience and other Course Characteristics

Variable	ANOVA F-Ratio	Ordered Means ($p < .05$)
Potential value for future teacher		
Participation in teach-reteach cycle	$F(3,19) = 3.94$, $p < .05$	AT > SR, VT
Amount Learned		
Participation in teach-reteach cycle	$F(3,19) = 4.49$, $p < .05$	AT, VT > SR
Receiving feedback from supervisor	$F(3,28) = 8.34$, $p < .01$	VT, AT, LL > SR
Acting as audiance and observing	$F(3,28) = 3.25$, $p < .05$	AT, VT > SR
Preparation for course examination		
Receiving feedback from supervisor	$F(3,28) = 4.74$, $p < .05$	VT > LL, AT, SR
Receiving specific assignment for reteach session	$F(3,28) = 3.46$, $p < .05$	VT > AT, SR
Experience of re-presenting lesson	$F(3,28) = 3.49$, $p < .05$	VT > AT, LL, SR
Usefulness in assessing as a teacher		
Participation in teach-reteach cycle	$F(3,19) = 3.33$, $p < .05$	AT > VT
Receiving feedback from supervisor	$F(3,28) = 9.09$, $p < .01$	AT, VT > LL, SR
Receiving specific assignment for reteach session	$F(3,28) = 3.22$, $p < .05$	AT, VT > LL
Other course characteristics		
Percent of total learned in course attributable to MT experience	$F(3,29) = 5.16$, $p < .01$	AT > SR
Percent of amount learned in MT experience which will aid in future teaching	$F(3,29) = 3.86$, $p < .05$	AT > SR

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