DOCUMENT RESUME

ED 325 469 SP 032 712

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TITLE The Use of Homework and Cooperative Learning in an Elementary Classroom: Implications for Teacher Education.
PUB DATE 18 Oct 90
NOTE 8p.; Paper presented at the Annual Meeting of the Mid-Western Educational Research Association (Chicago, IL, October 18, 1990).
PUB TYPE Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Academic Achievement; *Cooperative Learning; *Elementary School Curriculum; Grade 5; Higher Education; *Homework; Intermediate Grades; Preservice Teacher Education; Teaching Methods

ABSTRACT

This study sought to determine if students who have homework added to their cooperative learning lessons achieve at a higher rate than the students who did not have homework assigned. The subjects were 64 fifth-grade students enrolled in four different classes in social studies. Two classes were assigned to the no-homework condition, one class was placed in the practice homework condition and the remaining class was in the preparation homework condition. The experiment ran from September through January. Pretest and posttest scores indicated that the addition of homework to cooperative learning activities increased student achievement. Additionally, no differences in student achievement were found between practice and preparation homework groups. It is suggested that the use of homework as a strategy and cooperative learning as a methodology be included in teacher education methods courses. (JD)

THE USE OF HOMEWORK AND COOPERATIVE LEARNING IN AN ELEMENTARY CLASSROOM:

Implications for Teacher Education

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A paper presented at the annual meeting of
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Chicago, Illinois, October 18, 1990.

THE PROBLEM

Homework and Cooperative Learning are two distinct educational approaches. Homework tends to be an additive to a classroom lesson; whereas, Cooperative Learning is a way of dealing with the classroom itself. Most Cooperative Learning advocates imply that homework is unnecessary or at least minimized with the use of Cooperative Learning. No classroom experiment that involves both homework and Cooperative Learning has been located. If Cooperative Learning raises student achievement and homework raises student achievement, then the following question is indicated: Will Cooperative Learning without homework produce greater student achievement than Cooperative Learning with homework?

Thus, will students who have homework added to their Cooperative Learning lessons achieve at a higher rate than the students who did not have homework assigned?

REVIEW OF THE LITERATURE

Homework

One of the first reviews of the literature on homework was conducted by Goldstein (1960). He noted that from 1929 to December 1958 Education Index listed 280 homework articles. Of these articles, 17 were experimental articles.

The literature on homework has expanded greatly since 1960. Foyle, Lyman, Tompkins, Perne, & Foyle (1990) identified 85 homework field experiments, including Foyle's 1983/84 social studies homework field experiment at Emporia High School (KS). In that experiment Foyle found a statistically significant difference in achievement scores between the homework group and the no-homework group in favor of the homework group. Homework raised student achievement when compared to no-homework (Foyle, 1985).

Cooperative Learning

Watson & Johnson (1972) pointed out that the classic group experiment was that of Deutsch in 1949. Deutsch researched cooperation and indicated that cooperative interdependence among students results in more satisfaction with classroom work and in better relationships among students.

Cooperative Learning (Slavin, 1990) is a direct outgrowth of the research on small group learning. Cooperative Learning has been studied for its effect on student academic achievement. Slavin (1983) reviewed the Cooperative Learning research and noted that students working in Cooperative Learning programs achieved significantly higher on the same objectives than did the control students who were taught by traditional methods.

METHOD

Subjects

The subjects were 64 fifth-grade students enrolled at two public schools in the Emporia School district. The students were enrolled in four different intact classes, with all four teachers having been trained in cooperative learning by the researchers. The classes were randomly assigned to one of three experimental conditions. Two classes were assigned to no-homework condition, one was placed in the practice homework condition, while the remaining class was in the preparation homework condition.

Instrumentation

The social studies materials provided by the school district were used. This material consisted of the Holt Social Studies Series (1983) and consisted of the textbook, America and Its Neighbors, and the supplemental workbook. The experimental group material also consisted of homework sheets containing four questions per assignment. A twenty-four item pretest and posttest was developed by the experimenter. This test consisted of items covered by the teacher during the course of the experiment, although the teachers were unaware of the pretest and posttest items. This "blind" procedure prevented teachers from teaching to the posttest items. These questions were also related to the homework questions which both homework groups completed.

The Science Research Associates (SRA) tests are given by USD #253 at all elementary grade levels. The SRA subtest, the Educational Abilities Series (EAS), is a group intelligence test. The EAS was used as a covariate in order to hold constant the differences in cognitive ability between each student. EAS scores were collected from each student's school cumulative file as reported from the previous spring's testing.

Procedure

During August 1989, the researchers and the participating teachers determined classroom Cooperative Learning methodology lessons and homework assignments using the 5th grade social studies materials. Classes were randomly assigned to either the practice homework, preparation homework, or no-homework conditions. All groups covered the same material, and Cooperative Learning classroom lessons were employed in all conditions. However, the practice homework group used Johnson and Johnson's Learning Together, while the preparation group used Slavin's Student Teams-Achievement Divisions (STAD), as did both no-homework groups. During the first week of classes, pretest scores were collected from all subjects. Those who were absent during the original testing session were tested the following day.

Following administration of the pretest, students began their typical social studies lessons, with all groups using Cooperative Learning techniques. In addition to regular classroom work, the experimental groups were also given approximately two homework assignments per week for the duration to the experimental phase, which lasted approximately four months. Homework assignments covered approximately one third of a chapter and correlated with questions on the pretest and posttest, as well as material covered by the teacher. Generally, homework assignments were regularly assigned, clearly stated, regularly collected, and promptly graded and returned, with researchers recording the grades obtained by subjects (Foyle, 1989).

The experiment ran from September through January, and covered seven chapters of social studies material. Due to the fact that teachers varied in the rates at which they taught, the range of time between pretesting and posttesting varied from three months and three weeks to four months and three weeks for the four classrooms. All posttesting was done three days after the teacher had completed teaching the last unit of the seventh chapter.

RESULTS

Pretest scores were collected from 75 fifth grade students. Student attrition occurred during the experimental phase due to students transferring out of the school district. These scores were eliminated from the sample. Students transferring into the district during the experiment were also excluded from the analysis. Thus, the final number of subjects was 64. Sample sizes for each cell were as follows:

Practice homework; $n = 15$
Preparation homework; $n = 12$
No-homework; $n = 37$

The analysis of the data consisted of the following: (a) the within subjects factor which was the multiple-choice posttest scores, (b) the between subjects factor of homework (practice homework, preparation homework, and no-homework), and (c) the covariates which were the multiple-choice pretest scores and the Educational Ability Series (EAS) test scores.

In order to test the hypothesis that student achievement in the homework condition would be higher than student achievement in the no-homework condition, data was collapsed across the two homework groups and compared to the no-homework condition. Results showed a highly significant effect for group, $F(1, 60) = 14.80$, $p<.0001$. Mean posttest scores of students in the homework condition were significantly higher than scores of students in the no-homework condition as shown in the Table 1.

Table 1

Cell counts, means and standard deviations of student posttest scores in homework and no-homework condition.

Homework Group	No-Homework Group
n = 27	n = 37
M = 13.74	M = 10.43
S.D. = 2.57	S.D. = 4.76

In order to test the hypothesis regarding differences in student achievement based on the type of homework, an analysis of covariance was performed using preparation homework and practice homework as between subjects factors. No significant differences were found between the two groups, $F(1, 23) = 1.92$, $p<.179$. Descriptive statistics appear in Table 2.

Table 2

Cell counts, means, and standard deviations of student posttest scores in practice and preparation homework conditions.

Practice Homework	Preparation Homework
n = 12	n = 15
M = 13.08	M = 14.27
S.D. = 2.47	S.D. = 2.60

DISCUSSION

The results of the current study bring to light some interesting implications for educators. The benefits of Cooperative Learning are numerous (DeVries & Slavin, 1978; Johnson & Johnson, 1987; Slavin, 1980, 1983, 1990; Lyman & Foyle, 1990). In addition, the benefits of homework have been shown (Foyle & Bailey, 1988; Foyle, 1989). The current study seems to indicate that the addition of homework to cooperative learning activities increases student achievement even more than either method does individually.

Several of the hypotheses which this study sought to investigate were substantiated. Specifically, it was found that Cooperative Learning with homework produced greater student achievement than Cooperative Learning without homework. Additionally, consistent with previous research (Foyle, 1985), no differences in student achievement were found between the practice and preparation homework groups.

The results of this study have several implications for educators. If results of this study are valid, then teachers should consider adding homework to their regular Cooperative Learning activities. Not only will students receive all the benefits provided by Cooperative Learning, but they will also show higher achievement gains.

Further research should be conducted to substantiate the results of this study, and to see if these positive results generalize to all subjects. Additionally, researchers could see if there is a substantial difference in the amount of information students retain in homework versus no-homework groups. However, the results of this study indicate that repeated exposure to material through homework will result in higher student achievement, a situation that teachers should keep in mind when developing lesson plans and student assignments.

Implications for Teacher Education

1. Current research findings about student achievement based on Cooperative Learning and/or homework should be provided to students in teacher education programs.

2. Since homework increases student achievement at the elementary school level, the use of homework as a strategy should be included as part of the content of teacher education methods courses.

3. Since there are classroom benefits in using Cooperative Learning, Cooperative Learning as a methodology should be included in teacher education methods courses.

4. Pre-service teachers should be made aware that Cooperative Learning with the addition of homework produces greater student achievement than Cooperative Learning alone.

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Date Filmed

March 29, 1991