Research Article

Journal of Innovative Research in Teacher Education, *4*(3), 410-426,
ISSN: 2757-6116
http://www.jirte.org
DOI: 10.29329/jirte.2023.616.4
Received: 30/09/2023
Revised: 05/12/2023
Accepted: 24/12/2023

The effect of using games on students' cooperative learning skills in social studies course*[1]

İmen Akbulut [2], and Önder Eryılmaz [3]

Abstract

The main purpose of this research is to investigate the effect of using games on students' cooperative learning skills in social studies courses. The quasi-experimental research which is one of the quantitative research methods was adopted in the research. The research was carried out during the 5th grade People, Places and Environment learning theme. The sample of the research consists of 60 secondary school students. "The Cooperative Learning Skill Scale" was used as a data collection tool. T-test for independent samples and covariance analysis was employed to analyze data. As a result of the research, it was found that there was a statistically significant difference between the post-test scores of the groups in favour of the experimental group. In other words, it was concluded that the games implemented in the social studies course had a statistically positive and significant effect on the students' cooperative learning skills. In addition, it was resulted that no statistically positive and significant effect was found on the students' positive interdependence and collaboration skill levels while a positive and significant effect was found on the group cohesion levels of students. Based on the results, it could be suggested that social studies teachers who want to improve their students' cooperative learning skills can benefit from games in their lessons.

Keywords: Social studies, Game, Cooperative learning skill.

Cite: Akbulut, İ., & Eryılmaz, Ö. (2023). The effect of using games on students' cooperative learning skills in social studies course. *Journal of Innovative Research in Teacher Education, 4*(3), 410-426. https://doi.org/10.29329/jirte.2023.616.4

* Ethics approval (E-30640013-108.01-84219) was obtained from the Social Sciences Publication and Ethics Committee of Amasya university and research permission (E-47613789-44-58071291) was obtained from the Provincial Directorate of National Education.

[1] This research was funded in scope of the Research Project Support Programme for Undergraduate Students by The Scientific and Technological Research Council of Türkiye (TUBİTAK).

[2]Amasya University, Faculty of Education, Social Studies Education Department, Türkiye, akbulutimen@gmail.com

[3]Corresponding author, Amasya University, Faculty of Education, Social Studies Education Department, Türkiye, onder.eryilmaz@amasya.edu.tr

INTRODUCTION

There have been significant developments in learning in the last few centuries. Numerous scholars developed different theories on learning and addressed the concept of learning differently, particularly in the twentieth century. However, the social constructivist approach to learning has grown prominent in the twenty-first century, as educational environments are re-questioned and methods of obtaining information transform because of innovations in information and communication technologies. According to this theory, cooperative learning is one of the most fundamental components that boosts effective and permanent learning (Corte, 2010). Therefore, it is highly recommended that schools should provide opportunities for collaborative learning for students (Slavin, 2010).

Panitz (1999) defined cooperative learning as "a philosophy of interaction and personal lifestyle in which individuals are responsible for their actions, including learning and respecting the abilities and contributions of their peers." Cooperative learning was also defined by Roschelle and Teasley (1995) and they explained it as "the mutual participation of participants in a coordinated effort to solve the problem together" by focusing on learning processes. Students form their groups and manage the group process in cooperative learning. Furthermore, they collaborate in flexibly structured small groups (Davidson, 2021).

Cooperative learning is a process that allows individuals with different characteristics to learn by working together in groups to achieve a common goal and support each other (Yıldız, 1999). Individuals strive to be successful not only for themselves but also for their group members during this process. Because the group's success depends on all members' comprehension of the pertinent information and concepts presented (Marr, 1997). Cooperative learning enhances not only students' cognitive development but also their affective development during this process since group members will interact effectively with one another to achieve success (Gilles, 2014; Healy, Doran & McCutcheon, 2018; Hennebry and Fordyce, 2018; Slavin, 1990). Many studies have revealed that cooperative learning has a positive effect on individuals' social and academic development. For instance, Johnson et al. (1981) examined 122 studies on cooperative learning and concluded that cooperative learning is more effective in academic success and productivity than teaching based on interpersonal competition and individual studies. Johnson et al. (1981) reviewed 122 cooperative learning studies and concluded that cooperative learning is more effective on academic success and productivity than interpersonal competition-based learning and independent study. Similarly, Kyndt et al. (2012) evaluated 65 results of experimental studies in the meta-analysis study and it was revealed that cooperative learning was effective on students' academic success and attitude towards courses.

Cooperative learning skills are being taught to students within the scope of many courses, as a natural reflection of the importance it provides in today's world with the benefits it provides to the cognitive and affective development of individuals. The social studies course is one of these courses that cooperative learning skills are trying to be gotten by students. When considering the advantages of cooperative learning and the objectives of the social studies course, it seems that they overlap. Because it is unreasonable to expect pupils to become active citizens solely by listening to their instructor (Slavin, 1992). Thus, students are encouraged to cooperate through developing their interpersonal interactions and sense of responsibility through the social studies course (Sözer, 1992). Collaboration skills are one of the fundamental skills that are highlighted in the Social Studies Curriculum. In addition, the curriculum includes values such as solidarity, respect, love, responsibility, and helpfulness that they can get through cooperative learning (Ministry of National Education [MoNE], 2023).

It is expected that social studies teachers implement learner-centred activities in the teaching-learning process to develop students' skills outlined in the curriculum. It might be proposed that games are one of the instruments that social studies teachers may utilize to enhance their students' cooperative learning

skills. Above all, games are one of the most effective tools that make educational environments fun (Kayan & Aydın, 2023). At the same tine, games contribute to children's various development including social development. Children learn how to share, be a leader, respect, understand and protect their rights and freedoms by playing games. At the same time, they learn how to cooperate, solve some problems together with their playmates, make some decisions together, and learn how to act and think together within a group. (Bekmezci & Özkan, 2015). Therefore, children learn numerous new facts or concepts while playing games, and their cooperative learning skills increase as well. Parten also emphasized cooperative play in his theory about phases of play. According to the last stage which is called cooperative play in Parthen's theory, children get in touch and communicate with others and they need to cooperate for the quality of the game by doing so. They have common goals and can only reach them by cooperating. To achieve this goal, they share roles and play together (Nalbant, 2020). Based on this information, it can be stated that using games in social studies classes improves students' cooperative learning skills. Accordingly, Uygun, Akkeyik and Öztürk (2018) reported that educational games motivated learners to cooperate in social studies lessons in their study. Çelik (2020) also revealed that many traditional children's games are appropriate for developing cooperation skills that is stated in the social studies curriculum.

In the literature review, it was concluded that using games in social studies course affects the academic success of students (Ak & Oruç, 2022; Akkuş & Aslan, 2013; Altınbulak, Emir & Avcı, 2006; Cura et al., 2022, Çağır & Oruç, 2020; Edeş, 2019; Obro, 2023; Pehlivan & Demirel, 2022; Syawaluddin, Rachman & Khaerunnisa, 2020; Torun & Duran, 2014; Wang, 2010), their attitudes towards social studies course (Ak & Oruç, 2022; Çağır & Oruç, 2020), their attitudes towards children's rights (Torun & Duran, 2014) and critical thinking skills (Cicchino, 2015). However, only a limited amount of research has been conducted to investigate the effect of using games in social studies lessons on students' cooperative learning skills (Öztürk & Korkmaz, 2020). Considering the present situation of the literature and theoretical information, it is thought that it is important to conduct an experimental study to determine the effect of using games in the social studies course on students' cooperative learning skills. Therefore, the main purpose of this study is to investigate the effect of using games in social studies courses on secondary school students' cooperative learning skills. The following research questions were intended to be answered by the purpose of the research:

- Does using games have a significant effect on secondary school students' cooperative learning skill levels in social studies course?
- Does using games have a significant effect on secondary school students' positive interdependence levels in social studies course?
- Does using games have a significant effect on secondary school students' collaboration skill levels in social studies course?
- Does using games have a significant effect on secondary school students' group cohesion levels in social studies course?

METHOD

Research Design

The quasi-experimental design with pre-test, and post-test control group, which is one of the quantitative research methods, was adopted in the study to address the research question. Quasi-experimental designs are a type of experimental design that is carried out by group matching groups when random assignment cannot be made (Creswell & Creswell, 2018). Since the research was conducted in a state secondary school affiliated with the Ministry of Education and no adjustments could be made in the planning of each lesson in all classes, particularly for this research, a quasi-experimental design with a pre-test, and post-test control group was adopted.

Participants

The sample of research consists of secondary school students studying in two separate 5th-grade classes, which are designated as the experimental and control groups of a state middle school. The convenience sampling approach was utilized to determine the research sample. In this regard, a secondary school with at least two fifth-grade classes in the centre of the province where the research was conducted was decided. Then, the principals and social studies teachers of the selected schools were interviewed. The school where the social studies teacher was responsible for more than two 5th-grade classrooms and voluntarily agreed to engage in the research was identified as the site of the experimental research based on the interviews. The "Cooperative Learning Skill Scale" developed by Burak (2020) was applied to determine the experimental and control groups in the research site. One of the two classes with the closest overall scores on the "Cooperative Learning Skills Scale" was identified as the control group, while the other was identified as the experimental group. The control group consisted of 14 male and 16 female students, while the experimental group consisted of 12 male and 18 female students. The recommendations of the social studies teacher were taken into consideration when designating the experimental group.

Procedure

Before starting the experiment, lesson plans for the games, which are the independent variables of the research, were prepared for the outcomes in the "People, Places and Environment" learning theme. Since the affective outcomes are much more than in other learning themes, it was preferred to carry out the experimental procedure in this learning theme. Two expert opinions were consulted while preparing lesson plans. Experts have experience in conducting experimental research and they have studies about social studies education. On the other hand, before proceeding to the experimental process, a pilot study was carried out on the use of the games. The pilot study was conducted in the fifth grade at a different school that was socioeconomically like the school where the experiment was conducted. In the scope of the pilot study, three activities were carried out for the last two outcomes of the 5th Grade "Culture and Heritage" learning theme. The lesson plans planned to be used for the experimental process were reviewed at the end of the pilot study, and the needed arrangements were made in light of the social studies teacher's thoughts regarding activities and the researchers' experiences.

The experiment was carried out in the first semester of the 2022-2023 academic year in the 5th grade "People, Places, and Environments" learning theme. The procedure was planned in consultation with researchers, school administration, and the class teacher. The curriculum and the annual plans of the teachers were also considered. During the experimental procedure games, which were implemented in the experimental group, while activities that were already planned in the annual plan previously prepared by the social studies teacher were carried out in the control group. In the experiment group, several games were implemented such as bingo, boom, word search, puzzle, Chinese whispers, taboo game and shufflecup. Each game had different rules and procedures.

In the bingo game, the class is divided into 3 groups. The teacher determines a related term with the outcome of the lesson. Every 30 seconds, the teacher begins to write simply a clue of the term. Students attempt to find the phrase. When a student correctly guesses the term, he or she shouts "Bingo!" If a student correctly answers the question, his or her group receives ten points. If a student uses the incorrect term, his or her group receives a -10 point.

In the boom game, the class is divided into 6 groups and each group has 5 members. After that, one member from each group sits at separate tables. Small papers which should be prepared by the teacher are given every each of table. 5 different terms related to the outcome of the lesson are written in small papers. 5 different papers separate each of the players. Players start to take and give one paper from one player to another who sits side-by-side. Players try to collect the same term. When one player collects 5 same terms, put his/her hand in the middle of the table. The others try to put their hands after

him/her. The winner gets 100 points for his/her team and the others get 90, 80, 70 and 60 points respectively.

In the word search game, the class divides into 2 groups and students line up in a row in their groups. The teacher put small papers, in which the correct answers to questions are written, in front of the line. The teacher asks the question to two students who stand in the first place of the line. Students try to find the correct answer. When the one who finds the correct answer first, his/her group gets 10 points. The team with the most correct answers wins at the end of the game.

In the Chinese whispers game, the class is divided into 3 groups. The group members stand side by side in front of the blackboard. The teacher demonstrates a phrase related to the lesson outcome to the student who is standing at the beginning of the line. One by one, students try to whisper the term to another member. The student at the back of the queue says the whispered term. The group receives 10 points if the kid says the correct term.

In another game known as the taboo game, the teacher divides the class into three groups. The teacher delivers cards containing words that the players must guess from their fellow players. Each card also includes a list of "taboo" phrases that the player is not permitted to use in their description. Groups compete to predict the phrase in 60 seconds. If the teammates correctly guess the word, the team earns a point. If a student says a forbidden term, the other groups score a point. After each turn, the game is passed to the next team, either clockwise or counterclockwise. The game continues until all of the cards have been used or a time restriction has been reached. At the end of the game, the group with the most points wins.

In the shufflecup game, the class is divided into 2 groups and each group forms a line. The teacher places a table in the centre of the groups. The teacher selects one student from each group. Students must follow the instructions given to them, such as head, shoulder, knee, and foot. Students touch their knees when the teacher says knee. After a set period, the teacher poses a question, and the students attempt to answer it. The student who says the correct answer first receives 10 points for his or her group.

The social studies course has 3 lesson hours in total 2 and 1 separate lesson hour in a week, 2 different games were played per one outcome of the People, Places and Environments learning theme. Some games were played more than once during the experiment. The experimental procedure lasted 5 weeks and included 15 lesson hours.

Data Collection Tool

The "Cooperative Learning Skill Scale" developed by Burak (2020) was used as a data collection tool in the research. The scale has 18 items and 3 factors: Collaboration Skills, Group Cohesion and Positive Interdependence. The scale was developed as a 4-point Likert type. The scale includes the options "Never", "Sometimes", "Usually" and "Always" for each item. The Cronbach's Alpha internal consistency coefficients of the Collaboration Skills, Group Cohesion, and Positive Interdependence subscales and the overall scale were calculated as .83, .64, .61, and .87 respectively.

Data Collection and Analysis

Before and after the experimental procedure, the "Cooperative Learning Skill Scale" was presented to students in the experimental and control groups to obtain their pre and post-test scores. The obtained data was analyzed via the JAMOVI software. The t-test for independent samples was used to analyze the pre-test scores of the experimental and control groups. An analysis of covariance (ANCOVA) was performed between the experimental and control groups' post-test scores to evaluate the effect of using games on students' cooperative learning skills, collaboration skills, and group cohesion levels. Büyüköztürk (2023) stated that in experimental designs with pre-test and post-test control groups, ANCOVA is the most convenient analysis that effectively explains the experimental effect. Because

ANCOVA reduces error variances. Thus, it increases statistical power and great precision in the estimation of group effects (Kaselman et al., 1998). The groups' pre-test scores were set as a covariate variable in the ANCOVA. Since the assumptions of the parametric test were not met, the Mann-Whitney U Test was performed for the post-test scores of both groups to evaluate the effect of using games on students' positive interdependence levels.

Ethical Considerations

First, ethics approval (E-30640013-108.01-84219) was obtained from the Social Sciences Publication and Ethics Committee of a state university and research permission (E-47613789-44-58071291) was obtained from the Provincial Directorate of National Education. Furthermore, written permission was obtained from teachers and students who agreed to participate in the research via a voluntary participation form, as well as from students' parents via a parental consent form. School administration where the experimental procedure was carried out, was informed about all progress regarding the research, and all procedures were carried out with the information of the school administration.

FINDINGS

Before the experiment, pre-test scores from experimental and control groups were obtained through the "Cooperative Learning Skill Scale.". Table 1 shows descriptive statistics of the experimental and control groups' pretest scores.

Table 1. Descriptive Statistics of the Experimental and Control Groups' Pretest and Posttest Scores.

Measurements	Groups	N	X̄	se	Sd	Skewness	Kurtosis
Pretest	**Experiment**	30	58,2	1,30	7,12	-0,976	1,200
	Control	30	58,5	1,04	5,72	-0,326	-0,873
Posttest	**Experiment**	30	60,6	1,30	7,16	1,27	0,892
	Control	30	60,4	0,89	4,90	-0,467	-0,655

As shown in Table 1, the study's sample consists of 60 5th-grade students 30 in the experimental group and 30 in the control group. The experimental group's average pretest score was 58,2; while the control group's score was 58,5. Besides, according to the skewness and kurtosis values, it was observed that data was normally distributed with values ranging between ±1,5 (Tabachnick & Fidel, 2013). Based on this information, the t-test for independent samples was performed to analyze the relation between the experimental and control groups' pre-test scores. Table 2 shows the results of the t-test for independent samples performed between the experimental and control groups' pre-test scores.

Table 2. Results of the T-Test for Pre-Test Scores of the Experimental and Control Groups

Statistic	df	*p*	X̄ difference	se difference	%95 Confidence Interval	
					Lower	Upper
-0,180	58,0	0,858	-0,300	1,67	-3,64	3,04

According to the t-test results, there was no statistically significant difference between the two groups as shown in Table 2 ($p>.05$). This demonstrates that the two groups are appropriate for the experiment. In order to determine the effect of using games on students' cooperative learning skills, the "Cooperative Learning Skill Scale" was given to the experimental and control groups again at the end of the experimental procedure, and the post-test scores of the groups were obtained.

As shown in Table 1, the average posttest score of the experimental group was calculated as 60,6; while the control group's average posttest score was 60,4. Furthermore, according to the skewness and kurtosis values, it was observed that data was normally distributed with values ranging between ±1,5. This shows that parametric tests can be performed to analyze the data. In light of the descriptive statistics

of the data, ANCOVA, the most convenient analysis that can be used in quasi-experimental designs with a pre-test and post-test control group, was decided to be performed. To perform ANCOVA, some assumptions need to be met. Firstly, variances need to be equal. The Levene Homogeny Test was employed to evaluate the homogeneity of variances and the result was found to be not significant (p>.05). This result points out that the equality of variances assumption is met. Second, the regression curves need to be equal. To evaluate the equality of regression curves, the interaction between the group variable and pretest scores which is the covariate variable of the study was examined. The results of the pretest scores of the experimental and control groups and group variable interaction are shown in Table 3.

Table 3. The Interaction between the Covariate and the Group Variable Results

	Sum of Squares	Df	Mean Squares	F	*p*
Overall Model	815,587	3	271,862	12,2920	<.001
Pre-test	814,393	1	814,393	34,680	<,001
Group	0,485	1	0,485	0,020	0,886
Group x Pre-test	0,710	1	0,710	0,030	0,863
Residuals	1315,034	56	23,483		

As presented in Table 3, it was concluded that the interaction between the pretest scores determined as the covariate and the group variable was not significant. Accordingly, it was concluded that the assumption of equality of regression curves was met. Lastly, the linearity of the relation between the covariate variable and the dependent variable was examined for the assumptions of ANCOVA. For this purpose, the scatterplot graph was examined, and it was observed that there was a linear relation between the groups' pre-test scores and post-test scores. As a result, the data that was collected proved to be appropriate for covariance analysis. Finally, ANCOVA was performed between the experimental and control groups' post-test scores to determine the effect of using games in the social studies course on students' cooperative learning skills. The results of ANCOVA are presented in Table 4.

Table 4. ANCOVA Results

	Sum of Squares	df	Mean Squares	F	*p*	η^2p
Overall Model	866,62	2	433,31	18,7418	<.001	
Group	1,79	1	1,79	0,077	0,781	0,001
Pre-test	864,82	1	864,82	37,465	<.001	0,397
Residuals	1315,74	57	23,08			

As demonstrated in Table 4, it was found that there was a statistically significant difference between the post-test scores of the groups in favor of the experimental group (p<.05). In other words, it was concluded that the games implemented in the social studies course had a statistically positive and significant effect on the students' cooperative learning skills. In addition, the effect size of the experimental procedure was also calculated in the study. The partial η^2 value was evaluated for this purpose and it was calculated to be .397. In other words, when pre-test scores were adjusted, the independent variable explained approximately 40% of the variance in its effect on the dependent variable. This result indicates that the study has a large effect size.

The effect of using games on secondary school students' positive interdependence levels in social studies course

The positive interdependence, which is one of the sub-dimensions of "the Cooperative Learning Skill Scale", pretest scores of the experiment and control groups were examined at the beginning of the experiment. Descriptive statistics about the pretest and posttest scores of both groups are shown in Table 5.

Table 5. Descriptive Statistics of the Experimental and Control Groups' Pretest Scores for Positive Interdependence.

Measurements	Groups	N	X̄	se	sd	Skewness	Kurtosis
Pretest	**Experiment**	30	14,4	,334	7,12	-1,457	1,005
	Control	30	14,0	,388	5,72	-0,739	-0,574
Posttest	**Experiment**	30	15,0	0,334	1,83	-1,938	2,745
	Control	30	14,2	0,363	1,99	-0,915	-0,142

As shown in Table 5, the study's sample consists of 60 5th-grade students 30 in the experimental group and 30 in the control group. The experimental group's average pretest score was calculated as 14,4; while the control group's score was calculated as 14,0. Besides, according to the skewness and kurtosis values, it was observed that data was normally distributed with values ranging between ±1,5. Based on this information, the t-test for independent samples was performed to analyze the relation between the experimental and control groups' pre-test scores. Table 6 shows the results of the t-test for independent samples performed between the experimental and control groups' pre-test scores.

Table 6. Results of the T-Test for Pre-Test Scores of the Experimental and Control Groups for Positive Interdependence

Statistic	df	*p*	X̄ difference	se difference	%95 Confidence Interval	
					Lower	Upper
0,781	58,0	0,438	0,400	0,512	-0,628	1,41

According to the t-test results, there was no statistically significant difference between both groups as shown in Table 6 ($p>.05$). This result indicates that two groups are appropriate for the experiment. To determine the effect of using games on students' positive independence levels, the "Cooperative Learning Skill Scale" was given to the experimental and control groups again at the end of the experimental procedure, and the post-test scores of the groups were obtained.

As shown in Table 5, the average posttest score of the experimental group was calculated as 15,0; while the control group's average posttest score was 14,2. When skewness and kurtosis values were examined, it was observed that data was not normally distributed. This shows that parametric tests can not be performed to analyze the data. Thus, The Mann-Whitney U, a non-parametric test, was utilized to analyze the data only for the post-test scores of both groups. The results of the Mann-Whitney U Test are shown in Table 7.

Table 7. Results of Mann-Whitney U Test for Positive Interdependence

	Statistic	df	p
Student's t	0,105	58,0	0,917
Mann-Whitney U	396		0,428

Table 7 demonstrates that it was found that there was not a statistically significant difference between the post-test scores of the groups ($p<.05$). In other words, it was concluded that the games implemented in the social studies course has not a statistically significant effect on the students' positive interdependence levels.

The effect of using games on secondary school students' collaboration skill levels in social studies course

The collaboration skill, which is one of the sub-dimension of "the Cooperative Learning Skill Scale", pre-test scores of the experiment and control groups were examined at the beginning of the experiment. Descriptive statistics about pretest and posttest scores of experiment and control groups are demonstrated in Table 8.

Table 8. Descriptive Statistics of the Experimental and Control Groups' Pretest Scores for Collaboration Skill.

Measurements	Groups	N	X̄	se	sd	Skewness	Kurtosis
Pretest	**Experiment**	30	31,6	,691	3,78	-1,042	1,110
	Control	30	31,9	,600	3,29	-0,940	0,558
Posttest	**Experiment**	30	32,2	0,72	3,95	-1,432	1,39
	Control	30	33,1	0,44	2,43	-0,622	-1,14

As shown in Table 8, the sample consists of 30 5th-grade students in the experimental group and 30 5th-grade students in the control group. The experimental group's average pretest score was calculated as 31,6; while the control group's score was calculated as 31,9. Besides, when skewness and kurtosis values were examined, it was observed that data was normally distributed with values ranging between ±1,5. Accordingly, the t-test for independent samples was performed to analyze of the experimental and control groups' pre-test scores. Table 9 shows the t-test results for independent samples performed between the experimental and control groups' pre-test scores.

Table 9. Results of the T-Test for Pre-Test Scores of the Experimental and Control Groups for Collaboration Skill

Statistic	df	*p*	X̄ difference	se difference	%95 Confidence Interval	
					Lower	Upper
-0,328	58,0	0,744	-0,300	0,915	-2,13	1,53

According to the t-test results, there was no statistically significant difference between the two groups as shown in Table 9 ($p>.05$). As a result, it was revealed that the two groups are appropriate for the experiment. In order to determine the effect of using games on students' collaboration skills, the data collection tool was given to the experiment and control groups once again at the end of the experimental procedure, and the post-test scores of the groups were obtained.

As shown in Table 8, the average posttest score of the experimental group was calculated as 32,2; while the control group's average posttest score was 33,1. Furthermore, when skewness and kurtosis values were examined, it was observed that data was normally distributed with values ranging between ±1,5. This shows that parametric tests can be performed to analyze the data. In light of the descriptive statistics of the data, ANCOVA, the most convenient analysis that can be used in quasi-experimental designs with a pre-test and post-test control group, was decided to be performed. To perform ANCOVA, some assumptions need to be met. Firstly, variances need to be equal. The Levene Homogeny Test was employed to evaluate the homogeneity of variances and the result was found to be not significant ($p>.05$). This result indicates that the equality of variances assumption is met. Second, the regression curves need to be equal to perform ANCOVA. To evaluate the equality of regression curves, the interaction between the group variable and pretest scores which is the covariate variable of the study was examined. The results of the pretest scores of the experimental and control groups and group variable interaction are shown in Table 10.

Table 10. The Interaction between the Covariate and the Group Variable Results for Collaboration Skill

	Sum of Squares	Df	Mean Squares	F	*p*
Overall Model	138,38	3	46,13	5,897	,001
Pre-test	123,06	1	123,06	14,319	<,001
Group	8,47	1	8,47	0,986	0,325
Group x Pre-test	6,85	1	6,85	0,797	0,376
Residuals	481,29	56	8,59		

As shown in Table 10, it was revealed that the interaction between the covariate variable and the group variable was not significant. Thus, it can be said that the assumption of equality of regression curves was met. Lastly, the linearity of the relation between the covariate variable and the dependent variable was examined for the assumptions of ANCOVA. The scatterplot graph was examined to evaluate the linearity

and it was observed that there was a linear relation between the groups' pre-test scores and post-test scores. As a result, the data that was obtained proved to be appropriate for ANCOVA Finally, ANCOVA was performed between the post-test scores of the experimental and control groups to determine the effect of using games in the social studies course on students' collaboration skills. The results of ANCOVA are presented in Table 11.

Table 11. ANCOVA Results for Collaboration Skill

	Sum of Squares	df	Mean Squares	F	*p*
Overall Model	142,09	2	71,04	8,478	<.001
Group	8,16	1	8,16	0,952	0,333
Pre-test	133,93	1	133,93	15,639	<.001
Residuals	488,13	57	8,56		

Surprisingly, it was concluded that there was a statistically significant difference between the post-test scores of the groups in favour of the control group (p<.05). In other words, it was concluded that the games implemented in the social studies course had not a statistically positive and significant effect on the students' collaboration skill levels.

The effect of using games on secondary school students' group cohesion levels in social studies course

Pre-test scores of the group cohesion, which is one of the sub-dimensions of "the Cooperative Learning Skill Scale", for experiment and control groups were examined at the beginning of the experiment. Descriptive statistics about pre-test scores of both groups are shown in Table 12.

Table 12. Descriptive Statistics of the Experimental and Control Groups' Pretest Scores for Group Cohesion.

Measurements	Groups	N	X̄	se	sd	Skewness	Kurtosis
Pretest	**Experiment**	30	12,2	,488	2,67	-0,639	-0,455
	Control	30	12,6	,403	2,20	-0,284	-0,914
Posttest	**Experiment**	30	13,3	0,470	2,58	-0,811	-0,350
	Control	30	13,1	0,301	1,65	-0,319	-0,263

As shown in Table 12, the experiment group consists of 30 and the control group consists of 30 5th-grade students. The experimental group's average pretest score was calculated as 12,2; while the control group's score was calculated as 12,6. In addition, when skewness and kurtosis values were examined, it was observed that data was normally distributed with values ranging between ±1,5. Considering these results, the t-test for independent samples was performed to analyze the experimental and control groups' pre-test scores. Table 13 shows the t-test results for independent samples performed between the experimental and control groups' pre-test scores.

Table 13. Results of the T-Test for Pre-Test Scores of the Experimental and Control Groups for Group Cohesion

Statistic	df	*p*	X̄ difference	se difference	%95 Confidence Interval	
					Lower	Upper
-0,180	58,0	0,858	-0,300	1,67	-3,64	3,04

As a result of the t-test, no statistically significant difference was found between the two groups as shown in Table 13 (p>.05). Thus, it was revealed that the two groups are appropriate for the experiment. To determine the effect of using games on students' group cohesion levels, the data collection tool was given to the experiment and control groups once again at the end of the experimental procedure, and the post-test scores of the groups were obtained.

As demonstrated in Table 12, the average posttest score of the experimental group was calculated as 13,3; while the control group's average posttest score was 13,1. Furthermore, when skewness and kurtosis values were examined, it was observed that data was normally distributed with values ranging between ±1,5. This shows that parametric tests could be performed to analyze the data. Based on these results the descriptive data of pre-tests and pos-tests, ANCOVA which is the most convenient analysis that can be used in quasi-experimental designs with a pre-test and post-test control group, was decided to be performed. However, ANCOVA requires some assumptions that need to be met. Firstly, variances need to be equal. The Levene Homogeny Test was employed to evaluate the homogeneity of variances and the result was found to be not significant (p>.05). This result indicates that the equality of variances assumption is met. Second, the regression curves need to be equal to perform ANCOVA. In order to evaluate the equality of regression curves, the interaction between the group variable and pretest scores which is the covariate variable of the study was examined. The results of the pretest scores of the experimental and control groups and group variable interaction are shown in Table 14.

Table 14. The Interaction between the Covariate and the Group Variable Results for Group Cohesion

	Sum of Squares	Df	Mean Squares	F	*p*
Overall Model	89,21	3	29,74	10,01	<,001
Pre-test	68,94	1	68,94	21,83	<,001
Group	9,04	1	9,04	21,83	0,096
Group x Pre-test	11,23	1	11,23	3,56	0,065
Residuals	176,80	56	3,16		

As shown in Table 14, no significant difference was found in the interaction between the covariate variable and the group variable. This result shows that the assumption of equality of regression curves was met. Lastly, the linearity of the relation between the covariate variable and the dependent variable was examined for the assumptions of ANCOVA. The scatterplot graph was examined to evaluate the linearity and it was observed that there was a linear relation between the groups' pre-test scores and post-test scores. As a result, the data that was obtained proved to be appropriate for ANCOVA Finally, ANCOVA was performed between the post-test scores of the experimental and control groups to determine the effect of using games in the social studies course on students' collaboration skills. The results of ANCOVA are presented in Table 15.

Table 15. ANCOVA Results for Group Cohesion

	Sum of Squares	df	Mean Squares	F	*p*	η^2p
Overall Model	85,29	2	42,65	12,666	<.001	
Group	2,33	1	2,33	0,705	0,404	0,012
Pre-test	82,97	1	82,97	25,150	<.001	0,306
Residuals	188,03	57	3,30			

As a result of ANCOVA, it was found that there was a statistically significant difference between the post-test scores of the groups in favor of the experimental group (p<.05). In other words, it was concluded that the games implemented in the social studies course had a statistically positive and significant effect on the students' group cohesion levels. In addition, the effect size of the experimental procedure was also calculated in the study. The partial η^2 value was evaluated for this purpose and it was calculated to be .306. In other words, when pre-test scores were adjusted, the independent variable explained nearly 30% of the variance in its effect on the dependent variable. Based on this result, it could be said that the study has a large effect size.

DISCUSSION AND CONCLUSION

As a result of the research, it was revealed that using games in the social studies course had a significant effect on the development of students' cooperative learning skills. Similarly, Öztürk and Korkmaz (2020) concluded in their research that gamified teaching in the social studies course had a significant effect

on students' collaborative learning skills. In the research conducted by Bayram and Çalışkan (2019), it was revealed that using games in the teaching-learning process has positive contributions to students. Raphael, Bachen and Hernandez-Ramos (2012) also found a significant effect of games on students' cooperative learning skills. Zumbach, Rammerstorfer and Deibl (2020) also found a significant and positive effect of games on students' meta-cognitive levels. According to the results of these studies, using games has a great potential to enhance students' cooperation and cooperative learning skills not only in social studies classes but also in other courses.

It was also found that using games in the social studies course has no statistically significant effect on the students' positive interdependence levels. Lafont, Proeres and Vallet (2007) also found no effect of games on interpersonal relations in their experimental study. On the other hand, some studies assert that games can develop students' interdependence. For instance, Baydar (2021) found in his study that the team-games-tournament method fosters learners' positive interdependence. Gündüz, Aktepe, Uzunoğlu and Gündüz also stated that games enhance students' positive interdependence. However, there is no obvious explanation in the literature for this circumstance, it could be said that further research needs to be conducted.

It was revealed that using games in the social studies course did not have a statistically significant effect on the students' collaboration skill levels. However, most studies indicate the positive effects of games on collaboration. For instance, Boyle et al. (2016) point out that games can effectively promote collaborative interactions. Fan (2000) also found that there was considerable development in cooperation in a short period in the education provided by using games for children between the ages of 6 and 12. Morschheuser et al. (2017) also stated that cooperative games help students learn collaboratively more than individual games. Hartati et al. (2018) and Istirahayu (2020) also concluded in their research that traditional games contribute to students' cooperation skills. In the research conducted by Nurkhasyanah and Suyadi (2020), it was revealed that educational games made of cardboard had a positive effect on students' cooperation skills. When compared to the findings of relevant studies in the literature, this research outcome may have generated a dilemma. The result of the study might be caused by the procedure of games. However, this situation still shows that it needs to be investigated whether employing games in social studies courses has an effective impact on students' collaborative skills.

Lastly, it was revealed that using games in the social studies course has a statistically significant effect on the students' group cohesion levels. This study's findings are consistent with the findings of numerous other studies in the literature. Uz Bilgin and Gül (2020) found in their experimental study that the gamified group outperformed the traditional group in terms of group cohesion scores. Similarly, Garaigordobil, Berrueco and Celume (2022) revealed that playing games has positive effects on students' numerous characteristics such as group cohesion. Zaug et al. (2020) also concluded in their study that games foster students' group cohesion. When the findings of this study are compared to the findings of other relevant studies in the literature, it is possible to conclude that using games in social studies lessons strengthens students' group cohesion.

Games can be considered to provide learners with an exceptional learning experience, resulting in a great tool for teaching social information. The procedure not only enhances student connection but also helps students develop social skills. Games make educational activities more fascinating while boosting student motivation. As a result, games could help teachers make social studies more effective by allowing students to communicate with one another.

It might be beneficial to consider the research limitations while evaluating the results. First of all, the research is limited to the data obtained from 5th-grade secondary school students through the "Cooperative Learning Skills Scale". Another limitation is that the research was only conducted in the "People, Places, and Environments" learning theme.

Based on the results of the present study, it can be suggested that social studies teachers who want to improve their students' cooperative learning skills can benefit from games in their lessons. Besides, research could be designed about what kind of games in social studies lessons could improve students' cooperative learning skills more. In addition, the effects of using games in social studies lessons on different dependent variables can be investigated. Moreover, research can be designed about the effect of various independent variables on students' collaborative learning skills in social studies lessons.

Statement of Researchers

Researchers' contribution rate statement: All authors equally contribute to research.
Conflict statement: The corresponding author declares that she has no conflict of interest.
Support and thanks: This research was funded in the scope of the Research Project Support Programme for Undergraduate Students by The Scientific and Technological Research Council of Türkiye (TUBITAK).

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Author Biographies

İmen Akbulut, is a pre-service social studies teacher who studies at the Social Studies Education Undergraduate Program at Amasya University. She conducted a research project as a coordinator which was funded by The Scientific and Technological Research Council of Türkiye (TUBİTAK) which is most well-known scientific research centre in Türkiye. She is interested in teaching social studies education. She intends to pursue a career in social studies education.

Önder Eryılmaz is an associate professor in the field of Social Studies Education. He works at the Department of Social Studies Education at the Faculty of Education, Amasya University, Türkiye. He carried out studies on a variety of subjects, including teaching methods, service learning, social problems, social responsibility, prosociality, active citizenship, and global climate change in social studies education. Furthermore, he carried out many projects that were funded by well-recognized scientific institutions as a coordinator, supervisor, and researcher in Türkiye.