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## THE EFFECTS OF COOPERATIVE LEARNING ON THE ABILITIES OF PRE-SERVICE ART TEACHER CANDIDATES TO LESSON PLANNING IN TURKEY

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### ABSTRACT

*Cooperative learning is in many ways a more effective learning method than individual and competitive learning. In this study, the effects of cooperative learning on the abilities of the pre-service art teacher candidates to plan lessons were emphasized. For this purpose, 32 art teacher candidates were selected for the experimental group, and 32 art teacher candidates were selected by random sampling method. An evaluation rubric was developed to evaluate the lesson plans that the art teacher candidates prepared. Points that increased two by two from 0 to 10 were included in the rubric. A cooperative learning program was developed for application in the experimental group. Samples of lesson plans were taken for a pre-test purpose before starting the program. The program lasted for three weeks, and four hours each week; and at the end of the program post-test works were taken from the candidates. The rubric was scored by three people, including researchers. Cooperative learning method was applied to the experimental group, and traditional learning method was applied to the control group. The candidates of both groups were requested to focus on planning a lesson. The results of the research shown that there was no significant difference between the pre-test points ( $P > .05$ ), however, there was a significant difference between the post-test points in favour of the experimental group ( $P < .05$ ). It was observed that the results of this research were similar to those of other research.*

### INTRODUCTION

Students differ in their abilities, ways of learning and thinking, academic motivation levels and interests. Therefore, teachers ought to choose the teaching method that enables the students to learn at the highest levels. Lazarowitz, Hertz-Lazarowitz and Baird (1994) have criticized the teaching method in which the teacher lectures, because only hardworking students can take benefit from it. It encourages the students to study individually and learn in a competitive way, and it doesn't contribute to the academic and social development of the students in the class. The

1994 study cited above suggests that the teachers use other methods. According to Lazarowitz et al. the explanation method is not suitable enough for the students' expressing and discussing their thoughts and asking what they don't understand, this method is disadvantageous especially for students who have difficulty in understanding.

Whereas, Vygotsky (1978) has reported that social experience can shape the cognitive processes of individuals in a learning situation. Vygotsky believes that the construction of knowledge and the transformation of various points of view into personal thinking results from cooperative efforts to learn, understand, and solve problems. Zimmerman (1990) argues that the learning process should be organized in such a way that learners can take responsibility for their own learning processes.

Johnson and Johnson (1999) stated that learning environments can be divided into three categories. The first one is the "competitive learning" environment in which while some students win and others lose, and the students compete with one another to determine who "the best" is. Second one is the "individual learning" environment in which the students study on their own to realize their goals without being interested in what others do. The third one is the "cooperative learning" environment in which the members of the group either win or lose together and which requires to study together in the framework of mutual goals.

The most important feature of the cooperative learning is that the individuals study in small groups by helping each other to learn to achieve a mutual goal. However, not every study group is a cooperative learning environment. A study group's being a cooperative learning environment is dependent on the fact that the students in the groups try to take the learning of themselves and others to the top level. For this reason, each member of the group knows that he/she cannot be

successful unless other members are, so he/she tries to help others to learn. The achieved success is a group success that is achieved with the contribution of every member (Cooper, Robinson, & McKinney, 1994).

However, in cooperative learning, group members should believe in the necessity of the “group success” for the success of the group members. Slavin (1990) advocates that this requirement can be met with a cooperative award structure and a cooperative work structure. In the cooperative award structure, the group members are awarded together. Cooperative work structures are the conditions in which the efforts of the group members to finish a work are combined, are encouraged. The cooperative work structure has two types as task distribution and group work. In the task distribution, each student is evaluated individually and the individual points are summed up, then the group points are achieved. In group work, every member of the group works on one task. Meyers (1997) emphasizes that in the work structure of cooperative learning, small groups should be responsible and they should be accountable.

There are also disadvantages of cooperative learning. One of them is “having something all at your fingertips” effect. When responsibility for the group is undertaken by one or only a few people, others may participate in their success. Members of the group may also ignore their responsibilities or display low success. In the event of this, the hardworking members may decrease their efforts, thinking that they are being exploited (Slavin, 1999: 74). “The growing richer of the rich” is a condition in which the better students take more benefit of the work done by the roles they have undertaken. While the student who “knows” learns better, the student who “doesn’t know” that much may worsen. In “interference of the responsibility” condition, the more hardworking students do not rate the suggestions and explanations of others and ignore them. While well-structured groups are successful, badly-structured groups become unsuccessful (Johnson & Johnson, 1990). The students who do not have enough self-confidence may also experience difficulty in belonging to the group. More talented students may feign less ability. There is a risk that the time is diluted as the responsibility is shared. The group may resist learning, and there may be destructive discussions.

There are also some techniques that are used in establishing students the cooperative learning method. Some techniques are as follows: “Learning Together & Alone (LTA)” technique developed by Johnson and Johnson (1990), “Student Teams Achievement Divisions (STAD)” technique developed by Slavin (1990), “Team Accelerated Instruction (TAI)” technique, developed by Slavin and Associates, “Teams-Games-Tournaments (TGT)” technique developed by De Vries and Slavin, “Jigsaw Technique” developed by Aronson et al., and “Group Investigation” technique developed by Sharan and Sharan (Johnson, Johnson, & Stanne, 2000). Palincsar and Herrenkohl (2002) discuss the general situations for cooperative learning as “reciprocal teaching” and “cognitive tools and intellectual roles–CTIR”.

The cooperative learning technique, whose efficiency is tested in the present study, was developed by Slavin (1990) the “STAD”. In this technique, students form heterogeneous groups and the teacher presents the lesson, then the students study the lesson within their teams until they are sure that all members of the groups understand the lesson. All students are evaluated individually about the subject; the progress points are summed up; and then the group points are achieved. After the group point is compared for certain criteria, reinforcements are given to students (Slavin, 1992).

In the 1981 study in which Johnson, Maruyama, Johnson, Nelson and Skon reviewed 122 researches that analyzed the relationship between cooperative learning and academic success, they found out that cooperative learning had more positive results in the subject area teaching of every age group than both the “competitive learning” and the “individual learning” method (Johnson & Johnson, 1999). Slavin (1983) states in a study, in which he analyzed 46 researches, that when the cooperative learning method were compared with competitive and individual learning methods, it had positive results significant as related to academic success in 63% of the researches.

In an extensive search, there was found that 164 studies investigating all cooperative learning methods by Johnson, Johnson and Stanne (2000). The studies yielded 194 independent effect sizes representing academic achievement. They have found out that all

cooperative learning techniques had a significant positive impact on student achievement. According to Johnson and friends, the widespread use of cooperative learning is due to multiple factors.

Carlsmith and Cooper (2002) formed five groups in a study carried out for a twelve-week term. These groups were asked to prepare a study persuasive for other students. At the end of the research, it was observed that there was an increase in the attitudes of blood charity and the habit of drinking milk among the students in the campus who were included in the research. Morgan (2003) has carried out his 140 university students on the bases of cooperative learning. Statements from 140 university seniors were sorted into eight clusters. Themes emerged connected to these clusters that are supported by a research base on cooperative learning. Morgan recommended that group exams for group grades from a base of cooperative learning strategies implemented in higher education classrooms be further researched.

The teacher training system in Turkey is organized by The Council of Higher Education (CHE). However, teacher characteristics have been determined by National Education Law (NEL) that became law in 1973. Turkey's Ministry of National Education (MNE) prepares curriculum for all primary and secondary schools in Turkey. Art teachers are responsible for applying art education programmes that have been prepared. It is important for an art teacher to prepare a good lesson plan and to present lesson to students according to this plan. This research has been required with the thought that art teacher candidates may be more successful by teaching the significant ways of making a good plan to each other with the cooperative learning method.

## PURPOSE

In the planning of education, program, teacher, students and the environment are the main elements. The teacher has the most important role within these elements as the person preparing and applying the plan. Planning has an aim to guide the teacher who manages the teaching and learning process. Determining objectives and behaviours, determining the subject to achieve the objectives and behaviours, determining the teaching methods and techniques about the

subject and evaluating the changes of behaviours that are anticipated in children constitute the main lines of the lesson plan. It is thought that the pre-service art teacher candidates will prepare better lesson plans using the cooperative learning method in comparison with individual and competitive learning methods. Many researches state that the cooperative learning is superior over individual, competitive, and traditional lecturing methods.

The main aim of this study is to investigate the effects of cooperative learning on the abilities of art teacher candidates to plan a lesson. In other words, to determine whether there is a difference between the abilities of the experimental group students, to whom cooperative learning method was applied and those of the control group students to whom the traditional learning method was applied to plan a lesson.

The hypotheses below were tested in the framework of this general aim.

*Hypothesis 1:* There is no significant difference between the pre-test and post-test points of the experimental group to whom a cooperative learning method is applied.

*Hypothesis 2:* There is no significant difference between the pre-test and post-test points of the control group to whom a traditional learning method is applied.

*Hypothesis 3:* There is no significant difference between the pre-test points of the experimental group to whom cooperative learning method is applied and the control group to whom the traditional learning method is applied.

*Hypothesis 4:* There is no significant difference between the post-test points of the experimental group to whom cooperative learning method is applied and the control group to whom the traditional learning method is applied.

## RESEARCH METHOD

### Design and Participants

Quasi-experimental design was used in this research. In this study, an experimental group and a control group were formed and the pre-test and post-test method of Campbell and Julion (1966) was used. The research was conducted in the art teacher training program at Nigde University in Turkey. The program aims at training art teachers for primary and secondary level schools after their four-year of

study. The first, second and third year mainly focuses on developing trainees' art skills (such as, history of art, media applications, aesthetics, art critique, computer operations, and drawing-painting skills). Starting from the third year, teacher training courses (i.e., classroom management, teaching methods, lesson plans etc.) are provided. The last year of the program emphasizes the practicum approach in school settings; where trainees are taken to schools to teach lessons and understand the daily routines at schools.

The sample of the study consisted of 64 fourth year students at an art teacher training program at the Education Faculty of Nigde University in Turkey, during the spring semester of the 2004–2005 academic years. The participants in the study were 26 males (40.6%) and 38 females (59.4%). Age levels of the participants ranged from 22 to 30. The average age for students was 23.2 years old with the standard deviation of 1.93 years old. For the sample of the research 32 students (17 female and 15 male) were chosen to form the experimental group and 32 students (21 female and 11 male) at the same age levels were randomly selected to form the control group. The groups were formed heterogeneous by the researchers.

**Data Collection Method**

In the research, an evaluation rubric was developed to evaluate the lesson plans that the students prepared as a data collection tool. The main elements of student performances in the lesson planning rubric are “Objectives and behaviours, subject selection, method determining and evaluation.” Point assignment was made so that it enables measurable assessment for each component of assessment rubric. The points were assigned as two by two from “0” to “10” with equal gaps. Making the point assignments like this enables flexibility in scoring. (Herman, Gearhart & Baker, 1994; Custer, 1996; Moscal, 2000).

**The scoring criteria are as follows:**

Task not done.....	0
No evidence of success.....	2
There is some evidence of success.....	4
Improving.....	6
Good.....	8
Perfect.....	10

The lesson plans students had prepared were evaluated by three evaluators, including the researcher. The researchers and an educational science expert participated in the evaluation. The evaluators made evaluations individually. The scorers weren't informed which group was the control group and which one was the experimental group during the application of the program. Shaka and Bitner (1996), Moscal (2000) have stated that there should be a harmony between the scorers for the reliability of the evaluation rubrics. The concept of scorer reliability is used for this purpose. Wragg (2001: 23-24) has mentioned that there is a way to ensure the reliability of the harmony in the points that the scorers give without being aware of each other. The scorer reliability is based on the possibility that different scorers assign similar points. Koretz, Stecher, Klein, McCafery and Deibert (1993: 49) have mentioned that increasing the harmony between the scorers is enabled by increasing the material to be scored and the number of scorers. In the event that there is a disharmony between the scorers, teaching the scorers is important.

In the initial application, the lesson plans of 55 students were studied. The results of the reliability analysis made for the points given by the scorers in the initial application were as follows.

In the scoring of the objectives and behaviours, the lowest correlation among the three scorers was .68 between the B and C, the highest correlation was .86 between A. and C. Cronbach Alpha value was found as .90. In scoring the determining the subject, the lowest correlation of the three scorers was .50 between B and C, the highest correlation was .80 between A and B. Cronbach Alpha value was .82. In scoring determining the method, the lowest correlation of the three scorers was .87 between B and C, and the highest correlation was .93 between A and C. Cronbach Alpha value was .96. In scoring the main components about evaluation, the lowest correlation was .81 between B and C among the three scorers, the highest correlation was .94 between A and B. Cronbach Alpha value was .95.

**Application of the Program**

In the research, a cooperative learning program was developed to apply in the experimental group. Before starting the

program, lesson plan samples were taken from the experimental and the control groups for the purpose of pre-testing. The program lasted for three weeks, as four hours in every week, and at the end of the program, post-test works were taken.

To ensure cooperative learning, the students in the experimental group were divided into eight mixed groups of four students. The groups were informed about the award to be given to the most successful group at the end of the application before the start of application. The group studies were carried out in the class environment and apart from class hours. At the beginning, the subject was taught by the lecturer, then worksheets including the objectives sentences were distributed to the students and the students were requested to study together to determine the subject appropriate for the objectives, to select methods and determine questions and they were requested to prepare themselves for the evaluation at the end of the application. The students were also supposed to give a four-hour teaching seminar for the evaluation and sharing the experiences. The students of each group were required to examine the curriculum prepared by The Ministry of National Education. They were also requested to identify objectives and behaviours in accordance with the curriculum. At the end of the application, the individual points that were acquired by evaluation of the lesson plans of the students were not revealed to them, the group success points were emphasized. The success points of the groups were acquired by summing the individual points of each student, and dividing this value by the number of students in the group. At the end of three weeks, the previously stated awards were presented to the members of the group with the highest point. In the control group, a traditional teaching method, based on the lecturing of the teacher was used. At the end of three weeks, the lesson plan samples were collected from all of the students in the control group as the post-test.

#### ANALYSIS OF THE DATA

Data acquired at the end of the research were processed in SPSS for Windows package program. Arithmetical mean, standard deviation and *t*-test were used as analysis techniques. In the comparison of groups, independent-samples *t*-test was used. In the

pre-test and post-test comparisons, paired-samples *t*-test was used.

#### FINDINGS

In this section, the findings acquired as a result of the research have been analyzed according to the related hypotheses.

*Hypothesis 1:* There is no significant difference between the pre-test and post-test points of the experimental group to whom a cooperative learning method was applied.

According to the result of the *t*-test, carried out between the pre-test and post-test points of the experimental group to whom the cooperative learning method was applied; it has been seen that there is a significant difference;

$[t(31) = -4.77 p < .05]$  in writing the objectives and behaviours,

$[t(31) = -3.85 p < .05]$  in determining the subject,

$[t(31) = -3.28 p < .05]$  in determining the method,

$[t(31) = -4.88 p < .05]$  in evaluating, and

therefore hypothesis 1 has been rejected. The cooperative learning method improves the ability of the students to plan lessons effectively.

*Hypothesis 2:* There is no significant difference between the pre-test and post-test points of the control group to whom a traditional learning method is applied.

According to the results of the *t*-test, carried out between the pre-test and post-test points of the control group to whom traditional teaching method is used, there is a significant difference;

$[t(31) = -2.68 p < .05]$  in determining the objectives and behaviours,

$[t(31) = -3.73 p < .05]$  in determining the subject,

$[t(31) = -2.44 p < .05]$  in determining the method,

$[t(31) = -3.79 p < .05]$  in evaluating, and

therefore hypothesis 2 has been rejected. The lesson planning abilities of the control group students have improved. In this situation, it will be more appropriate to make a comparison between the experimental group and the control group.

*Hypothesis 3:* There is no significant difference between the pre-test points of the

experimental group to whom cooperative learning method is applied and the control group to whom the traditional learning method is applied.

The results of the *t*-test carried out between the experimental group and control group before the application of cooperative learning method, no significant difference has been found

$[t(62) = .61 p > .05]$  in the component determining the objectives and behaviours,  $[t(62) = .25 p > .05]$  in the component of determining the subject,  $[t(62) = .06 p > .05]$  in the component of determining the method,  $[t(62) = -.10 p > .05]$  in the component of evaluation. Therefore hypothesis 3 has been accepted for every sub-component of lesson planning. It can be said that the lesson planning abilities of the experimental and the control group students were similar before starting the application of the program. It will be beneficial for the analysis between the experimental and the control group after the application of the cooperative learning method should be examined.

*Hypothesis 4:* There is no significant difference between the post-test points of the experimental group to whom cooperative learning method is applied and the control group to whom the traditional learning method is applied.

According to the results of the *t*-test made between the post-test points of the experimental and the control groups, a significant difference has been found at a level of

$[t(62) = 2.44 p < .05]$  in the component of determining objectives and behaviours. However, it is seen that there is no significant difference  $[t(62) = 1.70 p > .05]$  in the component of determining the subject,  $[t(62) = 1.39 p > .05]$  in the component of determining the method,  $[t(62) = 1.54 p > .05]$  in the component of evaluating. In this case, hypothesis 4 was rejected for determining the objectives and behaviours, but accepted for determining the subject, method and evaluating. There was more increase in the arithmetical mean of the experimental group than the arithmetical mean

of the control group. The data acquired has shown that the cooperative learning has improved the lesson planning abilities of the senior students of Fine Arts Education Department more than a traditional teacher dominated teaching method.

## RESULTS AND DISCUSSION

In this research the effects of cooperative learning on the art teacher candidates' ability of preparing lesson plans was searched. For this reason experimental and control groups were formed. Whereas the method STAD developed by Slavin (1990) was applied to experimental group, presentation method was applied to control group. The students of each group were required to prepare lesson plans for an efficient art teaching. Lesson plans prepared by groups were scored by three scorers, including the researchers. The data of this research has indicated that STAD technique of the cooperative learning techniques, improved the lesson planning abilities of the students. There has been a result in favour of the experimental group students especially in determining the objectives and behaviours. Application of cooperative learning method for three weeks has improved the objectives and behaviours determining abilities of the students considerably. In fact, when the point increases were analyzed for subject, method-techniques, and evaluation aspects of lesson planning, it was again in favour of the experimental group students. If the program had lasted more than three weeks, the results between groups would have been different.

The superiority of cooperative learning method over lecturing method was seen clearly in such a short time as three weeks. Our research was supported that the cooperative learning in the researches made by Johnson and Johnson in 1981, Slavin in 1983, Carlsmith and Cooper in 2002, and Morgan in 2003 have superiority over other learning types.

Identification of objectives and behaviours is significant for preparing a well-designed lesson plan. That the students examine the curriculum was useful for students in the process of the identification of objectives. While complicated objective sentences were available in pre-test aimed lesson plans of each group, it was observed that more meaningful and well-designed objective sentences were written in post-test

aimed lesson plans. Since the determination of other dimensions were easier than the identification of objectives, it was quite normal that there was no significant difference between experimental and control groups in the way of the choice of topics based on objectives, determination of teaching methods and evaluation questions in lesson plans.

It was observed that the objectives identified by students were generally in cognitive domain. The students accepted Bloom's Taxonomy as a model for their cognitive domain objectives. Bloom and his colleagues provided taxonomy of educational objectives intended to provide for the classification of the goals of educational system. Cognitive domains include those of knowledge, comprehension, application, analysis, synthesis and evaluation (Dettmer, 2006). The cognitive domain objectives in the curriculum of MNE have been prepared by taking Bloom's Taxonomy into consideration. It is possible to encounter some alternative taxonomy apart from Bloom's in literature. Dettmer (2006) has offered a new taxonomy by criticizing Bloom's taxonomy. Domains in Dettmer's taxonomy are as following: "Cognitive, Affective, Sensorimotor and Social". His cognitive domain is as following: "know, synthesize and create".

It was observed that the students of experimental group were successful in the identification of objective-based topics, teaching method and evaluation questions. Although there were not a significant difference between the experimental and control groups, the means of experimental group's post-test were higher than that of control group. It was observed that some of the students in the experimental group preferred cooperative learning as a teaching method in their lesson plans. It can be considered that they will apply cooperative learning strategies when they become art teachers in the future.

That the students were given the criteria for assessment at the beginning of the program affected the success of the students of each groups in planning lessons. Such an assessment type can decline the exam-anxiety of students as the students were informed that the assessment would not done secretly and by only one person at the beginning of the program. There were scopes for the students applied the method STAD to discuss and criticise their works according to evaluation

rubric. This assessment style is in accordance with McConnell's (1999) collaborative assessment, Aschbacher's (1991) performance assessment, and Paulson, Paulson and Meyer's (1991) portfolio assessment approach. The Collaborative assessment strives to bring a variety of viewpoints and values to the assessment process and in doing so helps make the process of assessment more open and accountable. The performance assessment is defined to consist of such measures of understanding and skill of higher-order, complex tasks as "direct writing assessments, open-ended written questions, hands-on experiments, performances or exhibits, and portfolios." The portfolio is defined as "a purposeful collection of student works that display the efforts, development and successes of the learner."

At the end of the research meetings were held with the students applied the method STAD. Some of them complaint that group members of their own did not do the duties they were responsible for. It could be accepted that the students did not do their duties affected group success in a negative way. After having identified objectives and behaviours, some of the group members may have distracted some their duties in the identification of topics, methods and evaluation questions in lesson plans. The hardworking members in the experimental group must have decreased their efforts, thinking that they were being exploited (Slavin, 1999). Morgan (2003) recommends group exams for group grades from a base of cooperative learning strategies implemented in higher education classrooms. A study with college students (Hwong, et al., 1992) has showed that they came to view group affected grades as "more fair" than individual grades in less than half of a semester (quote: Morgan, 2003).

Johnson, Johnson and Smith (1991) suggested that poorly designed group learning could produce worse results than competitive approaches. Actually, the cooperative learning process requires that all members of the group agree on the team goals and each member must attribute his or her own successes to the success of the group to maximize the learning potential of the whole group (Cooper et al., 1994).

## CONCLUSION



Cooperative learning method is different from individual and competitive learning methods in that it is based on the students cooperating to reach a solution to a problem. Looking for a solution for a problem means producing more presenting solutions. While the individual tries to persuade others to accept their ideas, they learn to analyze, synthesize and critically analyse others' ideas, which contributes much to the improvement of critical thinking.

The results of this study showed that cooperative learning is an essential learning method in training our fine arts teachers. In addition, the study has revealed some evidences to support the idea of cooperative learning as a learning preference for art teacher candidates.

In respect of the findings we have and the other empirical findings, we suggest that the cooperative learning should be part of the daily instructional methods used in all teacher training programs. This decision could affect whether students perform to the best of their abilities. It is the responsibility of teachers to be aware of the various learning preferences that students bring to classroom and to try to take full advantage of them during the daily teaching and learning process.

## RECOMMENDATIONS FOR FUTURE RESEARCH

Without reviewing the research on the different cooperative learning methods, it is difficult to recommend specific cooperative learning procedures to researchers. Methods of cooperative learning aimed at lower-level tasks may produce high effect sizes on simple recognition level tests than methods of cooperative learning aimed at higher-level reasoning and critical thinking. Nevertheless, students may be influenced via peer interactions in a classroom that uses peer-learning groups. It may contribute to the development of high self-confidence, empathic approach, communication skills, problem solving, creative and critical thinking in students.

A number of limitations need to be considered in interpreting the findings of this study. This study included only the students from the Department of Fine Arts Education. A more comprehensive study including the other disciplines and/or across disciplines will contribute to our understanding of the relationship attitudes as well as their main effect on achievement.

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