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Abstract

The aim of the study was to test the effect of using the flipped learning model in social studies course on students' academic achievement and higher-order thinking skills, and to determine student views on this model. Explanatory sequential design, one of the mixed research methods, was used in the research. The study group of the research consisted of 30 students studying at the 7th grade in two secondary schools affiliated to the Ministry of National Education in the Bor District of Niğde Province in Turkey. As a result of the research, it was concluded that the academic achievement and higher-order thinking skill total scores of the students in the experimental group, in which the social studies course was conducted with the flipped learning model, were statistically significant and at a higher level compared to the students in the control group. The analysis of the data obtained from the semi-structured interviews also revealed the students learned the subjects better with this model and had positive thoughts about the model in the social studies course conducted with the flipped learning model.

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Research Article

The Effect of the Use of the Flipped Learning Model in the Social Studies Course on the Students' Academic Success and Higher-Order Thinking Skills *

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Abstract

The aim of the study was to test the effect of using the flipped learning model in social studies course on students' academic achievement and higher-order thinking skills, and to determine student views on this model. Explanatory sequential design, one of the mixed research methods, was used in the research. The study group of the research consisted of 30 students studying at the 7th grade in two secondary schools affiliated to the Ministry of National Education in the Bor District of Niğde Province in Turkey. As a result of the research, it was concluded that the academic achievement and higher-order thinking skill total scores of the students in the experimental group, in which the social studies course was conducted with the flipped learning model, were statistically significant and at a higher level compared to the students in the control group. The analysis of the data obtained from the semi-structured interviews also revealed the students learned the subjects better with this model and had positive thoughts about the model in the social studies course conducted with the flipped learning model.

Keywords: Social studies, flipped learning, academic achievement, higher-order thinking, skill

1. INTRODUCTION

Today, digital technologies have become an indispensable part of teaching-learning processes and are considered to be a necessity rather than a matter choice. They are used both to prepare learners for the information society and to provide learning environments suitable for today's conditions of the generation whose learning preferences have changed. The point that draws attention at this point is that student-centered learning approaches based on digital technologies are becoming more and more usable in the education process day by day. Especially in recent years, the state of technology has been effective in the emergence of new teaching approaches and models such as "Flipped Learning" (Geçer, 2013; Gençer, 2015; Umar & Ko, 2022). As for what Flipped Learning literally means, the words "Flip" and "Learning" refer to 'Inverted' and 'learning' respectively (Cambridge Dictionary, 2021). Flipped learning is expressed as a teaching model in which direct instruction takes place outside the classroom mostly through videos, and then, discussion activities based on peer teaching and collaboration are carried out under the in-class guidance of the teacher (Francl, 2014). The main purpose of this learning model is to realize meaningful learning. Because the environments where in-class and out-of-class activities are conducted are swapped in the flipped learning model; the course content is given prior to the course while homework and other activities are carried out in the classroom (Arslanhan, Bakırcı & Altunova, 2022).

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In the related literature, flipped learning is claimed to have many advantages. It is stated that this learning model will contribute to students' repeating the lessons they missed by individualizing their learning outside the classroom, learning at their own pace, conducting their own learning processes, improving their attitudes towards the lesson in a positive way (Iyitoğlu, 2018) and increasing their academic success (Bergmann & Sams, 2012). In addition, with the educational videos watched in the home environment and the collaborative practices made in the classroom about these videos, this teaching model provides the opportunity for students to communicate with both their teachers and their peers (Baytiyeh & Naja, 2017). One of the biggest advantages of flipped learning is that it contributes to the development of various skills, including higher-order thinking skills, by enabling students to reinforce their learning (Chen, Hwang, & Chang, 2019; Lo, Cheung, Chan & Chau, 2021; Yiğitoğlu & Erişen, 2020). Another remarkable point in the flipped learning model is that students are active in the learning-teaching process. Because the problem-solving activities that the students have done enable them to take an active role in the classroom. This role that students take in the process will help them come to the classroom ready, understand how to access and share information, and include their higher-order thinking skills into the learning process (Bergmann & Sams, 2012).

The rapidly developing science and technology has also been influential in the emergence of educational approaches that focus on higher-order thinking skills and include mental skills in the field of education. Because modern education approaches put the student at the center of all educational activities and aim to develop their language and mental skills at a high level (Güneş, 2012). For this reason, practices for the development of thinking skills in schools also gain importance (Kurnaz-Adıbatmaz & Kutlu, 2020). Great importance should be given to higher-order thinking and deep learning skills while designing education systems so that individuals who can meet the needs of the modern age can be raised (Kutlu, Doğan & Karakaya, 2010; Senemoğlu, 2011). In fact, developing students' higher-order thinking skills, including problem solving and critical thinking, has been recognized as a very important educational goal in the 21st century (Lin, Hwang, Chang & Hsu, 2021).

One of the courses that aim to provide students with higher-order thinking skills in the education process is “Social Studies”. Social Studies Course has a separate and important role in the process of making students gain higher-order thinking skills in the education-teaching process. Because it tries to structure the students in harmony with the various life skills and citizenship competencies that the individuals will need in order to adapt to the society, they live in. In this sense, students' use of higher-order mental skills such as research, reflective thinking, problem solving, critical thinking and decision-making in the learning process plays an important role in reaching the determined goals of Social Studies Course.

1.1. Literature Review

1.1.1. Flipped Learning Model

The flipped learning model, which is a sub-branch of blended learning in which technological tools are used, is regarded as one of the new generation teaching models (Toytok & Ramazanoğlu, 2021). This learning model emerged in the United States when chemistry teachers named Jonathan Bergmann and Aoran Sams noticed that students from rural areas were behind in the subjects as they could not come to the classes due to various reasons. Flipped learning is a learning model in which students listen to the lesson at home through videos and do activities related to the subject at school. This model, which includes the use of all kinds of internet technology so that the teacher can spend more time interacting and communicating with the students instead of teaching the subject in the classroom, is generally based on the principle of watching the videos created by the

teacher outside of class hours. In the simplest terms, classroom work is done at home through the videos created by the teacher while homework is done in the classroom (Ahmed, 2016).

The flipped learning model provides students with multimedia-supported materials online outside of school and enables students' cognitive skills to develop through problem-solving activities in the classroom. The model aims that students come to the lesson ready and spend more time for active learning activities in the classroom. Stating that a flipped classroom is active and student-centered and includes the course content, Herreid and Schiller (2013) claim that this type of education enables students to learn by associating the course content with the real world. Flipped learning, which has emerged as an innovation in the education process in recent years, is used both to increase the motivation of students and to help them gain technological skills (Jamaludin & Osman, 2014). In the flipped learning model, the videos prepared by the teacher beforehand can be watched, rewinded or forwarded and repeated by the students whenever they want. Social interaction environment can be created by doing cooperative learning activities in the classroom. Teamwork among students can make it easier for them to help each other and acquire different skills (O'Flaherty & Phillips, 2015). One-on-one, small group or large group activities conducted through this model enable learners to better understand the subject (Eryilmaz & Çiğdemoğlu; 2018; Gülbahar, Kalelioğlu & Afacan-Adanır, 2020: 64) and help students' motivation, creativity and course success increase (Al-Zahrani, 2015). This model increases the interaction between students and teachers, allows students to prepare as much as necessary at the appropriate place and time, supports collaborative work, and enables students to move from passive listening to active learning by ensuring their participation in the lesson.

1.1.2. High Level Thinking Skill

Thinking is one of the important skills that provides the linguistic, mental and social development of individuals and directs their learning and future. It can also be defined as the process of collecting data about a subject or event, evaluating the data obtained, and making a judgment as a result (Perkins & Ritchhart, 2004: 352). The difference of this definition from other definitions is that it expresses not ordinary thinking but higher-order thinking. Because higher-order thinking includes different processes from the processes in low-level thinking. The main difference between high-order thinking and lower-order thinking skills is that high-order thinking is the use of knowledge, skills and experiences from past experiences through deduction, induction and analogy in the case of insufficient information when solving a problem or reasoning. For example, problem-solving by a student through memorizing any question formula shows low-level thinking while making relationships and predictions using the information given can be expressed as higher-order thinking (Kurnaz-Adıbatmaz & Kutlu, 2020).

Bloom's taxonomy, which is widely known by educators and researchers, is used to measure higher-order thinking skills. Generally, the last three levels of Bloom's taxonomy (analysis, synthesis, and evaluation) are accepted as higher-order thinking skills (Anderson, Krathwohl, Airasian, Cruikshank, Mayer, Pintrich, Raths & Wittrock, 2001). It is necessary to understand Bloom's reconstructed taxonomy of cognitive domains to better understand higher-order thinking skills. Bloom's updated taxonomy is a special classification approach in which categories are ordered in one dimension. The updated taxonomy consists of six steps: remembering, understanding, applying, analyzing, evaluating and creating (Kurnaz-Adıbatmaz & Kutlu, 2020). Accordingly, application, analysis and evaluation are accepted as higher-order thinking skills while remembering information is an example of low-level cognitive pattern or thinking skills. As a matter of fact, application, analysis, and evaluation-oriented learning experiences all develop problem-solving, inferencing, estimation, generalization and creative thinking skills, which are considered higher-order thinking skills (Wilks, 1995). In Bloom's taxonomy, critical thinking success in the learning process occurs when students can perform at the levels of analysis, synthesis and evaluation (Munawaroh, Sudiyanto & Riyadi,

2018). Especially in the face of changes and advances in the digital age, individuals need to be successful in choosing the appropriate information, analyzing, synthesizing and transferring it to new experiences by catching the latest developments (Akpur, 2020).

1.1.3. Flipped Learning Model and Higher-Order Thinking Skills

It is becoming more and more important to use teaching approaches and models that can be useful in developing students' higher-order thinking skills in the education process. Flipped learning, which is regarded as one of such teaching models, creates a cooperative learning, peer teaching and project-based learning environment in order to develop higher-order cognitive skills for the relevant learning area. While applying the flipped learning model in order to develop higher level thinking, teachers should observe students, give feedback on their work, and be in constant interaction with them to avoid confusion in classroom discussion activities (Hamdan, McKnight, McKnight & Arfstrom, 2013). In the flipped learning model, students' activeness in the learning-teaching process ensures that they are also active in the problem-solving activities carried out in the classroom. In addition, it is thought that the learning process that students perform both in and out of the classroom, coming to the classroom ready, asking questions about the subject, actively participating in learning activities, taking responsibility for their own learning, and knowing how to access and share information will contribute to the development of higher-order skills of students (Bergmann & Sams, 2012). For this reason, it is necessary to develop high-level thinking in educational institutions, especially in the rich technology classroom environment, and to ensure that educators adopt appropriate approaches to facilitate students' thinking development (Sun, Xie & Lavonen, 2022). It is considered important for the effectiveness of the process that teachers, who are the guides of this process, use methods and techniques that will contribute to the development of students' higher-order thinking skills.

Flipped learning is believed to provide students with higher-order thinking skills at all educational levels, grades and school subjects (Chen et al., 2019). Flipped learning model aims to realize all cognitive steps in Bloom's teaching objectives classification taxonomy and to offer a learning-teaching environment suitable for this. It is stated that lecturing takes too much of teachers' time (Bond, 2020) and students do not need help in the understanding and remembering steps of Bloom's taxonomy which was rearranged by Anderson at al. (2001) in a classroom where traditional learning is applied. The upper steps, where students need the help of their teachers more, are tried to be gained through homework outside of the classroom (Hayırsever & Orhan, 2018). However, in the flipped learning model, which is the opposite of the traditional classroom, while the goals at the remembering and understanding level as the first steps of the taxonomy are tried to be gained through online applications outside the classroom, higher-order cognitive goals of the taxonomy such as application, analysis, evaluation and creation are achieved in the classroom (Yiğitoğlu & Erişen, 2008).

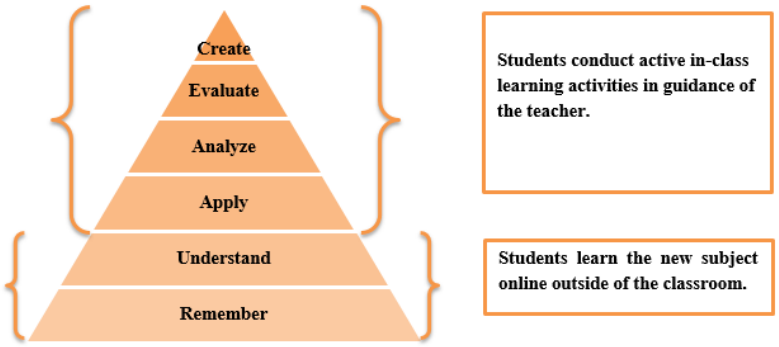

Figure 1. Revised Bloom's taxonomy pyramid (Yiğitoğlu & Erişen, 2020)

Reversing the teaching focus helps students develop lower-level thinking skills (i.e., remembering and understanding) outside of the classroom but higher-order thinking skills (i.e., analysing, evaluating and creating) in the classroom (Bergmann & Sams, 2012; Hayırsever & Orhan, 2018).

1.1.4. Higher-Level Thinking Skills in Social Studies Teaching

Higher-order thinking skills such as critical thinking, problem solving, creative thinking, reflective thinking, analytical thinking and scientific thinking have been included in instructional programs due to the greater emphasis put on higher-order thinking skills in the education and training process in the 21st century and they have improved accordingly (Shukla & Dungsungnoen, 2016). It also enabled the development of thinking skills (Yılmaz, Aşkar, Yıldız & Sönmez, 2021). Over time, higher-order thinking skills have become one of the essential subjects of the education process and developing these skills has become one of the main objectives of various teaching programs. One of the courses that aims to enable students to gain higher-order thinking skills in the education-teaching process is "Social Studies", which is created in the context of human life and its relationship with the environment. Especially the students who have not acquired higher-order thinking skills have a deficiency in verifying knowledge and making contextual analyzes of the subjects learned in the classroom in this course (Purnomo & Mulianingsih, 2021). It is essential to make students achieve higher-order thinking skills such as questioning, problem solving, and hypothesis development in social studies courses in accordance with the objectives of the curriculum and under the guidance of teachers so that this deficiency can be filled (Yusmanto, Soetjipto, & Djatmika, 2017). Because this course aims not only to transfer knowledge to the students, but also to make them achieve knowledge and scientific and systematic thinking skills while educating active citizens (Gelen, 2002). Considering that there is thinking in every step of education, it is thought that students may need higher-order thinking skills that they can acquire in social studies course throughout their lives. In addition to asking appropriate and effective questions, being active citizens who can make decisions is also directly related to their higher-order thinking skills. It can be suggested that the social studies curriculum prepared in this context aims to raise students as creative individuals who can think and ask questions freely in the education-teaching process, and who can question by thinking critically.

The purpose of this study is to examine whether the use of flipped learning model in social studies course has an effect on students' academic achievement and higher-order thinking skills. While it is stated that the flipped learning model is effective in developing students' higher-order thinking skills, no study that measures higher-order thinking skills based on questions based on Bloom's taxonomy has been found in the related literature. It is believed that this study will contribute to testing whether the use of flipped learning model in social studies course develops students' higher-order thinking skills. In this sense, answers were sought to the questions of whether the flipped learning

model in the 7th grade social studies course has an effect on the academic success of the students or on their higher-order thinking skills together with students' opinions.

2. METHOD

2.1. Research Design

This research, which examines the effects of the use of the flipped learning model in the social studies course on students' academic achievement, high-level thinking skills, and their views on the flipped learning model, was conducted with the mixed research method. Mixed research method is expressed as a research design in which data collection and data analysis are done by using the question types of both quantitative and qualitative approaches (Tashakkori & Teddie, 2003). In other words, it is defined as collecting and analyzing data using both qualitative and quantitative approaches in a single study and making inferences by integrating the findings (Tashakkori & Creswell, 2007). Creswell (2021) expressed the mixed research design as a research approach in which qualitative and quantitative data are collected, the two data sets are integrated, and then conclusions are drawn using the advantages of that integration to understand research problems. In this study, explanatory sequential design, one of the mixed research methods, was used. The explanatory sequential design is a research design that starts with the quantitative phase and uses the qualitative phase to explain the results of the quantitative phase (Creswell, 2021). In the explanatory sequential design, qualitative research is used to provide a deeper explanation of quantitative research results (Creswell & Plano Clark, 2020).

2.2. Participants

Simple random sampling was used in the quantitative part of the study. In this context, computer-assisted random selection technique, one of the simple random sampling methods, was used in the selection of the experimental and control groups. In this context, the study group of the research consisted of 30 students in total who study in the 7th grade in two separate state secondary schools affiliated to the Ministry of National Education in the Bor district of Niğde province in Turkey, and the group was divided into two groups as the experimental and control group both of which were comprised of 15 students. Criterion sampling, one of the purposive sampling methods, was used in the qualitative part of the research. Criterion sampling is defined as the preferred sampling in accordance with the criteria determined by the researcher (Yıldırım & Şimşek, 2021). As studying in the classroom in which the flipped learning model was applied was determined as the basic criterion in this research, 15 students who made up the experimental group formed the study group of the research in the qualitative part.

2.3. Instruments

Data collection tools used in this research are an academic achievement test prepared by the researcher for the "People, Places and Environments" learning field in the 7th grade social studies course, open-ended questions, a rubric for the evaluation of these questions and semi-structured interviews.

2.3.1. Academic Achievement Test

In line with the principles expressed in this research, an academic achievement test consisting of 50 multiple-choice questions about the "People, Places and Environments" learning field in the 7th grade social studies course was prepared and presented to expert opinion. Content validity was calculated using the Lawshe technique, in which CVR, NN and N refer to content validity rate,

number of experts who state that the item is necessary or the item measures the structure and the number of experts who gathered information about the substance respectively.

$$CVR = \frac{N_N}{\frac{N}{2}} - 1$$

According to this formula, the minimum value to be reached when the opinions of 20 experts are taken is calculated as 0.42 (Lawshe, 1975). The items below the calculated minimum value were removed from the data collection tool and a temporary form was created for the pilot study. In line with expert opinions, a multiple-choice test consisting of 40 items was applied to 160 students at the 8th for testing the validity and reliability of the academic achievement test to be used in the pilot study. The data collected through the pilot study were analyzed with TAP (Test Analysis Program), which also provides individual reports on total scores and item responses for test takers (Brooks & Johanson, 2003). The reliability, item difficulty and item discrimination levels of the data collection tools were examined using TAP. The reliability level of the tests was calculated with the KR21 value. It is considered appropriate to base the KR21 value for multiple-choice tests applied in the classroom environment and a coefficient value of over 0.70 obtained from KR21 is accepted as good in terms of reliability (Terzi, 2019). The item discrimination coefficient can vary between -1.00 and +1.00 (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz & Demirel, 2019). As a result of the statistical analysis in the study, it was determined that no item that was negative and under 0.20 in terms of item discrimination existed in the achievement test.

15 items were excluded so that the scale could be evaluated out of 100, a balanced distribution of the number of questions for each achievement could be ensured and participants at the 7th grade could answer the questions within one lesson period. After deleting the 15 items in the achievement test, the remaining items were analyzed again. The item discrimination value was calculated according to the item analysis based on the difference between the lower and upper 27% group averages (Büyüköztürk et al., 2019). It was seen that the academic achievement test is highly reliable with an average KR21 reliability value of 0.876. A coefficient value of over 0.70 obtained from KR21 is accepted as good in terms of reliability (Terzi, 2019). As the academic achievement test had an easy level of difficulty (0.60 - 0.79) with a difficulty index of 0.60, it was determined that the average discrimination index of the test was at a very good level (≥.40 very good) with a value of 0.61. The fact that the discriminative power of the test is very good can be interpreted as that it is successful in distinguishing between students who know and those who do not.

2.3.2. Open-Ended Questions and Rubrics Designed to Measure Higher Thinking Skills

Measuring and evaluating higher-order mental skills requires the use of certain measurement tools because classical measurement methods such as multiple choice, true false, matching, completion, short answer, etc. are insufficient to measure the high-level mental skills that are desired to be observed in students, which necessitates the use of open-ended items (Aslanoğlu, 2022). In this study, 15 open-ended questions prepared in accordance with the last three steps of the revised Bloom taxonomy (analysis, evaluation, creation) and a rubric to evaluate these questions were developed in order to measure the effect of the flipped learning model on students' higher-order thinking skills.

Open-ended questions were analyzed using the SPSS 21 package program. In this study, item discrimination and item difficulty indexes were examined to prove the reliability of the measurement tool. Item discrimination and item difficulty indexes are given in Table 1.

Table 1. Item discrimination index and item difficulty index of the open-ended questions

Question	n	Discrimination Index (dj)	Difficulty Index (pj)
Question 1	30	0.45	0.51
Question 2	30	0.74	0.48
Question 3	30	0.59	0.44
Question 4	30	0.69	0.34
Question 5	30	0.52	0.45
Question 6	30	0.39	0.38
Question 7	30	0.56	0.46
Question 8	30	0.77	0.5
Question 9	30	0.77	0.5
Question 10	30	0.85	0.42

As a result of the statistical analysis, it was revealed that the item discrimination value of each question was over 40 at "very good" level and item difficulty values of all the questions ranged between 0.40 - 0.59 at "moderate" difficulty level. The measurement tool consisting of open-ended questions was coded and each participant was given a different number. The raters scored the rubrics without knowing whether the student was in the experimental or the control group. It is known that scoring reliability is excellent if the scores do not change from one scoring to another or from one rater to another (Turgut, 1977).

2.3.3. Semi-Structured Interview

For the qualitative part of the research, semi-structured interviews were conducted with the students after the application. Semi-structured interview is described as an effective technique that includes open-ended questions and provides qualitative data. The purpose of semi-structured interview is to examine the thoughts, feelings, knowledge and logic of the participants about a topic in depth (Johnson & Christensen, 2014). Draft interview questions were prepared by the researcher in order to determine the views of the students about the social studies course conducted with the flipped learning model. The draft questions were presented to 2 faculty members working in the field of assessment and evaluation, 2 faculty members working in the field of social studies education, and 1 faculty member working in the field of Turkish education for language compatibility to get expert opinion. The interview form was rearranged according to the feedback from the experts. A pilot application was made with 2 secondary school students in order to determine whether the interview form was suitable for the purpose of the research and then the interview form was given its final form.

2.4. Implementation Process

In order to minimize the influence of the researcher as an external factor in the implementation process, the application of data collection tools and the teaching of the lessons were carried out by the course teachers in both the experimental and the control group. Before the implementation process, the teachers of the classes in the experimental and control groups were informed about what to do during the implementation process through interviews. First, an academic achievement test was given to the experimental and control group teachers by informing them that the pre-test would be carried out before moving on to the topics in the 7th grade “People, Places and Environments” in the social studies course. The experimental group teachers were informed that videos would be sent according to the achievements in line with the annual plan and the students should watch the videos at home. It was also told that there should be no lectures before and after the relevant achievement in the lessons, and that the activities prepared by the researcher or the course teacher should be used through the methods and techniques determined by the researcher during the lesson.

During the implementation period, the course videos on EBA TV in accordance with the achievements were shared with the students by the teacher through EBA and digital communication tool. The teacher followed up on which students watched the videos via EBA. On the other hand, the control group teachers were informed that they should teach the lesson with their own methods. Annual plans were obtained from the teachers of the experimental and control groups in order for the subjects to progress simultaneously, and the implementation process was carried out according to the annual plan. After the achievements were completed in line with the annual plan, a measurement tool consisting of post-test and open-ended questions was applied to both groups.

Semi-structured interviews were conducted with each student separately in January 2022 in a quiet classroom environment so that the research process would not be affected. Depending on the structure of the semi-structured interview, the research was tried to be deepened through additional questions asked to the participants according to their answers. The participants were informed about the purpose of the research and that their personal information would be kept confidential. All of the semi-structured interviews conducted within the scope of the research lasted approximately 250 minutes. The interviews were recorded with a voice recorder with the permission of the participants and then they were transcribed in the computer environment.

2.5. Data Analysis

2.5.1. Analysis of the Data Collected through the Academic Achievement Test

Shapiro-Wilk, Skewness and Kurtosis tests were performed for the normality analyzes obtained from the study groups during the application process. Since both the experimental and the control group consisted of equal numbers of participants, Shapiro-Wilk was conducted as the normality test. The analyzes of the academic achievement pre-test and post-tests applied to the experimental and control groups were carried out with the JAMOVI statistical program.

Table 2. Normality distribution for the experimental and control groups

Groups	Data Collection Tools			
Experimental	Academic Achievement Pre-test	**Skewness**	.986	.580
		Kurtosis	.500	1.121
			Shapiro-Wilk	
		s	**Sd**	**p**
		.901	15	.098*
	Academic Achievement Post-test	**Skewness**	-.251	.580
		Kurtosis	.065	1.121
			Shapiro-Wilk	
		s	**Sd**	**p**
		.950	15	.519*
Control	Academic Achievement Pre-test	**Skewness**	.235	.580
		Kurtosis	-1.680	1.121
			Shapiro-Wilk	
		s	**Sd**	**p**
		.888	15	.062*
	Academic Achievement Post-test	**Skewness**	-1.066	.580
		Kurtosis	.634	1.121
			Shapiro-Wilk	
		s	**Sd**	**p**
		.896	15	.082*

**p>.05*

When Table 2 is examined, it is seen that the data show a normal distribution (George & Mallery, 2010). t-test for independent samples was used to compare the academic achievement test scores due to the normal distribution of the experimental and control groups.

2.5.2. Analysis of the Data Collected through Open-Ended Questions

After ensuring rater reliability, item discrimination and item difficulty, the scores obtained by the experimental and control groups from the open-ended questions were transferred to the SPSS statistical program. Shapiro-Wilk, Skewness and Kurtosis tests were applied for the normality analyzes obtained from the study groups during the experimental processes. Since the experimental group and the control group consisted of the same numbers of participants, Shapiro-Wilk was used as the normality test. In the study, t-Test for independent samples was conducted to determine whether the mean scores differed significantly from each other.

2.5.3. Analysis of Semi-Structured Interviews

Content analysis was used in the analysis of the data obtained through the semi-structured interview. Content analysis forms the basis of the process of conceptualizing the data and explaining patterns between concepts through themes (Yıldırım & Şimşek, 2021). In other words, content analysis is based on a detailed examination of the data collected during the research process and shows an inductive approach. In this context, concepts, codes, categories and themes are required to explain the data. Among the collected data, codes are extracted from the events or facts that are frequently repeated and emphasized by the participants. Categories are created from the codes and themes from the categories (Baltacı, 2019). In the content analysis, the data obtained through interviews in the study were analyzed in four stages:

- Coding of data,
- Finding codes, categories and themes,
- Editing codes, categories and themes,
- Identification and interpretation of findings (Yıldırım & Şimşek, 2021)

3. FINDINGS

3.1. Findings Related to the Academic Achievement Test

Table 3. t-test findings for independent samples regarding the academic achievement test pre-test mean scores of the experimental and control groups

Group	n	$\bar{x}$	sd	df	t	p
Experimental	15	43.20	17.32	28	1.139	.264
Control	15	36.40	15.31			

It was determined that there was no statistically significant difference ($t_{(28)}$=1.139;p>.05) between the academic achievement pre-test mean scores of the experimental and control groups. The absence of a statistically significant difference between the academic achievement pre-test scores of the experimental and control groups is interpreted as that the experimental and control groups are equivalent in the application process.

Table 4. t-test findings for dependent samples regarding the academic achievement pre-test and post-test mean scores of the experimental group

Tests	n	$\bar{x}$	sd	df	t	p
Pre-test	15	43.20	17.32	14	10.94	**.000***
Post-test	15	84.27	6.32			

p≤.05

When table 4 is examined, a statistically significant difference ($t_{(14)}$=10.94;p≤.05) was found between the academic achievement pre-test and post-test mean scores of the experimental group. The fact that the arithmetic mean ($\bar{X}$=87.27) of the post-test scores of the experimental group was higher than that of the pre-test ($\bar{X}$=43.20) indicates that the difference is in favour of the post-test.

Table 5. t-test findings for dependent samples regarding the academic achievement pre-test and post-test mean scores of the control group

Tests	n	$\bar{x}$	sd	df	t	p
Pre-test	15	36.40	15.31	14	3.95	**.001***
Post-test	15	65.60	21.53			

*$p \leq .05$

According to Table 5, a statistically significant difference exists between the academic achievement pre-test and post-test mean scores of the control group ($t_{(14)}$=3.95;p≤.05). The difference was found to be in favour of the post-test ($\bar{X}$=65.60) in the control group. Considering the results obtained from the academic achievement test applied at the end of the unit in the control group, it is seen that there is an academic improvement in the control group as well.

Table 6. t-test findings for independent samples regarding the academic achievement post-test mean scores of the experimental and control groups

Group	n	$\bar{x}$	sd	df	t	p
Experimental	15	84.27	6.32	28	3.22	**.003***
Control	15	65.60	21.53			

*$p \leq .05$

The values in Table 6 indicate that there exists a statistically significant difference ($t_{(28)}$=3.22;p≤.05) between the academic achievement post-test mean scores of the experimental and control groups. It is seen that this difference is in favour of the experimental group. The reason for the fact that the academic achievement post-test mean score of the experimental group ($\bar{X}$=84.27) was higher than that of the control group ($\bar{X}$=65.60) shows that the implementation process was successful. In this context, it can be stated that the flipped learning model is more effective than the traditional learning model in increasing the academic achievement of students.

3.2. Findings Related to the Open-Ended Questions

Table 7. t-test findings for independent samples regarding the rubric mean scores of the experimental and control groups

Group	n	$\bar{x}$	sd	df	t	p
Experimental	15	53.53	14.88	14	4.549	**.001***
Control	15	34.20	15.86			

*$p \leq .05$

According to Table 7, there is a statistically significant difference ($t_{(14)}$=4.549;p≤.05) between the mean scores obtained from the rubric developed to measure the higher-order thinking skills of the experimental and control groups in favour of the experimental group ($\bar{X}$=53.53). As a result of the application process, it was found that the higher-order thinking skills of the students in the experimental group were higher than those of the students in the control group. Accordingly, it can be stated that the flipped learning model applied in line with this finding is effective in improving students' higher-order thinking skills.

3.3. Findings Related to the Semi-Structured Interviews

The themes, categories and codes obtained from the analysis of the semi-structured interviews are given in Table 8.

Table 8. Themes, categories and codes obtained as a result of content analysis

Theme	Category	Code
1. Educational Process	➢ Problem ➢ Subject teaching ➢ Understandability	• Trouble-free video viewing • Clear videos • Learning the subject • Eagerness to come to class
2. Flipped Learning	➢ Learning the subject	• Better learning • Time to play in the classroom • Retention • Enjoyable • Sense of competition

As a result of the analysis of the data, 2 (two) themes were determined, namely "Education Process" and "Flipped Learning".

3.3.1. Education Process

In the interviews conducted for the participants to evaluate their own learning, the participants were asked whether they encountered any problems while watching the videos, and all the participants stated that they did not encounter any problems. For example; S2 said, "No, I did not encounter a problem. Since I have an internet connection at home, I watched all the videos."

The students were asked whether there were places they did not understand while watching the videos, and most of the participants (n=11) found the videos understandable and stated that there were no parts they did not understand. For example; S6 asserted that he understood the topics in the videos by saying "No, there weren't. Our teacher in the videos explained the subject well. In some places he asked questions. He gave lots of examples." On the other hand, the participants S7, S9, S11 and S14 stated that they had difficulty in understanding some parts. In response, they were asked what they did when they had difficulty in understanding those parts. The participants P7 and T14 replied that they took notes and asked their teacher questions in the classroom about the parts they did not understand, while the participants P9 and T11 stated that they rewinded the video and watched it again.

When the participants were asked whether the videos they watched had an effect on their learning of the subjects, only T14 said that there were times when he couldn't learn while watching the videos. However, the other participants stated that the videos they watched at home were effective in their learning the subjects and achievements. For example, S1 answered "Yes, it helped me learn. Although I knew some subjects, I learned more after watching the videos." S7 said, "I think I learned the whole unit. All the information is in my mind. After all, we already answered all the questions correctly in the quiz." He mentioned the effect of the videos he watched on his participation in the activities held in the classroom.

3.3.2. Views on the Flipped Learning Model

In this section, in order to obtain a holistic view about flipped learning, the views of the participants on the flipped learning model used in the research were tried to be determined by focusing on the model.

The answers given by the participants showed that all participants had a positive opinion about the flipped learning model. When the data obtained from the interviews with the participants are examined, it is seen that they describe flipped learning as very good, fun, nice, effective, educational and instructive. For example, participant S1 said, "I learned very well. I wish we always taught classes like this. It is both enjoyable and instructive." S6 and S7 expressed that they wanted other lessons to be taught with this model as well. The participant S9 pointed out the positive effect of the activities carried out in the classroom on the whole class by saying, "When we had a competition in the class, the whole class got ambitious. We listened to the videos more carefully the next week. I think it was good."

Afterwards, the participants were asked the question "Do you think you learned better in this model?" in order to examine the effect of the flipped learning model on the learning process. Considering the answers given, it is seen that all participants stated that they learned the subject better with the flipped learning model. For example; the participant S2 said, "Yes, I learned very well. Normally, we did not have time to play games in class. Now we both played a lot of games in the class and learned the subjects. These events kept the topics in my mind." The participant S9 claimed that they forgot the subjects faster because they could not do activities at home in traditional learning by saying "Yes, we do not do activities at home when we learn about the subject at school. And then we

forget about it." The participant S6 emphasized that the activities based on flipped learning model reinforced the course subjects with the statement; "I think I have learned the subjects very well. When I came to school, I did not forget the videos I watched. I could remember them when I was doing the activity."

4. DISCUSSION and CONCLUSION

In this study, it was concluded that there was no statistically significant difference between the pre-test scores of the experimental and control groups which shows that the experimental and control groups had equal achievement levels before the application process. In experimental studies, it is an expected situation that there is no statistically significant difference between the pre-test results in terms of the fact that the effect of the application process is the preliminary step of the change situation. Cognitive equivalence of the experimental and control groups during the application process is considered important in terms of revealing the change experienced on the two groups as a result of the process.

In the study, it was determined that there was a statistically significant difference between the academic achievement pre-test and post-test mean scores applied to the experimental group. In line with this result, it can be stated that an academic progress has occurred from the beginning to the last stage of the application process. In addition, the statistical increase in the academic achievement levels of the experimental group in the post-test can be interpreted as that the flipped learning model has a positive effect on the learning of the students. In the related literature, there are experimental studies examining the academic achievements of students using the flipped learning model in social studies course. In the studies conducted by Erdoğan (2019), and Şerefli (2020), it was concluded that the use of flipped learning in social studies course increased the academic achievement of students, which supports the findings of this research.

It is also determined that there is a statistically significant difference in favor of the post-test between the academic achievement test pre-test and post-test mean scores applied to the control group. This is thought to indicate an academic progress from the beginning to the last stage of the implementation process. Considering the results obtained from the academic achievement test applied at the end of the unit in the control group, it is seen that there is an academic progress in the control group as well. Although a program-based teaching was carried out in the control group as opposed to the experimental group, an improvement in the academic achievement levels of the control-group students is considered to be an expected result (Özen, 2020).

It was concluded that the academic achievement post-test mean scores of the experimental group were statistically more significant and higher than those of the control group, in which the lesson was conducted with traditional learning methods. This result reveals that the flipped learning model is more effective than the traditional learning model. In the related literature, there are various experimental studies in which the social studies course is conducted with the flipped learning model.

Bursa (2019) concluded that flipped classroom practices significantly increased the academic achievement and responsibility levels of the students in the experimental group. Similarly, Söğüt (2019) and Dursunlar (2018) found in their studies that the social studies course structured according to the flipped classroom model contributed positively to the academic achievement of students. In their study, Aidinopoulou and Sampson (2017) concluded that the flipped classroom model in social studies course increased students' participation in student-centered activities, improved their historical thinking skills and increased their academic achievement. Erbil and Kocabaş (2020) concluded that the use of cooperative learning method in the flipped classroom environment has a positive and significant effect on students' academic achievement levels. Contrary to the results obtained both in this study and in the abovementioned studies, Pozolinski (2015) conducting social studies course with the flipped

learning model did not lead to a statistically significant difference in academic achievement. In the related literature, there also exist ssome studies investigating the effect of conducting the flipped learning model in different courses other than social studies on academic achievement. In some studies, it was concluded that the academic achievement of the experimental group classes in which the flipped learning model was applied was statistically significant compared to that of the control group class in which the traditional learning model was applied (Akgün & Atıcı, 2017; AlJaser, 2017; Boyraz & January, 2017; Bursa, 2019; Deslauriers, Schelew & Wieman, 2011; Elian & Hamaidi, 2018). These results can be expressed as that flipped learning model has a positive effect on increasing the academic achievement of students in other courses as well as social studies courses.

Another result obtained is that there is a statistically significant difference in favor of the experimental group in the mean scores obtained from the rubric prepared to measure the higher-order thinking skills of the experimental and control groups. In line with this result, it can be stated that flipped learning has an important effect on developing students' higher-order thinking skills. Higher-order thinking skills, which are expected to be possessed by individuals at secondary school, serve as a touchstone for students' further academic achievements. It is also revealed in the study that the flipped learning model has an important effect on the development of higher-order thinking skills of individuals in addition to their academic achievements. Similarly, studies by Bergmann and Sams (2012), Hamdan et al. (2013), Herreid and Schiller (2013), Gough, DeJong, Grundmeyer and Baron (2017), Lee and Lai (2017), Mas'ud and Surjono (2018), Suprapti, Nugroho and Pembangunan (2021) also revealed that flipped learning is an effective method for developing higher-order thinking skills.

The learning processes of the students of the flipped learning model are mentioned. It was concluded that most of the participants who stated that they did not encounter any problems while watching the videos also described the videos as understandable. Some participants stated that they did not understand the subject in some places, but this problem disappeared when they watched the videos again. It was concluded that only one participant had difficulty in learning the subject from the videos watched at home in the out-of-class dimension of the flipped learning model, and the other participants stated that it was effective in learning the subject and achievements. It is thought that this result shows the flipped learning model has a positive effect on students' learning. In a study with a similar result (Bursa, 2019), participants stated that their academic achievement levels increased in the social studies course conducted with the flipped learning model. According to the results of the study by Akgün and Atıcı (2017), participant students in the experimental group stated that their academic achievement increased with the flipped classroom method, they remembered the topic they had learned better, they were more active during the lesson, and found watching the videos before the lesson more motivating. Similarly, İnciman-Çelik and Soft (2021) concluded that the flipped learning model was effective in students' learning of the subject, students were able to practice more in the classroom and they were motivated.

The views of the students about the flipped learning model were tried to be handled with a holistic approach. From the findings obtained from the analysis of the data, it was concluded that all participants thought that they learned better with the flipped learning model than with the traditional learning model. In addition, it was determined that all participants had a positive view of flipped learning and described this model with adjectives such as very good, fun, nice, effective, educational and instructive. Some participants stated that it would be beneficial to teach other lessons with this method as well. In their qualitative studies with similar results, Boyraz and Ocak (2017) also concluded that students had a positive view of flipped learning.

4.1. Conclusion for the Explanation of Quantitative Findings with Qualitative Findings

In studies designed with an explanatory sequential design in the mixed research method, it is necessary to explain in more detail how the quantitative findings are supported by the qualitative

findings after the quantitative and qualitative results are presented and discussed separately (Creswell, 2021). For this reason, in this section of the research, the results and discussions of the quantitative and qualitative findings are presented without comparing them.

In the second sub-problem of the quantitative part of the research, it was determined that there was a statistically significant difference between the academic achievement pre-test and post-test mean scores of the experimental group in which the lessons were conducted with the flipped learning model. The difference was in favor of the post-test. This result was supported by the results obtained from the analysis of the interviews with the participants. Participants of the study stated that they learned better in the lessons conducted with the flipped learning model, which supports the quantitative findings of the study.

Another result obtained from the quantitative data is that there is a statistically significant difference in favor of the experimental group in the mean scores obtained by the students from the rubric prepared to measure the higher-order thinking skills of the experimental and control groups. According to the interviews with the participants, it is thought that carrying out their own learning processes is an important indicator of their higher-order thinking in the process. Participants mostly expressed that they understood the subject while watching the lectures, and using their own methods to solve the problem had a positive effect on the higher-order thinking skills of the participants who had difficulty in understanding the subjects. In addition, the fact that participants like and enjoy the activities used in classroom practices is thought to have an important effect on the development of both their academic achievements and higher-order thinking skills.

In summary, it has been concluded from the quantitative and qualitative findings of the research that the use of the flipped learning model in social studies lessons is effective on the improvement of students' academic achievements and higher-order thinking skills.

Based on the results of the research, the following suggestions can be expressed:

- Research can be conducted using the flipped learning model at different grade levels and learning areas in social studies courses.
- Research can be conducted to test the effects of the flipped learning model on different skills other than high-level thinking skills.
- Various researches can be conducted on the effectiveness of the flipped learning model by using different data collection tools.

Based on the conclusion that the model used improves the academic achievement and high-level thinking skills of the students, the use of this model in the social studies course can be encouraged.

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Ethics Committee Decision

This research was carried out with the permission of Niğde Ömer HalisDemir University Social and Human Scientific Research and Publication Ethics Committee with the decision numbered 140905 dated 03/12/2021.

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