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The Combination of Flipped Learning, Station Technique and Technology in Harmony Lesson: Evaluating Student's Achievement, Attitude and Views

Ali Korkut Uludağ*

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Abstract: To mitigate the negative impacts of COVID-19 on the distance education Harmony course, a contempo6rary educational strategy with experimental content has been developed in this study. This research uses a mixed-methods sequential explanatory design, combining (a) a pretest-posttest control group design and (b) a qualitative study to comprehend the potential quantitative changes resulting from the use of the flipped learning model, station technique, and technology combination. The technology combination is built with the Bandlab social music platform, YouTube lesson support platform, QR codes, and Zoom Breakout Rooms. The study examines how these approaches affect students' success in the harmony lesson, their attitudes towards the lesson, and their learning experiences. The study sample consists of music teaching 2nd-grade students (control group n=41 & experimental group n=44). The experimental procedure takes nine weeks and includes three stages. After the learning sessions, individual semi-structured interviews were conducted with the experimental group students. As a result, positive improvements were achieved in students' attitudes towards the lesson, their success levels, and their learning experiences.

Keywords: Harmony, flipped learning, station rotation, technology combination, youtube, distance education

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* *Corresponding Author:* Atatürk University, Turkey, korkutuludag@atauni.edu.tr.

Introduction

The unexpected emergence of COVID-19 and its rapid spread throughout the world have resulted in devastating earthquakes and unexpected changes in music education (Daubney & Fautley, 2020). COVID-19 has brought about a re-evaluation of music education as a reflection of newly emerging ideas on teaching (Calderón-Garrido et al., 2021). It has also led to the production of new pedagogical solutions (Bolívar-Chávez et al., 2021). All of these things have come to the forefront in response to the negative effects that the pandemic has had. Furthermore, we are confronted with the reality that online learning cannot replace the musical skills that a student acquires while attending school (Adam & Metljak, 2022). In addition, research on online distant music education is still in its early phases (Edward et al., 2018; Koutsoupidou, 2014).

Studies found in the relevant literature regarding the COVID-19 pandemic period and music education have shown significant problems, especially in practical lessons. Music department students stated that practical lessons conducted during the pandemic were not as effective as face-to-face education (Özer & Üstun, 2020). In line with students learning experiences (Keskin & Özer Kaya, 2020), the need for conducting experimental research to properly structure education during the pandemic makes this study of higher importance. Ng et al. (2022) have pointed out that research on the effectiveness of online pedagogy for music learning is not sufficiently developed at this point.

Some problems encountered in Harmony lessons have influenced the planning of this study. Some of these problems are: a deepening of students' musical learning losses (Camlin & Lisboa, 2021), problems with students' internet access (Nichols 2020; Vaizman, 2022), a lack of technological equipment (Rucsanda et al., 2021), online teaching is very time-consuming in terms of planning course activities. These and other issues have prompted music instructors to consider the use of technology in the classroom and to reconsider the value of online music education (Vaizman, 2022). In response to the negative experiences encountered in Harmony lessons during the pandemic, some studies focusing on modern pedagogy have been examined. The proposal to combine the Flipped Learning model and the station rotation model within the blended learning approach (Clayton Christensen Institute, 2020) has provided guidance for the planning of the current study (Govindaraj & Silverajah, 2017). Consequently, there was a need to understand the student experiences resulting from combining these two models. Various technology-supported learning tools have also been included to strengthen the research. The combination of technological learning tools and QR codes enables students to learn anytime and anywhere (Kalogiannakis & Papadakis, 2017).

The sub-dimensions of blended learning have been used in designing the current study. Among these, the Rotation model stands out as an important dimension of blended learning (Rehman & Lakhan; Staker & Horn, 2012). Within the Rotation model, there are four specific types: station rotation, lab rotation, Flipped Learning, and individual rotation (Ayob et al., 2020). The literature shows that some types within this model have been combined in academic studies. Particularly, the combination of station rotation and

Flipped Learning models has some features that enhance students' learning levels (Smalls, 2019), provide them with a fun learning environment (Sanubari, 2022), and make them more actively engaged in the lessons (Sohaya et al., 2021). It also offers significant flexibility in meeting the needs of both instructors and students in the classroom (Lopes & Soares, 2018). Furthermore, the Flipped Learning model has been preferred by researchers as an alternative model during the pandemic period because it is included in both the combination and blended learning models (Sanubari, 2022).

With the help of scientific evidence, this study aims to reveal a solution to the problems encountered in the distance education harmony lesson by utilizing new technological resources and modern teaching methods. In this process, a YouTube course support platform and technology-supported activities that support the flipped learning model (Ng, 2022) have been designed to trigger collaboration, facilitate learning and save time.

Developing Research Questions and Hypotheses Based on Literature Background

In this section, research questions and hypotheses were developed in line with the literature background to understand students' learning experiences.

Effects of the Flipped Learning Model on Learning

Based on the literature information below, the first research question was formulated to understand students' learning experiences in the Flipped Learning model.

RQ1. What positive effects does Flipped Learning have on students' learning experiences?

The use of the flipped learning method in music lessons enables teachers to communicate effectively with students (Kim & Kyoung Song, 2020). It is also ideal for facilitating and accelerating students' music learning processes (Akbel, 2018) and providing effective solutions to their motivation problems (Brownlow, 2016). Thanks to the mobile instrument application designed by Davy et al. (2022) with the flipped learning model, it has been proven that the students have reached high motivation.

Effects of YouTube on Learning

Based on the literature information below, the second research question was formulated to understand students' learning experiences on YouTube.

RQ2. What positive effects does the YouTube lesson support platform have on students' learning experiences?

According to Koutsoupidou (2014), the probability of students gaining different learning experiences and increasing their interest in learning by using YouTube videos is higher than in traditional instrument training courses. YouTube's simple, functional, and pragmatic nature (Waldron, 2013) allows students to listen to and compare different performances of a piece they are studying (Wise et al., 2011). It provides practical and

self-learning opportunities (Smith & Secoy, 2019), which offer significant advantages for music education. Stowell and Dixon (2014) concluded that YouTube is a valuable learning tool in music lessons for both teachers and students.

Effects of QR Codes on Learning

The third research question was formulated to understand students' learning experiences with QR codes based on the literature information below.

RQ3. What positive and negative effects do QR codes have on students' learning experiences?

QR codes used in instrument and composition education enabled students to instantly access information, and their learning experiences improved (Palazón & Giráldez, 2018). On the other hand, serious problems may arise due to the holding position of the mobile device or the incorrect positioning of QR codes on paper (Sever, 2019).

The Effects of the Station Technique Applied in Zoom Breakout Rooms on Learning

The fourth research question was formulated to understand students' learning experiences with the station rotation technique applied in Zoom breakout rooms based on the information from the literature below.

RQ4. What positive effects does the station rotation model applied to Zoom breakout rooms have on students' learning experiences?

Studies using Zoom breakout rooms and station techniques in different disciplines other than music provided important clues for the current study. Aslan (2021) used Zoom breakout rooms for group work for the experimental group and reached higher scores than the control group in which traditional methods were used. As a result of a study in which Zoom breakout rooms were used to create a live group activity in medical education, students provided positive feedback on the application (Rucker et al., 2020).

The literature shows that station techniques are used infrequently in music education, but more frequently in other disciplines. The station rotation model is included in the blended learning experiences of South Korean music teachers (Kim, 2021). It showed that station teaching can potentially improve the cooperative learning aspects of undergraduate students in English language teaching (Chien, 2017). According to preservice classroom teachers, the station technique is a fun, useful activity that supports active participation, and helps creative and imaginative thinking (Genç, 2013).

Effects of the BandLab Social Music Platform on Learning

Based on the literature, the fifth research question was formulated to understand students' learning experiences on the BandLab social music platform.

RQ5. What positive effects does the BandLab platform have on students' learning experiences?

Thanks to BandLab, students can collaborate with musicians from all over the world, invite each other on the platform, and work together on a collaborative arrangement project, albeit remotely (Giddings, 2020). BandLab is also the software that promotes the motivating and collaborative acquisition of both musical and digital skills (Moltó & Prada, 2021). As a result of a compositional project study in which BandLab was used, significant improvements were achieved in the self-efficacy beliefs of preservice teachers (Harris & Carroll, 2020).

Based on the results of previous research, it was thought that there could be an improvement in the students' attitudes toward the lesson and their success levels. Considering these studies in the literature, the following hypotheses have been put forward:

Hypothesis 1. There will not be a significant difference between the success levels of the experimental and control group students regarding the online harmony lesson before the experimental procedure.

Hypothesis 2. There will be a significant difference between the success levels of the experimental and control group students regarding the online harmony lesson after the experimental procedure.

Hypothesis 3. There will be a significant difference between the experimental and control group students' attitudes toward the online harmony lesson after the experimental procedure.

Method

This research was designed with an explanatory sequential mixed-methods design. This design was used to explain quantitative findings further using qualitative data (Creswell, 2017). A pre-test post-test control group design was used in the quantitative dimension of the study. In the qualitative aspect, semi-structured interviews were conducted with the experimental group of students.

Study Group and Data Collection Instruments

This study was conducted with the participation of second-year undergraduate students enrolled in the Music Education Department of a state university in Turkey. The experimental group consisted of 44 students (25 females & 19 males, SD=2,51), and the control group consisted of 42 students (19 females & 21 males, SD=2,09). The average age of all students was 21.4 years. It was determined that the participating students had access to mobile devices, computers, and the internet. The Harmony lesson was a two-semester course in the Music Education curriculum. The participating students previously took the Harmony lesson for one semester before the experimental procedure, but it was their first time participating in a lesson designed with the Flipped Learning model.

The Role of the Researcher

The researcher assumed the following roles during the study: collecting relevant information on the topic, interpreting the analysis of quantitative data, conducting the experimental procedure, monitoring students and team leaders, structuring the YouTube lesson support platform, preparing QR codes and lesson notes, creating their own instructional videos, engaging in direct communication with the participating students, and analyzing and interpreting qualitative data.

Attitude Scale

The "Attitude Scale Regarding the Use of Distance Education Environments in the Pandemic Process" developed by Yıldız et al. (2021) was used in the study. The internal consistency coefficient of the scale was.93, as determined by Cronbach's Alpha, to test the reliability of the scale, which consisted of 24 items and has a 4-factor structure. As a result of the statistical analysis for the sub-dimensions of the scale, the internal consistency coefficients were .94 for the competence and motivation dimension, .81 for usability, .88 for effectiveness, and .84 for satisfaction (Yıldız et al., 2021).

Achievement Test

The achievements related to the harmony lesson were first examined, and 30 questions were prepared. An item analysis was carried out to ensure the construct validity of the test. The questions were reduced to 20 in line with the criteria and the feedback of two experts. Afterward, a pilot exam was conducted on the university's online exam platform with the participation of senior students in the department of music teaching (n=39). As a result of this exam, it was determined that it was not necessary to remove any questions or rearrange the questions. The Kuder-Richardson 20 (KR-20) value was calculated for the reliability of the achievement test. The KR-20 value of the test was calculated as (.82).

The experts worked as faculty members in Music Education programs in different cities. They also had academic publications on modern pedagogies and instructional technologies. The first expert supervised a doctoral thesis on the Flipped Learning model and guitar instruction during the COVID-19 pandemic and also published this thesis as an academic publication.

Semi-Structured Interview Protocol

Experts who evaluated the achievement exam were given six interview questions developed by the researcher. The number of questions was reduced to 5 in line with expert feedback. With these questions, a pilot application was carried out on two senior students via Zoom. No changes were made to the questions in line with the feedback of these two participants. The interviews were conducted by the researcher over the phone for 15-20 minutes and were recorded with the permission of the participants. The recorded interviews were transcribed.

Structured Interview Questions:

1. Can you describe your learning experiences with the Flipped Learning model? Did you encounter any advantages or disadvantages?
2. Can you tell us about your learning experiences with the YouTube lesson support platform? Did you encounter any advantages or disadvantages?
3. Can you tell us about your learning experiences with QR codes? Did you encounter any advantages or disadvantages?
4. Can you tell us about your learning experiences with the station technique in Zoom breakout rooms? Did you encounter any advantages or disadvantages?
5. Can you tell us about your learning experiences on the Bandlab platform? Did you encounter any advantages or disadvantages?

Data Analysis

According to Table 1, students showed a balanced distribution in terms of gender and age variables. When Kolmogorov-Smirnov analysis and skewness-kurtosis (±3) values of z scores were examined, it was seen that a normal distribution was realized in MAT scores. There were significant deviations from normality in factor scores other than the attitude scale and usability. Therefore, parametric (paired samples t-test, independent samples t-test) and non-parametric approaches (Mann-Whitney U test) were used for the analysis. The d and r coefficients were calculated to determine the effect size. The values were interpreted as .2 was small, .5 was medium. For, .8 was large for d, .1 was small, .3 was medium, .5 was a large effect (Cohen, 1988).

Table 1.

Gender, Age, and MAT Descriptive Values

Experimental (*n=44*)				Control (n =*42*)		
Gender *n (%)*	Female		25	56.8	21	50.0
	Male		19	43.2	21	50.0
	$\bar{x}$ ± sd	Min-Max	KS ***	$\bar{x}$ ± sd	Min-Max	KS ***
age	21.84 ± 2.12	19-30	-	21.55 ± 1.58	19-27	-
MAT (pre-test)	50.34 ± 12.64	25-80	.20	53.09 ± 10.18	30-70	.20
MAT (post-test)	74.09 ± 15.45	20-90	.20	56.19 ± 16.74	20-90	.19
Competence and Motivation	32.50 ± 3.13	20-35	**.00** **	17.66 ± 4.45	7-27	.20
Availability	34.86 ± 3.13	28-39	.19	28.90 ± 3.18	21-36	.20
Effectiveness	23.40 ± 2.52	13-25	**.00** **	14.22 ± 2.37	10-20	**.00** **
Satisfaction	18.70 ± 1.97	13-20	**.00** **	12.61 ± 1.88	9-18	**.02** *
Attitude Scale Total	110.05 ± 7.91	75-119	**.00** **	73.39 ± 9.24	58-93	**.04** *

* p<.05 ** p<.01****Kolmogorov-Smirnov significance* (MAT)

Content analysis was conducted on the qualitative findings. To increase the reliability of the findings, inter-coder consistency was determined. A table was created to prevent differences that may occur in inter-coder consistency. The inter-coder consistency was calculated as .88.

Table 2.

Code Chart

Code	Collaboration
Code Definition	Whether the implementation process encourages students to learn cooperatively
Full Definition	Students act of their own will and desire to work collaboratively and evaluate the experimental procedure phases.
Sample quotes	"The activities used in the course encouraged me to work collaboratively"
Usage Time	When students actually mention the word cooperation or a synonym
Time to Use	When students' talk about cooperation cannot be reasonably interpreted

The concepts in this codebook are listed with the title of the code, a short and complete description, and one or more sample citations to show the type of evidence to be determined for the code (Creswell, 2019). While editing this chart, a sample code chart (cited from Creswell, 2019) in Guest et al., (2006) was used.

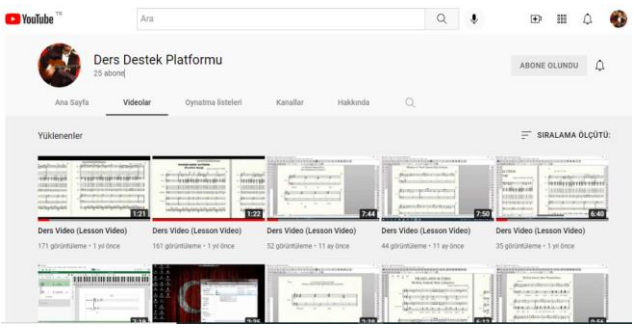
Experimental Procedure

Experimental procedure studies were introduced to the students in a meeting held on Zoom. Students were given different tasks in each of the three stages. In this process, the students were divided into six groups by the researcher.

The course videos for the experimental group were prepared by the researcher and uploaded to the YouTube lesson support platform. Students accessed these videos with QR codes placed on PDF files. Lecture notes are also embedded in PDF files. Before the online lesson, the students watched the lesson videos they were assigned to watch, took notes, and prepared questions about the points they did not understand.

Figure 1.

YouTube Lesson Support Platform



First Stage

At this stage, the study groups were determined as composition, tonal harmony, model harmony, counterpoint, accompaniment figure, and orchestration. Students were given information about the use of Zoom breakout rooms and the subjects they were responsible for. The names of the groups are written in the name section of the Zoom breakout rooms. The students logged in to the assigned rooms by finding the group names.

Two 60-minute lessons were held in the Zoom break rooms in the second and third weeks. The researcher navigated between the breakout rooms, guided group discussions, and tried to encourage students to collaborate to increase group work efficiency (Aslan, 2021). The groups' tasks on the melody given to them in the first stage are as follows: 1. The composition group wrote the lyrics, 2. The tonal harmony group did chord programming, 3. The modern harmony group did chord programming, 4. The contrepoint group did a double vocal study, 5. The accompaniment figure group performed piano accompaniment, 6. The orchestration group performed orchestration work on a different melody for the 1st and 2nd strings, viola, violoncello, and contrabass instruments.

Figure 2.

A Section of Contrepoint, Chord Programming and Piano Accompaniment

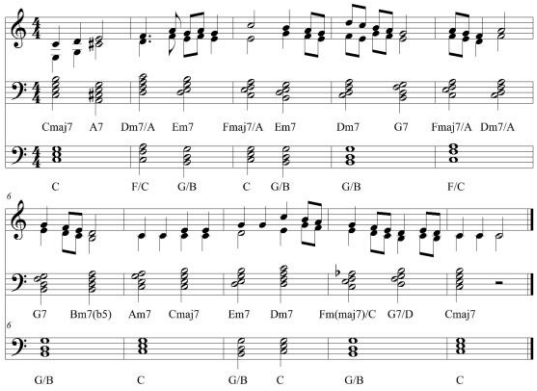
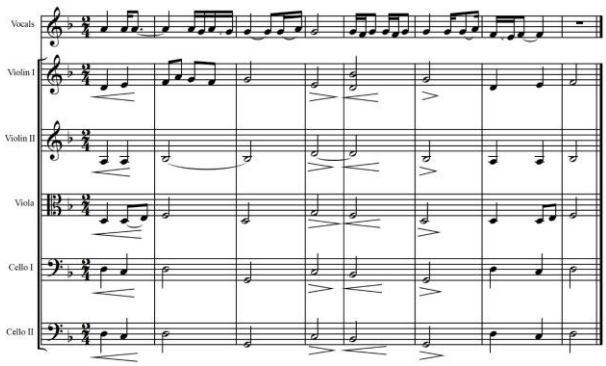


Figure 3.

A Section of Orchestration



Second Stage

At this stage, the previous workflow was followed, the students were given the same tasks on a different tune, and station technique was conducted in the Zoom break rooms. Six different stations were established, and each station was given 10 minutes of working time. Group leaders worked only at their own stations until the end of the study, and they gave information about the study flow to the new students who logged in to the breakout rooms during station changes. This cycle continued until the students served at each station and arrived at their own station. The station work took approximately 70 minutes.

Figure 4.

Station Technique Cycle

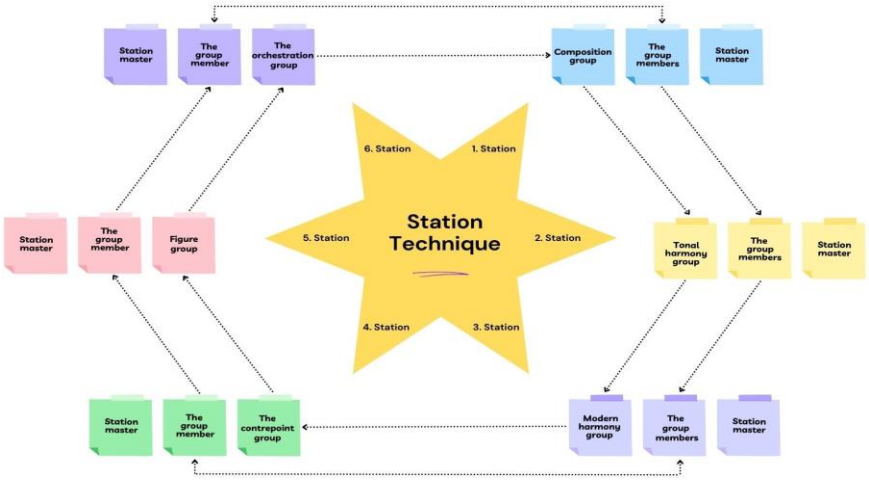
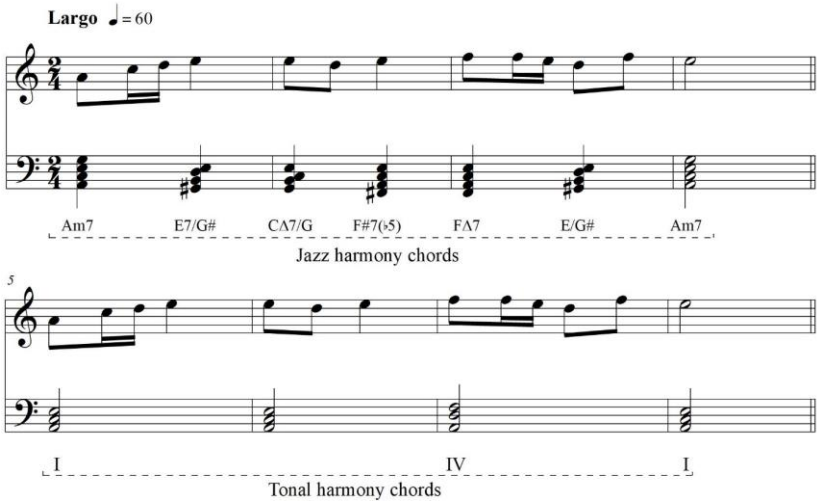


Figure 5.

A Section from the Station Technique Study



Third Stage

At this stage, the Composition group was assigned to make arrangements on the BandLab platform and direct other groups. All students signed up for BandLab before they started study. Students met on Zoom for the application, and the BandLab project page was shared on Zoom. The students first exchanged ideas about the arrangement. In the first channel, the trumpet was chosen, and the solo of the melody was written. In the second channel, accompaniment chords were written with electro piano. And in the third channel, electric bass legato and bass accompaniment were written. Modern metal was chosen from the drum machine section for the rhythm channel. All recording procedures were carried out by the team leader of the Composition group, and the arrangement was sent to the researcher.

What Happened in the Control Group?

The lessons were conducted online with the control group students on the university's live lesson platform. The researcher used Finale notation software, a course book, and course slides during the lesson. Teacher-centered direct instruction and question-answer methods were adopted in the lessons. In this process, the students learned the same subjects as the experimental group students. Students were assigned homework on these topics.

Quantitative Findings

This section of the research presents both quantitative findings and interpretations from the attitude scale and achievement test.

Table 3.

Experimental and Control Group's Pre-test Music Achievement Scores

Group	n	x ± sd	*t*	p	D
Experimental	44	50.34 ± 12.64	-1.11	.27	-
Control	42	53.09 ± 10.18			

Regarding the first hypothesis, Table 3 shows that the pre-test scores of the experimental and control groups are close to each other, and there is no significant difference between the scores (p>.05).

Table 4.

Experimental and Control Group's Pre-test and Post-test Music Achievement Scores

		n	x ± sd	*t*	p	D
Experimental	Pre-test	44	*50.34 ± 12.64*	*-10.98*	***.00*** **	*-1.65*

	Post-test	42	*74.09 ± 15.45*			
Control	Pre-test	44	*53.09 ± 10.18*	*-1.64*	*.11*	-
	Post-test	42	56.19 ± 16.74			

** *p<.01*

In relation to the second hypothesis, it was determined that the post-test scores ($\bar{x}$= 74.09) of the experimental group students are significantly higher than the pre-test scores ($\bar{x}$= 50.34) (t [43], p<.01). It was seen that the effect size is high (d=-1.65). It was determined that there was no significant difference in the control group's scores before and after the procedure (p>.05).

Figure 6.

Pre-test Post-Test Scores of the Experimental and Control Groups

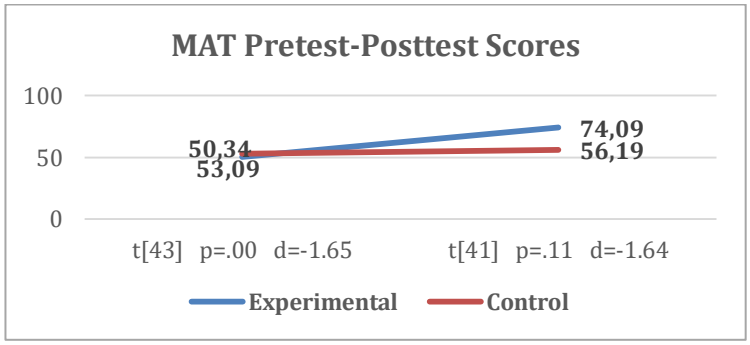


Table 5.

Experimental and Control Group's Post-Test Music Achievement Scores

Group	n	$\bar{x}$ ± sd	*t*	p	D
Experimental	44	74.09 ± 15.45	5.16	**.00** **	1.11
Control	42	56.19 ± 16.74			

**p<.01

As can be seen in Table 5, there is a significant difference in music achievement test scores in terms of the group variable (t [84], p<.01). It was determined that the experimental group ($\bar{x}$= 74.09) is more successful compared to the control group ($\bar{x}$= 56.19). Considering the effect size value, it can be said that the program is highly effective (d= 1.11).

Figure 7.

Post-test Scores of the Experimental and Control Groups

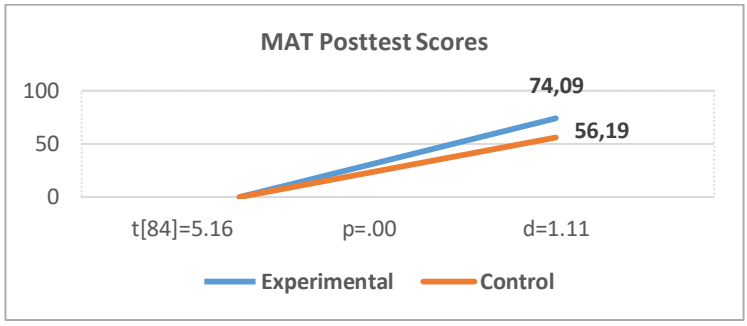


Table 6.

T-test Results for the Experimental Group's Post-Test Attitude Scores

	Group	x ± sd	U	p	r
Attitude Total	Experimental	110.05 ± 7.91	14.50	.00 **	-.84
	Control	73.39 ± 9.24			
Competence and Motivation	Experimental	32.50 ± 3.13	18	.00 **	-.84
	Control	17.66 ± 4.45			
Effectiveness	Experimental	23.40 ± 2.52	50.50	.00 **	-.81
	Control	14.22 ± 2.37			
Satisfaction	Experimental	18.70 ± 1.97	56.50	.00 **	-.81
	Control	12.61 ± 1.88			
	Group	x ± sd	*t*	p	*D*
Availability	Experimental	34.86 ± 3.13	8.64	.00 **	1.89
	Control	28.90 ± 3.18			

** *p<.01*

Regarding the third hypothesis, Table 6 shows that the attitude total and factor scores of the experimental group are significantly higher than those of the control group (p<.01). When the effect size values were examined, it was determined that these values were high for all score groups.

Qualitative Findings

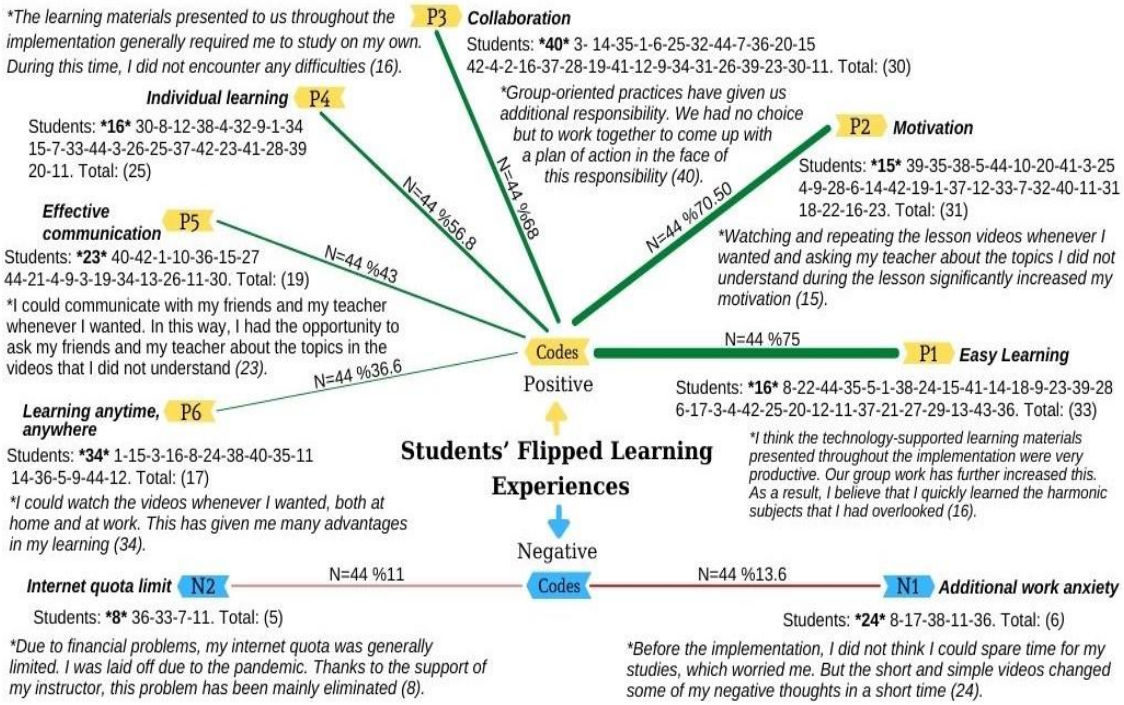
In this section, qualitative findings and interpretations obtained from the semi-structured interview questions are presented.

Lesson Activities from the Perspective of the Students

In this section, the interview question is " Can you describe your learning experiences with the Flipped Learning model? Did you encounter any advantages or disadvantages?" was explored to answer the first research question. The students' learning experiences are depicted on the relationship map shown in Figure 8.

Figure 8.

Relationship Map of Students' Group-Focused Flipped Learning Model Learning Experiences

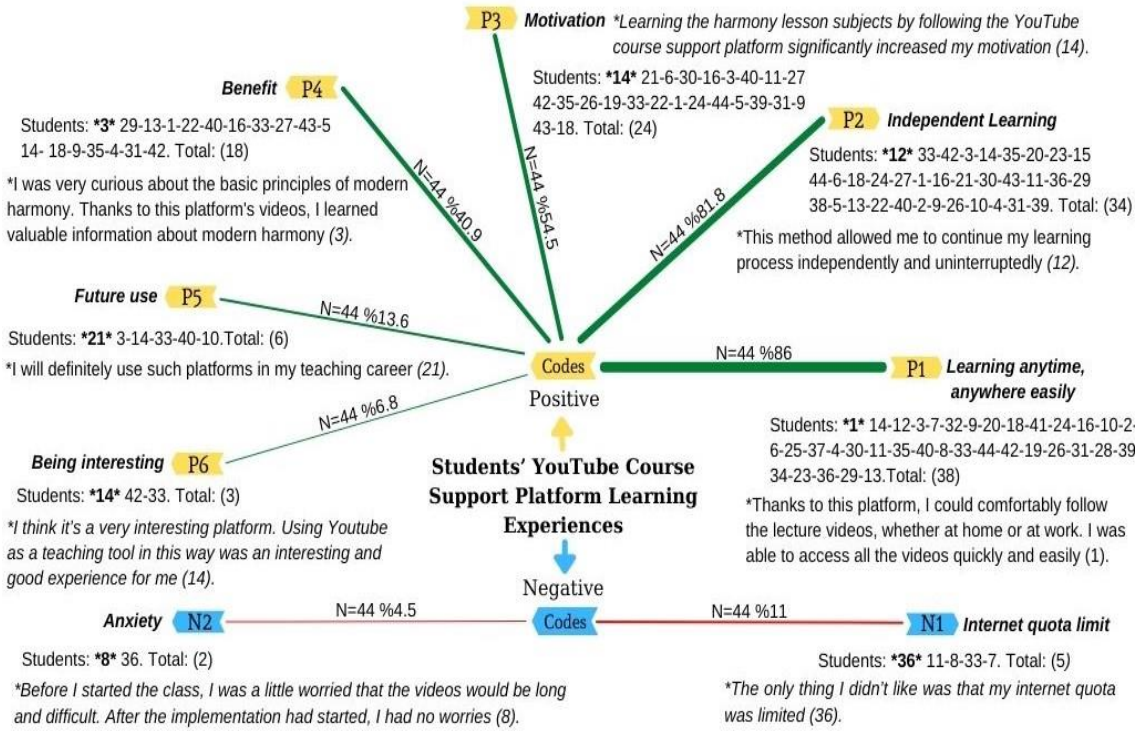


According to Figure 8, students focused heavily on positive codes in relation to the first research question. Positive codes generally indicate the learning outcomes targeted by modern pedagogy. Every student in the negative category has code(s) in the positive category. For instance, student number 11, who chose two negative codes, expressed their opinion on all positive codes and showed the most intense distribution that included both categories. The fact that the negative codes were not related to the content of the flipped learning model showed that the students had adopted this model at a high level.

In this section, the interview question is "Can you tell us about your learning experiences with the YouTube lesson support platform? Did you encounter any advantages or disadvantages?" was explored to answer the second research question. The students' learning experiences are depicted on the relationship map shown in Figure 9.

Figure 9.

Relationship Map of Students' Youtube Lesson Support Platform Learning Experiences

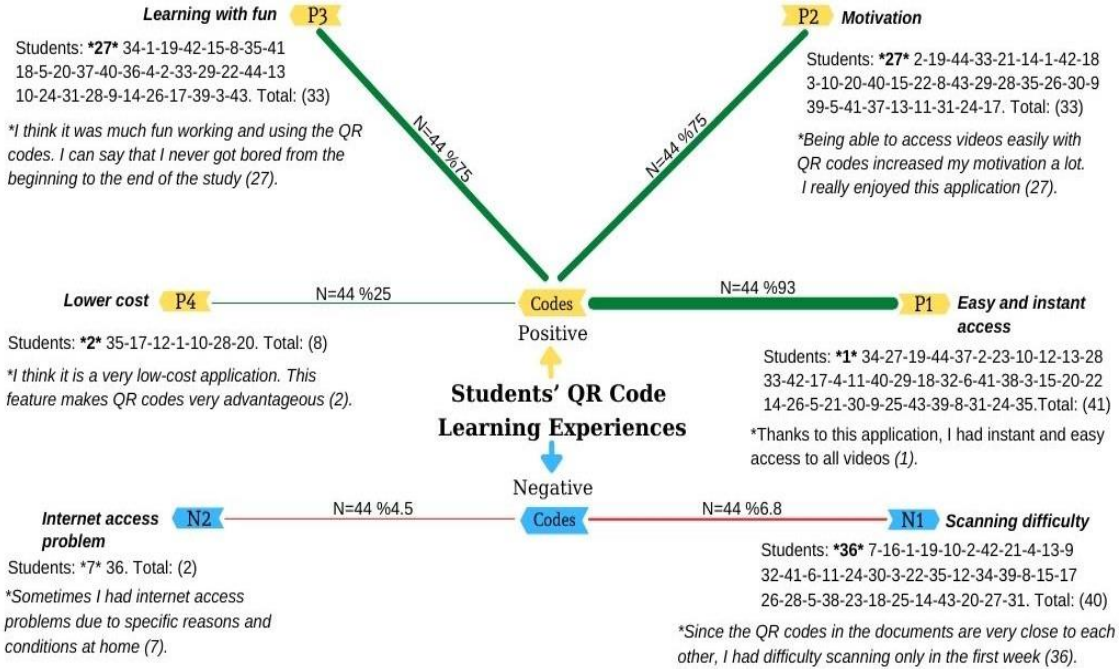


According to Figure 9, students showed interest in the YouTube support platform related to the second research question, but they also highlighted some issues. However, the interviews revealed that these problems were quickly resolved. No negative views criticizing the content or functionality of the platform were found within the negative codes. In fact, the total number of students in the negative code category appears to be significantly lower compared to the students in the positive category. All the positive codes likely contributed to an increase in students' motivation.

In this section, the interview question is "Can you tell us about your learning experiences with QR codes? Did you encounter any advantages or disadvantages?" was used to answer the third research question. The students' learning experiences are presented in the relationship map shown in Figure 10.

Figure 10.

Relationship Map of Students' QR Code Learning Experiences

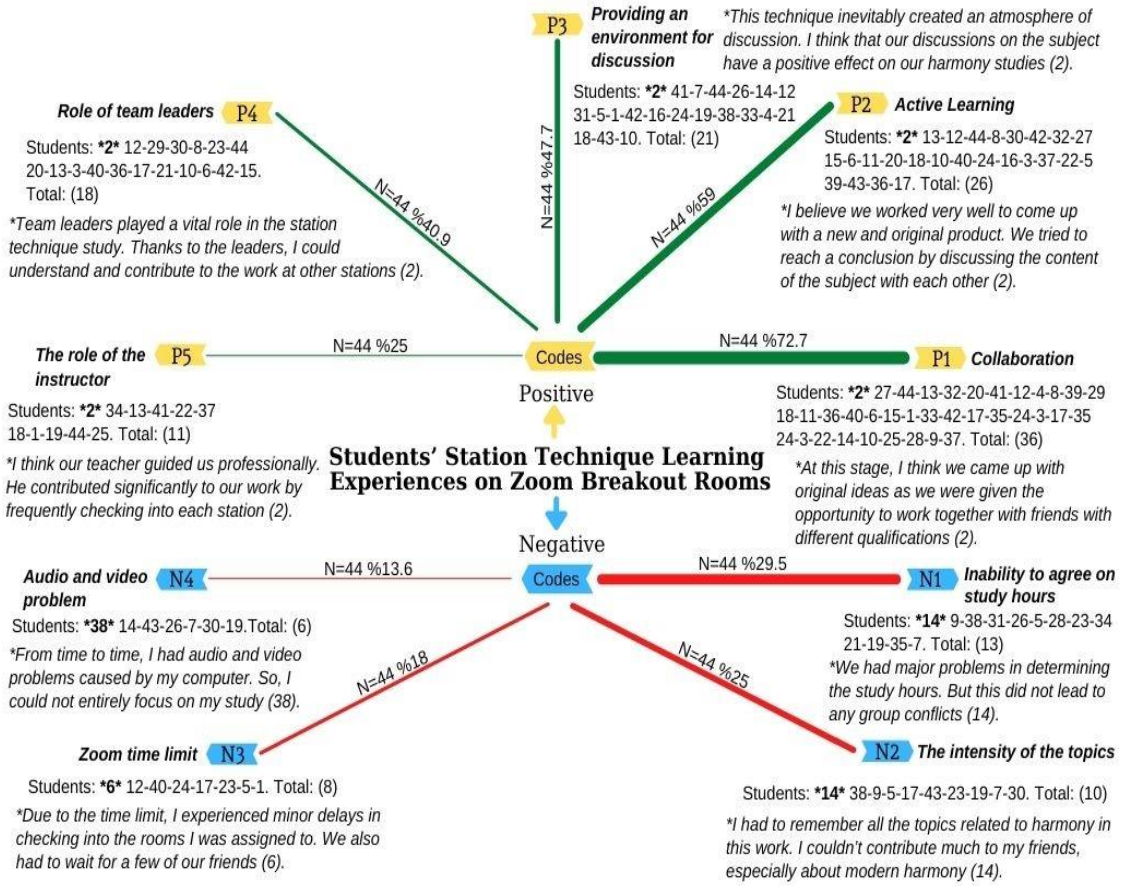


According to Figure 10, students predominantly focused on positive codes and sporadically on negative codes related to the third research question. It is understood that some students occasionally experience difficulties both scanning QR codes and connecting to the internet. Fortunately, the students mentioned that the impact of these problems was short-lived. The majority of students reported having learning experiences that enhanced their learning process. Additionally, among all the experiences, the highest total student distribution was observed for the negative code N1 (Total: 40).

In this section, to answer the fourth research question, the students learning experiences with the Station Technique in Zoom Breakout Rooms were explored by asking the question, "Can you tell us about your learning experiences with the station technique in Zoom breakout rooms? Did you encounter any advantages or disadvantages?" The students' learning experiences are depicted in the relationship map presented in Figure 11.

Figure 11.

Relationship Map of Students' Station Technique Learning Experiences in Zoom Breakout Rooms

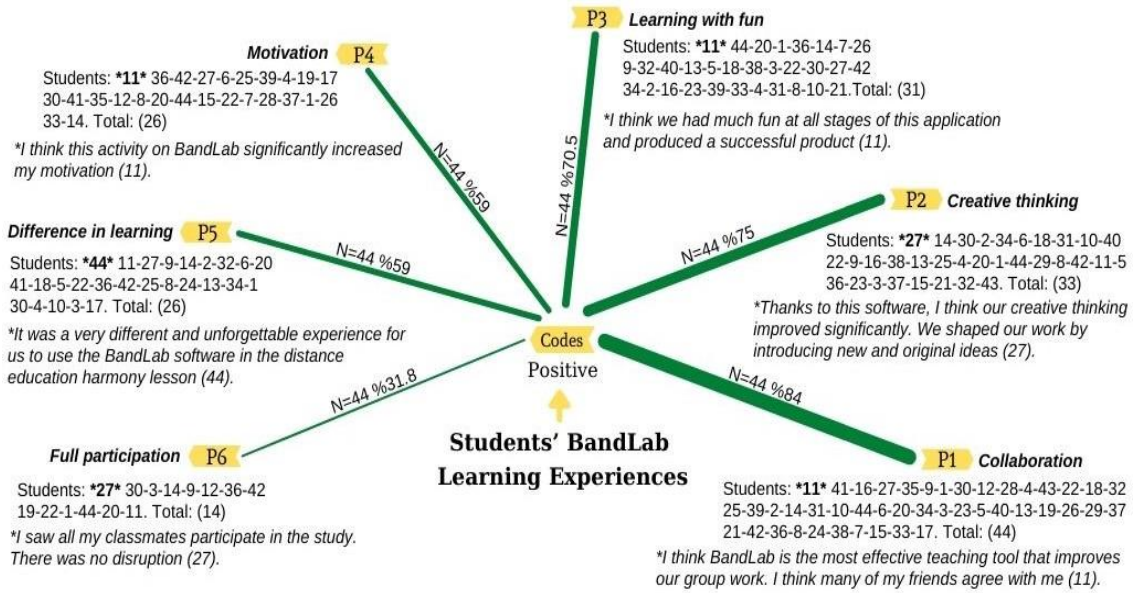


According to Figure 11, students predominantly focused on negative codes related to the fourth research question in their experiences with the Station Technique in Zoom Breakout Rooms. Despite this finding, students expressed their views mainly through positive codes. Notably, Student 2 had the highest weighted score on positive codes across the board, an interesting observation. Influenced by the instructor and team leaders, creating both a discussion and an active learning environment contributed to students' strong inclination toward the collaboration code. Although the highest number of negative codes emerged during this process, students did not express any negative views regarding the content of the Station Technique.

This section aimed to answer the fifth research question by responding to the interview question, "Can you tell us about your learning experiences on the Bandlab platform? Did you encounter any advantages or disadvantages?" Students' learning experiences are presented in the relationship map depicted in Figure 12.

Figure 12.

Relationship Map of Students' Bandlab Learning Experiences



As shown in Figure 12, students primarily focused on positive codes related to the fifth research question. The fact that all students (n= 44) mentioned the concept of collaboration, which ranks first, suggests that BandLab is a highly effective teaching tool. Unlike other experiences, this study revealed the attainment of contemporary educational concepts such as "creative thinking" and "diversity in learning." Additionally, it is noteworthy that students have equally emphasized codes P4 and P5.

Results and Discussion

The combination of the Flipped Learning model and Station Rotation formed the foundation of the experimental procedure in this study. The findings align with similar studies in the literature that have employed the combination of Flipped Learning and Station Rotation models (Govindaraj & Silverajah, 2017; Nurkamto et al., 2019). For instance, Smalls (2019) implemented both Station Rotation and Flipped Learning models simultaneously at the secondary school level and observed an increase in both class and district assessment scores. In another study that evaluated these two models separately, the findings showed that students who used the Flipped Learning model achieved higher learning outcomes (in social studies) than students who used the Station Rotation learning model (Sanubari, 2022).

This study, in line with the findings of Lai (2021) and Ng (2022), has demonstrated that the Flipped Learning model is an effective method in relation to the first research question. However, some students have expressed concerns about additional workload, similar to the findings of Wanner et al. (2015). Students have also raised concerns about

the duration and content of instructional videos. According to Birgili and Demir (2021), low-quality and lengthy videos contribute to decreased motivation in students' experiences with the Flipped Learning model. Sever (2014) suggests that a well-designed instructional video for the Flipped Learning model should be concise and comprehensible. In the current study, the instructional videos were prepared to be engaging and within a duration that does not overwhelm students (Yıldız and Otacıoglu, 2017), approximately ranging from 7 to 12 minutes (Ng, 2022). Short videos used in music education facilitate students' progress (Vaizman, 2022).

Concerning the second research question, the "P1" code that students are predominantly engaged with suggests that YouTube provides students with easy access anytime and anywhere, consistent with the literature (Alp & Kaleci, 2018; Clifton & Mann, 2011). In this study, YouTube was not used as a live teaching tool since there was a high possibility of encountering various communication problems in live lessons conducted through YouTube (Baki & Çelik, 2021). However, it was considered beneficial to deliver the instructional videos prepared for the experimental procedure to students through the YouTube platform (Serçemeli & Kurnaz, 2020).

Related to the third research question, QR codes enabled students to instantly access the videos on the YouTube lesson support platform. Study group students emphasized QR codes functions, such as low cost, ease of use (Zhang et al., 2015), motivation-enhancing (Palazón & Giráldez, 2018), and enjoyable learning experience (Özkaya et al., 2015). However, in contrast to these findings, Wells (2012) pointed out that conservatory music students experienced internet access issues during an activity involving QR codes, consistent with the current study. In addition, it was observed that 40 students had difficulty scanning the QR codes in the current study. It can be said that the researcher should have been more prepared and careful about such problems. Sever (2019) also pointed out that two students could not scan the codes located in the middle of a page in a QR code game study they developed for Suzuki violin lessons. Responding to this problem, all QR codes were repositioned on documents at different angles and with more spacing before being sent to the students.

The study conducted by Kalogiannakis and Papadakis (2017) found that the use of mobile technologies in environmental education improves students' attitudes towards curriculums. In line with this finding, this study highlights the learning benefits of using QR codes and mobile technologies, and it also supports the findings of previous studies in the literature (Ceipidor et al., 2009; Crompton, 2013; Lai et al., 2013; Lai & Hwang, 2014).

In relation to the fourth research question, students were encouraged to engage in collaborative, interesting, and active learning activities (Li et al., 2021). They had the opportunity to socialize with each other (Davis et al., 2021) with the support of Zoom breakout rooms and station techniques. In the current study, a collaborative working environment (Romero-Ivanova et al., 2020) was created in break rooms to facilitate more efficient group work on projects. In addition, group leaders provided significant convenience for both students and researchers. In previous studies, students have

expressed the need for team leaders in Zoom breakout room-supported activities (Lee, 2021).

Regarding the fifth research question, this study demonstrated that BandLab triggered collaboration and creative thinking behaviors in students, consistent with the findings of Bilevičiūtė (2020) and Harris and Carroll (2020). The other positive codes identified by students also indicated the different advantages of BandLab.

The experimental procedure revealed a potential power for enhancing students' achievement levels, attitudes, and perspectives towards the course. The quantitative findings obtained with the achievement test and the attitude scale confirmed the first, second, and third hypotheses of the study. Accordingly, it was seen that the education applied to the experimental group students was effective in composition, tonal harmony, model harmony, contrepoint, accompaniment figure, orchestration, and lyricizing skills.

Delimitations and Implications

The present research has some delimitations. First, testing the research on a larger sample could yield richer and more diverse findings for music educators. Secondly, this study was conducted for harmony lessons, and further research could explore similar findings in other music subjects. Thirdly, and most importantly, both the attitude scale and achievement test findings did not clearly distinguish the effects of Flipped Learning and Station Rotation models. In other words, these two models were not treated as the first and second independent variables. Lastly, organizing such innovative studies to cover both distance and face-to-face education could offer different perspectives on music education. In addition, this study can be further developed and tested based on blended learning. This experimental study, conducted during the COVID-19 pandemic, is currently being continued, enriched, and renewed in the face-to-face education process with the reutilization of the Zoom platform as of 2022.

Recommendations

According to Govindaraj and Silverajah (2017), "even though there are many studies conducted on the effects of station-rotation and the flipped classroom model on students learning, there have been inadequate reported attempts to understand the impact of the combination of these models in a single research setting" (p. 74). The current study aims to contribute to addressing this gap by providing an alternative approach. In further research, the effectiveness of this alternative approach can be discussed through experimental studies.

Based on the fact that distance education requires higher motivation, this study presented an alternative and modern pedagogical approach for the harmony lesson. Quantitative and qualitative data measured students' learning experiences from different perspectives and produced rich and detailed results that supported each other. Findings emphasized the positive effects of using student-centered teaching approaches and technology-based teaching materials together in a systematic cycle.

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Genişletilmiş Türkçe Özet

Armoni derslerinde literatürle benzer şekilde karşılaşılan bazı sorunlar bu çalışmanın tasarlanmasında etkili olmuştur. Bu sorunlardan bazıları şunlardır: öğrencilerin müzikal öğrenme kayıplarının derinleşmesi (Camlin ve Lisboa, 2021), öğrencilerin internet erişimiyle ilgili sorunlar (Nichols, 2020; Vaizman, 2022), teknolojik ekipman eksikliği (Rucsanda vd., 2021) ve çevrimiçi öğretimin ders etkinliklerini planlama açısından çok zaman alıcı olması. Pandemi sürecinde yürütülen Armoni dersinde yaşanan bu olumsuzluklar karşısında bazı modern pedagoji içerikli çalışmalar incelenmiştir. Harmanlanmış öğrenme içerisinde yer alan ters yüz öğrenme modeli ve istasyon rotasyon modelinin (Clayton Christensen Enstitüsü, 2020) tek bir araştırma ortamında birleştirilme önerisi (Govindaraj ve Silverajah, 2017) mevcut çalışmanın planlanmasında yol gösterici olmuştur. Araştırma soruları ve hipotezleri aşağıdaki gibidir:

AS1. Ters yüz öğrenme modelinin öğrencilerin öğrenme deneyimleri üzerinde ne gibi etkileri vardır?

AS2. YouTube ders destek platformunun öğrencilerin öğrenme deneyimleri üzerinde ne gibi etkileri vardır?

AS3. QR kodlarının öğrencilerin öğrenme deneyimleri üzerinde ne gibi etkileri vardır?

AS4. Zoom breakout rooms üzerinde uygulanan istasyon tekniği rotasyon modelinin öğrencilerin öğrenme deneyimleri üzerinde ne gibi etkileri vardır?

AS5. BandLab platformunun, öğrencilerin öğrenme deneyimleri üzerinde ne gibi etkileri vardır?

Hipotez 1. Deney ve kontrol grubu öğrencilerinin çevrimiçi armoni dersine ilişkin başarı düzeyleri arasında deneysel prosedür öncesi anlamlı bir fark olmayacaktır.

Hipotez 2. Deney ve kontrol grubu öğrencilerinin çevrimiçi armoni dersine ilişkin başarı düzeyleri arasında deneysel prosedür sonrası anlamlı bir farklılık olacaktır.

Hipotez 3. Deney ve kontrol grubu öğrencilerinin çevrimiçi armoni dersine ilişkin tutumları arasında deneysel prosedür sonrası anlamlı bir farklılık olacaktır.

Bu araştırma, açımlayıcı sıralı karma yöntem deseni ile tasarlanmıştır. Araştırmanın deneysel prosedürü, Türkiye'de ki bir devlet üniversitesinin müzik öğretmenliği bölümünde öğrenim gören 2. sınıf lisans öğrencilerinin katılımıyla yürütülmüştür. Deney grubu 44 öğrenciden (25 kız ve 19 erkek); kontrol grubu ise 42 öğrenciden (19 kız ve 21 erkek) oluşmuştur. Araştırmada veri toplama aracı olarak Yıldız vd. (2021) tarafından geliştirilen "Pandemi Sürecinde Uzaktan Eğitim Ortamlarının Kullanımına İlişkin Tutum Ölçeği", araştırmacı tarafından geliştirilen "Başarı Testi" ve "Yarı Yapılandırılmış Görüşme Formu" kullanılmıştır. Nicel verilerin analizinde Kolmogorov-Smirnov analizi, nitel verilerde ise içerik analizi kullanılmıştır.

Birinci hipotezle ilişkili olarak, deney ve kontrol grubunun ön test puanlarının birbirlerine yakın olduğu ve puanlar arasında anlamlı farklılık olmadığı görülmüştür ($p>.05$). İkinci hipotezle ilişkili olarak, deney grubu öğrencilerinin son test puanlarının ($\overline{x}= 74.09$), ön test puanlarından ($\overline{x}= 50.34$) anlamlı düzeyde yüksek olduğu tespit edilmiştir ($t_{[43]}$, $p<.01$). Kontrol grubunun ise işlem öncesi ve sonrası puanlarında anlamlı farklılık olmadığı saptanmıştır ($p>.05$). Üçüncü hipotezle ilişkili olarak, deney grubunun tutum toplam ve faktör puanlarının kontrol grubuna göre anlamlı düzeyde daha yüksek olduğunu görülmüştür ($p<.01$).

Öğrenciler, ters yüz öğrenme modeli, Youtube ders destek platformu, QR kodları, Zoom Breakout Rooms ve BandLab öğrenme deneyimleri içerisinde yoğun olarak pozitif kodlara yönelmişlerdir.

Bu araştırmada uygulanan ters yüz öğrenme modeli ve istasyon tekniğinin kombinasyonu, literatürdeki benzer çalışmalarla (Govindaraj ve Silverajah, 2017; Nurkamto vd., 2019) tutarlı bulgular ortaya koymuştur. Örneğin Smalls (2019), ortaokul düzeyinde istasyon rotasyonu ve ters yüz öğrenme modellerini bir arada kullanmış öğrencilerin hem sınıf hem de bölge değerlendirme puanlarında artış sağlamıştır.

Birinci araştırma sorusuyla ilişkili olarak bu çalışma, Lai'nin (2021) ve Ng'nin (2022) bulgularını takip ederek ters yüz öğrenme modelinin etkili bir yöntem olduğunu göstermiştir. Buna karşılık bazı öğrenciler, Wanner vd. (2015) çalışmalarında olduğu gibi ek iş yükü kaygısına dikkat çekmişlerdir. Öğrenciler, ders videolarının süresi ve içeriği ile ilgili kaygılarını da belirtmişlerdir. Birgili ve Demir'e (2021) göre öğrencilerin ters yüz öğrenme modeli deneyimlerindeki motivasyon düşüklüklerine, uzun süreli ve düşük kaliteli videolar sebep olmaktadır. Sever'e (2014) göre ters yüz öğrenme modeli için iyi planlanmış bir ders videosu mümkün olduğunca kısa ve anlaşılır olmalıdır. Mevcut araştırmada ki ders videoları, ilgi çekici ve öğrenciyi sıkmayacak sürede (Yıldız & Otacıoglu, 2017) yaklaşık olarak 7 ile 12 dakika arasında (Ng, 2022) hazırlanmıştır. Çünkü müzik eğitiminde kullanılan kısa videolar, öğrencilerin ilerlemelerini kolaylaştırmaktadır (Vaizman, 2022).

Öğrencilerin araştırmanın ikinci sorusuyla ilişkili olarak birinci sırada yöneldikleri "P1" kodu, literatürle tutarlı olarak YouTube'un öğrencilere her yerde ve her zaman kolay bir erişim fırsatı sağladığını göstermiştir (Clifton ve Mann, 2011; Alp ve Kaleci, 2018). Bu çalışmada, Youtube platformu bir canlı ders aracı olarak kullanılmamıştır; çünkü YouTube üzerinden yapılan canlı derslerde çeşitli iletişim problemleriyle karşılaşılması (Baki ve Çelik, 2021) büyük bir olasılıktır. Deneysel prosedür için hazırlanan eğitici videoların YouTube platformu üzerinden öğrencilere sunulmasının faydalı olabileceği (Serçemeli ve Kurnaz, 2020) düşünülmüştür.

Üçüncü araştırma sorusuyla ilişkili olarak QR kodları, öğrencilerin YouTube ders destek platformunda ki videolara anında ulaşabilmelerini sağlamıştır. Öğrenciler, QR kodunun düşük maliyetli, kolay (Zhang vd., 2015), motivasyonu artırıcı (Palazón ve Giráldez, 2018) ve eğlenerek öğrenme (Özkaya vd., 2015) gibi fonksiyonlarına dikkat çekmişlerdir. Bu sonuçlara karşılık Wells, (2012) konservatuvar müzik öğrencileri için

hazırladığı QR kodu içerikli bir etkinlikte, mevcut çalışmada olduğu gibi öğrencilerin internet erişimi ile ilgili sorun yaşadıklarına dikkat çekmiştir.

Dördüncü araştırma sorusuyla ilişkili olarak öğrenciler, zoom breakout rooms ve istasyon tekniği desteğiyle işbirlikçi, ilgi çekici ve aktif öğrenme etkinliklerine teşvik edilmiş (Li vd., 2021), birbirleriyle sosyalleşme (Davis vd., 2021) imkanı bulmuşlardır. Mevcut çalışmada öğrencilerin grup projeleri üzerinde daha verimli çalışabilmeleri için ara odalarda işbirlikçi çalışma ortamı (Romero-Ivanova vd., 2020) oluşturulmuştur. Ayrıca grup liderleri, hem öğrenciler hem de araştırmacı için önemli kolaylıklar sağlamıştır. Öğrenciler geçmişteki araştırmalarda, zoom breakout rooms destekli çalışmalarda ekip liderlerine ihtiyaç duymuşlardır (Lee, 2021). Beşinci araştırma sorusuyla ilişkili olarak bu araştırma, Bilevičiūtė (2020) ile Harris ve Carroll'un (2020) bulgularını takip ederek BandLab'in öğrencilerde işbirliği ve yaratıcı düşünme davranışlarını tetiklediğini göstermiştir.

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Author	Contact
Ali Korkut ULUDAĞ	Atatürk University, Kazım Karabekir Faculty of Education, Yoncalık Campus, 25000 Yakutiye, Erzurum E - mail: korkutuludag@atauni.edu.tr