Providing On-Campus Teaching Experience for Student Teachers in Agricultural Education: A Comparison of Two Techniques

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In *A Design for a School of Pedagogy* (U.S. Department of Education, 1980) B. O. Smith urged teacher educators to provide more laboratory or clinical teaching experience for student teachers. Smith maintains that most teachers have not had enough clinical or laboratory teaching experience. It is believed that expanded clinical teaching experiences will result in better teachers.

Microteaching is a technique commonly used by agricultural educators to provide clinical teaching experience for prospective teachers. Researchers have found that microteaching tends to have a positive effect on students' views of themselves as teachers and their attitudes toward and perceptions of teaching. Even though microteaching is beneficial, there are certain disadvantages associated with microteaching such as cost of videotape equipment, maintenance, mobility of equipment, and the amount of time required to record and playback.

A new technique for providing students with laboratory teaching experience, reflective teaching, has recently been introduced in education. Reflective teaching does not require expensive equipment and appears to require less time than does microteaching. However, very little research is available which examines the effectiveness of reflective teaching as compared to microteaching.

Objective of the Study

The purpose of this research was to determine if reflective teaching was as "good" as microteaching. The specific objective of the study was to compare students participating in reflective teaching with students participating in microteaching on the following variables:

a) students' views of themselves as teachers.

b) students' attitudes toward teaching.

c) students' perceptions of the role of teaching.

d) students' attitudes toward the type of laboratory teaching experience engaged in (microteaching or reflective teaching).

e) students' teaching performance as measured by their student teaching grades.

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It was hypothesized that there would be no differences between students who participated in reflective teaching and those who participated in microteaching on any of the five dependent variables.

Reflective Teaching

Reflective teaching, as described by the originator, is "'Competitive' peer teaching where several teachers vie to accomplish the same objective with different groups of pupils composed of peers" (Cruickshank, 1977, p. 8). In reflective teaching four or five students (out of a class of 20-30 students) are selected to be teachers. Each of the designated teachers is given the same lesson to teach. The lesson is developed by the teacher educator and contains behavorial objectives, information about the topic to be taught, and the length of time allowed to teach the lesson. No suggestions for establishing learning set or procedures to be used in teaching are found in the lesson. The designated teachers are given several days to prepare to teach the lesson.

When the day comes for the designated teachers to teach, the rest of the class is divided into small groups of five to seven students. The small groups may be placed in various corners of the classroom or may be placed in adjacent classrooms depending upon the availability of space. Each designated teacher is assigned one of the small groups. The designated teachers start teaching simultaneously when the instructor gives the signal. After the time allowed to teach the lesson (normally 10 or 15 minutes), the instructor gives the signal for the teachers to stop. A test over the information taught, based on the behavioral objectives of the lesson, is then administered to the peers who have been taught. The designated teachers have not previously seen the test.

After taking the test, the peers in each group complete an evaluation form on their teacher. Each teacher grades the test and then evaluates his or his own teaching using a specified form. When this is accomplished a set of questions is provided to each group. The questions concentrate on the teaching techniques and procedures used and require both the students and the teacher to discuss or reflect back on the teaching episode.

Finally, all the small groups reconvene into one large group. Data about each group, such as mean test scores, teacher preparation time, and the amount of time it took to teach the lesson, are recorded on the board. The teacher of each small group explains how he or she taught the lesson. The teacher educator then leads the class in a discussion of the teaching experience using the data on the board, observations made during the teaching, and input from the students to formulate ideas and opinions about effective teaching. The entire procedure is repeated until all students have had several opportunities to teach.

Methods and Procedures

Methodology

At the beginning of the spring semester, 1981, students in "Methods of Teaching Vocational Agriculture," (n = 44) at Purdue University were randomly divided into two equal-sized groups. One group of students was randomly assigned to the reflective teaching lab while the other students were assigned to the microteaching lab.

The teaching labs met for two hours every Friday for eight weeks. During the lab the students taught lessons to their peers. The microteaching students were allowed to select any topic that would normally be taught in a vocational agriculture program and to present an 8-12 minute lesson on that topic. Each student presented two lessons to the other class members (n = 22). A video tape was made of each student's presentation which was later viewed by the student who taught the lesson. After each presentation the student was critiqued by the college instructor and the peer group.

Students in reflective teaching were assigned pre-determined lessons to teach. The lessons included objectives and content but contained no suggestions for teaching procedures. Each reflective lesson was simultaneously presented by four different teachers to four peer groups. After the lesson the learners were tested over what had been taught. This was followed by a discussion and sharing of the various teaching methods used. The lessons, developed by the researchers, were over topics that could be taught in agriculture but are not commonly taught such as Angora goats, triticale, displaying flag, figuring depreciation, using weeds for oil, and beekeeping. (The originator of reflective teaching had developed a number of generic lessons. A number of these lessons were over "made up" information such as a new language. The researchers wanted to use agricultural lessons in which the students would have limited knowledge.) Eighteen different lessons were used. Each student presented three reflective lessons.

Instrumentation

Four instruments were used in this research. They were: *Myself as a Teacher Scale, Teaching Attitude Scale, When I Think About Teaching Scale, and Students' Reaction to Laboratory Teaching Experience*. The first three were used both as pretests and posttests while the last was used as a posttest only.

These instruments were developed by the researchers. The instruments were reviewed by professionals in the field to insure content validity and were field tested with 100 undergraduate students. The alpha reliability for the instruments ranged from .86 to .92. All of the instruments with the exception of the last instrument used a 1-99 scale with one being low and 99 being high. On the last instrument a standard 1-5 Likert-type scale was used.

The 14 item *Myself as a Teacher Scale*, measured students' views of themselves as teachers. The 18 item *Teaching Attitude Scale*, was

designed to determine the students' attitudes toward teaching. The 50 item *When I Think About Teaching Scale*, measured students' perceptions of teaching. The 17 item *Students' Reaction to Laboratory Teaching* measured the students' attitude toward their laboratory teaching experience. Student teaching grades as assigned by the university supervisor were the fifth dependent variable.

Results

Findings

There were no statistical differences between the two groups on any of the five dependent variables using .05 as the level of confidence.

Students' Views of Themselves as Teachers. The students' perceptions of their own teaching ability increased slightly from pretest to posttest in the reflective teaching group. The mean pretest score of students in reflective teaching on the *Myself as a Teacher Scale* was 1046.7 while the posttest score was 1100.2. The microteaching group started at 1086 and ended at 1089.5. The highest possible score was 1386. Analysis of covariance, using the pretest as the covariate, revealed no differences ($F = 2.28$, $df = 1,41$, $p > .05$). These figures are presented in Table 1. The scores indicate the students were confident of their teaching abilities before the laboratory experience and were still confident after the laboratory teaching experience.

Students' Attitudes Toward Teaching. Both groups of students registered gains in attitude toward teaching from the start of the teaching lab to the end of the lab; however, there were virtually no differences between the two groups. The mean pretest attitude score of the reflective teaching students was 1312.7 while the microteaching students had a mean pretest attitude score of 1318.2. On the posttest the attitude score of the reflective teaching students had risen to 1373 and the microteaching students had risen to 1379. The highest possible score was 1782. The difference between the two groups was not significant ($F = 0.011$, $df = 1,41$, $p < .05$). The scores indicated the students had positive attitudes toward teaching. See Table 1.

Students' Perceptions of the Role of Teaching. The students' perceptions of the role of teaching remained unchanged as a result of the teaching laboratory. The students' perceptions concerning teaching both before and after the experiment were classified as idealistic. No statistical analysis was performed on these data because the number of cells in the 2 x 3 matrix with an expected frequency of less than five exceeded the maximum allowable for the chi square test for independence.

Students' Attitude Toward Laboratory Teaching Experience. In general the students had a positive attitude toward the laboratory teaching procedure they experienced. The students in reflective

teaching had a mean attitude score of 66.9 out of possible 85 points while the microteaching students had a mean attitude score of 62.7. The difference in scores was not significant (t = 1.7, df = 42., p > .05). See Table 1.

Table 1

A Comparison of Microteaching and Reflective Teaching Students on Selected Variables

Variables	Reflective teaching (n=22) Pretest	Posttest	Microteaching (n=22) Pretest	Posttest
1. Perception of teaching ability[a]	1046.7	1100.2	1086.0	1089.5
2. Attitude toward teaching[b]	1312.7	1373.0	1318.2	1379.0
3. Attitude toward laboratory[c]	-	66.9	-	62.7
4. Student teaching grade[d]	-	5.8	-	5.4

[a]Highest possible score = 1386 (F = 2.28, df = 1,41, p > .05)
[b]Highest possible score = 1782 (F = 0.011, df = 1,41, p > .05)
[c]Highest possible score = 85 (t = 1.7, df = 42, p > .05)
[d]Highest possible score = 6 (t = 1.4, df = 42, p > .05)

Student Teaching Grades. An analysis of student teaching grades revealed no statistically significant differences between the two groups. The reflective teaching students received a mean student teaching grade of 5.8 on a 6.0 scale while the microteaching students received a 5.4 average. This difference was not statistically significant (t = 1.4, df = 42, p > .05). See Table 1.

Conclusions

Reflective teaching appears to be as effective as microteaching in preparing students to teach. There were no differences on any of the dependent variables according to the type of teaching laboratory students experienced. Student attitudes toward teaching, perceptions of teaching, perception of teaching ability, and performances during student teaching were similar for both groups. This indicates that reflective teaching could be used in place of microteaching. The researchers are of the opinion that both techniques should be used.

The amount of time allocated for the two techniques was the same. The reflective teaching students had the opportunity to teach three lessons while the microteaching students only taught two lessons. This indicates students will get more on-campus teaching experience through reflective teaching. Reflective teaching is a procedure that should be carefully considered for use in the future in preparing teachers of vocational agriculture.

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