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AUTHOR Reed, Cheryl L.; And Others
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ABSTRACT

The subject of both papers is microteaching. The purpose of the first study was to assess the effects of focusing on general technical skills versus interpersonal relationship skills in conjunction with microteaching. A total of three training procedures were used: (1) directive lecture (DL), (2) non-directive lecture (NDL), and (3) microteaching treatment (MT). At the end of the experiment, all students participated in one microteaching session to have their teaching skills assessed. Results showed greater teaching skills but less favorable attitudes toward it than students who did not participate. The second study examined the effects on teacher performance and attitudes of several manipulations of the conditions under which the microteaching supervisor provides feedback. Each student was placed in a group. Each taught a short lesson, was critiqued by his supervisor, and taught the lesson again. Various methods of supervision were used, depending on the group. The treatment resulting in the greatest amount of change was the audiotape treatment. (author/KJ)

THE EFFECT OF MICROTEACHING, DIRECTIVE, AND NON-DIRECTIVE LECTURES ON ACHIEVEMENT AND ATTITUDES IN A BASIC EDUCATIONAL PSYCHOLOGY COURSE[1]

Cheryl L. Reed, Adrian P. Van Mondfrans, and Thomas M. Smith

Purdue University

Microteaching as a technique of teacher training was first implemented in 1963. The focus within the microteaching model has been almost exclusively on general technical skills related to teaching such as reinforcement, set induction, closure, etc. (Allen and Ryan, 1969). Training in other areas such as interpersonal relations may be facilitated by the microteaching model (cf. Ivey, 1968).

The purpose of the present study was to assess the effects of focusing on general technical skills versus interpersonal relationship skills in conjunction with microteaching. The authors were especially interested in the effects on performance and attitudes of prospective teachers in an educational psychology course.

Three basic factors were manipulated in the study: lectures on general technical skills related to teaching (Directive Lectures, DL), lectures on interpersonal relationships (Non-directive Lectures, NDL), and participation in multiple microteaching sessions (MT). All possible combinations of these three factors were utilized in a 2 x 2 x 2 factorial design. The basic questions asked were: (1) What is the effect on subjects' teaching skill and attitudes toward educational psychology and micro-teaching? and (2) What is the effect on subjects' teaching skill and attitudes toward educational psychology and microteaching of combining two or more of the factors?

1. A paper presented at the annual meeting of the American Educational Research Association, Minneapolis, March, 1970.

Method

Subjects. Subjects were 87 undergraduate students enrolled in a basic educational psychology course during the spring semester, 1969. The class was randomly split into eight experimental groups receiving the treatments indicated in Table I.

Procedures. During the fall semester, 1968, a pilot study was conducted. From the information and experience gained during the fall, the following procedures were decided upon. All subjects met twice a week for instruction. The eight experimental groups met separately once a week. During these separate meetings the treatments were administered. At the end of the experiment all subjects participated in one microteaching session in which their terminal teaching skills were assessed.

The microteaching treatment (MT) consisted of five microteaching training sessions. The microteaching session involved presenting a five to ten minute lesson, viewing a videotape of the performance, and re-teaching the lesson.

In addition to MT training two other kinds of training procedures were used - directive and non-directive lectures. The directive lecture (DL) treatment consisted of five lectures in which specific teaching skills were taught. These skills included reinforcement, varying the stimulus, set induction, closure, lecturing, and the use of audio-visual materials. Subjects participating in both MT and DL were instructed to implement the skills described in the DL in their MT sessions. Subjects who did not microteach in conjunction with the DL met in small groups and discussed methods of implementing the skills.

The non-directive lecture (NDL) treatment consisted of five lectures on the effects of various teacher characteristics and student characteristics in learning situations. Subjects who received both NDL and MT treatments were instructed to implement the skills described in the NDL in their MT session(s). Subjects who did not microteach in conjunction with NDL also met in small groups and discussed methods of implementing the skills.

When a group was not participating in one of the three treatments (MT, DL, or NDL) they met with an instructor to discuss class material.

Instruments. Data for analysis were drawn from two sources: (a) student responses to a 56 item course evaluation form[1], and (b) peer evaluations of each subject's teaching skill in the final MT session using the Stanford Teacher Competence Appraisal Guide (STCAG, available from Stanford University).

The course evaluation form included thirty items specifically related to the MT situation, ten items involving the entire class lectures, eleven items related to the small group activity, and five items involving the overall course experience.

The STCAG consists of thirteen items to evaluate specific teaching skills. These include two items on the aims of the lesson, three items on lesson organization, six items involving teacher-student relationships, and two items involving evaluation procedures.

Analysis. All items of the course evaluation and the STCAG were analyzed separately using the approximate method of unweighted means in a three-way analysis of variance with unequal cell size as described in

1. Copies available upon request from the first author.

Bancroft (1968, p. 66). An alpha level of .05 was used to test the significance of the resulting F-ratios.

Results

ANOVA tables and means are available from the first author upon request. The findings significant at the .05 level or beyond are presented here in summary form. First, the main effects of each factor (MT, DL, or NDL) are described. Secondly, the effects of combinations of these factors are described.

The main effects of MT, DL and NDL factors on performance. With respect to ratings of the subjects' teaching skill using the STCAG, when the four experimental groups receiving the MT treatment (the MT groups) were compared with the four experimental groups not receiving the MT treatment, there were significant differences on four of the thirteen items. The MT groups were rated higher on the three items related to ending the lesson and evaluation techniques. The four groups which did not receive the MT treatment were rated higher on gaining the initial attention of the students.

When ratings of subjects' teaching skill were compared for the four groups receiving the DL treatment versus the four groups not receiving the DL treatment there were significant differences on twelve of the thirteen items. The DL groups were rated higher on all twelve of these items. The DL groups also scored higher on the thirteenth variable although the difference was not significant.

There were no significant differences in teaching skill between the groups receiving the NDL treatment and the groups not receiving NDL.

The main effects of the MT, DL and NDL factors on attitudes. On the course evaluation instrument the subjects who did not receive the MT treatment evaluated nine of 56 items higher than the MT treatment groups. The items involved the following aspects of the course: the amount learned and the motivating value of the DL and/or the NDL they received; the motivating value of acting as an audience in the MT session; the percent of the overall course material learned in the experimental sessions in general and with particular value to future teachers; preparation for class exams and assignments; and willingness to participate again. The subjects not receiving the MT treatment also felt they spent less time on work related to the experimental session.

Subjects receiving the DL treatment gave higher ratings than the subjects not receiving DL on seven of 56 items of the course evaluation instrument. These items were: the amount learned from TV tapes; the motivational value of the class lectures; the motivational value of the DL; the amount learned and the usefulness in assessing self as a prospective teacher; and the value for future teachers of the overall course experience.

The NDL subjects gave higher ratings than the subjects not receiving the NDL treatment on nine of 56 items, while the opposite was true on one of 56 items. The NDL subjects rated the following aspects of the course higher: the value of the MT lesson for future teachers; amount learned from the MT preparation; usefulness of the MT experience in assessing self as a teacher; the motivating value of acting as the audience for others in the MT session; the value of the overall course for future teachers; amount learned from the course; and the usefulness in assessing self as

a teacher of the overall course. The NDL subjects rated the amount learned viewing the videotape of their MT lesson(s) lower than subjects not receiving NDL treatment.

Interaction of MT, DL and NDL on performance. The interaction of MT and DL factors yielded significant F-ratios for four of thirteen teaching skill items. The four items dealt with the aims and planning of the MT lesson. On all four items groups receiving both the MT and DL treatments were rated highest,groups receiving DL but not MT next highest, and those receiving MT but not DL lowest.

The interactions of the MT and NDL factors yielded significant F-ratios on two of thirteen teaching items skills. These items dealt with being sensitive to students' abilities and directing students' attention to the learning tasks. For both of these items the subjects receiving the NDL treatment but not the MT treatment were rated highest, the subjects receiving MT but not NDL next highest, and the subjects receiving both MT and NDL lowest.

The interaction of DL and NDL resulted in no significant F-ratios.

Interaction of MT, DL and NDL on attitudes. There were only eight significant F-ratios of the 168 possible two-way interactions involving MT, DL, and NDL on the course evaluation instrument. Since this number would be expected by change, these data will not be presented.

The MT by DL by NDL interaction on performance. The three-way interactions of MT, DL AND NDL yielded significant F-ratios for four of thirteen items on the STCAG. The four items concerned the subjects' ability to direct students' attention to the learning tasks, to gear the pace of the lesson to students' ability, to have a harmonious relationship with students,

and to evaluate students adequately. On all four items the subjects receiving the MT treatment only were rated highest, the subjects receiving MT and NDL were rated next highest and subjects receiving DL or both DL and NDL were rated third highest. Subjects receiving NDL only were rated lowest with subjects receiving both MT and DL next to lowest. The subjects receiving MT, DL and NDL were rated third lowest.

The MT by DL by NDL interaction on attitudes. The three-way interaction of MT, DL and NDL yielded significant F-ratios for 28 of the 56 items on the course evaluation instrument. General patterns will be discussed below. Twenty-two out of the thirty items dealing with the MT session resulted in significant differences between groups. In general, the subjects receiving all three treatments rated these variables highest; the subjects with just NDL treatment rated second highest; the subjects with just the MT treatment rated third highest; the subjects with DL treatment fourth highest; subjects with both DL and NDL rated fifth highest; and subjects with both MT and DL treatments rated sixth. The subjects receiving no treatments rated MT items lowest while subjects receiving MT and NDL treatments rated these items second from the lowest.

Three of the five items on overall course experience resulted in significant F-ratios. The subjects having only the NDL treatment rated the course highest; the subjects with all three treatments rated the course second highest; the subjects with only DL treatment rated the course third highest. The overall course experience items were rated lowest by subjects receiving none of the treatments and second from the lowest by subjects who received only the MT treatment. The subjects receiving some combination of two treatments rated the overall experience in the middle of the other subjects.

Two of the eleven items dealing with the small group activities resulted in significant differences between groups. In general, the subjects receiving only NDL treatment rated the items highest while the subjects participating in MT and NDL treatments but not the DL treatment rated the items lowest. The subjects receiving just DL, DL and NDL but not MT, and the subjects receiving all three rated the items second. The subjects with just MT rated the items fifth. Subjects receiving no treatments or receiving MT and DL rated the overall course second from the lowest.

There was only one item out of ten possible items about the class lectures which resulted in a significant F-ratio. On this variable--the helpfulness of TV lectures in preparing for exams--the subjects receiving all three treatments rated it highest, the subjects receiving one of the three rated second highest, while the subjects receiving no treatment or a combination of two treatments rated it lowest.

Discussion and Conclusions

Students who participated in the microteaching training sessions showed greater teaching skill than students who did not participate. However, the students' attitudes about certain aspects of the course were less favorable if they had received the microteaching treatment. Those aspects centered around the small group experience. Students felt that microteaching took a great deal of time. One might hypothesize that the subjects felt overburdened since so much more of their time was consumed in preparing for the five microteaching training sessions. Thus, they had less time to devote to other course activities.

The directive lectures, like the microteaching treatment, were also found to be effective in improving students' teaching skills. In addition, students who received the directive lectures had a more positive attitude toward the course than students who did not have the directive lecture treatment. Perhaps this is because there were more specific indicators of purposes and activities which gave the student assurance of what was expected of him.

Students' attitudes toward the course were also higher when they had received the non-directive lecture treatment than when they had not. The non-directive lectures, however, did not affect teaching skills.

The addition of the non-directive lectures to the microteaching training diminished the effectiveness of the microteaching in terms of students' teaching skills. It may be that the non-directive lectures focused the students' attention on skills which were not successfully assessed. In general, attitude scores about the course were also lower when treatments were presented in pairs rather than separately. Students with two treatments may have felt that the treatments were not sufficiently relevant to course exams and assignments to justify the time required for the treatments. Interestingly, students who received all three treatments gave extremely favorable evaluations of the course. It may have been that, since these subjects had not participated in any of the discussion sessions (where course assignments and material covered by exams were discussed), they were not aware of other activities that might have been conducted. Even though these subjects had positive attitudes about the course, their performance of teaching skills was poorer than students in half the other groups.

Van Mondfrans et al. have shown that engaging in microteaching can improve students' attitudes toward an educational psychology course. From past research and these conclusions two optimum sets of experiences for students in this educational psychology course may be suggested. If both good teaching skills (as assessed at the end of the course) and positive attitudes toward the course are desired, the best treatment would be a combination of one microteaching experience with directive lectures. However, if the desired outcome is positive attitude toward the course, the provision of microteaching, directive lectures, and non-directive lectures would be optimal.

Table I

Treatments	Microteaching	Directive Lecture	Non-directive Lecture
Group A	X *	X	X
B	X	X	0
C	X	0	X
D	X	0	0
E	0	X	X
F	0	X	0
G	0	0	X
H	0	0	0

* An X underneath each treatment indicates the presence of the treatment for that group. 0 indicates the absence of the treatment for that group. Group A thus received all three treatment conditions.

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The Effect of Mode of Feedback in Microteaching

Joe E. Shively, Adrian P. Van Mondfrans, Cheryl L. Reed

Purdue University

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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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

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	$F(3,28)=5.34$, $p<.01$	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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