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Examining the effect of flipped learning model in flute education on motivation and performance of students*

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Abstract. In this research, it is aimed to test the effectiveness of the flute lessons conducted with the "Flipped Learning Model" compared to the traditional teaching. In the study, the quasi-experimental design –pre-test, post-test with control group- was used. The study group (n=30) consisted of the flute education students who were studying in the 1st, 2nd, 3rd and 4th grades of Karadeniz Technical University Music Teaching Program in the spring semester of 2016-2017 academic year. "Performance Observation Form" and "Motivation Scale for Individual Instrument Instruction" were used to collect the data. Nonparametric Mann-Whitney U and Wilcoxon Signed Ranks tests were applied in the analyses. As a result, it was observed that there was a significant increase in the performance success and motivation of the experimental group students compared to the control group students, and that the program based on the activities of the flipped learning model was more effective and formative than the traditional teaching.

Keywords: Flipped learning model, music education, instrument education, flute education

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INTRODUCTION

The expectations, needs and demands of human beings change every day. This causes the development of technology, which is one of the basic resources that will meet the requirements of this change. Expectations and needs renew themselves in the field of education as well as in all fields, which means that technological developments become efficient more and more every day in the educational environment, that the learners take an active role in the learning activities, the classroom environment changes and develops and the learning continues beyond the school environment. Briefly, the change of teacher's role paves the way for an overall change in education. This change in all areas of education today is very fast thanks to the results obtained from studies in the field of educational technology. For this reason, we are constantly moving towards new horizons and new approaches are introduced.

Thanks to these approaches, the concept of teaching based on the dictation of knowledge, which has been practiced for years in learning environments, where the teacher is at the center is losing importance today. In relation with this situation, the educational approaches increase their importance that allows the information to be restructured and updated, in which students are actively involved and taken to the center. These approaches are implemented in the field of music education as well as in other areas of education. In this regard, with the increasing number of digital and open educational resources day by day, the classroom environment and the learning-teaching process are questioned, which has been held efficient in music education for years and technology supported models that encourage student's active learning are introduced. One of these models is flipped learning, which is also called flipped classroom, transformed learning, inverted learning, classwork at home and homework in class model. This model is increasingly widespread in secondary and higher education institutions in recent years (Yıldız, Gürşen Otacıoğlu, 2017).

According to Sarıtaş and Yıldız (2015, p.418), the flipped learning model is a new education model and this model, which has been increasingly used in recent years, has traces of highly structured learning theory. In the flipped learning model, the teacher presents the

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technology-supported resources to the student that s/he has prepared or chosen before in a digital environment and the teaching takes place outside the classroom through these resources. Then, it is aimed to cover the subject on higher levels in the classroom environment. In other words, flipped-learning model is based on the use of learning activities such as understanding in theory and remembering outside the classroom with the support of videos and various materials. In the classroom, on the other hand, it is based on the logic of performing high level learning practices such as exercise, analysis, evaluation and production (Mok, 2014).

The first practice of the flipped learning model was carried out in the USA in 2007 by two chemistry teachers working in a high school. The teachers initially thought about how to help the students who missed their class. Based on this idea, they took short videos of their lessons and uploaded them to the internet so that students could access them easily, wherever and whenever they wanted. Then, they saw that the uploaded videos were watched by the students who were late to school, missed their classes, as well as those who could not understand the lesson in the classroom. Over time, this method has become increasingly common, and other high school students, parents, and some teachers have started watching these videos. Teachers realized that students, while watching these videos prepared for themselves, started to learn by themselves. As a result, teachers told them to watch these videos as homework and started to make them do more high-level exercises and activities in the classroom environment. In this way, the foundations of the flipped learning model were laid (Kara, 2015; Temizyürek and Ünlü 2015).

The flipped learning model developed further in the coming years and at the end of this development, the structure of the model has been transformed into the shape depicted below:

FIGURE1. *Structure of the flipped learning model*

Figure 1 shows that the flipped learning model differs greatly from environments based on traditional approaches, where information is presented as teacher-centered. In the figure, the activities in the first circle (blue) are held in the classroom, and the activities in the second circle (green) are held outside the classroom. In environments based on traditional approaches, the teacher presents the information in the lesson and gives the student assignments to be done at home. In contrast, in environments based on the flipped learning model, the teacher presents the information with videos and educational tools prepared in advance. As a result, the communication and solidarity skills, namely collaboration are emphasized in the classroom environment (Mok, 2014). In the flipped learning model, the students watch the lecture videos at home, learn with the educational tools sent by the teacher, and have the chance to reinforce what they learn from these videos and tools with their fellow students in the classroom.

In the flipped learning model, open educational resources or course materials are digitally shared by the teachers on a common platform. Students also examine the subject and the content of the lesson on digital platform according to the instructions made by their teachers before coming to school. Thus, they come prepared for their lesson. In addition, because the first steps of the learning process were carried out by students outside of the classroom, the issues that are not fully absorbed, understood or cause confusion regarding the lesson materials shared by the teachers are forwarded to the teachers via e-mail. Teachers also examine the feedback from students in advance and make the necessary preparations accordingly before coming to class. If the teacher deems necessary, they can form groups of students who send e-mails to them so that they can better understand and absorb the subject in the classroom (Sarıtaş and Yıldız, 2015, p.416).

According to LaFee (2013), teachers have much more time compared to the traditional learning method to take advantage of students' readiness and practice what is learned in the home environment, to increase communication in the classroom, and to use the strategies that the student is in the center and actively learning. In addition, the flipped learning model can also regulate students' working time outside the classroom and make them more effective.

Features of Flipped Learning Model

The flipped learning model is a model, in which the teacher uses the methods of constructivist theory inside and outside the classroom, but it is expected that the model should have the following four features to be called the flipped learning model. These four features are seen as prerequisites for the flipped learning model. Bergmann & Sams (2012) presented the items under the headings below for the educators in order to provide information about the flipped learning model, to present materials and to spread the flipped learning model to determine whether these four features are used. If these items are realized in the learning environment, it is anticipated that there will be no problem calling that model flipped learning model. Sub-items under the main items have been prepared for educators and practitioners as to whether the main item is practiced correctly.

1. Flexible Environment: It is a model where the learning environment is very flexible, can be changed, students can learn wherever and whenever they want, and the teacher's plans adapt to this flexibility. Many different practices of the constructivist approach can be realized within this model.
    a) I offer students the environment and the necessary time to interact and think adequately of their own learning.
    b) I constantly look at the students, give appropriate feedback and make the necessary arrangements.
    c) I constantly offer students different ways to learn concepts and develop expertise.
2. Learning Culture: In the traditional model, the teacher is regarded as the main source of information. However, in the flipped learning model, the teacher is the one offering the environment and the student develops an active learning approach within that environment, makes self-assessments, and works alone and/or as a collaborator.
    a) I provide support for students to perform meaningful activities without being teacher-centered.
    b) I set up the skeleton of all these activities and make them accessible to students through correction and feedback.
3. Intentional Content: In the flipped learning model, the teacher constantly thinks about how the model should be presented so that students can understand the concepts. For this purpose, the teacher constantly questions which material will benefit the student and create active learning environments.
    a) I prioritize the concepts used in direct instruction so that students can access information on their own.
    b) I create the necessary content (usually videos) for students.
    c) I ensure that all students have access to the content.
4. Professional Educator: Although the role of the teacher in the flipped learning model seems to be small, the teacher should act in a very systematic manner, give correct feedbacks and reactions when necessary provide constructive criticism, be supportive and ensure order in the classroom environment.
    a) I give feedback as needed to all students (single, small group and class).
    b) I continuously record my data and observations in the class in order to make a process evaluation. I constantly make constructive assessments in the classroom.
    c) I cooperate and exchange ideas with other educators and practitioners to improve practices.

Comparison of the Flipped Learning Model and Traditional Model

The flipped learning model is a learning model, which is the opposite of traditional learning approach. While the presentation of the content is done in the classroom environment with a teacher-centered approach in the traditional concept, the understanding of the subject by the students mostly occurs through various homework assignments outside the classroom. On the other hand, in the flipped learning model, the students watch the videos prepared about the lessons and revise them with other tools. Hence, they will be prepared for the lesson. During the lesson, they mostly understand the subject in the classroom by doing various activities and exercises (Görü Doğan, 2015).

The flipped learning model differs from traditional approaches in the following aspects (Abeysekera & Dawson, 2015):

1. Change in classroom use.
2. Change in out-of-class time use.
3. Doing activities in the classroom that are traditionally accepted as homework.
4. Doing activities outside the classroom (online) which are traditionally accepted as in-class studies.
5. Activities based on individual learning, peer learning and problem solving.
6. Activities done before coming to class.
7. Activities done outside the classroom such as watching videos.

In the figure below, the differences between the traditional model and the flipped learning model are shown. Green indicates out-of-class applications and blue indicates in-class applications:

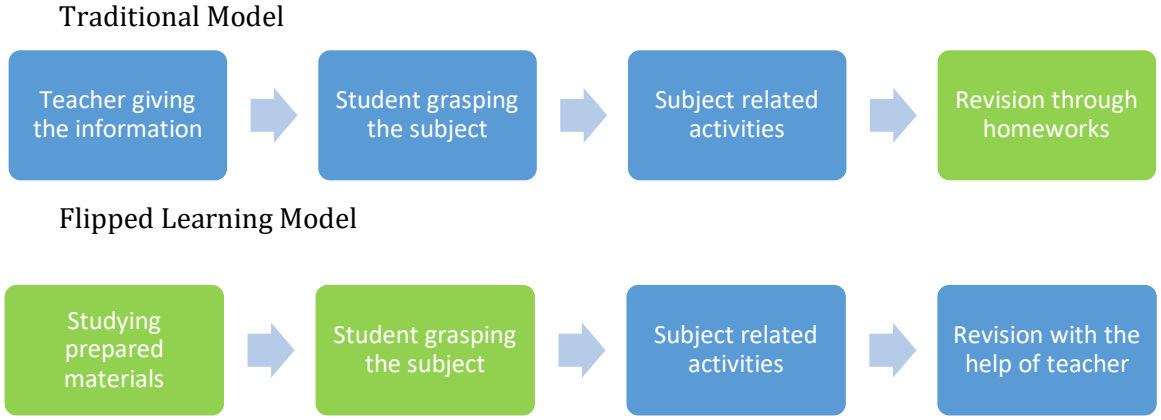


FIGURE 2. *Comparison of traditional education and flipped learning model (Moravec, Williams, Aguilar-Roca and O'dowd, 2010).*

As seen in Figure 2, the transfer of information in the traditional model, the student's understanding of the subject and the activities takes place in the classroom. On the other hand, revising part happens at home, outside the classroom. The main difference of the flipped learning model compared to the traditional model is the transfer of information and the student's understanding of the subject through out-of-class practices. In addition, the topic-related activities and revising part are carried out under the support and supervision of the teacher (Yıldız and Gürşen Otacıoğlu, 2017).

Advantages and Disadvantages of Flipped Learning Model

The main purpose of the flipped learning model is to allocate much more efficient time for in-class exercises by taking out of the classroom the process of 'simply lecturing students' (Filiz and Kurt, 2015).

When the studies on the subject are examined, it is seen that the flipped learning model has various advantages and disadvantages compared to traditional learning. These are shown in

Table 1 (Filiz & Kurt, 2015; Fulton, 2012; Herreid & Schiller, 2013; Kara, 2015; Miller, 2012; Talbert, 2012):

Table 1. *Advantages and disadvantages of the flipped learning model*

Advantages	Disadvantages
All courses are available for learners whenever and wherever they want.	Learners must have strong internet connection as well as a computer.
Learners have the opportunity to learn lessons according to their own pace of understanding.	Interest may decrease over time as it is imperative to continue.
There is no such thing as homework. This is among the factors that motivate students.	If no attendance check is done, students may feel that the lesson is not important.
Since homework is done in a classroom environment, students have the opportunity to ask much more easily the parts they do not understand.	It can be very difficult to check whether learners are watching videos in the virtual environment and learning the subject.
The flipped learning model increases the ability of learners to comment.	Having the opportunity to listen again when the lesson is missed may lead to weakening of the concepts of school and class.
Thanks to the flipped learning model, learners improve their ability to work and communicate in a team.	Learners do not have the chance to ask many questions during the lesson (However, this started to change within time as interactive videos became more common).
It offers parents the opportunity to follow lessons and help their children.	The processing speed of students is different from each other and this situation is not taken into consideration much.
Students and teachers make use of the time spent in the classroom environment much more effectively.	Learners may have some trouble finding video recordings of good quality.
With the flipped learning model, the education process becomes more transparent as the classroom doors are opened to everyone.	The motivation difference between learners also leads to a different success.
It allows students to easily follow the lessons they missed due to their absence from school for various reasons.	Students might mislearn.
Thanks to this learning method, learners have the opportunity to spend more time with original researches.	Learners need to spend extra time to correct the wrong information they've learned.
Learners are more active in the learning process.	Students whose individual learning ability is not fully developed have difficulties.

Hypotheses

In this research, it is thought that individual instrument flute education lessons with the flipped learning model may be effective in increasing the performance and motivation level of the students. In the research, it is aimed to test the effectiveness of the curriculum for the flipped learning model created for this objective. For this purpose, the following experimental setup was followed in the research and hypotheses were tested:

Table 2. *Experimental setup of the research*

Experimental Group	Pre-test	Flipped learning program for flute education	Post-test
Control Group	Pre-test	Traditional Teaching	Post-test

The hypotheses tested in the study are as follows:

Hypothesis 1:

H_0: There is no significant difference between the performance test scores of the groups.
H_1: There is a significant difference between the performance test scores of the groups.

Hypothesis 1.1:

H_0: There is no significant difference between the experimental group performance pre-test scores and post-test scores.
H_1: There is a significant difference between the experimental group performance pre-test scores and post-test scores.

Hypothesis 1.2:

H_0: There is no significant difference between the control group performance pre-test scores and post-test scores.
H_1: There is a significant difference between the control group performance pre-test scores and post-test scores.

Hypothesis 1.3:

H_0: There is no significant difference between the experimental group and control group performance post-test scores.
H_1: There is a significant difference between the experimental group and control group performance post-test scores.

Hypothesis 2

H_0: There is no significant difference between the motivation scores of the groups.
H_1: There is a significant difference between the motivation scores of the groups.

Hypothesis 2.1:

H_0: There is no significant difference between the experimental group motivation pre-test and post-test scores.
H_1: There is a significant difference between the experimental group motivation pre-test and post-test scores.

Hypothesis 2.2:

H_0: There is no significant difference between the control group motivation pre-test and post-test scores.
H_1: There is a significant difference between the control group motivation pre-test and post-test scores.

Hypothesis 2.3:

H_0: There is no significant difference between the experimental and control group motivation post-test scores.
H_1: There is a significant difference between the experimental and control group motivation post-test scores.

Importance

This research is up-to-date in terms of the fact that it deals with flipped learning model, which has become widespread in recent years in secondary and higher education, and it is also functional for determining the effects of this method in terms of performance success and motivation variables in musical instrument education.

One of the issues frequently emphasized in teacher education in recent years is the creation and making use of the tools that will enable students to be active in the home environment. In accordance with the constructivist teaching methods and considering the recommendations of the Ministry of National Education and the five-year development plans of our country, especially the innovations in the field of education technology, it is an important requirement that education programs are now open to active learning, student-centered approaches and technology. For this reason, this study is also important in terms of accelerating the research on technology supported, blended educational environments in teacher education and guiding the transforming activities on programs and curriculum in this field. When the

literature is examined, very few studies on flipped learning model in music and instrument education have been found. To conduct a study on that is important, because it is an experimental practice that takes different variables and looks after different outcomes regarding the use of flipped learning model in music and instrument education.

It is considered that the study will give perspective on the effects of the flipped learning model to be used in instrument lessons for students who receive individual instrument flute education and educators who provide this education. In addition, the study seems to provide a pool of resources regarding the model for the students who received flute training, educators and researchers, thereby contributing to the field of instrument education.

It is considered that using the flipped learning model in flute education and planning the activities for this model will enable the model to be applied by the researchers and educators in instrument education and may provide information for creating a program in instrument education.

It is considered that the effect of the flipped learning model in instrument education will enable instrument training programs and curriculum to be updated to include model-oriented activities in all institutions where instrument education is provided, especially in education faculties and music education departments.

When the related literature was scanned, it was determined that this research is the first one in our country using the flipped learning model in the field of flute education. In addition, it has been determined that there is no study that meets the scope of this research at the international level. The research is expected to provide suggestions for the field researchers as well as being an example for flute training and other instrument training studies to be carried out at home and abroad. In addition, this research is considered to be an original study in terms of shedding light on other following studies and creating a resource (video etc.) for the flute education process.

METHOD

Research Model

This research was designed in the quasi-experimental method type with pre-test, post-test and control group.

Experimental model, which is one of the frequently used models in the field of education, is a research model in which the data to be observed are produced under the control of the researcher in order to try to determine the cause-effect relationships (Karasar, 2006, p.87). In other words, the effect of independent variables on the dependent is examined in the testing models (Kuzu, Çankaya, & Mısırlı, 2011; Büyüköztürk, 2002, p.40). The independent variable of this study is teaching activities based on the flipped learning model in flute education, while dependent variables are the performances and motivation of the students who are studying flute.

"In a research, an experimental method is generally used to measure variables and to reveal cause and effect relationships between these variables" (Çepni, 2009, p. 112). In this respect, if the aim of a researcher is to examine cause-effect relationships, an experimental method is an appropriate research method that can be used. In the experimental method, while an effect is made on the experimental group, no effect on the control group is made and the data received from each group are evaluated at the end of the study (Çepni, 2009, p. 112).

Study Group

The study group (n=30) consists of 30 flute education students studying in the 1st, 2nd, 3rd and 4th grades of Karadeniz Technical University Music Education Program in 2016-2017 academic year. The study group students has been selected taking into consideration the equivalence test, the opinions of the lecturers entering the course, the programs and methods followed, played works, scales, etc. in order to balance students' readiness levels. In addition, for the stated purpose, the grade point average of the students for the fall semester of the 2016-2017 academic year was calculated by examining the Student Affairs records of Karadeniz

Technical University and taking all these criteria into consideration, the study group was divided into three levels: starter (n:10), intermediate (n:10) and advanced (n:10). In this respect, the Purposive Sampling method is used in the selection of the students to be included in the study group. Purposive sampling is the selection of the sample by considering people with required qualifications, events, objects or situations related to the problem of the research (Büyüköztürk et al., 2008, p.177-184). The purposive sampling method is used in order to determine the effect of the practice on the starter, intermediate and advanced level students.

After this stage, every student from each different level group has drawn a number to form experimental and control groups. Experimental and control groups was formed by neutral (random) assignment method: starter experimental group (n:5); starter control group (n:5); intermediate experimental group (n:5); intermediate control group (n:5); advanced experimental group (n:5); advanced control group (n:5). One way to reduce or remove the effects of external variables is to create experimental and control groups according to the principle of neutrality. As a matter of fact, in experimental studies, the appointment of experimental and control groups as neutral (random) is seen as a prerequisite for the validity of the studies (Büyüköztürk, 2002, p. 40). In addition, in order to determine whether this prerequisite was met, pre-tests applied to both groups regarding the level of performance and motivation were also used. Mann-Whitney U test was used in the analysis of these pre-tests. Mann Whitney U test is a non-parametric alternative of two independent samples t-test and is used to test whether two independent samples are random samples taken from the same median sample obtained by ranking or intermittent scale (Büyüköztürk, 2016, p.165)

In the tables below, firstly, the descriptive values of the pre-tests related to the motivation and performances of the study group and then the results of Mann-Whitney U test are given.

Table 3. *Descriptive statistics of motivation pre-test scores of the groups*

Motivation Scale Pre-test	**N**	**Level**	**N**	$\overline{X}$	**Sd**
Experimental Group	15	Starter	5	44.0	7.5
		Intermediate	5	46.2	7.0
		Advanced	5	41.8	4.3
Motivation Scale Pre-test	N	Level	N	$\overline{X}$	**Sd**
Control Group	15	Starter	5	48.0	2.8
		Intermediate	5	46.0	5.3
		Advanced	5	40.6	3.0

Arithmetic mean of motivation pre-test scores of the experimental group starter students is 44.0, standard deviation is 7.5; the arithmetic mean of the pre-test scores of the motivation scale of the control group beginner students is 48.0 and the standard deviation is 2.8.

The arithmetic mean of the motivation pre-test scores of the experimental group intermediate students is 46.2, standard deviation is 7.0; the mean pre-test arithmetic score of the motivation scale of the control group intermediate students is 46.0 and the standard deviation is 5.3.

The arithmetic mean of the motivation pre-test scores of the experimental group advanced students is 41.8, standard deviation is 4.3; the mean motivation scale pre-test arithmetic score of the control group advanced students is 40.6 and the standard deviation is 3.0.

Table 4. *Results of mann-whitney u test performed according to motivation pre-test scores of the groups*

Level	**Group**	**N**	**Mean Rank**	**Sum of Ranks**	**U**	**z**	**p**
Starter	Control	5	6.2	31.0	9.000	-0.742	0.458
	Experimental	5	4.8	24.0			
Intermediate	Control	5	5.2	26.0	11.000	-0.314	0.753
	Experimental	5	5.8	29.0			
Advanced	Control	5	4.6	23.0	8.000	-0.958	0.338
	Experimental	5	6.4	32.0			

As shown in Table 4, according to the results of Mann-Whitney U test conducted concerning the motivation pre-test scores of the groups, there was no significant difference between the groups (p>0.05). According to this result, it can be said that the experimental and control groups are equivalent in terms of motivation test pre-test scores according to the levels.

Table 5. *Descriptive statistics of the groups' performance pre-test scores*

Performance Pre-test	**N**	**Level**	**N**	$\overline{X}$	**Sd**
Experimental Group	15	Starter	5	38.4	0.5
		Intermediate	5	38.8	0.5
		Advanced	5	39.4	0.2
Performance Pre-test	N	Level	N	$\overline{X}$	Sd
Control Group	15	Starter	5	36.8	1.7
		Intermediate	5	39.2	0.4
		Advanced	5	39.1	0.5

The arithmetic mean of the performance pre-test scores of the experimental group starter students is 38.4, standard deviation is 0.5; the average of performance pre-test arithmetic scores of the control group beginner students is 36.8, and the standard deviation is 1.7.

The arithmetic mean of the performance pre-test scores of the experimental group intermediate students is 38.8, standard deviation is 0.5; the average of the performance pre-test arithmetic scores of the control group intermediate students is 39.2, and the standard deviation is 0.4.

The arithmetic mean of the performance pre-test scores of the experimental group advanced students is 39.4, standard deviation is 0.2; the average of the performance pre-test arithmetic scores of the control group advanced students is 39.1 and the standard deviation is 0.5.

Table 6. *Results of mann-whitney u test performed according to motivation pre-test scores of the groups*

Level	**Group**	**N**	**Mean Rank**	**Sum of Ranks**	**U**	**z**	**p**
STARTER	Control	5	4.3	21.5	6.500	-1.265	0.206
	Experimental	5	6.7	33.5			
INTERMEDIATE	Control	5	6.3	31.5	8.500	-0.849	0.396
	Experimental	5	4.7	23.5			
ADVANCED	Control	5	4.4	22.0	7.000	-1.189	0.234
	Experimental	5	6.6	33.0			

As shown in Table 6, according to Mann-Whitney U test results made concerning the performance pre-test scores of the groups, there was no significant difference between the groups (p>0.05). According to this result, it can be said that the experimental and control groups are equivalent in terms of motivation test pre-test scores according to the levels.

Table 7 shows the distribution of students in the study group according to their demographic characteristics:

Table 7. *Distribution of students in the study group according to their demographic characteristics*

Level	**Experimental (N)**	**Control (N)**	**f**	**%**
Starter	5	5	10	33.3
Intermediate	5	5	10	33.3
Advanced	5	5	10	33.3
Total	15	15	30	100.0
Age	Experimental (N)	Control (N)	f	%
23 and below	11	13	24	80.0
24-26	4	1	5	16.7
27-29	-	1	1	3.3
Total	15	15	30	100.0

Continuation of Table 7.

Gender	Experimental (N)	Control (N)	f	%
Female	13	14	27	90.0
Male	2	1	3	10.0
Total	15	15	30	100.0
Educational Background	Experimental (N)	Control (N)	f	%
FAHS	11	13	24	80.0
Other	4	2	6	20.0
Total	15	15	30	100.0
Grade	Experimental (N)	Control (N)	f	%
1	9	6	15	50.0
2	2	7	9	30.0
3	2	2	4	13.3
4	2	-	2	6.7
Total	15	15	30	100.0
Flute Starting Age	Experimental (N)	Control (N)	f	%
13	2	-	2	6.7
14	2	2	4	13.3
15	6	3	9	30.0
16	1	3	4	13.3
18	-	3	3	10.0
19	2	2	4	13.3
20	2	-	2	6.7
21	-	2	2	6.7
Total	15	15	30	100.0
Daily practice (hour):	Experimental (N)	Control (N)	f	%
less than 1 hour	5	6	11	36.7
1 hour	8	9	17	56.7
2 hours	2	-	2	6.7
Total	15	15	30	100.0

Data Collection Tools

In the selection of data collection tools, firstly, the literature (thesis, article, book, scientific research, internet, etc.) related to the subject was examined in order to form the basis of the research and to reach the objectives set before; in the light of the information obtained from examinations, it was decided which data collection tools would be chosen and how their conceptual structure, framework and content would be.

Based on this point, two kinds of data collection tools were used to obtain the data of the research. These are as follows:

1. Applied to experimental and control groups for pre-test and post-test; "Performance Observation Form" whose validity and reliability was provided by the researcher
2. Applied to experimental and control groups for pre-test and post-test. It is the "Individual Instrument Lesson Motivation Scale" developed by Girgin (2015).

The appearance of the experimental pattern to be used in the research is shown in table 8:

Table 8. *Pattern of the research*

Group	Pre-test	Practice	Post-test
Experimental Group	Performance Observation Form	Flipped Learning	Performance Observation Form
	Motivation Scale		Motivation Scale
Control Group	Performance Observation Form	Traditional Teaching	Performance Observation Form
	Motivation Scale		Motivation Scale

Performance observation form

In the research, the performance observation form developed by the researcher was used to measure the students' performance success levels. Validity and reliability studies of the performance observation form and expert opinion were consulted to evaluate the content based on expert opinion, and reliability studies were conducted between the different raters for the experiment-control groups. The prepared performance observation form consists of 10 items related to flute training, and a 5-point likert scale was used for scoring. The results of the independent inter-rater agreement (inter-rater reliability) test performed separately for the experimental and control groups are given below.

Table 9. *The relationship between the scores of the experimental group raters performance observation form*

Raters	1.R.	2.R.	3.R.	4.R.	5.R.
1. Rater	1.00				
2. Rater	0.996	1.00			
3. Rater	0.990	0.992	1.00		
4. Rater	0.998	0.989	0.991	1.00	
5. Rater	0.987	0.989	0.994	0.991	1.00

A significant correlation was found in terms of the scores that the experimental group raters gave to the performance observation form ($p<0.05$).

Table 10. *The relationship between the scores of the experimental group raters performance observation form*

Raters	1.R.	2.R.	3.R.	4.R.	5.R.
1. Rater	1.00				
2. Rater	0.661	1.00			
3. Rater	0.746	0.541	1.00		
4. Rater	0.579	0.634	0.688	1.00	
5. Rater	0.576	0.528	0.595	0.599	1.00

A significant correlation was found in terms of the scores that the experimental group raters gave to the performance observation form ($p<0.05$).

According to these results, the performance observation form is suitable for use in the study. It was considered as a valid and reliable measurement tool and applied to the study group (N=30) before and after the experiment.

Individual instrument lesson motivation scale

In the research, "Individual Instrument Lesson Motivation Scale", which was developed by Girgin (2015) and whose validity and reliability studies were performed by the researcher, was used to examine the motivations of the students for the individual instrument lesson. The scale consists of 25 items and scoring is done in 5-point Likert type. Cronbach alpha value for the scale is .77. In the study, Cronbach alpha value of the scale was recalculated and turned out to be .98. The highest score that can be obtained from the scale is 125, and the lowest score is 25. As the score to be obtained from the scale increases, the level of motivation will increase. As the score decreases, the level of motivation will decrease. Findings reveal that "Individual Instrument Lesson Motivation Scale" is a measurement tool suitable for measuring the motivation of music teacher candidates for instrument lesson.

Application Process and Data Collection

In line with the problem of the research, while applying the flute education program based on the activities of the 10-week flipped learning model prepared in accordance with the cognitive, affective and psychological learning areas for the experimental group students receiving flute education, traditional teaching method was applied to the control group. The program applied to the experimental and control groups is the same, but the activities are different. Within the program prepared for the experimental group, in order not to distract students, video lessons, the longest of which is around 10 minutes, and which are not found in

the flute education literature, have been created for students to watch at home and answer the necessary questions. Screen examples for video lessons are as follows.

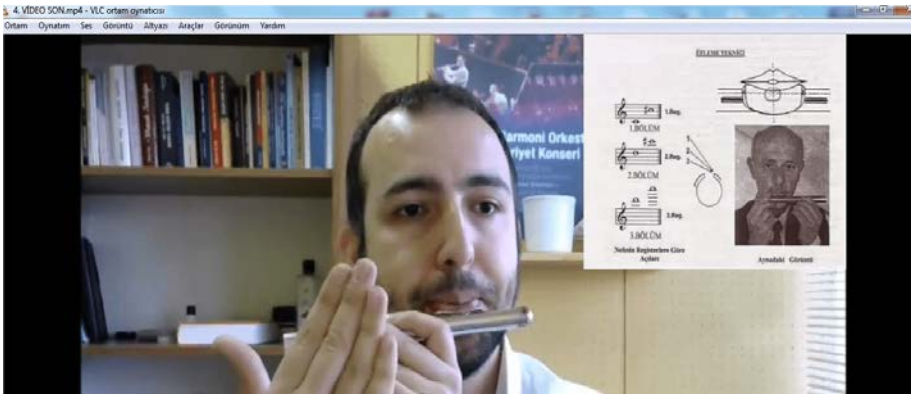


IMAGE 1. *An example of video lessons*

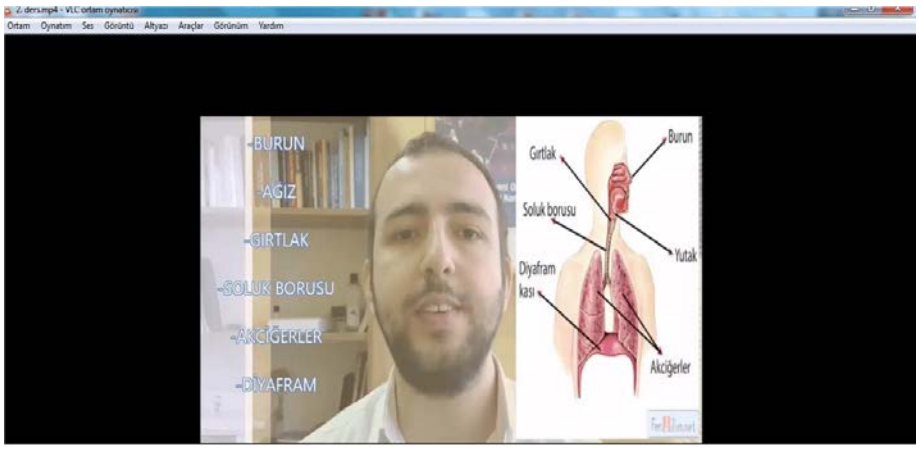
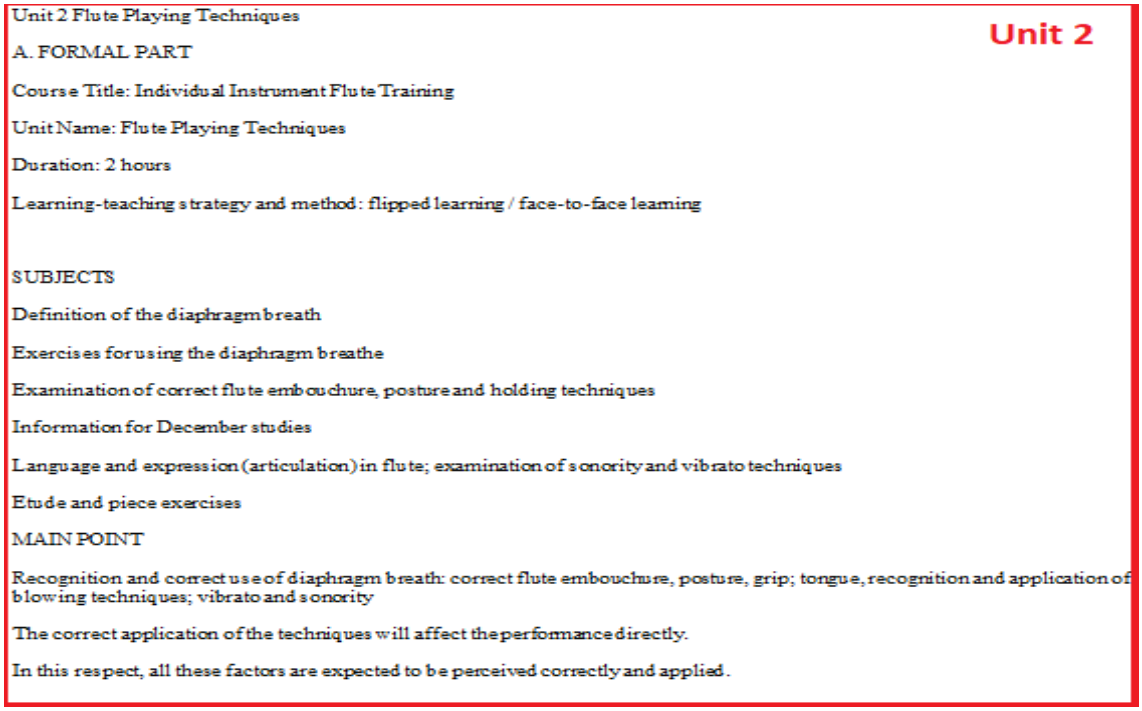


IMAGE 2. *An example of video lesson*

The videos and other tools created based on the activities of flipped learning model were presented to the students via social media and the follow-up of the students was provided through their social media accounts. In-class activities for experimental group students consist of group discussion, questions and answers, putting the information given in the home environment into practice, reinforcing the exercises in the home environment and the evaluation process. At this stage, it was tried to improve students' high level learning. In this process, traditional education for flute education was applied to the control group. Information about instrument education in the control group was given by the teacher in the classroom and the works selected for students were performed in the classroom. Part of the plan of a unit of the training program is given below as an example.



Unit 2 Flute Playing Techniques

Unit 2

A. FORMAL PART

Course Title: Individual Instrument Flute Training

Unit Name: Flute Playing Techniques

Duration: 2 hours

Learning-teaching strategy and method: flipped learning / face-to-face learning

SUBJECTS

Definition of the diaphragm breath

Exercises for using the diaphragm breathe

Examination of correct flute embouchure, posture and holding techniques

Information for December studies

Language and expression (articulation) in flute; examination of sonority and vibrato techniques

Etude and piece exercises

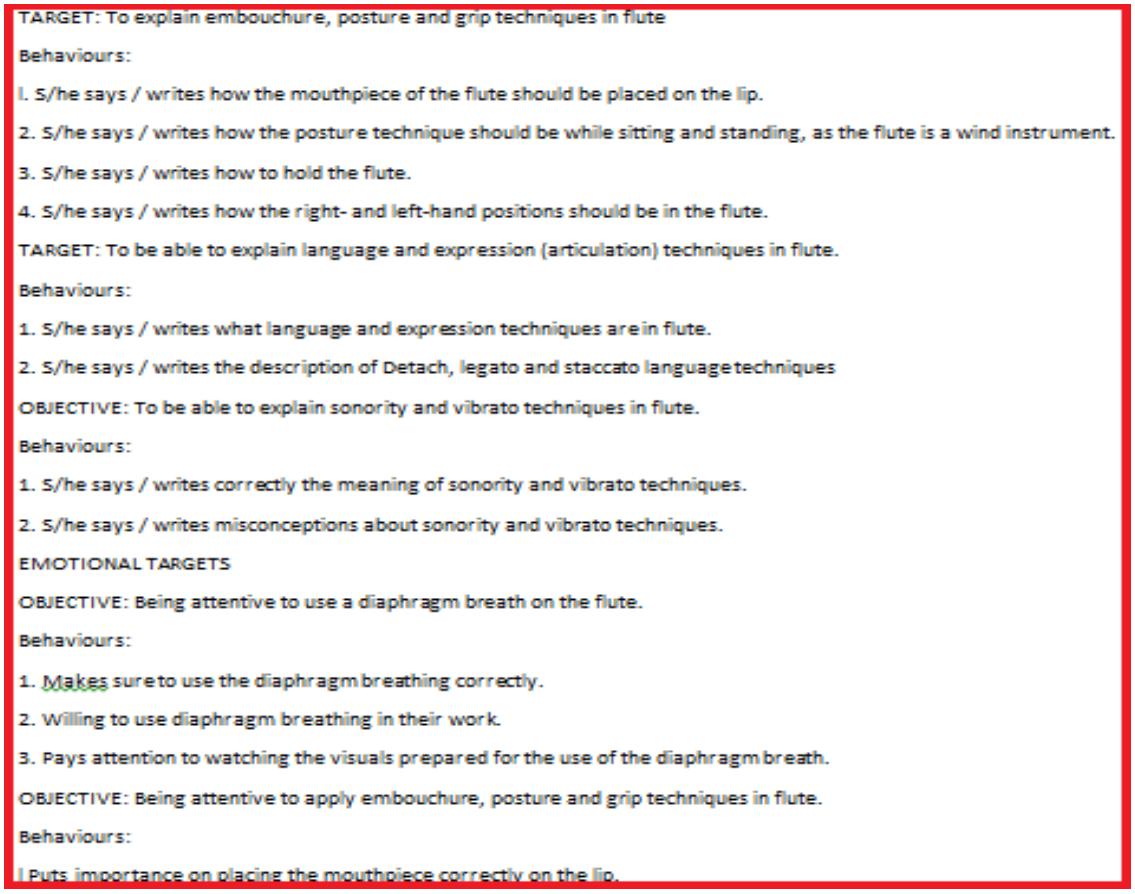
MAIN POINT

Recognition and correct use of diaphragm breath: correct flute embouchure, posture, grip; tongue, recognition and application of blowing techniques; vibrato and sonority

The correct application of the techniques will affect the performance directly.

In this respect, all these factors are expected to be perceived correctly and applied.

IMAGE 3. *Training program example*



TARGET: To explain embouchure, posture and grip techniques in flute

Behaviours:

l. S/he says / writes how the mouthpiece of the flute should be placed on the lip.

2. S/he says / writes how the posture technique should be while sitting and standing, as the flute is a wind instrument.

3. S/he says / writes how to hold the flute.

4. S/he says / writes how the right- and left-hand positions should be in the flute.

TARGET: To be able to explain language and expression (articulation) techniques in flute.

Behaviours:

1. S/he says / writes what language and expression techniques are in flute.

2. S/he says / writes the description of Detach, legato and staccato language techniques

OBJECTIVE: To be able to explain sonority and vibrato techniques in flute.

Behaviours:

1. S/he says / writes correctly the meaning of sonority and vibrato techniques.

2. S/he says / writes misconceptions about sonority and vibrato techniques.

EMOTIONAL TARGETS

OBJECTIVE: Being attentive to use a diaphragm breath on the flute.

Behaviours:

1. Makes sure to use the diaphragm breathing correctly.

2. Willing to use diaphragm breathing in their work.

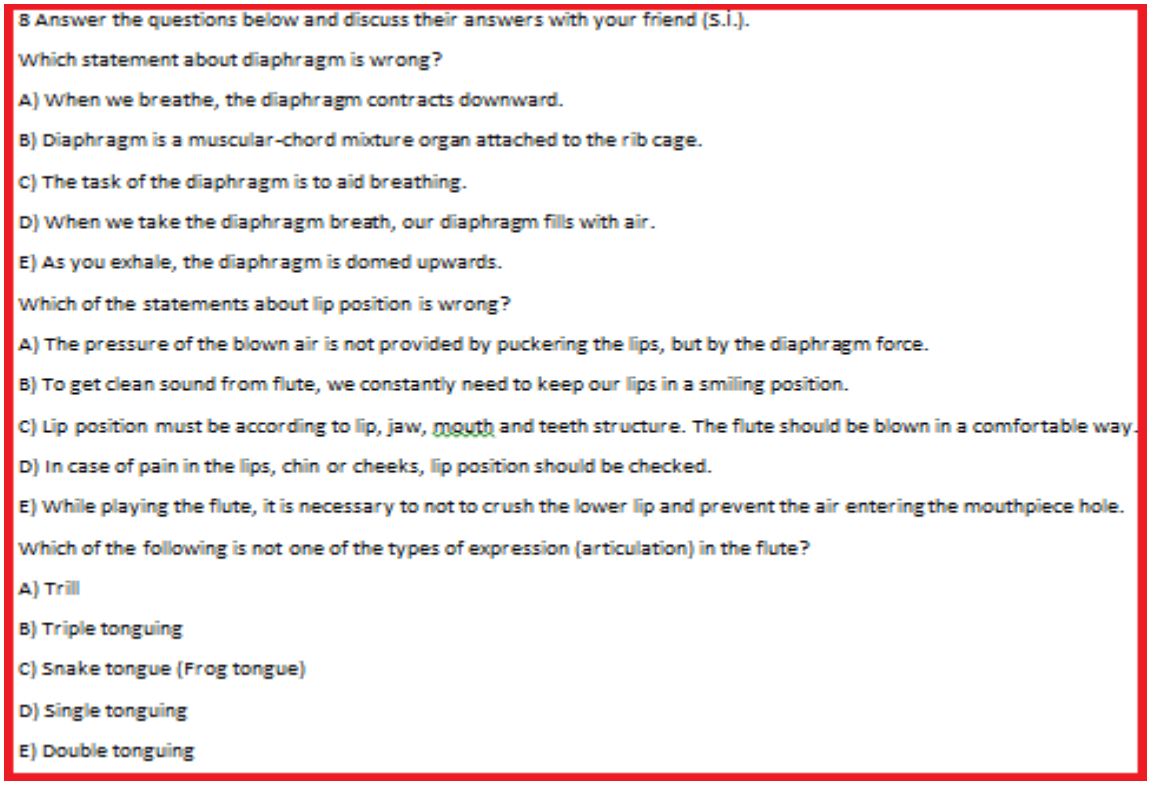
3. Pays attention to watching the visuals prepared for the use of the diaphragm breath.

OBJECTIVE: Being attentive to apply embouchure, posture and grip techniques in flute.

Behaviours:

l Puts importance on placing the mouthpiece correctly on the lip.

IMAGE 4. *Training program example: target behaviors*


B Answer the questions below and discuss their answers with your friend (S.İ.).

Which statement about diaphragm is wrong?

A) When we breathe, the diaphragm contracts downward.

B) Diaphragm is a muscular-chord mixture organ attached to the rib cage.

C) The task of the diaphragm is to aid breathing.

D) When we take the diaphragm breath, our diaphragm fills with air.

E) As you exhale, the diaphragm is domed upwards.

Which of the statements about lip position is wrong?

A) The pressure of the blown air is not provided by puckering the lips, but by the diaphragm force.

B) To get clean sound from flute, we constantly need to keep our lips in a smiling position.

C) Lip position must be according to lip, jaw, mouth and teeth structure. The flute should be blown in a comfortable way.

D) In case of pain in the lips, chin or cheeks, lip position should be checked.

E) While playing the flute, it is necessary to not to crush the lower lip and prevent the air entering the mouthpiece hole.

Which of the following is not one of the types of expression (articulation) in the flute?

A) Trill

B) Triple tonguing

C) Snake tongue (Frog tongue)

D) Single tonguing

E) Double tonguing

IMAGE 5. *Training program example: in-class questions and answers*

Then, motivation and performance tests (pre-test/post-test) were applied to both groups before and after the training. For the measurement of motivation points, the "Motivation Scale for Instrument Class" was applied to all students one by one and was given approximately 7 minutes in practice.

As a result of the expert opinion, the works and studies regarding performance measurement were recorded with a camera recording to be sent to five people who are experts in the field after the 7-minute decipher period given to the students. These records were sent to the expert group consisting of five people and the records were evaluated by the experts with the help of the "Performance Observation Form".

1. In the selection of works:
2. Expert trainers' opinion
3. The suitability of the works to the student level
4. Suitable works for educational music
5. Being composed-written by respected composers of the flute literature
6. Not being performed by students before
7. Complying with the determined goals and behaviors
8. The criteria of motivating students and not being too difficult were taken into consideration.

Data Analysis

The data gathered from the study within the framework of the research problem, the main hypotheses and sub-hypotheses were transferred to the computer environment and statistical analyses were performed. Descriptive statistics such as frequency, percentage and arithmetic mean were used in statistical analysis. The non-parametric Mann Whitney-U and Wilcoxon Signed Ranks Test was applied from the predictor statistics. Whether the data obtained from the research shows a normal distribution with the Shapiro-Wilk test was examined. The reason for using nonparametric tests in the study is due to the fact that the study data did not show a normal distribution. Parametric tests are used if the data obtained from the studies show normal distribution properties, and non-parametric tests are used if they do not. In the Shapiro-Wilk test, if the value of "p" is significant ($p<0.05$), it is decided that the

distribution is not normal and non-parametric, if it is not significant (p>0.05), parametric tests are used by deciding that the distribution is normal (Baştürk, 2010, p.89). Nonparametric tests were preferred as the number of the study group did not meet the required number for parametric tests. In studies where the study group under (n:30) is, it is a correct approach to prefer non-parametric tests (Büyüköztürk, 2002, p.7).

Before the experimental study, the scores of the one-way measurement for the pre-tests were analyzed with the Mann Whitney-U test in order to determine the equivalence of the groups. Descriptive statistics were used to compare the mean scores of the experimental and control groups, and also the Mann Whitney-U test was used. Wilcoxon Signed Ranks Test was used to compare the difference between the pre-test and post-tests of the experimental and control group students. Then, Mann-Whitney U test was used again to compare the pre-test and post-test scores for these two groups.

FINDINGS

In this part of the study, the data obtained in line with the hypotheses of the research are presented in tables and interpreted by considering the order of the hypotheses.

Findings Related to Hypothesis 1

H_0 : There is no significant difference between the performance test scores of the groups.
H_1 : There is a significant difference between the performance test scores of the groups.

Findings for 1.1, 1.2 and 1.3 hypotheses created under this main hypothesis are presented in the tables below.

Findings Related to Hypothesis 1.1

H_0 : There is no significant difference between the experimental group performance pre-test scores and post-test scores.
H_1 : There is a significant difference between the control group performance pre-test scores and post-test scores.

Table 11: *Wilcoxon signed rank test results to determine whether the performance pre-test-post-test scores of the experimental group differ*

Level Groups	Experimental Group Post-test- Pre-test	N	Mean Rank	Sum of Ranks	z	p
STARTER	Negative Rank	0	0.00	0.00	-2.023	0.043
	Positive Rank	5	3.00	15.00		
	Equal	0				
INTERMEDIATE	Negative Rank	0	0.00	0.00	-2.023	0.043
	Positive Rank	5	3.00	15.00		
	Equal	0				
ADVANCED	Negative Rank	0	0.00	0.00	-2.041	0.041
	Positive Rank	5	3.00	15.00		
	Equal	0				

As seen in Table 11, according to the Wilcoxon signed rank test results, which were conducted to determine whether the pre-test, post-test scores of the experimental group's starter, intermediate and advanced groups differ, significant differences were detected between the pre-test-post-test scores of the beginner, intermediate and advanced groups (p<0.05). Accordingly, the null hypothesis was rejected for all level groups, and the alternative hypothesis was accepted. Based on the findings, it can be said that the curriculum implemented in line with activities based on the flipped learning model is effective in increasing the performance of students in the starter, intermediate and advanced levels.

Findings Related to Hypothesis 1.2

H_0 : There is no significant difference between the experimental group performance pre-test scores and post-test scores.

H_1 : There is a significant difference between the control group performance pre-test scores and post-test scores.

Table 12: *Wilcoxon signed rank test results to determine whether the performance pre-test-post-test scores of the experimental group differ*

Level Groups	Control Group Pre-test-Post-test	N	Mean Rank	Sum of Ranks	z	p
STARTER	Negative Rank	0	0.00	0.00	-2.023	0.043
	Positive Rank	5	3.00	15.00		
	Equal	0				
INTERMEDIATE	Negative Rank	1	4.00	4.00	-0.944	0.345
	Positive Rank	4	2.75	11.00		
	Equal	0				
ADVANCED	Negative Rank	0	0.00	0.00	-2.023	0.043
	Positive Rank	5	3.00	15.00		
	Equal	0				

As can be seen in Table 12, according to the results of Wilcoxon signed-rank test results to determine whether the control group starter, intermediate and advanced groups' performance scores differ, a significant difference was found in favor of the post-test in the starter and advanced groups ($p<0.05$), on the other hand, there was no significant difference for the intermediate level group ($p>0.05$). Accordingly, while an alternative hypothesis was accepted for the starter and advanced groups, and the null hypothesis was rejected; for the intermediate group, the null hypothesis was accepted and the alternative hypothesis was rejected. Based on the findings, it can be said that there is a significant increase in the pre-and post-training performances of the starter and advanced level control group, which received traditional education, while there is no significant increase in the intermediate level group.

Findings Related to Hypothesis 1.3.

H_0 : There is no significant difference between the experimental group performance pre-test scores and post-test scores.

H_1 : There is a significant difference between the experimental group performance pre-test scores and post-test scores.

Table 13: *Mann-whitney u test results to determine whether the performance post-test scores of the experimental and control groups differ*

Level	Group	N	Mean Rank	Sum of Ranks	U	z	p
STARTER	Control	5	3.0	15.0	0.000	-2.627	0.009
	Experimental	5	8.0	40.0			
INTERMEDIATE	Control	5	3.0	15.0	0.000	-2.611	0.009
	Experimental	5	8.0	40.0			
ADVANCED	Control	5	3.0	15.0	0.000	-2.660	0.008
	Experimental	5	8.0	40.0			

As seen in Table 13, according to the results of Mann-Whitney U test conducted to determine whether the performance post-test scores of the starter, intermediate and advanced groups of the experimental and control groups differ, there's a significant difference in favor of the experimental group between the post-test scores of the beginner, intermediate and advanced level groups ($p<0.05$). Accordingly, the null hypothesis was rejected for all level groups, and the alternative hypothesis was accepted. Based on the findings, it can be said that the curriculum implemented in line with activities based on the flipped learning model is effective in increasing the performance of students in the starter, intermediate and advanced

levels.

Findings Related to Hypothesis 2

H_0 : There is no significant difference between the motivation scores of the groups.
H_1 : There is a significant difference between the motivation scores of the groups.

Findings for 2.1, 2.2 and 2.3 hypotheses created under this main hypothesis are presented in the tables below.

Findings Related to Hypothesis 2.1

H_0 : There is no significant difference between the experimental group performance pre-test and post-test scores.
H_1 : There is a significant difference between the control group performance pre-test and post-test scores.

Table 14: *Wilcoxon signed rank test results to determine whether the performance pre-test-post-test scores of the experimental group differ*

Level Groups	Experimental Group Pre-test-Post-test	N	Mean Rank	Sum of Ranks	z	p
STARTER	Negative Rank	0	0.00	0.00	-2.023	0.043
	Positive Rank	5	3.00	15.00		
	Equal	0				
INTERMEDIATE	Negative Rank	0	0.00	0.00	-2.032	0.042
	Positive Rank	5	3.00	15.00		
	Equal	0				
ADVANCED	Negative Rank	0	0.00	0.00	-2.041	0.041
	Positive Rank	5	3.00	15.00		
	Equal	0				

As seen in Table 14, according to the Wilcoxon signed rank test results, which were conducted to determine whether the pre-test-post-test scores of the experimental group's starter, intermediate and advanced groups differ, significant differences were detected between the pre-test-post-test scores of the starter, intermediate and advanced groups ($p<0.05$). Accordingly, the null hypothesis was rejected for all level groups, and the alternative hypothesis was accepted. Based on the findings, it can be said that the curriculum implemented in line with activities based on the flipped learning model is effective in increasing the performance of students in the starter, intermediate and advanced levels.

Findings Related to Hypothesis 2.2

Hypothesis 2.2

H_0 : There is no significant difference between the experimental group performance pre-test and post-test scores.
H_1 : There is a significant difference between the control group performance pre-test and post-test scores.

Table 15: *Wilcoxon signed rank test results to determine whether the performance pre-test-post-test scores of the experimental group differ*

Level Groups	Control Group Pre-test-Post-test	N	Mean Rank	Sum of Ranks	z	p
STARTER	Negative Rank	3	4.00	12.00	-1.219	0.223
	Positive Rank	2	1.50	3.00		
	Equal	0				
INTERMEDIATE	Negative Rank	3	3.00	9.00	-1.461	0.144
	Positive Rank	1	1.00	1.00		
	Equal	1				
ADVANCED	Negative Rank	2	2.25	4.50	-0.813	0.416
	Positive Rank	3	3.50	10.50		
	Equal	0				

As seen in Table 15, according to the results of the Wilcoxon signed rank test conducted to determine whether the starting, intermediate and advanced levels of the control group differ, no significant difference was observed in the intermediate and advanced groups ($p>0.05$). Accordingly, the zero hypothesis was accepted for the beginning, intermediate and advanced groups, and the alternative hypothesis was rejected. Based on the findings, it can be said that there is no significant increase in the pre-and post-training motivation of the control group, which is traditionally trained.

Findings Related to Hypothesis 2.3

H_0 : There is no significant difference between the experimental group's performance post-test and control group's post-test scores.

H_1 : There is a significant difference between the experimental group's performance post-test scores and control group's post-test scores.

Table 16: *Mann-Whitney U test results to determine whether the performance post-test scores of the experimental and control groups differ*

Level	Group	N	Mean Rank	Sum of Ranks	U	z	p
STARTER	Control	5	3.00	15.00	0.000	-2.619	0.009
	Experimental	5	8.00	40.00			
INTERMEDIATE	Control	5	3.00	15.00	0.000	-2.619	0.009
	Experimental	5	8.00	40.00			
ADVANCED	Control	5	3.00	15.00	0.000	-2.685	0.007
	Experimental	5	8.00	40.00			

As seen in Table 16, according to the results of Mann-Whitney U test conducted to determine whether the performance post-test scores of the starter, intermediate and advanced groups of the experimental and control groups differ, there is a significant difference in favor of the experimental group between the post-test scores of the starter, intermediate and advanced level groups ($p<0.05$). Accordingly, the null hypothesis was rejected for all level groups, and the alternative hypothesis was accepted. Based on the findings, it can be said that the curriculum implemented in line with activities based on the flipped learning model is effective in increasing the performance of students in the beginner, intermediate and advanced levels.

DISCUSSION and CONCLUSION

Discussion

Today, there is a great difference compared to the past in the views of students studying in secondary and higher education, their approach to knowledge and the means of accessing information. The students of the present generation or to Prensky's "digital citizens"(2001, p.1-6) are students who can socialize thanks to mobile devices and learn on their own, that is, they

meet many requirements with technology. In this respect, one of the important trends in today's education is the inclusion of technology in education and training processes. But in this case, how can we include technology in the process? This question comes to minds. Indeed, many applications had been tried for this in the past and the result was a disappointment. Edison thought that the education-oriented films in 1922 would be a breakthrough in the world of education, but the result was not as expected (as cited in Cuban, 1986, p.62). Such examples can be multiplied. In this case, the question that needs to be questioned is how useful it is to use the technology only as an information transmission tool. At this point, Clark (1994) stated that the technological tools used only to convey information cannot create the expected effect in the education process, and that qualified education depends on the content and teaching method used. There are different researchers who advocate these ideas in the literature (see Oblinger & Hawkins 2006; O'Flaherty & Philips 2015).

In line with the above views, it is thought that this method gap can be filled with flipped learning, in which technological tools can be used efficiently, the students can be active and the time in the classroom can be separated into the upper steps of learning. As a matter of fact, there are studies suggesting that the flipped learning model can be a good solution for a qualified education process (see Bergman & Sams, 2012, p.113; Abeysekera & Dawson, 2015; Fautch 2015).

As in all areas of education, technology is used in music education. This also applies to instrument education, an important branch of music education. Instrument education aims certain musical behaviors to be gained integrated through instrument technique. Flute education is one of the important branches of instrument education. The flute education, which is handled within the scope of this research, is given in music education programs of education faculties for eight semesters.

According to the results of this research, it has been determined that the education given based on the flipped learning model has a much more positive effect compared to conventional education on the performance and motivation of the music education program students in the faculty of education who received flute education and the model is a constructive education model.

In the analysis conducted on the first hypothesis of the research and the performance scores of the experimental and control groups for the sub-hypotheses of this hypothesis, the flipped learning model was found to be more effective than traditional teaching. In the analysis where the pre-test and post-test performance scores of the control group were examined, a significant difference was detected in favor of the post-test in the beginning and advanced level groups. The reason for this difference may be the classroom training students have received for 10 weeks and individual performance enhancing exercises during this training.

As a conclusion, the positive effect of flipped learning might result from the performance-enhancing works performed by the students at home within the context of activities based on the video-supported flipped learning model, scale, arpeggio and tiers studies for the flute education, and the activities done in the classroom, the video lessons that shows the structure of the work and etude. In addition, according to Sever (2014), the flipped learning model reduces the student's performance anxiety. Considering that the decrease in performance anxiety will cause students to exhibit their performance more effectively, one reason for the performance success observed in this study is thanks to the flipped learning model, which reduces the performance anxiety.

When studies on the flipped learning model are analyzed in the literature, it is seen that they address many variables (success, motivation, attitude, self-efficacy, active learning etc.) for the flipped learning model. In other words, there are many studies on these variables and the flipped learning model in the literature. However, the knowledge we have about students' instrument performance and flipped learning model is very few. The main reason for this situation is that there are a little information presented to us in today's literature.

When the related literature is examined, a study supporting the findings related to this study was found. Topalak (2016, p.117) worked with eleven third grade students in the study, in which the inverted (flipped) learning model was used to determine the effect of the beginner

level piano teaching. As a result of the research, it has been determined that there is a positive difference for the experimental group between the flipped learning model and the traditional learning model while playing the correct rhythm, an acceptable tempo, in musicality, technical behaviors and parts integrity.

In the analysis conducted on the first hypothesis of the research and the performance scores of the experimental and control groups for the sub-hypotheses of this hypothesis, the flipped learning model was found to be more effective than traditional teaching.

As a result of the study, it was determined that the motivation of the students studying with the flipped learning model towards the instrument lesson was higher compared to the students studying with the traditional model. Bergmann & Sams (2012, p.100) also argued that the flipped learning model is a motivation strengthening model for the student. The reason for this situation might be that the flipped learning environment meets the needs of today's students, called the "x and y generation", and also because of the positive effects of active learning practices, the students' susceptibility to this model related to technology and their high interest in working with this model.

In the literature, there are studies indicating that the flipped learning model causes an increase in student motivation and that this study is in parallel with the result (see Zappe, Leicht, Messner, Litzinger & Lee, 2009; Akgün, 2015, p.89; Sırakaya, 2015, p. 115; Turan, 2015, p.3; Aşıksoy and Özdamlı, 2016; Topalak, 2016, p.117; Çukurbaşı, 2016, p.190; Xin-yue, 2016; Yavuz, 2016, p.81 and Yılmaz, 2017). These studies support the finding that the flipped learning model has positive effects on student motivation.

For instance, the findings obtained from Yavuz's (2016, p.81) study on the effect of inverted classroom practices at the secondary level on academic achievement and the study of student experiences showed that the academic achievement scores of the students in the experimental and control groups did not differ. However, it was revealed that students liked the model, that the model should be used in other lessons and that the model increased motivation. In addition, students think that technological support, well-planned system, teacher and students should be informed correctly for the implementation of the model.

Turan (2015, p.3), in a study he conducted to examine the effect of preschool teacher education students on academic success, cognitive load and motivation by using the flipped learning model, he came to conclusion that students studying with the flipped learning model had higher level of motivation compared to the students studying with traditional model.

However, there are results in the literature that contradict this result (cf. Johnson, 2013, p.50; Wallace, 2014; Chiu, 2016, p.67).

Chiu (2016, p. 67) concluded that the motivation levels of both groups were similar in their study with high school students studying with the flipped learning model and traditional model. It can be said that the reason of these differences are the differences in application, different characteristics of the study group, the methods and techniques used.

Despite the fact that most educators prefer environments based on flipped learning model over traditional classroom environments, Wallace (2014) argues that students who avoid technology will have problems in environments based on flipped learning model, and therefore this will cause a decrease in students' motivation. However, considering today's “x and y generation” students are integrated with the technology; it is also a matter of discussion how much this view can be defended.

Conclusion

Results related to Hypothesis 1

Results for 1.1, 1.2 and 1.3 hypotheses created under this main hypothesis are presented below item by item.

Results related to Hypothesis 1.1:

According to the results of Wilcoxon signed-ranks test conducted to determine whether the performance pre-test-post-test scores differ in different level groups of the experimental group, a significant difference was found in favor of the post-test between the pre-test-post-test

scores of the starter, intermediate, advanced level groups ($p<0.05$). Accordingly, the null hypothesis was rejected for all level groups, and the alternative hypothesis was accepted. Accordingly, it was concluded that the curriculum implemented in line with activities based on the flipped learning model was effective in increasing the performance of the experimental group - in the beginner, intermediate and advanced levels.

Results related to Hypothesis 1.2:

According to the results of Wilcoxon signed-rank test to determine whether the control group starter, intermediate and advanced groups' performance scores differ in different level groups, a significant difference was found in favor of the post-test in the starter and advanced groups ($p<0.05$), on the other hand, there was no significant difference for the intermediate level group ($p>0.05$). According to this result, an alternative hypothesis was accepted for the starter and advanced groups, and the null hypothesis was rejected, for the intermediate group, the null hypothesis was accepted and the alternative hypothesis was rejected. Based on the findings, it can be said that there is a slightly significant increase in the pre-and post-training performances of the starter and advanced level control group, which received conventional education, while there is no significant increase in the intermediate level group.

Results related to Hypothesis 1.3:

According to the results of Mann Whitney U test conducted to determine whether the performance post-test scores differ in different level groups of the experimental and control groups, a significant difference was found between the post-test scores of the starter, intermediate and advanced groups in favor of the experimental group ($p<0.05$). Accordingly, the null hypothesis was rejected for all level groups, and the alternative hypothesis was accepted. Accordingly, it was concluded that the curriculum implemented in line with activities based on the flipped learning model was effective in increasing the performance of the experimental group - in the starter, intermediate and advanced levels.

Results related to Hypothesis 2

Results for 2.1, 2.2 and 2.3 hypotheses created under this main hypothesis are presented below item by item.

Results related to Hypothesis 2.1:

According to the results of Wilcoxon signed-ranks test conducted to determine whether the performance pre-test-post-test scores differ in different level groups of the experimental group, a significant difference was found between the pre-test-post-test scores of the starter, intermediate, advanced level groups in favor of the post-test ($p<0.05$). Accordingly, the null hypothesis was rejected for all level groups, and the alternative hypothesis was accepted. Accordingly, it was concluded that the curriculum implemented in line with activities based on the flipped learning model was effective in increasing the performance of the experimental group - in the starter, intermediate and advanced levels.

Results related to Hypothesis 2.2:

According to the results of the Wilcoxon signed rank test conducted to determine whether the motivation pre-test and post-test scores differ in different level groups of the control group, no significant difference was found in any level group ($p>0.05$). According to this result, null hypothesis was accepted for all level groups and alternative hypothesis was rejected. Accordingly, it was concluded that there was no significant increase in the motivation of the control group receiving conventional education - in the starter, intermediate and advanced levels - before and after the training.

Results related to Hypothesis 2.3:

According to the results of Mann-Whitney U test conducted to determine whether the motivation post-test scores differ in different level groups of the experimental and control groups, a significant difference was found between the post-test scores of the starter, intermediate and advanced groups in favor of the experimental group ($p<0.05$). Accordingly, it can be said that the curriculum implemented in line with activities based on the flipped learning model was effective in increasing the motivation of the experimental group - in the starter, intermediate and advanced levels.

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