



EFFECTIVENESS OF COOPERATIVE LEARNING STRATEGY (CLS) IN TEACHER EDUCATION

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Abstract

Cooperative learning applications in teacher education classroom was the focus of this investigation. The purpose of the study was to compare selected cooperative learning strategy (Scripted Cooperative dyads, Think Pair Share, and Group Processing) with traditional learning methods. For 10 weeks, 64 students in educational psychology class participated in one of the two conditions. On three of four measures of achievement, the cooperative group showed significantly stronger performance than the non cooperative group. In addition, students exposed to the cooperative learning strategy reported significantly more favorable attitudes toward classroom instruction.

Introduction

Cooperative learning has been shown to enhance learning. Working in dyads or small groups, usually with some incentive or reward for the group's accomplishments, students are motivated in cooperative learning to help one another master skills or learn the material (Slavin, 1994). Researchers have documented well the effectiveness of cooperative learning methods, especially at the elementary and secondary levels (Johnson & Johns on, 1987; Sharan & Sharan, 1989/90). Cooper and Mueck (1989, 1990) described the application of cooperative learning in university classrooms. The immense effectiveness of the CLS in the classroom has also lead to the development of a cooperative games industry, which has emerged in Canada, producing over 50 family and school-oriented games based on the principles of

Cooperative learning (Pastimes, 1993). Although there is considerable interest in and anecdotal evidence supporting cooperative learning applications in college and university settings, little empirical research has been done in the post secondary environment or with adult learners. Sociologists, according to Billson (1986), have analyzed many aspects of group process in the college learning experience, but insufficient research attention has been directed toward methods of instructional grouping in university classrooms. In these environments, the modes of instruction remain, many believe, as individually competitive as ever (Cooper et al., 1990; Sherman, 1991); still, faculty are beginning to investigate the use of cooperative learning techniques with university and college students (Cooper, 1990; Johnson, Johnson, & Smith, 1991; Millis, 1991, 1992).

Selected Cooperative Learning Strategy

The purpose of the research reported here was to compare two instructional approaches-selected cooperative learning strategy versus traditional competitive methods-used with pre service teachers in the educational psychology classes. Three cooperative strategies were employed with the experimental group.

Scripted Cooperative Dyads

In the experimental class, students were randomly and permanently assigned to learning partners for the duration of the semester. Students were given structured assignments and time during each class to work with partners in drill and review exercises that reinforced material presented in class. Similar to Dansereau's scripted dyad (1987), one partner was the recaller, the other was the listener, and the roles were reversed every other assignment. For example, after a short presentation of a concept map showing Piaget's and Kohlberg's differences in theories of moral development, the instructor asked the learning partners to drill and review what was just covered. One partner (the driller) explained his notes about the concept map, discussing the main points of debate between the theorists. The other partner (the reviewer) listened, double-checked her notes, and responded to the driller's notes and explanation. Students were trained by example to detect and correct errors, and omissions in the partner's notes or explanation and to judge the importance of the ideas presented.

The Scripted Cooperative dyads functioned much like peer tutoring models, except that partners took turns being the tutor, because Slavin (1990, 1994) showed that peer tutoring advantages tutors more than it does those being tutored. Research on peer tutoring indicates that this practice improves the academic performance and attitude of both the student who tutors and the student who is tutored (Cohen, Kulik, & Kulik, 1982; Larson & Dansereau, 1986; McCown & Roop, 1992).

College students who study in dyads recall more material than those who study alone (Hall et al., 1988). Further, peer tutoring may be more effective (a) for those receiving specific and sufficient tutor training (Jenkins & Jenkins, 1987); (b) in dyads where there is extensive interaction focusing on content (Deering & Meloth, 1990); (c) in dyads where there is more structured interchange (Fantuzzo, Connelly, & Dimeff, 1989); (d) when tutors are high in cognitive ability and social orientation (Hall et al., 1988); and (e) when the material to be learned is structural and functional rather than procedural (Hythecker et al., 1985).

Like cooperative learning strategy, peer tutoring strategies for university students have been defended (Sherman, 1991), but little empirical research has been done on this approach beyond the elementary and secondary levels.

Think-Pair-Share

Using the think-pair-share technique developed by Lyman (cited in Sherman, 1991), students listened to a teacher-posed question about the out-of-class reading. They were given time to formulate an answer and then were cued to pair with their learning partner. After the pairs had conferred briefly, they were called upon, through a random drawing of names, to share their best collective answer with the whole group.

Group Processing

Slavin, in his extensive work on cooperative pedagogy, attempted to identify which element of cooperative learning has the most promising effects (1983, 1990). He found that group incentives, which motivate students to urge other students to perform well, seem to be the single most effective component in improving achievement. For this experiment, a group mean for each dyad of learning partners was computed based on scores from two exams and 12 quizzes. The mean score was factored in as 10% of the final grade for each student.

Method

Subjects and Setting

The classes selected for this experiment were Pre service teachers studying educational psychology in the Bachelor of Education program of University of Mumbai. The classes met twice weekly for one 10-week semester.

The cooperative group i.e the class using cooperative learning strategy, n=32. The non cooperative group i.e the class using traditional methods, n=32. Students enrolled in the classes did not have the prior knowledge that an experiment would be taking place. For most students, the class, regardless of group, was the first education or psychology course they had taken.

Procedure

The two groups received the same instructional material, were taught by the same instructor using the same curriculum, received the same number of out-of-class and in-class assignments, were taught with the same schedule of instructional methods (a mini lecture, random questions in class on the assigned readings, and short breakout assignments during class), and were administered the same evaluation instruments.

The experimental group employed the cooperative learning strategies discussed above. The control group used traditional, competitive strategies (independent review instead of peer tutoring, individual rather than paired responses to teacher-posed questions, and the standard norm referenced grading scheme with no group incentive).

Measures

The study's dependent measures were academic achievement and attitude toward the effectiveness of instruction. Achievement was measured by total test scores (exams and weekly quiz grades), final exam scores, summary total

For multiple choice item scores, and summary total for application item scores. Attitude was measured with the college's standard student evaluation form, which includes the following items (rated on a scale of 1 to 5, 5 =most effective) related to the effectiveness of instruction: clarity of presentation, arousal of interest, improvement of critical thinking, effectiveness of methods, instructor concern, consistency of goals, course organization, and overall quality of instruction.

The student evaluation form as well as all exams and quizzes were administered and scored by a staff member not involved with the implementation of the research project.

Results

The dependent variables of student achievement and attitude toward the effectiveness of instruction were analyzed first with a simple test of differences in the mean scores for the two groups, using a t test for independent samples. In achievement, as measured by total test scores, the cooperative group outperformed the non cooperative group ($t=-1.968$, $df=59$, $p<.025$). The final exam scores ($t=-2.644$, $df=59$, $p<.01$) revealed even greater difference between the groups, with the cooperative group again showing the stronger performance. On the summary total scores of multiple choice items (based on text readings), the cooperative group outperformed the non cooperative group ($t = -1.620$, $df=59$, $p<.05$). On the summary total scores of application items (based on class demonstrations and notes), there was no significant difference in performance between the two groups.

The achievement data were analyzed further to determine which other factors in the two groups, beyond assignment to the cooperative class or the traditional class, might account for the differences.

The analysis of differences in attitude toward effectiveness of instruction between the two groups supported the hypothesis that the use of cooperative learning methods promotes more favorable attitudes toward classroom instruction. On eight items of the college's standard student evaluation form, the cooperative group rated the instruction more favorably than did the non cooperative group. The significant differences in the expected direction were in ratings for *clarity* of presentation ($p<.05$), arousal of interest ($p<.001$), improvement of critical thinking ($p<.01$), effectiveness of methods ($p<.05$), instructor concern ($p<.01$), and overall quality of instruction ($p<.05$). Differences in consistency of goals and course organization, areas that were held constant for both groups, were not found to be significant.

Discussion

The findings of this research support the hypothesis that employing cooperative learning strategies in teacher education classrooms improves students' achievement and attitude toward instruction. Using Scripted Cooperative Dyad, Think Pair Share strategy, and Group Processing with the experimental group seemed to promote its superior performance. These findings might be summarized by the old adage that the best way to learn something well is to teach it to someone else.

In reflecting on this experiment while planning the next cooperative learning intervention, the researcher concluded that cooperative learning strategies are effective and important instructional methods for pre service teacher education classrooms. But there are several questions that need to be addressed. One question concerns group grading incentives. Although this strategy appears to be effective, are there ethical and practical issues regarding

the use of group grades that must be considered? The students in the experimental group were The achievement of others, and therefore were more willing to accept a learning partner's grade as a factor in their own final grade. Experience with group grading for two semesters beyond the experiment indicated that students making poorer grades than their learning partners sometimes became disgruntled and reported expecting more benefit from the 10% factor.

Other questions include, why was the cooperative group more successful on multiple choice test items than on application test items? Was the Think Pair Share strategy, which focused on the text material that was covered by multiple choice test items, more powerful than the Scripted Cooperative Dyads (peer tutoring) strategy, which focused on the class notes that were covered by application test items? Deering and Meloth (1990) argued that two essential elements in cooperative group work are extensive interaction focusing on content and persistent practice in asking for and giving help with content comprehension. Perhaps peer interactions need to be intensified or students require more concentrated training in Scripted Cooperative Dyads, for this strategy to produce a stronger effect.

Finally, pairing considerations are important. Slavin (1994) reminds us that there **is** some evidence that peer tutoring works best for the higher achieving tutor. Should learning partners then be matched deliberately instead of randomly? Should students be stratified by ethnicity or gender and then assigned randomly to pairs? How important are the social interactions across ethnicity and gender in cooperative learning? These questions point to new directions for research as the use of cooperative learning in teacher education classrooms expands.

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