HURRIAN EDUCATION

www.hurrians.com

2024

Volume 5, Issue 1

pp. 1-18

A Cooperative Learning Method Focused On Reading and Writing Activities and Its Comparison with Other Methods: Reading Writing and Presentation Method[1]

Adem Akkus[2], Kemal Doymus[3]

(Research Article)

Abstract

In this article a recently developed method, Reading Writing and Presentation (RWP) was introduced and compared with two different learning methods. Those methods are Subject Jigsaw technique (JG) and curriculum implemented method. For that reason, three instructional methods were used for the study. Research was carried out with 8th grade elementary school students. Number of students included in RWP group was 22, in JG group was 25 and in CG was 27. Thus, total number of the students enrolled in the study was 74. Research design was semi-experimental design with pre-test and post-test. Before the study, all the students were given a pre-test in order to determine present academic knowledge level. Pre-test results revealed that CG group had statistically significant academic achievement than both JG and RWP. After implementing the methods, students were given a post-test. Both RWP and JG group cleared the significant difference with CG. Students were also given a technique view form which is a semi structured form. Technique view forms revealed students enjoyed techniques on the other hand it gave clues on implementing the techniques. Although the post-test results didn't reveal statistical significant difference between the study groups, it was concluded that in a long term study, both JG and RWP groups would achieve statistically significant achievement.

Keywords: Cooperative Learning, Jigsaw, Reading, Reading Writing Presentation, Writing

INTRODUCTION

Schools are equipped with modern equipment to support education and meaningful learning. On the other hand, studies indicate that if learning environment isn't supported with instructional methods and techniques then, the desired achievement doesn't happen (Bourgonjon, Valcke, Soetaert & Schellens, 2010). Modern techniques put forward students' activity and let them to learn through in their way (Wang, Ke, Wu & Hsu, 2012) so that they can concrete the abstract and complicated information. Thus, students can relate the knowledge with daily life. For that reason, instructional techniques should also support every student's needs and interests (Garderen, Hanuscin & Lee, 2012; Tan & Calabrase Barton, 2010). Making relationship between information and daily life means students should use scientific thinking

[1] This study is derived from first author's PhD dissertation

[2] Elementary Science Education, Education Faculty, MAUN, Mus, Turkey, ademakkus@gmail.com, https://orcid.org/0000-0001-9570-3582

[3] Elementary Science Education, Education Faculty, Ataturk University, Erzurum, Turkey, kdoymus@atauni.edu.tr, https://orcid.org/0000-0002-0578-5623

Received: 29. 9. 2024 Accepted: 29. 12. 2024

skills which develop higher order thinking skills. Through that, a student becomes an individual making the rational approaches to problems, contributing to professional work area (Zhan, Xu & Ye, 2011) and law abiding citizen (Cabus & De Witte, 2011). However, studies indicate that learning should happen via a natural way. In other words, learning shouldn't solely base on text books and provide meaningful learning (Acat, Anılan & Anagun, 2010).

Cooperative learning method (CLM) supports indoor and outdoor activities and showed promising results on increasing students' academic achievement, social and psychological development. CLM also increases critical thinking skills thus helping students to realize the outside world and its interaction or relationship with the surrounding environment (Abdullah & Shariff 2008; Byrd, 2012). This is achieved by presenting the interesting stimulus to students through activities. These activities also support students' needs such as talking, walking around or having fun. Thus, classrooms turn into a fun environment (Bandiera & Bruno 2006). CLM develops students' social skills and increase their courage, self-efficacy, self-confidence etc. yet, it must be noted that role of teachers are essential in creating such results (Bursal, 2010; Doymuş, Şimşek & Şimşek, 2005) since, CLM isn't simply a group work. In a traditional group work everyone is on their own journey thus, characteristics such as taking responsibility, helping each other or sharing success don't happen. For that reason, teachers play a key role in CLM by observing and intervening the groups whenever necessary. This turns students to three musketeers who are responsible for each other, try for each other's success, share positive feeling for and with each other (Shih, Shih, Shih, Su & Chuang, 2010). Literature already indicates different studies from different regions in various times in which the benefits of CLM were noted (Kılıç, 2008; Tanel & Erol, 2008; Köseoğlu, 2010; Göçer, 2010; Yi & Luxi, 2012; Swaray, 2012; Laguador, 2014; Tran, 2014; Genç, 2016; Azmin, 2016; Moges, 2019; Yulianto, Yufiarti & Akbar, 2019).

It is pointed out by the researchers that elementary school students' reading skills gradually decreases. However, reading is associated with self-efficacy, focusing on target and academic success. For that reason, reading contributes the affective development (Troia, Harbaugh, Shankland, Wolbers & Lawrence, 2013). Hebert, Gillespie & Graham (2013) point out that reading skills play important role in education, work life and daily life. Authors also note that the reason for approval of "No Child Left Behind and Reading First" act by US senate is due to those facts. Also neurological studies indicate that reading skills are associated with comprehension. Students, having better vocabulary can build better semantic webs and comprehend the issue better than students who don't have good vocabulary. Moreover, vocabulary knowledge affects speaking skills positively (Oullette & Beers, 2010). Vocabulary shouldn't be defined solely as words memorized. They refer broader meaning including but not limited to cognitive development. As different words encountered by the students, they experience different meanings of the words helping them to develop better cognitive and affective skills. This is the reason why a person with high literacy usually exhibit better comprehension and offer better solutions to problems (Fountas & Pinnell, 2012).

Since the purpose of education is to help students to develop better characteristics, teachers should help them how to present and use what was read. Having good reading skills is useful in processing the information but for a better learning, students should also exhibit what they

learned. Reading Writing and Presentation (RWP) method developed by Aksoy in 2011 and based on cooperative works of students through reading and writing activities. RWP aims to use individual differences through collaboration and make students to help each other and eventually learn from each other (Wolff, 2010) through collaborative writing activities. Writing activities develops higher order thinking skills since students need to make meaningful connections between what was learned. This is also helpful for building a base for learning to come in the future (Shih et al, 2010). Through collaborative writing activity students encounter new and different ideas which also develop their critical thinking. Also, creating a meaningful writing helps students developing the skills on how to organize the previous learning with new learning. Analyzes, synthesis, planning and evaluation strategies develop since a new product needs to be exhibited. If there must be a joint product then, students need to discuss in the group, present solutions and use an efficient language which also develops their social skills and hence affective development (Oullette & Beers, 2010; Saiegh-Haddad & Geva, 2010). Studies done on RWP method showed that cognitive and affective domains positively affected by the method (Yıldız, 2019). Okumus (2020) showed that RWP was effective in increasing academic achievement for environmental science course of preservice teachers. Additionally, Akkus and Doymus (2022a; 2022b) showed in two different studies that method was affective in increasing elementary sixth and seventh grade students' academic achievement in science courses. In that context, purpose of this study is to determine effectiveness of RWP. Because RWP is one of the CLM methods, for a better evaluation another successful technique of CLM which is Subject Jigsaw (JG) is also used for comparison. Thus, JG is one of the control groups. In order to put out the effectiveness of the RWP method another control group was also selected and referred as control group (CG). This group's instructional method was established by the Ministry of Education. Thus, study involves three different study groups.

For that reason, purpose of this study is to determine the effect of reading writing presentation (RWP) method on academic achievement of 8th grade science students' academic success in state of matter and heat unit.

Problem state of the study is

1. Does reading writing and presentation technique (RWP) make statistically significant difference in academic achievement of 8^{th} year elementary school students in states of matter and heat unit?

Sub problems of the study are

1.1. Does RWP make statistically significant difference in academic achievement of 8^{th} year elementary school students in states of matter and heat unit with respect to subject jigsaw technique (JG)?

1.2. Does RWP make statistically significant difference in academic achievement of 8^{th} year elementary school students in states of matter and heat unit with respect to current curriculum instruction?

METHOD

Research Design

Research design of the study is pre-test and post-test semi experimental design. This design is useful in determining the effect of concerned variable which was academic achievement for the current study (Karasar, 2005). Since purpose of the study was to determine effect of instructional methods and distinguish their effect among each other, it was assumed semi experimental design would fit best for the study purpose. In semi experimental design groups are selected randomly with respect to equal chance for the same level. In this study, students studying at the same level were selected. Other conditions for the groups was assumed equal.

Study Groups

Three different classrooms at 8th grade level were randomly selected as study groups. After that instructional methods which will be studied by the classrooms randomly distributed to them. Those instructional methods were Reading Writing and Presentation (RWP), Subject Jigsaw (JG) and curriculum implemented method (control group). Number of students in each group was 22 for RWP, 25 for JG and 27 for control group. For that reason, total number of the sampling was 74.

Data Collection Tools

Pre-test

A draft pre-test was prepared whose questions were multiple choice type and were selected from elementary school text books and nationwide elementary school exams. 30 questions were chosen for the draft pre-test and presented to specialist for the compliance with research purpose. Specialists were academics from two different universities who had publications on the concerned issue. After finalizing the draft pre-test a pilot study was done with 40 students at 8th grade. After initial reliability analyzes 10 questions were omitted from draft pre-test thus leaving it with 20 questions. Finalized pre-test had .65 KR-20 reliability value.

Post-test

A post-test was prepared whose questions were multiple choice type and were selected from elementary school text books and nationwide elementary school exams. 25 questions were chosen for the draft post-test and presented to specialist for the compliance with research purpose. Specialists were academics from two different universities who had publications on the concerned issue. After finalizing the draft post-test a pilot study was done with 28 students at 8th grade. After initial reliability analyzes 5 questions were omitted from draft post-test thus leaving it with 20 questions. Finalized post-test had .69 KR-20 reliability value.

Instructional method view form

A draft semi-structured interview form was prepared whose questions were presented to 10 elementary school students for a pilot study. Interview form was finalized with respect to coherence of readability and responses of the students. In order to get further insight related to study, likert type questions were added to form. After getting expert opinions from the scholars having publications on cooperative learning method interview form was concluded.

Study steps

In order to determine present level of academic achievement of the groups, a pre-test was applied to them. After that, curriculum requirements by the ministry of education was applied to all groups. For that reason, only difference between the groups was instructional methods. Jigsaw group studied with respect to subject jigsaw technique while control group studied with respect to curriculum implemented method. Study process of RWP was told in detail under respective topic

Study steps for RWP group

RWP is applied in three step. In first step students read about the topic. Students read their textbook or material provided by the teacher. Those materials are related about topics. After finishing the reading students pass to second step which is a group work.

In second step students write a report about the topic. However, this topic should be written in group. For that reason, students write a combined report as a group work. Each report was presented to teacher for evaluation. If the report had missing points then, report was send back to group to correct the problems. If report does not have any missing point then groups pass to next step which is third step of RWP.

In step three, groups present their report to the classroom. After that RWP method is finalized and students were given post-test.

FINDINGS

Analyzes of Achievement Test Results

Pretest results

Descriptive statistics of pre-test results are presented in Table 1.

Table 1. *Descriptive statistics of pre-test results*

Groups	N	X	SD
CG	27	46.11	15.338
JG	25	33.40	11.878
RWP	22	35.68	12.373

Data in Table 1 indicated that CG group mean was higher than both JG and RWP group mean. RWP group mean was higher than JG group. A one-way Anova test (Table 2) was applied to determine whether this difference was statistically significant.

Table 2. *One-way Anova pre-test result*

Groups	Sum of Squares	Df	Mean of Squares	F	P
Between groups	2385.601	2	1192.801	6.659	0.002
Within groups	12717.439	71	179.119		
Total	15103.041	73			

Since Anova result [$F(2.71)= 6.659$; $p< 0.05$] indicated there was a statistical significant difference then a LSD test was applied to find the source of difference and test result was presented in Table 3.

Table 3. *LSD test result of pre-test*

(I)Groups	(j) Groups	Mean Difference (I-J)	Standard Error	p
CG	JG	12.711*	3.175	0.001
	RWP	10.429*	3.844	0.008
JG	CG	-12.711*	3.715	0.001
	RWP	-2.282	3.912	0.562
RWP	CG	-10.429*	3.844	0.008
	JG	2.282	3.912	0.562

Data in Table 3 revealed that there was a statistical difference between RWP group and CG in favor of CG. Also test results indicated that there was a statistical difference between CG and JG group in favor CG.

Posttest results

Descriptive statistics of post-test results are presented in Table 4.

Table 4. *Descriptive statistics of post-test results*

Groups	N	X	SD
CG	27	44.81	14.175
JG	25	39.20	13.204
RWP	22	45.55	12.039

Data in Table 4 indicated that RWP group mean was higher than both CG and JG group mean. Same data indicated that CG group mean was higher than JG group mean. To determine if there was a statistical significant difference between the groups a one-way Anova test was applied. Result of one-way Anova test result presented in Table 5.

Table 5. *One-way Anova post-test result*

Groups	Sum of Squares	Df	Mean of Squares	F	P
Between groups	591.120	2	295.560	1.685	0.193
Within groups	12451.529	71	175.374		
Total	13042.649	73			

Data in Table 5 revealed that there wasn't a statistical significant difference between the groups [F(2.71)= 1.685; p> 0.05].

Analyzes of technique view form results

Likert type view form results

Table 6. *Students' views' on working in cooperative groups*

Views	JG	RWP
Fun	2.9	3.7
Informative	3.2	3.8
Helpful	3.3	3.7

*Scores are based on 5 point scale

Cut off value for negative ideas is below 2 for ratings out of 5 score based system. For that reason, it was observed that students none of the groups had negative views on the methods. Additionally, RWP group had higher score than JG.

Table 7. *Characteristics distinguished by the students*

Views	JG	RWP
I understand topic material very well	3.4	4.0
My self-confidence increased	3.8	4.1
My perspective enlarged	3.6	3.9
I achieved so many things on my own	3.9	3.8

*Scores are based on 5 point scale

Conventional cut off value for negative ideas is below 2 for ratings out of 5 score based system. For that reason, it was observed that Students reported positive self-developments due to methods. Understating topic material and increase in self-confidence was above positive value of 4 for RWP group.

Table 8. *Understanding their level on different areas*

Working area	JG	RWP
Problem solving	3.6	3.7
Preparing written documents	4.2	4.2
Making speeches	4.2	3.9
Working in group and with other groups	3.7	4.1
Organizing and planning	4.0	4.0
Efficiency on time management	4.0	4.3

*Scores are based on 5 point scale

Cut off value for negative ideas is below 2 for ratings out of 5 score based system. For that reason, it was observed that none of the groups had negative views on the methods. Students reported they acquired positive developments in the specific fields.

View form results

Table 9. *Students' views' on working with friends*

Views	JG	RWP
Very good	17.4	37.0
Good	34.8	33.4
Enough	0.0	3.7
Bad	34.8	18.5
Very bad	13.0	7.5

*Scores are based on percentile

% 52.2 of JG and % 74.1 of RWP students think that working in cooperative groups was good. However. 47.8 % of JG and 26 % of RWP students think the opposite.

Table 10. *Students' views on their work effort in cooperative groups*

Views	JG	RWP
Very good	47.8	42.9
Good	26.1	25
Enough	13.0	25
Bad	8.7	3.6
Very bad	4.4	3.5

*Scores are based on percentile

Most of the students had positive ideas about their work effort. On the other hand, %13.1 of JG group and % 7.1 of RWP group had negative views on their work effort.

Table 11. *Will of becoming group leader*

Views	JG	RWP
Yes	39.1	42.9
No	60.9	57.1

*Scores are based on percentile

Will of becoming group leader in cooperative groups are below %50 for both groups.

Table 12. *Students' views on learning by themselves without help of teacher*

Views	JG	RWP
A lot	39.1	28.6
Some	34.8	60.7
Very few	21.7	7.1
Not at all	4.4	3.6

*Scores are based on percentile

More than %50 of students stated that they still need help from teacher. %60,9 of JG and 71,4 of RWP group indicated they still needed teacher's help in learning.

Table 13. *Students' preference on next cooperative group work*

Views	JG	RWP
Studying other courses	65.2	42.9
Using time efficiently	60.9	46.4
Making better job-share with group mates	56.5	53.6
Making research from more sources	60.9	67.9

*Scores are based on percentile

Less than %50 of RWP group wanted to study other lessons with RW method. On the other hand, more than %50 percent of JG group wanted to study other lessons with same method and want to use time more efficiently. More than %60 percent of the students from both groups wanted to make research from more resources in the next cooperative session.

DISCUSSION AND CONCLUSION

Pre-test analyzes revealed that CG group mean was higher 12.71 point than JG and 10.43 point higher than RWP. Statistical analyzes revealed that these difference were significant and in favor of CG group. Thus, it might be said that students in CG group were academically more successful than both JG and RWP group students. There might be several reasons for the academic knowledge level difference of the students. Students' previous teachers, schools might have provided better educational opportunities for CG. Another reason might be stated that parents of the students in CG had better economic conditions thus, providing their children learning materials. Another reason might be stated as parents' education level since families with higher educational degrees tend to interest in their children's achievement and provide better conditions for studying. Literature indicate there are some studies indicating similar points which might affect students' academic achievement positively and increase their motivation towards learning (Jezierski & Wall, 2019; Lv, Lv, Yan & Luo, 2019; Grace & Gerdes, 2019; Lara & Saracostti, 2019; Chun & Devall, 2019). Be that as it may, Post-test analyzes revealed that RWP had increased the mean point difference up to .74 point with CG. On the other hand, JG group mean was lower than CG mean by 5.61 point (Table 4). Considering the post-test results it might be said that RWP had better effect on students' academic achievement than Subject Jigsaw technique. Although there wasn't statistical significance in favor of study groups in this research, it is noteworthy that both CLM methods, RWP and JG groups cleared the statistical difference with CG. In that sense, it might be said both RWP and JG are successful instructional methods to increase the students' academic achievement. Similarly, literature indicates various studies noting the success of CLM on students' academic achievement in different time spans (Law, 2008; Gök & Sılay, 2009; Doğan, Uygur, Doymuş & Karaçöp, 2010; Sancı & Kılıç, 2011; Tarhan & Sesen, 2012; Çakır, Ballıel & Sarıkaya, 2013; Mehta & Kulshrestha, 2014; Gull & Shehzad, 2015; Tombak & Altun, 2016; Chan & Idris, 2017; Kövecses-Gősi, 2018; Juita & Widiyarto, 2019; Shawver, 2020).

Reasons why CLM methods put out better scores might be understood through students' ideas. Students' ideas about implemented methods were mostly positive. For example, students indicated that working in cooperative groups was fun, informative and helpful. On the other hand, it is noteworthy that JG students' score indication on fun part wasn't so high. Yet, students in both groups expressed that they comprehended topic materials better, enlarged their perspectives when encountered with different ideas, had the pleasure of achievement and felt the increase in their self-confidence. Moreover, students indicated that they took self-responsibility, worked in harmony with group mates, and developed better cognitive and affective skills. Positive comments provided by students who worked with CLM were also revealed by some studies (Maden, 2011; Güvenç, 2011; Zhang, 2018; Pawattana, Prasarnpanich & Attanawong, 2014; Hardaningtiastuti, Soegito & Murwatiningsih, 2018; Casey & Fernandez-Rio, 2019). Be that as it may, it is clear that students in cooperative groups still needed teacher's help in learning and the will of becoming group leader is relatively low. Thus, it may be said that cooperative groups didn't work well as expected since, in a successful CLM, students tend to take responsibility and help each other. Success of CLM lies within the famous "Unus pro omnibus, omnes pro uno" quote. So, it might be said that students needed

more time to get used to method. Similarly, Pinheiro & Simoes (2012) indicated that students get used to methods and comprehend what is expected from them after some time. Additionally, it might be argued that teacher couldn't reached all the groups and group members accordingly and hence could not orchestrated the group works. Hence, there was a lack in methods' work process. This idea is also supported by Martlew, Ellis, Stephen & Ellis (2010) pointing out similar notes. Additionally, Könings, Brand-Gruwel & van Merrienboer (2011) state that transition to adolescence period may create low motivation which leads to low academic achievement. Few researches supporting the arguments are also discussed in some papers (Casey & Goodyear, 2015; Slavin, 2014; Van Ryzin, Roseth & Biglan, 2020).

Another reason might be stated for why academic achievement didn't occur for the CLM methods is the timing of research which was also stated by the teachers who implemented methods in the classroom. In Turkey, 8th grade students needed to take exam to attend respectful high schools. Thus, for a student to attend a respectable high school s/he needs to take good score on the high school entrance exam whose importance also stressed by families. In return, high school entrance exam might have created stress for the students. Research was carried out in a time where exam date was close thus; due to dramatic increase in stress students in study groups mightn't show enough interest to the cooperative works hence damaging the CLM progress. High school entrance exam scores are also prestige source of elementary schools. Thus, principals create stress on teachers too. Having both stressed teachers and students might have created tension among the students and for the teacher. Stressed caused problems by the high school entrance exam for teachers and students were discussed in some papers (Argon & Soysal, 2012; Gündoğdu, Kızıltaş & Çimen, 2010; Şahin, Baş, Sucuoğlu & Fırat, 2012; Başol & Zabun, 2014; Erzen & Odacı, 2014; Kesici & Aşılıoğlu, 2015; Delioğlu, 2017; Demir & Gençdoğan, 2017). Supporting the claim, same research design with same CLM methods including JG and RWP were implemented for 6th and 7th grades (Akkuş & Doymuş, 2022a; 2022b). Both studies revealed that both RWP and JG were successful instructional methods. Thus, it is believed that perceived stress by the students also affected the results of this study. Still, for this study, it is noteworthy that RWP method increased mean point more than JG group did. In that case, it is also possible to claim RWP method helped students understand reading material context better. However, there are few studies comparing JG and RWP did not conclude any statistical difference between them in terms of academic achievement (Akdağ & Şimşek, 2019; Gürbüz, Şimşek & Berber, 2015; Koç et. al., 2016).

Recommendation and Limitation

This study was only carried out on one curriculum unit with a relatively small sample. This study is limited with sample specific 8th grade elementary school students.

Another limitation of the study is timing. It is believed early implementation of the RWP might provide a statistical difference proving RWP is a successful instructional method.

Final limitation of the study is that comprehension level of students in regarding the reading was not assessed during the study. Vocabulary and concept comprehension assessments would provide more data on RWP. Thus, a longitudinal study could be carried out with.

Acknowledgements

This study is supported by TÜBITAK (The Scientific and Technological Research Council of Turkey) with Project number 110K252. Authors of this report especially thank to TÜBİTAK for its support for the study.

Conflict of Interest

The authors of this study declare no conflict of interest

REFERENCES

Abdullah, S. & Shariff, A., (2008). The effects of inquiry-based computer simulation with cooperative learning on scientific thinking and conceptual understanding of gas laws. *Eurasia Journal of Mathematics, Science & Technology Education, 4* (4), 387-398.

Acat, M.B., Anılan, H. & Anagun, S.S. (2010). The problems encountered in designing constructivist learning environments in science education and practical suggestions. *TOJET: The Turkish Online Journal of Educational Technology, 9 (*2), 212-220.

Akdağ, S. & Şimşek, U. (2019). An investigation of the effects of jigsaw and reading-writing implementation methods (OYU) on student's academic achievement in social studies course. *Turkish Studies – Educational Sciences, 14* (3), 165-188. https://doi.org/10.29228/TurkishStudies.22743

Akkus, A., & Doymus, K. (2022a). Effect of Subject Jigsaw and Reading Writing Presentation Techniques on Academic Achievement of 6th Grade. *Journal of Turkish Science Education, 19* (2), 496-510.

Akkus, A., & Doymus, K. (2022b). Effect of Subject Jigsaw and Reading Writing Presentation Techniques on Academic Achievement of 7th Grade Science Students' Academic Success in Structure and Properties of Matter. *Acta Didactica Napocensia, 15* (1), 92-104.

Argon, T. & Soysal, A. (2012). Teacher and student views regarding the placement test. *International Journal of Human Sciences, 9* (2), 446-474.

Aksoy, G. (2011). *Effects of reading-writing-application and learning together methods on students' understanding of laboratory experiments in science and technology course*. [Unpublished Doctorate Thesis]. Atatürk University, Erzurum, Turkey.

Azmin, N. H. (2016). Effect of the jigsaw-based cooperative learning method on student performance in the general certificate of education advanced-level psychology: An exploratory Brunei case study. *International Education Studies, 9* (1), 91-106.

Bandiera, M. & Bruno, C. (2006). Active/Cooperative learning in schools. *Journal of Biological Education, 40* (3), 130-134.

Başol, G. & Zabun, E. (2014). The predictors of success in Turkish high school placement exams: Exam prep courses, perfectionism, parental attitudes and test anxiety. *Educational Sciences: Theory & Practice, 14* (1), 63-87.

Bourgonjon, J., Valcke, M., Soetaert, R. & Schellens, T., (2010). Students' perceptions about the use of video gamesin the classroom. *Computers & Education, 54* (4), 1145-1156.

Bursal, M. (2010). Turkish preservice elementary teachers' self-efficacy beliefs regarding mathematics and science teaching. *International Journal of Science and Mathematics Education, 8,* 649-666.

Byrd, D. (2012). Social studies education as a moral activity: Teaching towards a just society. *Educational Philosophy and Theory, 44* (10), 1073-1079.

Cabus, S.J. & De Witte, K. (2011). Does school time matter? –On the impact of compulsory education age on school dropout. *Economics of Education Review, 30,* 1384-1398.

Casey, A. & Fernandez-Rio, J. (2019). Cooperative learning and the affective domain. *Journal of Physical Education, Recreation & Dance, 90* (3), 12-17.

Casey, A. & Goodyear, V. A. (2015). Can cooperative learning achieve the four learning outcomes of physical education? A review of literature. *Quest, 67* (1), 56-72.

Chan, L. L. & Idris, N. (2017). Cooperative learning in mathematics education. *International Journal of Academic Research in Business and Social Sciences, 7* (3), 539-553.

Chun, H. & Devall, E. (2019). A parental involvement and academic socialization model: A cultural approach. *School Psychology, 34* (5), 555–565.

Çakır, N.K., Ballıel, B. & Sarıkaya, M. (2013). An investigation of the effect of cooperative learning on students achievement, retention and attitudes to science. *Mehmet Akif Ersoy University Journal of The Institute of Educational Sciences, 2* (2), 1-15.

Delioğlu, H. N. (2017). *8th grade students of success of mathematics and test and mathematics anxiety, mathematics self efficacy of investigation* [Unpublished Master Thesis]. Adnan Menderes University, Aydın, Turkey.

Demir, M. & Gençdoğan, B. (2017). The effect of test anxiety and academic success in predicting school burnout. *Gümüshane University Electronic Journal of the Institute of Social Science, 8* (20), 97-110.

Doğan, A., Uygur, E., Doymuş, K. & Karaçöp, A. (2010). The use of jigsaw technique in 7th grade primary science and technology course and students' views on this technique. *Erzincan University Journal of Education Faculty (EUJEF), 12* (1), 75- 90.

Doymuş, K., Şimşek, Ü. & Şimşek, U. (2005). A review on cooperative learning method: I. cooperative learning method and studies related with this method, *Erzincan University Journal of Education Faculty (EUJEF), 7* (1), 59-83.

Erzen, E. & Odacı, H. (2014). Who *feels more test anxiety? A research based on personal, academic and family variables. Journal of Human Sciences, 11* (2), 401-419.

Fountas, I.C. & Pinnell, G.S. (2012). Guided reading: The romance and the reality. *The Reading Teacher, 66* (4), 268-284.

Garderen, D.V., Hanuscin, D. & Lee, E. (2012). Quest: A collaborative professional development model to meet the needs of diverse learners in K-5 science. *Psychology in the Schools, 49* (5), 429-443.

Genç, M. (2016). An evaluation of the cooperative learning process by sixth-grade students. *Research in Education, 95* (1), 19-32.

Göçer, A. (2010). A comparative research on the effectivity of cooperative learning model and jigsaw technique on teaching literary genres. *Educational Research and Reviews, 5* (8), 439-445.

Gök, T. & Sılay, İ. (2009). The effects of the cooperative learning method on the learning of the problem-solving strategies. *Mersin University Journal of The Faculty of Education, 5* (1), 58-76.

Grace, M. & Gerdes, A. C. (2019). Parent-teacher relationships and parental involvement in education in Latino families. *Contemporary School Psychology, 23* (4), 444-454.

Gull, F. & Shehzad, S. (2015). Effects of cooperative learning on students' academic achievement. *Journal of Education and Learning, 9* (3), 246-255.

Gündoğdu, K., Kızıltaş, E. & Çimen, N. (2010). Seviye belirleme sınavına (SBS) ilişkin öğrenci ve öğretmen görüşleri (Erzurum il örneği) [Students' and teachers' view on level determination exam (SBS)]. *Elementary Education Online (EEO), 9* (1), 316-330.

Gürbüz, N., Şimşek, U. & Berber, K. (2015). Effect of cooperative learning model on the academic succes of students at 6th grade social sciences lesson. *e-Kafkas Journal of Educational Research, 2* (1), 19-27.

Güvenç, H. (2011). The effects of cooperative learning supported with reflective materials on Turkish teacher candidates self-regulation. *Education and Science, 36* (159), 3-13.

Hardaningtiastuti, H. W., Soegito, A. T. & Murwatiningsih, M. (2018). The development of social attitudes through cooperative learning methods in social studies education subjects in public junior high school 1 Batang. *Journal of Educational Social Studies, 7* (2), 217-223.

Hebert, H., Gillespie, A. & Graham, S. (2013). Comparing effects of different writing activities on reading comprehension: A meta-analysis. *Reading and Writing, 26* (1), 111-138.

Jezierski, S. & Wall, G. (2019). Changing understandings and expectations of parental involvement in education. *Gender and Education, 31* (7), 811-826.

Juita, H. R. & Widiyarto, S. (2019). *The effectiveness of cooperative learning methods: a case study of writing learning at junior high school.* In Second Conference on Language, Literature, Education, and Culture (ICOLLITE 2018) (pp. 266-268). Atlantis Press.

Karasar, N. (2005). *Bilimsel Araştırma Yöntemleri [Scientific Research Methods (*15th edition). Ankara: Nobel Yayın Dağıtım

Kesici, A. & Aşılıoğlu, B. (2015). The effect of secondary students' affective features towards mathematics and the stress they experience before the TEOG exam (the exam for accessing to various types of high schools) on their mathematical success. *Ahi Evran University Journal of Kırşehir Education Faculty, 18* (3), 394-414.

Kılıç, D. (2008). The effect of the jigsaw technique on learning the concepts of the principles and methods of teaching. *World Applied Sciences Journal, 1,* 109-114.

Koc, Y., Yildiz, E., Caliklar, S. & Simsek, U. (2016). Effect of jigsaw II, reading-writing-presentation and computer animations on the teaching of ,light unit. *Educational Research and Reviews, 11*(20), 1906-1917. https://doi.org/10.5897/ERR2016.2861

Könings, K.D., Brand-Gruwel, S. & van Merrienboer, J.J.G. (2011). The fit between students' lesson perceptions and desires: Relations with student characteristics and the importance of motivation. *Educational Research, 53*, 439- 457.

Köseoğlu, P. (2010). The influence of jigsaw technique-based teaching on academic achievement, self-efficacy and attitudes in biology education. *Hacettepe University Journal of Education, 39*, 244-254.

Kövecses-Gősi, V. (2018). Cooperative learning in VR environment. *Acta Polytechnica Hungarica, 15* (3), 205-224.

Laguador, J. M. (2014). Cooperative learning approach in an outcomes-based environment. *International Journal of Social Sciences, Arts and Humanities, 2* (2), 46-55.

Lara, L. & Saracostti, M. (2019). Effect of parental involvement on children's academic achievement in Chile. *Frontiers in Psychology, 10*, 1464.

Law, Y-K. (2008). Effects of cooperative learning on second graders' learning from text. *Educational Psychology, 28* (5), 567-582.

Lv, B., Lv, L., Yan, Z. & Luo, L. (2019). The relationship between parental involvement in education and children's academic/emotion profiles: A person-centered approach. *Children and Youth Services Review, 100*, 175-182.

Maden, S. (2011). Effect of Jigsaw I technique on achievement in written expression skill. *Educational Sciences: Theory and Practice, 11* (2), 901-917.

Martlew, J., Ellis, S., Stephen, C. & Ellis, J. (2010). Teacher and child talk in active learning and whole-class contexts: some implications for children from economically less advantaged home backgrounds. *Literacy, 44* (1), 12-19.

Mehta, S. & Kulshrestha, A. K. (2014). Implementation of cooperative learning in science: A Developmental-cum-experimental study. *Education Research International, 2014*, 431542.

Moges, B. (2019). Practices and challenges of cooperative learning in selected college of Arsi university: As a motivational factor on enhancing students' learning. *Universal Journal of Psychology, 7* (1), 1-17.

Okumus, S. (2020). The Effect of Cooperative Reading-Writing-Application Method on Environmental Science Learning and Writing Skills Development. *International Journal of Progressive Education, 16* (1), 168-191.

Oullette, G. & Beers, A. (2010). A not-so-simple view of reading: How oral vocabulary and visual-word recognition complicate the story. *Reading & Writing, 23*, 189-208.

Pawattana, A., Prasarnpanich, S. & Attanawong, R. (2014). Enhancing primary school students' social skills using cooperative learning in mathematics. *Procedia-Social and Behavioral Sciences, 112*, 656-661.

Pinheiro, M.M. & Simoes, D. (2012). Constructing knowledge: An experience of active and collaborative learning in ICT classrooms. *Procedia-Social and Behavioral Sciences, 64*, 392-401.

Saiegh-Haddad, E. & Geva, E. (2010). Acquiring reading in two languages: an introduction to the special issue. *Reading and Writing, 23*, 263-267.

Sancı, M. & Kılıç, D. (2011). Effect of jigsaw and group study on students' academic achievemnt in elementary school 4th grade science and technology course. *Journal of Educational and Instructional Studies in the World, 1* (1), 2146-7463.

Shawver, T. J. (2020). An experimental study of cooperative learning in advanced financial accounting courses. *Accounting Education, 29* (3), 247-262.

Shih, J-L., Shih, B-J., Shih, C-C., Su, H-Y. & Chuang, C-W. (2010). The influence of collaboration styles to children's cognitive performance in digital problem-solving game "William Adventure": A comparative case study. *Computers & Education, 55*, 982-993.

Slavin, R. E. (2014). Cooperative learning and academic achievement: Why does groupwork work?. *Annals of Psychology, 30* (3), 785-791.

Swaray, R. (2012). An evaluation of a group project designed to reduce free-riding and promote active learning. *Assessment & Evaluation in Higher Education, 37* (3), 285-292.

Şahin, S., Baş, A.U., Sucuoğlu, H. & Fırat, N.Ş. (2012). İlköğretim okulu öğrencileri ile öğretmenlerinin ortaöğretime geçiş sistemine ilişkin görüşleri [The opinions of the primary school and its teachers on transition to secondary education]. *International Journal of Human Sciences, 9* (2), 847-878.

Tan, E., & Calabrase Barton, A. (2010). Transforming science learning and student participation in sixth grade science: A case study of a low-income, urban, racial minority classroom. *Equity & Excellence in Education, 43* (1), 3-55.

Tanel, Z. & Erol, M. (2008). Effects of cooperative learning on instructing magnetism: analysis of an experimental teaching sequence. *Latin-American Journal of Physics Education, 2* (2), 124-136.

Tarhan, L. & Sesen, B.A. (2012). Jigsaw cooperative learning: acid-base theories. *Chemistry Education Research and Practice, 13*, 307-313.

Tombak, B. & Altun, S. (2016). The effect of cooperative learning: University example. *Eurasian Journal of Educational Research, 64*, 173-196.

Tran, V. D. (2014). The effects of cooperative learning on the academic achievement and knowledge retention. *International Journal of Higher Education, 3* (2), 131-140.

Troia, G.A., Harbaugh, A.G., Shankland, R.K., Wolbers, K.A. & Lawrence, A.M. (2013). Relationships between writing motivation, writing activity, and writing performance: effects of grade, sex, and ability. *Reading and Writing, 26* (1), 17 -44.

Van Ryzin, M. J., Roseth, C. J. & Biglan, A. (2020). Mediators of effects of cooperative learning on prosocial behavior in middle school. *International Journal of Applied Positive Psychology, 5*, 37-52.

Wang, C-H., Ke, Y-T., Wu, J-T. & Hsu, W-H. (2012). Collaborative action research on technology integration for science learning. *Journal of Science Education and Technology, 21* (1), 125-132.

Wolff, U. (2010). Subgrouping of readers based on performance measures: a latent profile analysis. *Reading and Writing, 23*, 209-238.

Yıldız, E. (2019). *Determination the effects of educational game, reading-writing-game and reading-writing-application methods in the elimination of the learning problems in 5th, 6th and 7th grades science course* [Unpublished Doctorate Thesis]. Atatürk University, Erzurum, Turkey.

Yi, Z. & Luxi, Z. (2012). Implementing a cooperative learning model in universities. *Educational Studies, 38* (2), 165-173.

Yulianto, D., Yufiarti, Y. & Akbar, M. R. (2019). A Study of Cooperative Learning and Independence: Impact on Children's Prosocial Behavior. *International Journal of Education, 12* (1), 49-55.

Zhan, Z., Xu, F. & Ye, H. (2011). Effects of an online learning community on active and reflective learners' learning performance and attitudes in a face-to face undergraduate course, *Computers & Education, 56*, 961-968.

Zhang, L. (2018). English flipped classroom teaching model based on cooperative learning. *Educational Sciences: Theory & Practice, 18* (6), 3652-3661.

APPENDİX

Cooperative Learning Student Review Form

Q1. Working in cooperative groups.....

5	**4**	**3**	**2**	**1**
Very fun ()	Fun ()	Somewhat fun ()	Less fun ()	Not fun ()
Very informative ()	Informative ()	Somewhat informative ()	Less informative ()	Not informative ()
Very Helpful ()	Helpful ()	Somewhat Helpful ()	Less Helpful ()	Not Helpful ()

Q2. Working in cooperative groups with peers is.....

5	4	3	2	1
Very good ()	Good ()	Enough ()	Bad ()	Very bad ()

Q3. Please explain the reason for your answer to Q2

……
……

Q4. After working in cooperative groups I .....

5	**4**	**3**	**2**	**1**
I understand topic material very well ()	I understand the topic material well ()	I understand the topic material somewhat well ()	I didn't understand the topic material ()	I didn't understand the topic material at all ()
My self confidence highly increased ()	My self confidence increased ()	My self confidence somewhat increased ()	I dont have much self confidence in my self ()	I dont have self confidence in my sel ()
My perspective level increased very much ()	My perspective level increased ()	My perspective level somewhat increased ()	My perspective level didn't increased much ()	My perspective level didn't increased ()
I can achieve much more things on my own ()	I can achieve more things on my own ()	I can somewhat achieve things on my own ()	I can barely achieve things on my own ()	I can't achieve things on own ()

Q5. How would you rate your work effort compared teammates?

5	4	3	2	1
Very good ()	Good ()	Enough ()	Bad ()	Very bad ()

Q6. Please explain the reason for your answer to Q5?

……
……

Q7. Would you want to be group leader in group works?

Yes ()	No ()

Q8. How much did you learn by yourself without teacher's help?

4	3	2	1
A lot ()	Some ()	Very few ()	Not at all ()

Q9. (Please put X mark on appropriate box)

Level of my ..... was	5	4	3	2	1
	Very good	Good	Enough	Bad	Very bad
Problem solving	()	()	()	()	()
Preparing written documents	()	()	()	()	()
Making speeches	()	()	()	()	()
Working in group and with other groups	()	()	()	()	()
Organizing and planning	()	()	()	()	()
Efficiency on time management	()	()	()	()	()

Q10. If you be in group work again which choice would suit you better?

1 Working on courses other than science and technology ()

2 Using time efficiently ()

3 Making better work-share with group mates ()

4 Making research from more sources ()

If you have any other thoughts, please write them here.