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Effect of Jigsaw I technique on teaching Turkish grammar

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The purpose of this study is to find out the effect of Jigsaw I technique on students' academic success and attitude towards the course in teaching Turkish grammar. For that purpose, three grammar topics (spelling and punctuation marks rules) were determined and an experimental study conforming to "control group preliminary-testing final testing model" was conducted at a middle school located in Kars Turkey. As data collection tools "Success Test to measure effectiveness of Jigsaw I Technique in Grammar Teaching "(AST) and "Turkish Course Attitude Scale" (TCAS) were used. At the end of the study, it was discovered that there was no difference between the success scores of the students in experimental and control groups and their attitudes towards the course, in other words, the academic success of both group where Jigsaw I technique was applied and the group where conventional teacher centered teaching was applied after the experiment and their attitudes towards Turkish course were similar.

Key words: Cooperative learning, jigsaw I technique, Turkish course, grammar teaching.

INTRODUCTION

Upon curriculum change made in 2005, structuralism has been taken as basis for Turkish teaching and student centered teaching has started to dominate (Kapulu et al., 2009). From this perspective, methods and techniques enabling the students to self-learning or to learn under teacher guidance are needed. Turkish course aims to enable students acquire five main skills of speaking, listening, reading, writing and grammar. Therefore, it will be needed to exploit both structuralism and teach five basic language skills by use of effective methods in Turkish teaching. In this line, one of the methods to be employed in Turkish teaching can be cooperative teaching method. It may be said that cooperative learning methods have positive effects on students' success and participation in learning a language (Maden, 2011).

Cooperative learning is defined as a teaching method where the students conduct studies to help each other learn in small groups in line with the common goal (Teyfur, 2013), an in-class method increasing motivation, helping students develop their image about themselves and their friends, increasing problem solving and critical thinking skills (Calderon, 1987 cited in Christison, 1990) and students working together in small groups where they are rewarded when working together (Ekinci, 2005). In cooperative learning, students are not competitors but assistants to each other. The goal of the students

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working in line with a common target is not to become better than each other but to do better together (Türkmen et al., 2015). Cooperative learning can be defined as a method where the students help each other in academic subjects, which develops their problem solving, critical thinking and communication skills and makes them active (Doymuş et al., 2004).

Jigsaw I, which is one of the cooperative methods, is called a complex strategy in which interdependency is created. Also known as combining technique, it allows to check if all students in the study have performed their tasks related to the subject area by forming new and expert groups from the members of the original groups at the end of the study. Particularly this technique is very appropriate and preferred for social study topics (Doymuş et al., 2005). Jigsaw I technique was developed by Aronson et al. (1978). In this technique, each student teaches his/her subject of expert to the group members. The students teach all sections of the unit to each other, test assessing each student individually is given to each student (Demirel, 1999).

In Jigsaw I technique, firstly, groups of 2-6 persons are formed and the groups are called original groups. All groups learn the same topic. The students in the original group research the sub-topics of the unit assigned to them and come together with the students researching the same topic and form a new group. Such groups are called expert groups. In such groups, the students share the research results with each other and exchange ideas about how to explain the topic to their friends. Then the students go to their original groups and share their studies with each other. After the students teach all parts of the unit to each other in their original groups, students take a test covering all units. The scores gained in the test are assessed individually. In Jigsaw I technique, the students becoming expert about a topic play an essential role in learning of their friends. However, taking extra time and not appropriate for grade one students are the negative aspects of the Jigsaw I technique (Doymuş et al., 2005).

The Jigsaw techniques differ with minor details. For instance, Jigsaw 2 is different from Jigsaw 1 in that in Jigsaw 2, firstly, all students study all the subjects of the unit and then select the subject of specialization instead of selecting a specific subject from the unit at the beginning of the application (Slavin, 1981 cited in Senemoğlu, 2011). All types of Jigsaw technique consist of introduction, expert research, report preparation, completion and assessment stages (Şimşek, 2007). At the introduction stage, the subject to be studied is introduced to the students before applying Jigsaw technique, the information about the technique to be applied is given and the essential points which are to be paid attention to are reiterated. After forming the main groups and ‘expert’ groups at the specialization research stage and commencement of the study, the students are reminded to discuss the parts of the subject not understood, asking about parts not understood to each other etc. The students are encouraged by teacher to be specialized in the subject at the expert research stage. During the report preparation, the students return to their original groups. At this stage, the students discuss the subject, question it and then attempt to teach it to their classmates. A joint report is then prepared.Finally, at completion and assessment stage, the individual presentations are produced and students' learning entire subject is presented.

In conventional teaching, the teacher stands in front of the class and conducts most of his/her speech there and controls events, transfers information, asks questions, makes assessments and rewards. In short, the teacher is the most active person in the class. Such teaching causes the formation of a conventional class environment where transferred information is repeated, information is transmitted and passive information recipients exist (Açıkgöz, 2005).

Language teaching is a multidimensional area since it develops child/adult’s language abilities, makes them acquire awareness of native language, and finally builds close relationship with other social skills (Maden, 2010). Therefore, it is difficult to achieve Turkish grammar teaching by just listing and memorizing main rules (Sağır, 2002).Therefore, it is considered that Jigsaw I technique effectiveness of which have been proved by several studies in several areas can be one of techniques that can provide contribution to solving the problems encountered in teaching grammar in Turkish course.

Conducted to find out the effect of Jigsaw I technique on success of grade 8 students of middle school in Turkish course, this study aims to find answers to the following questions:

1. Is there any difference in terms of academic success between the experimental group where Jigsaw I technique is applied and control group where the conventional teacher centered is employed in teaching spelling and punctuation marks rules in Turkish course?
2. Is there any difference in attitudes towards Turkish course between the experimental group where Jigsaw I technique is applied and the control group where conventional teacher centered teaching is applied?

STUDY MODEL

In this study, the effects of Jigsaw I technique on academic success in Turkish course and attitude towards the course have been examined. In this context, an experimental study with “control group according to preliminary-final-test model” was realized. Kerlinger (1973) defines the pattern of preliminary-test-final test control group as the pattern in which the subjects assigned to the experimental and control groups are measured before and after experimental manipulation (Büyüköztürk, 2001). Upon testing the effect of the preliminary-test final test control group pattern experimental

Table 1.The schematic view of application process.

Pre test	Group	Applied technique	Final test
AST TCAS	Experiment	Jigsaw	AST TCAS
AST TCAS	Control	Teacher centered teaching	AST TCAS

process on the dependant variable, it is a strong research pattern enabling the researcher to interpret the cause-effect findings and providing high statistical strength (Büyüköztürk, 2001).

The sampling of the study consists of 56 students (30 students in experimental group and 26 students in control group) from two separate classes attending grade 8 in middle school where the study was conducted. Experimental and control groups were determined taking into account the teacher's opinion, scores gained by students in various examinations at school and preliminary-test results. Impartial assignment method was employed in determining the experimental and control groups. The experimental group at the study where study was conducted consists of 14 girls and 16 boys, while control group consists of 13 girls and 13 boys. The school where study was conducted is of a poor level in socio-economic terms.

In the study, the following operations were conducted in order to find out the effects of Jigsaw I technique and teacher centered teaching on academic success of the grade 8 students in regard to teaching of the spelling and punctuation markings rules and their attitudes towards Turkish course (Table 1).

Data collection instruments

Academic success test (AST)

In this study, an achievement test consisting of multiple choice questions testing, punctuation rules and spelling rules tested in the central examinations (such as Placement Examinations) was used. Before starting the study, this test consisting of 50 questions was examined by 3 Turkish Teaching Specialist for scope validity and it was decided to omit 10 questions from the test. After the remaining 40 questions were given to 200 students, 2 questions (questions 3 and 24) were omitted from test for low reliability level. Regarding internal structure validity of the achievement test Cronbach Alpha was calculated to be 0.74. It can be said that an achievement test is reliable if Alpha values for overall and each factor of a test is 0.70 and more (Hair et al., 1995; cited in Wast and Önder, 2002).The test repeat test reliability correlation value of the achievement test is calculated to be 0.96. Therefore, it was concluded that the achievement test can be applied. This data collection tool called "Achievement Test to Evaluate the Effectiveness of Jigsaw I technique in Grammar Teaching" (AST) was administered as preliminary and final test in a middle school in Kars Province of Turkey.

The attitude scale of Turkish courses (TCAS)

Another measurement tool employed in this study is the "Turkish Course Attitude Scale" included in Middle School Turkish Course Teaching Program and Guide (2006) and consisting of total 20 items. The attitude values in the scale consist of scale of 5, namely "Strongly agree", "Agree", "Uncertain", "Disagree", and "strongly disagree". When starting analysis of findings, regarding the answers to the affirmative items in the scale, the points for each choices are: "Strongly agree: 1", "Agree: 2", "Uncertain: 3", "Disagree: 4", and "strongly disagree: 5". Regarding the answers to adverse items in the scale items (2, 4, 8, 10, 11, 13, 14, 15), the points for each choices are: "Strongly agree: 5", "Agree: 4", "Uncertain: 3", "Disagree: 2", and "strongly disagree: 1". In other words, the items containing adverse meaning in the scale were reversed coded and the data were made ready for analysis. Coranbach Alpha has been used for testing reliability of the scale. In addition, in order to determine degree and direction of the effect of questions on Coranbach Alpha, "Coranbach Alpha in case of deletion of Variable" value has been calculated. The said values indicate internal consistency of the remaining items in case an item is deleted. In this framework after examination of the reliability of the Scale for Attitude towards Turkish Course, and a high value of $\alpha = 0,856$ was found which indicates high reliability. The studies for scale reliability have been conducted by use of data obtained from 200 students outside the scope of the study.

In order to find out the effects of the items establishing the scale on the reliability level, when values of "Coranbach Alpha in case of deleting of an item" were examined, it was determined that deletion of the items of "There is no need to spare time for Turkish course in addition to teaching session", "I usually feel uncomfortable in Turkish course", "In my opinion, Turkish is an unnecessary course" and "I feel more restless in examination of Turkish course than the examinations of other courses" had a partial contribution to internal consistency of the scale. However, taking into account that the said findings may be subject to size of sampling, the structure of the current measurement instrument has been protected. Because when the analysis results are examined in whole, it is likely to say that all items provide positive contribution to reliability of the scale and Coranbach Alpha for general and over 70 for each factor is adequate for verification of reliability of the scale (Hair et al., 1995 cited in Wast and Önder, 2002).

Process

The study was conducted in grade 8 in Kars Province of Turkey covering the spelling rules and punctuation markings. Before starting the application, the experimental and control groups were given "Achievement Test to find out the effectiveness of the Jigsaw I Technique on Grammar Teaching" (AST) and "Turkish Course Attitude Scale" (TCAS) as preliminary test and then it has been discovered that there is no considerable difference between the groups according to the results of the tests. Starting from the week following administering the preliminary test, the experimental group was given Jigsaw I technique in 3 h courses while control group was given teacher centered teaching. In line with the constructivist learning approach, the activities prepared by the teacher or provided in course books were covered by groups according to Jigsaw I technique in experimental group while by all class with the

Table 2. Distribution of main groups

Main Group A	Main Group B	Main Group C	Main Group D	Main Group E
A1 A2 A3	B1 B2 B3	C1 C2 C3	D1 D2 D3	E1 E2 E3
A4 A5 A6	B4 B5 B6	C4 C5 C6	D4 D5 D6	E4 E5 E6

Table 3. Distribution of expert groups regarding the topics.

Topic I	Topic II	Topic III	Topic IV	Topic V	Topic VI
A1, B1, C1, D1, E1	A2, B2, C2, D2, E2	A3, B3, C3, D3, E3	A4, B4, C4, D4, E4	A5, B5, C5, D5, E5	A6, B6, C6, D6, E6

direction of the teacher in control group. In the group where conventional teacher centered teaching was applied, the topics were covered by the teacher while in the group where Jigsaw I technique was applied, the teacher only performed guiding and walked in the group to explain the points where students had difficulties to understand. Before starting the application, the teacher to apply it was informed about the technique. In addition, the author visited the classrooms at some stages of the study, observed the application and made required warning when required.

The procedure for the experiment group

First of all, school administration and class teacher were cooperated to find out the success rates of the students in grade 6 and the socio-economic status of their families. In line with the obtained information and taking into account the genders of the students, heterogonous groups were formed and each group was coded with a letter. As a result 5 groups were formed (Table 2) and each group was coded with a letter (Groups A, B, C, D, E). In addition, the members of the groups were coded according to the title of topics (For instance; A1, A2, A3, A4, A5, A6)

Then the same topics assigned to the groups were shared among group leaders in the first lesson of the related week during three weeks. In line with this sharing, sub-topics were listed per weeks as follows:

I. Week:

A1, B1, C1, D1, E1: Use of capital letters
A2, B2, C2, D2, E2: Spelling of special nouns from foreign languages
A3, B3, C3, D3, E3: De suffix
A4, B4, C4, D4, E4: Mi suffix
A5, B5, C5, D5, E5: Ki suffix
A6, B6, C6, D6, E6: Intensified Words, Hendiadyoins

II. Week:

A1, B1, C1, D1, E1: Abbreviations
A2, B2, C2, D2, E2: Spelling of combine words
A3, B3, C3, D3, E3: Spelling of numbers and dates
A4, B4, C4, D4, E4: Hyphen, dash, slash
A5, B5, C5, D5, E5: Full stop
A6, B6, C6, D6, E6: Comma

III. Week:

A1, B1, C1, D1, E1: Semi-colon
A2, B2, C2, D2, E2: colon
A3, B3, C3, D3, E3: Triple dot
A4, B4, C4, D4, E4: Question and correction marks
A5, B5, C5, D5, E5: Apostrophe and quotation mark
A6, B6, C6, D6, E6: Parenthesis and exclamation marks

As also seen above, in the study considering the measurements of the Jigsaw I technique the persons with the same numerical code were assigned with the topic of the same heading, and expert groups were formed by gathering the students with the same code (Table 3) and the process was started with administering the preliminary test. The students in such groups were told to study their topics and then to return their original groups. In the experiment group every week during the first hour the topic assignment was made and the original groups were led to discuss how to get prepared for the topics, and during the second hour, studies were made in expert groups also using the materials prepared by the teacher, during the third hour, the group members returned to the original groups where they work as expert of the topic. This procedure was continued in the same way for three weeks.

The procedure for the control group

The lessons in control group were covered by teacher also covering the courses in experiment group through conventional teacher centered method and trained in Jigsaw I field. The courses in this group have been covered through direct instruction in a manner to take 9 h and three weeks taking into account the topic of that week. At the end of the theoretical courses, the teacher asked students to do the tasks, also asked from the students in the experiment group and took feedbacks and re-covered the points not learnt well.

During the week immediately after the application the measurement means were administered as final test to both experiment and control group, and the results gained there from were analyzed by means of SPSS statistical program.

FINDINGS

Effect of Jigsaw I technique on academic success

In order to check if there is any significant difference between academic success of students in experiment group where Jigsaw I technique was applied and the control group where conventional teacher centered

Table 4. The findings about the success of the students in experiment and control groups before and after the experiment.

Test	Groups	n	Mean	Standard deviation	U	p
Pre test	Control	26	16.04	6.03	310.500	0.261
Pre test	Experiment	30	14.31	4.84	297.000	0.177
Post test	Control	26	17.31	6.03		
Post test	Experiment	30	19.52	5.46		

Table 5. Findings about attitudes of experiment and control group students before and after experiment.

Test	Groups	n	Seq. Aver.	Sum of Seq.	U	p
Pre test	Control	26	29.75	773.50	357.500	0.592
Pre test	Experiment	30	27.42	822.50	373.000	0.780
Post test	Control	26	27.85	24.00		
Post test	Experiment	30	29.07	872.00		

instruction was applied before and after experiment, Mann Whitney U test was administered (Table 4).

When Table 4 is examined, it is seen that the U value regarding the difference in the success scores of the students in experiment and control groups in the preliminary test is 310,500 and p>0.05 was found to be non-significant. This finding indicates that there is no difference in the successes of the students in experiment and control groups before experiment. When examining the table, it is seen that the arithmetic average of the success scores of the students in control group in preliminary test is 16.04 while it is 14.31 for experiment group students. As a result, it can be said that there is no difference in preliminary test success rates of the students in experiment and control groups; in other words, the success of both groups before experiment was similar.

When examining Table 4, it is seen that the U value regarding the difference in the success scores of the students in experiment and control groups in the final test 297.000 and p>0.05 were found to be non-significant. This finding indicates that there is no difference in the successes of the students in experiment and control groups before experiment in regard to the success scores gained in the final test. It is seen that the arithmetic average of the success scores of the students in control group in final test is 17.31 while the arithmetic average of students in experiment group in final test is 19.52. As a result, it can be said that there is no difference in final test success rates of the students in experiment and control groups, in other words, the success of both groups after experiment was similar.

Effect of Jigsaw I technique on Turkish course attitudes

In order to see if there is significant difference between the attitudes of experiment and control groups towards Turkish course before and after the experiment, Mann Whitney U test was applied and the results are given in Table 5.

When Table 5 is examined it is seen the U value regarding the difference in the attitudes towards Turkish course of the students in experiment and control groups before experiment is 357,500 and p>0.05 was found to be non-significant. This finding indicates that the attitudes of the students in experiment and control groups towards Turkish course before experiment were similar. It is seen that the line average of the attitudes of the students in control group in preliminary test is 29.75 while it is 27.42 for experiment group students. As a result, this finding indicates that it is likely to say that there is no difference in the attitudes of the students in experiment and control group towards Turkish course before experiment.

It is seen that the U value regarding the difference in the attitudes of the students towards Turkish course in experiment and control groups in the final tests 373,000 and p>0.05 was found to be non-significant. This finding indicates that the attitudes of the students in experiment and control groups towards Turkish course after experiment were similar. The line average of the attitudes of the students in control group in final test is 27.85 while it is 29.07 for experiment group students. As a result, this finding indicates that it is likely to say that there is no difference in the attitudes of the students in experiment and control groups towards Turkish course after experiment.

DISCUSSION

The purpose of this study is to find out the effect of Jigsaw I technique on students' academic success and

attitude towards the course of teaching Turkish grammar in middle school. It has been found that there are 46 studies (doctoral thesis f = 10, master thesis f = 10, article f = 26) conducted on the academic achievement of students by using collaborative learning techniques in Turkey. In 43 studies (93.31%), it is determined that collaborative learning techniques increase the academic achievement of students (Kardaş and Cemal, 2015). Several studies have indicated that Jigsaw I technique and other techniques of cooperative learning have positive effects on the success of the students (Colosi and Zales, 1998; Ghaith and El-Malak, 2004; Sönmez, 2005; Çörek, 2006; Artut and Tarım, 2007; Avşar and Alkış, 2007; Box and Little, 2003; Doymuş and Şimşek, 2007; Ayna, 2009; Karaçöp et al., 2009; Johnson et al., 1981; Kardaş, 2013). In a study conducted by Pala (1995), it was discovered that the students in the experiment group taught through cooperative method were more successful in vocabulary test. In this study by Pala (1995), it was revealed that the students liked the method and developed positive attitude for the method. Another study conducted by Tonbul (2001) in English teaching course, it was found out that the cooperative method was more effective for remembering and the students stated to employ this method in other courses too. Özer (1999) and Yaman (1999) found out in their studies that cooperative methods are effective in Turkish course. Şahin (2010a, 2010b) discovered in his studies that Jigsaw II and III techniques have affirmative effects on academic success related to written instruction and attitudes towards the course. Karakoyun (2010) found out that Jigsaw I technique increases academic success in teaching punctuation marks. Despite the fact that the effectiveness of Jigsaw I technique has been revealed in several studies, at the end of this study, it was discovered that there was no difference between the success scores of the students in experiment and control groups in the final test and their attitudes towards the course, in other words, the academic success of both group where Jigsaw I technique was applied and the group where conventional teacher centered teaching was applied after the experimented their attitudes towards Turkish course were similar. Despite the fact that the effectiveness of Jigsaw I technique has been revealed in several studies, the result that the Jigsaw I techniques not more effective than the conventional teaching might be because the students were not ready for cooperation, the number of students with low success was high and they did not contribute to the group, the students were not able to get rid of the habit of being in teacher centered teaching which has continued for years, the students have poor social skills, and some students in the group were dominant while some were passive. Because of all of such reasons, techniques based on cooperative learning should not be applied unless the students are well trained about cooperative learning approach. According to Panitz (2006), full conversion from conventional learning methods to cooperative learning cannot be realized unless the students are trained about cooperative learning (Karakoyun, 2010).Therefore, it is likely to conclude that Jigsaw I technique will not be able to solve the problems encountered in grammar teaching on its own unless the students are equipped with various social skills. Cooperative learning methods are not capable to solve the teaching problems alone just like other all methods and techniques (Ün Açıkgöz, 2007).

Despite the comments stated above, conventional approaches should not be ignored all the time and in some schools such approaches should be employed in teaching some subjects.

In order to find out the effectiveness of Jigsaw I technique in Turkish course, various studies can be made in connection with both various topics of grammar and speaking, writing, reading and listening skills. Furthermore, conducting studies on not only Jigsaw I technique of cooperative learning but also other cooperative learning techniques will lead to more reliable results.

Conflict of interests

The author has not declared any conflicts of interest.

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