

THE EFFECT OF FLIPPED LEARNING MODEL IN DISTANCE EDUCATION ON STUDENT ACHIEVEMENT AND STUDENT VIEWS ABOUT THE MODEL¹

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Abstract: *The virus called COVID-19 that has affected the entire world has also affected education. Because the virus is very contagious, face-to-face education was suspended in both Turkey and many other countries. For the sake of a continuation of education, there was a move from face-to-face education to distance education. Online lessons have been taken via EBA and Zoom. Lesson time is mostly spent for the teacher speech and lecture at online lessons in distance education. That teacher speech and lecture take too much time in the lessons decreases the time allocated to students. Less student interaction and in-class activities influence the quality of education. Subjects are learnt before the lessons by the students themselves in flipped learning. The fact that students learn the subject before the lesson decreases the amount of time for the teacher speech and lecture. Thus, teachers may spend more time for student interaction and in-class activities. In this research, the effect of the flipped learning model in online lessons on students' English lesson academic success was investigated. The research was conducted with eighteen students for six weeks at a high school in Central Anatolia region in Turkey. Mix research, which is a combination of quantitative and qualitative research, was applied in this investigation. For the quantitative data, participants took an English lesson achievement test*

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as pre and posttest and for the qualitative data, a written document was applied to participants. For the results, SPSS 23 statistical package program was used. As a result of research, it was observed that there is a significant difference between experimental and control groups. The Flipped learning model at distance education has a positive effect on students' English lesson achievement. Moreover, participants gave positive feedback and views about the model. According to the research results, it can be recommended to use flipped learning model in distance education in English lessons.

Key words: *Blended learning; Flipped learning in distance education; Inverted classrooms.*

Introduction

Factors affecting the change of the world also affect communication methods (Dede, 1991). Considering the age we are in and the characteristics of those living in it, distance education has inevitably become widespread. After the coronavirus epidemic that affected the entire world, schools were closed in many countries to alleviate the speed of the epidemic. The interruption of face-to-face education has led the education world to distance education. Moreover, distance education, which is now mostly carried out thanks to technology, has started to replace face-to-face education even under normal conditions. According to Desmond Keegan (1980), distance education is the communication of students and teachers in different times and places through a common channel under the leadership of an institution. Distance education applications are synchronous and asynchronous. The synchronous education activity is face-to-face communication in different places. It is usually done by teleconference. Asynchronous is the sharing of course materials over the internet at different times and places (Burma, 2004). Synchronous and asynchronous way of learning can also be used in blended learning.

Blended learning is preparing the most appropriate educational environment for a specific learner population (Bersin, 2004). Another definition is the combination of any model or models with technology to achieve goals in education (Driscoll, 2002). It is the use of face-to-face education and distance education delivery channels

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together to obtain maximum efficiency from both face-to-face education and online education (Osguthorpe & Graham, 2003). Blended learning is a mixture of online and face-to-face environments that support each other to achieve the desired results of the course. For the system to be successful, the time allocated to face-to-face and online education should be determined very well so that these two systems complement each other successfully (Ginns & Ellis, 2007). Flipped learning is a way of using blended learning in both distance learning and face-to-face learning.

Basically, the idea of the flipped classroom is that what is traditionally done at home is done in the classroom and what is traditionally done as homework is completed at school (Bergman & Sams, 2012). What is done in the classroom is done at home, and what is done at home is done in the classroom (Lage, Platt, & Treglia, 2000). It is a technique consisting of two processes: interactive group activities in the classroom and computer-based individual instruction outside the classroom (Bishop & Verleger, 2013). In the flipped classroom model, the teacher gives the homework assignment before the lesson, that is, before the subject is explained in the classroom (Slomanson, 2014). In the lesson, the necessary steps are taken to internalize the subject and learn it in depth. In this displacement process, the teacher's lecturing of the subject is removed, leaving more time for in-class activities. It gives the teacher more time to discuss the complex points of the topic with more students in the classroom, to provide real-life examples related to the content of the topic, to challenge students to think more complex and in-depth, and to observe their learning processes (Merhring, 2016). The flipped classroom model in distance education is the sharing of the course subject with students through learning management systems such as Google Classroom, Moodle, Canvas or through a different channel that the teacher deems appropriate, such as e-mailing, or sharing from a social media account, and deepening the subject in online lessons.

There is some research about flipped learning in distance education. Lindeiner-Stráský, Stickle, and Winchester (2020) conducted a project to investigate the concept of flipped learning in distance education in an open education faculty. They gave advice to those who would use this model. Abuhmaid, Olaimat, Oudat, Aldhaeabi, and Bamange (2020) also conducted a flipped classroom application in distance education during the COVID 19 pandemic period. According to the results obtained as a result of

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the scale they applied to students studying in the information technology department at Chengdu University, they concluded that the flipped classroom model in online education increased students' attention. Montaner-Villalba (2021) investigated how university students perceive ESP academic writing in the context of online learning and specifically when using the Flipped Learning approach as an active learning strategy to improve ESP academic written competence. As a result of the research, it was concluded that students developed a positive attitude toward the model.

When the literature is examined, it is seen that although many studies have been conducted on distance education and the flipped classroom model separately but the application of the flipped classroom model in distance education has not been sufficiently researched. Therefore, in this study, the effect of the flipped classroom model in distance education on students' academic achievement in the English course was investigated.

Problem Statement

Is there a significant difference between the achievement of the group in which the distance education flipped classroom model is applied and the group in which the flipped classroom model is not applied in the English course? What are the students' opinions on the flipped learning model in distance education?

Hypotheses

1. There is a significant difference between the pre- and post-test scores of the group to which the flipped classroom model in distance education is applied.
2. There is a significant difference between the pre-test and post-test scores of the group in which the flipped classroom model in distance education is not applied.
3. There is a significant difference between the achievement of the group in which the flipped classroom model in distance education is applied and the group in which it is not applied.

Sub-problem

What are students' opinions on the flipped learning model in distance education?

Method

A mix model was used in the research. The use of both qualitative and quantitative techniques in the same research is called a mixed method (Sönmez & Alaca-

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pinar, 2017). In the research, the effect of flipped learning in distance education on student success was investigated, and the views of students about the model were searched. Therefore, both quantitative and qualitative data collection techniques were used together in this study. Since the use of these two techniques together can produce stronger results in the research of a problem, it has been frequently used in research in the field of education recently (Creswell & Clark, 2011). An exploratory sequential pattern, one of the mixed method designs, was used. In this design, first quantitative data is collected, followed by qualitative data. (Creswell & Clark, 2011). In this research, the first quantitative data were collected and then the qualitative data were examined. The pretest-posttest quasi-experimental method with a control group, which is a quantitative research method, was used. In this method, both the experimental and control groups are pretested before the experiment and posttest is applied after the experiment. In this way, it is checked whether there is a significant difference between the pre-and post-test averages of the experimental and control groups (Christensen, Johnson, & Turner, 2011).

Document analysis design, one of the qualitative research methods, was used. Document analysis is the examination of written sources related to a phenomenon to be investigated. In cases where observation and interview are not appropriate to strengthen the validity of the research, written materials such as newspapers, books, diaries, magazines, maps, brochures, notebooks can be examined (Yıldırım & Şimşek, 2018; Labuschagne, 2003). Qualitative data of the research were collected with written documents.

Participants

The research was conducted on the ninth-grade students in a public school in Central Anatolia region in Turkey in the first semester of the 2020-2021 academic year. Since the school where the application was made is a male imam hatip high school, the study group consists of men. Easy sampling method was used while determining the study group. In the easy sampling method, the researcher works with easily accessible people. In addition, the cost is lower with the appropriate sampling method (Kothari, 2004). The researcher conducted research on two classes assigned

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by the school administration. After these two classes were balanced according to the pre-test results, random assignment was made for experimental and control groups. The research was conducted with 18 students consisting of the experimental group (n=9) and the control group (n=9).

Data collection instruments

To collect the quantitative data of the study, an English lesson achievement test (ELAT) was prepared by the researcher. Before the test was prepared, the learning outcomes of the two units were determined. Questions appropriate to the outcomes were written. A question pool consisting of thirty-two questions was created. The opinions of three experts were taken to ensure the content validity of the prepared measurement tool. Content validity is the extent to which the items in a test measure the behaviors intended to be measured, in other words, the extent to which the item represents the behavior (Cohen & Swerdlik, 2009). According to Davis (1992), a content validity index of 80% and above is acceptable. The content validity rate index was found to be .85. The measurement tool was then applied to 108 students. After three items with low discrimination index were removed from the test, the Cronbach Alpha value was found to be .908. In this way, ELAT was developed.

Qualitative data on the implementation of the flipped classroom model in distance education were collected through a written document. The written document included open-ended questions. Participants were informed about the questions in the written document. They were also informed about how to access the written document and what was written would not be misused in any way.

Data collection

Before starting the study, both the experimental and control groups took ELAT as pretest. The test questions were uploaded to the www.socrative.com website by the researcher. This website is a tool suitable for online testing. While the participants are answering the test, the researcher can see who has logged in to the test, what percentage of the test has been answered, and who answered which question correctly or not.

After the test is completed, the researcher can download the test answers as excel or pdf files to his/her personal computer.

The test was opened for use by the researcher on the date and time determined with the participants. The necessary explanations for the entrance to the test were explained in advance, and entrance attempts were made. Thus, the participants were prevented from getting stressed before the exam. The exam password was shared with the study group 15 min before the exam was activated. The duration of the exam was determined as 40 min. After the time was over, the exam was closed by the researcher. The experiment was implemented for six weeks and thirty lesson hours. After experiment, the same test was activated on the same platform as the post-test.

When the research application was completed, the link to the written document form created in Google documents to collect qualitative data was shared with the participants on WhatsApp and Edmodo. The questions in the form were explained one by one and the participants' questions were answered. After the opinions of the participants were received, the form was closed for use.

Data analysis

The SPSS package program was used to analyze the quantitative data of the study. First, it was checked whether the data were normally distributed. Since the data were normally distributed, parametric statistics were used to analyze the quantitative data. For the first and second hypotheses of the study, dependent groups t test and for the third hypothesis, independent groups t test were applied.

Descriptive analysis and content analysis methods were used to analyze qualitative data. In descriptive analysis, data are presented in a simple and straightforward way and reflected as they are (Sönmez & Alacapınar, 2017). In addition, the views of the participants can be conveyed as they are in order to make the views expressed more vivid (Yıldırım & Şimşek, 2018). In the simplest sense, content analysis is to summarize and report a written text or message (Cohen, Manion, & Morrison, 2007). It is the process of drawing reproducible, repeatable, and valid conclusions from any text to be read, interpreted, or understood (Krippendorp, 2004). Content analysis is the process of combining similar information obtained from the form under a com-

mon concept. These data are then explained in a way that the reader can understand. During the analysis, the actual sentences of the participants are also included (Yıldırım & Şimşek, 2018). While content analysis method was used to examine the participants' thoughts about the flipped classroom model in distance education in depth, descriptive analysis method was used to reflect it as it is.

In this study, some measures were taken to ensure validity and reliability. Internal validity was tried to be ensured by taking expert opinions and direct quotations. For the analysis of qualitative data, the answers of the participants were printed out. Before the analysis, the answer sheets were coded such as P1, P2. Thus; participant confidentiality was ensured. Codes were created from the participants' answers and some student opinions were quoted as they were. For external validity, the data collection tool was explained and information about data analysis was given. For internal reliability, the findings were shared without comment and for external reliability, the consistency of the data was checked.

Procedure

The participants were informed about the process one week before the start of the experimental process. WhatsApp groups were established to communicate with both groups. During one week, both the experimental and control group were interviewed and informed about the process and the research. Experimental group was informed about the logging in the sites and the use of these sites was demonstrated.

A social education platform has been identified for pre-lesson sharing. A virtual classroom was created in Edmodo because it is easy to use and suitable for the ages of the participants and because it has a mobile application. Before the application started, interviews were conducted with the experimental group at specified times. Participants were made members of the class on Edmodo. They were also given information about how the website was used. It was announced that pre-lesson posts would be made on this website.

To ensure that the shared materials were studied, participants were sometimes directed to quiz or exercise websites with links. On some websites, the teacher may be able to see the students' answers, but not on others. In such cases where the teacher

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could not access the students' answers, the students shared a photo of their quiz or exercise on WhatsApp groups. Sometimes they were also asked to make some uploads to Edmodo. Students were also asked questions and requested to answer them. In this way, it was tried to determine whether they had studied the materials uploaded by the teacher. Determining the difficulties of the students before the lesson can guide the teacher on what to focus on in the activities during the lesson.

During the online classes on Zoom the researcher used some activities at only the application level based on Bloom taxonomy because students were expected to learn objectives about remembering and understanding before online classes. In this experimental, period some internet sites were used;

<https://.socrative.com/>, <https://piktochart.com/>, <https://liveworksheets.com>,
<https://bubbl.us/>, <https://kahoot.com/>, <https://.quizizz.com/>, <https://reviewgame-zone.com/>, <https://jeopardylabs.com/> <https://theteacherscorner.net/>, <https://wisc-online.com/gamebuilder>, <https://cram.com/>, <https://baamboozle.com/>,
<https://en.islcollective.com/>.

The purpose of the study was shared with the control group, and they were told why a pre-test and post-test were conducted. They were informed about how to log in to the www.socrative.com website for the pre-test and how to answer the questions. The pre-test was conducted on the specified date and time. The password to access the test was shared with the control group 15 min before the test started. In the control group, the subject was explained by the researcher. The coursebook and workbook sent by the Ministry of National Education (MoNE) were used.

Findings

Findings for the first hypothesis

For the first hypothesis of the research, "There is a significant difference between the pre- and post-test scores of the group to which the flipped classroom model in distance education is applied." dependent groups t test was used to test the hypothesis. Before the test, it was checked whether the pre- and post-test score differences showed a normal distribution. Since the scores showed a normal distribution, dependent groups t test was applied.

Table 1. Experimental group pretest and posttest dependent groups t-test results

Group	Test	\bar{X}	s	t	p
Experimental Group	Pretest	10,33	2,16	-3,132	0,014
	Posttest	18,22	2,47		

When Table 1 is examined, as a result of the dependent groups t test of the experimental group pre-test and post-test results, a significant difference was found between the pre-test mean score ($\bar{X} = 10.33$) and the post-test mean score ($\bar{X} = 18.22$) ($t(8) = -3.132, p < 0.05$). The averages show a significant difference in favor of the posttest. Based on this difference, it can be concluded that the flipped classroom model in online education applied in the experimental group contributed positively to students' learning in the English course.

Findings related to the second hypothesis

Dependent groups t test was conducted to test the second hypothesis of the study, "There is a significant difference between the pre-test and post-test scores of the group in which the flipped classroom model in distance education is not applied." Before the test was conducted, it was controlled whether the pre- and post-test scores were normally distributed or not. Since the scores were normally distributed, dependent groups t test was applied.

Table 2. The control group pretest and posttest dependent groups t-test results

Group	Test	\bar{X}	s	t	p
Controlgroup	Pretest	12,88	2,94	-1,490	0,637
	Posttest	13,77	2,37		

When Table 2 is examined, no significant difference was found between the mean pre-test score ($\bar{x} = 12.88$) and the mean post-test score ($\bar{x} = 13.77$) as a result of the dependent groups t test of the control group pre-test and post-test results ($t(8) = -.490, p > 0.05$). It can be deduced that there is no significant difference between the pre-test and post-test of the control group. According to this result, it cannot be concluded that the curriculum in the application in the control group contributed positively to students' learning in English lessons.

Findings related to the third hypothesis.

To test the third hypothesis of the study, " There is a significant difference between the achievement of the group in which the flipped classroom model in distance education is applied and the group in which it is not applied." an independent groups t test was conducted.

Table 3. Independent groups t-test results of achievement tests

Group	Test			d		
Experimental	Achievement	.88	.55	6	.25	038
ontrol	Achievement	88	.44			

When Table 3 is examined, there is a significant differentiation between the mean achievement scores of the experimental group ($\bar{x} = 7,88$) and the mean achievement scores of the control group ($\bar{x} = ,88$) in favor of the experimental group ($t(16) = 2,25, p < 0,05$). According to these data, it was determined that the achievement scores of the experimental group in which the flipped classroom model was applied in distance education were significantly higher than the achievement scores of the control group in which the course was taught according to the MoNE curriculum. According to the current curriculum, it can be said that the flipped classroom model in distance education contributed positively to students' English lesson achievement.

Findings related to sub problem

Students were asked to answer some questions about flipped learning in distance education. Codes were created according to the answers given by the students in the written document and presented in tables under categories. For the first questions "What did you do in distance education flipped classroom model in-class activities? In which activities do you think you learn more?" response codes are presented below.

Table 4. Flipped learning in distance education in-class activities

Codes	Participants
Learning through games	P1, P2, P4, P6, P7, P8, P9
Individual activities	P3, P5

When Table 4 is examined, it is seen that 7 of the participants found learning with games more useful, while 2 participants found individual activities or events useful. Some participants' opinions are shared below.

Some participant opinions on learning through games;

"I think the activities in the form of games that our teacher made us do played a more important role in our development because we had fun and developed thanks to those games and learning became more fun. We started to look forward to English lessons."

P1

"We were watching videos and doing activities ourselves, and we were playing games related to the subject in the lesson, and it was more memorable."

P4

"In group games, we learn more because it was fun and instructive."

P6

"The games we played were productive for me. There is nothing that is not productive."

P7

Participant opinions on individual activities:

"I think I learned better in individual activities."

P3

"Individual games helped me learn better because I answer the questions myself, so I answer both the right and the wrong. Mostly, it helped me learn better about the adverb of frequency. And the subject of natural disasters was not fully efficient, but it was less efficient."

P5

For the second question "What are the advantages of the flipped classroom model in distance education compared to normal distance education?", response codes are presented below.

Table 5. Advantages of the flipped classroom model in distance education

Codes	Participants
Coming ready for class	P1, P2, P3, P4, P5, P6, P8, P9
The lessons are fun	P2, P3, P4, P5, P6, P8, P9
Efficiency of the lessons	P1, P2, P4, P6, P7, P9
Effective use of class time	P1, P2

When Table 5 is analyzed, it is seen that the participants used more than one statement and 8 of the nine participants stated that coming to class ready to learn is a great advantage of the flipped classroom model. Among the advantages of flipped education, 7 of the participants mentioned that the lessons were fun. The view that the lessons were more productive was reported by 6 participants. Finally, 2 of the participants stated that the lesson time was used more effectively.

Some participant views on coming to class ready:

"I think flipped education is very good. It is excellent to study and come to the lesson ready in advance. In the lesson it is good to reinforce what we have studied." P4

"I think it is excellent to study the lesson beforehand and I recommend it comprehend the subject better." P5

"We are more successful by coming to classes beforehand." P6

"I was not tired; I was ready for the lessons." P9

Some participant opinions on the fun of the lessons:

"The lessons go very fast; I don't understand how the time passes. It is fun. I never get bored." P8

For the third question "What are the advantages of the flipped classroom model in distance education compared to normal distance education?" response codes are presented below.

Table 6. Negative opinions on the flipped classroom model in distance education

Codes	Participants
I prefer face-to-face	P2, P4, P5, P6,
I understand better when the teacher explains it	P2, P6
I am not sure I understand	P2
I have no negative comments	P7

When Table 6 is analyzed, it is seen that four participants stated they preferred face-to-face education and two participants preferred the teacher to explain the subject. One participant stated that he was not sure whether he understood the subject or not, and another participant stated that he did not have a negative opinion. It is seen that the second participant used more than one statement.

Some participant opinions on face-to-face training:

"It is not as efficient as face-to-face education." P5

"I understand better when it is face-to-face, in this way, I cannot ask about the subjects I do not know." P5

"I still prefer face-to-face." P6

Some participant opinions for the code "I understand better when the teacher explains":

"I understand better when I listen to the lessons." P2

"I understand better when the teacher explains." P6

Participant opinion for the code I am not sure I understand:

"I cannot be sure that I understand the subject correctly." P2

Conclusion and Discussion

The study focused on whether the flipped classroom model in distance education makes a difference in the academic achievement of the ninth-grade students in the English course. In the first hypothesis of the research, it was concluded that the flipped classroom model was effective in the experimental group. The result that the flipped classroom model was applied and made a positive contribution to the English course was also found in other studies. Ahmad (2016) investigated whether the flipped classroom model contributed to the listening skills of Egyptian EFL students at Suez University. He found a significant difference in the pre-test and post-test results of the students as a result of his pre-test and post-test research without a control group. He concluded that flipped classroom instruction contributed positively to English listening skills. Santikarn and Wichadee (2018) examined whether the classroom model influences students' academic achievement in English in a university English course in Thailand. As a result of

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the research, a significant difference was found in favor of the experimental group. In addition, students also accessed the Edmodo platform used by the researchers. They stated that they liked the uploaded videos very much.

In the second hypothesis of the study, the control group received education as prescribed by the MoNE. It was concluded that education in the control group did not have a significant effect on students' academic achievement in English lesson. In some studies, examining the effect of the flipped classroom model in English lessons, a significant difference was found in favor of the control group. In his doctoral dissertation, Yüreğilli Göksu (2018) examined whether the flipped classroom model has effects on students' reading skills in English lessons. After the statistical procedures, he found a significant difference between the pre-and post-test scores of the control group without the flipped classroom application, but when the effect size was examined, it was seen that the contribution of the model to reading skills was small.

In the third hypothesis of the study, it was concluded that the implementation of the flipped classroom model in distance education applied to the experimental group was more effective than the method prescribed by the Ministry of National Education and positively affected academic achievement in the English course. Similar results were found in other studies examining the flipped classroom model in English lessons. İnciman Çelik and Yumuşak (2021) examined the effect of the flipped classroom model on students' academic achievement in the tenth-grade English lessons. In the experimental group of the study, the flipped classroom model was applied. The control group was taught with the model deemed appropriate by the Ministry of National Education. As a result of the study, it was observed that the achievement of the experimental group was better than the control group. It was also seen in a study conducted in Sudan. Abdelrahman, DeWitt, Alias, Abdul, and Mohd (2017) conducted a study to identify the problems Sudanese students experience in paragraph writing skills in English as a foreign language. A flipped classroom model was applied to students using Edmodo platform. As a result of the application, it can be inferred that students' paragraph writing skills improved in the experimental group.

Looking at the data collected in the qualitative dimension of the study, it can be concluded that students developed a positive attitude toward the flipped classroom model. Students reported that they enjoyed the activities and games in the lessons. Şenel Tekin

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et al. (2020) applied synchronous and asynchronous flipped classroom model in online education in medical terminology course for medical documentation and secretarial students in a public school in Turkey. Students found the flipped classroom model applied in online education fun and reported that they enjoyed the in-class activities. Girmen and Kaya (2020) investigated whether the flipped classroom model contributed to the basic language development of the fourth-grade students. As a result of the gamified flipped classroom application, they reported that students liked this process very much and found it fun. Lee and Martin (2019) implemented a flipped classroom in a computer assisted language learning (CALL) model course in the English language teaching department of a university in the United States. As a positive opinion, students reported that coming to class ready to learn made them more active participators in the course.

Limitations and suggestions

This research was conducted during the COVID-19 period when education in public schools was conducted online. One limitation of this research is that students and teachers encountered distance education for the first time. In addition, the number of students participating in the research was limited because most of the students did not have the necessary equipment for distance education. It is also limited to six weeks and two units of the course.

- The research can be repeated in large groups.
- That grammar topic and target vocabulary are learned by the student before the lesson at his/her own pace and at his/her own time provides the teacher with the opportunity to practice more in the lesson. For this reason, the model can also be used in other foreign language teaching.
- The flipped classroom model in distance education can also be a research topic for other courses.
- The results of the application of the flipped classroom model in distance education in young age groups can also be a subject of research.

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