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Aksak rhythm studies in distance piano education with use of Midi

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As a result of the impact of the Covid 19 epidemic, the use of alternative mass media has become mandatory in the field of education, as in many areas, and this has led to the search for a new approach to education. In this context, communication problems may occur during rhythm practice in distance piano lessons that are conducted synchronously. Because of these potential problems, the aim of this study is to determine the effect of using midi with melodic nuclei practice for distance piano education on works with aksak rhythms. In this study, which was designed as a post-test control group design, experiment and control groups consisting of 4 people with equal piano education were formed from the 2nd grade of the Çankırı Karatekin University, Faculty of Art, Design and Architecture, Department of Music. During the lesson, a routine study was carried out with the control group for a piano piece with aksak rhythm. A treatment was given to the experimental group using midi recording, which included the melodic nuclei and rhythmic structure of this work. At the end of the lesson, student performances were measured and the data obtained was used using a t-test. No significant difference was found between the performance scores of the experimental and control groups. In this context, it is possible to say that midi supported melodic nuclei exercises has no effect the aksak rhythm practices.

Key words: Piano education, distance education, Midi, Aksak rhythm, melodic nuclei.

INTRODUCTION

Distance education can be expressed in its most general definition as an educational model in which educational activities are carried out without the teacher and student being in the same environment. ″Distance education, which dates back to the 1700s and started with letter teaching practices as a concept, continued its development in parallel with developments in technology and gained its meaning and importance today with information technologies″ (Özbay, 2015:378). ″Distance education that fundamentally started as correspondence by letter, develops and becomes widespread with a change that causes questioning of the formal education system applied in their age, thanks to communication technologies such as radio, television, interactive-audio teleconference systems, interactive audio and video-conference systems, computer and internet-based education tools″ (Yungul, 2018:1336).

″Traditional face-to-face instruction involves interaction between a teacher and students who are in the same location, whereas technology-mediated instruction uses informal or online information and communication technologies (ICT) to mediate the learning experience

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and interactions without requiring that students and teacher are in face-to-face contact″ (Ruokonen and Ruismäki, 2016:110). Today distance learning models based on online information and communication technologies are called synchronous, asynchronous and blended. ″Synchronous education is a method in which two-way communication is provided and mutual interaction occurs simultaneously, although the teacher and the student are physically in different environments. Asynchronous education is a flexible communication model, independent of time and place, in which course content is prepared in advance and delivered to students via the internet″ (Yorgancı, 2015: 1402 to 1403). In the blended model, these two models are used together.

The reflection of the developments in computer technologies in the 21st century on the field of education shows itself with the wide and diverse possibilities in teaching technologies. Thanks to these opportunities seen in teaching technologies, effective and important teaching tools are created especially in distance education, which is considered as an alternative to traditional education. Some of these tools that can be used effectively in distance education are as follows: *flipgrid, edpuzzle, playposit, padlet, wordwall, nearpod, biteslide, edmodo, wufoo, mindmeister, smore*, etc.

These innovations seen in all areas of education also affect music education, and learning in music education is supported by computer or telephone applications, videos, online media programs etc. on various platforms. ″It is thought that music education, which is always in interaction with technological developments, can be much more effective and sufficient with an education method that uses developing educational technologies″ (Yungul, 2018:1335).

Until 2020, the distance education, which was used as an alternative to face-to-face education or in cases where the educator and student could not come together, started to be implemented compulsorily at all levels of education within the scope of the precautions taken to protect against the epidemic caused by the emergence of the Covid-19 virus.

With the unexpected transition to distance education due to the Covid-19 epidemic, each university determined distance education models within the scope of their own means. Distance education models of universities vary with the infrastructure facilities they have, and it has been felt that different platforms should be used. In particular, various technological teaching tools were used for piano lessons conducted within the scope of instrument lessons in the music departments of universities.

In one-on-one instrumental studio teaching lessons, where the interaction between the educator and the student is very important, there may be situations where the distance education model is insufficient. In face-to-face education, the ease of communication in piano lessons with the student, allows for immediate feedback by the educator in real time studies, and allows them to demonstrate or exemplify the correct behavior. However, in synchronous distance piano education, this situation is limited by the internet connection or the efficiency of the platforms used.

It may take time for the rhythmic structure to be assimilated by the student when applying different rhythmic structures in pieces or etudes in piano education. The rhythmic examples provided by the teacher and the supporting exercises made with these readings during the performance can also be used in works with aksak rhythms. Aksak, ″is a name given to measures whose rhythmic structure is not even, as in two-and four-time periods. This name is given to the procedural patterns, which are composed of combining two and three patterns with a special construct within the measure″ (Duygulu, 2014;36). ″The term, AKSAK, borrowed from the Turkish terminology was adopted mainly since 1949, the year of the International Conference of Folk Music Specialists which took place at Geneva, Switzerland, by musicologists to designate a special category of rhythms, a few speciments of which were made known by Béla Bartók under the incorrect denomination of 'Bulgarian rhythm'″ (Saygun, 1969:1). It is known that examples of aksak rhythm in Turkish folk music are quite rich. Although they are called Usul, these examples, which appear in 5, 7, 8, 9, 10 times, can be used in different rhythmic structures. ″5 beats are either 2 + 3 or 3 + 2, 7 beats are 2 + 2 + 3 or 3 + 2 + 2, 8 beats are 3 + 2 + 3, 9 beats are 2 + 2 + 2 + 3 or 2+3 + 2 + 2 or other ways, the 10-beat usul is used as 3 + 2 + 2 + 3″ (Saygun and Yönetken, 1958:154).

Although the aksak rhythm appears in a wide variety and wide range of Turkish folk music, it is also seen in works composed in the context of the current of nationalism in the twentieth century. In addition, there are many examples of works that are expressed as rhythmic modulation, in which a change of meter is made in the work. ″Rhythmic modulation, also called mixed rhythm, is the use of more than one rhythmic unit and the number of rhythmic units (time signatures) in a piece, the transition between rhythmic structures, that is, the use of metric divisions consisting of different rhythms between the measures of the piece″ (Yöre, 2012:90) (Figure 1).

Piano students may have difficulty in perceiving the rhythmic structure at the first stage due to the variability of the measure structure, especially when they encounter the works with rhythmic modulation for the first time. At this stage, the teacher assumes a supportive role in learning the rhythmic structure of the study, directing the student by performing rhythmic reading. However, during the piano performance of the student in distance piano education, it may have some difficulties that result in the inability of the instructor or the student to count out loud as the other demonstrates/plays due to reasons such as lack of communication, hearing problem, sound delay, signal lag.

The aim of the study was to test alternative teaching

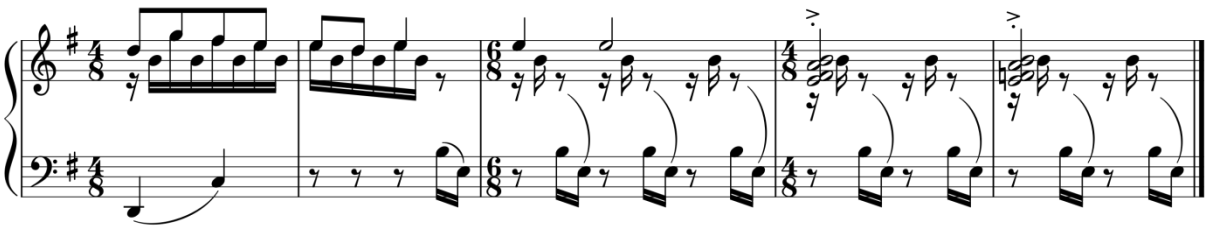

Figure 1. Example work on metric structure change, Black and White, II. Perpetual Motion (Baran, 1975:4).

Table 1. Study design.

Groups	Process	Post-test
Experimental	Synchronous online instruction + Midi	Performance scores
Control	Synchronous online instruction	Performance scores

techniques for the distance piano education model by measuring the effect of using Midi with melodic nuclei practice on piano performance in works with aksak rhythm in distance piano education. The reason for using Midi in this study is to test the effect of using an alternative teaching tool in audio transmission problems that may occur in synchronous online piano education. For the melody of the work to be studied in the preparation of the Midi file not to be memorized by the ear, it was considered appropriate to write the melodic nuclei of work instead of writing the entire melody of the work. ″Melodic nucleis are characteristic structures located in melodic areas that develop with stresses and dissolves″ (Yıldız and Güray, 2020:98).

For this purpose, the problem phrase of the research is designated as: 'How is the use of midi with a melodic nuclei effect practice of pieces with aksak rhythm in distance piano training?'

The hypotheses developed in the context of the problem situation of the research are stated below:

H_0: There is no significant difference between the aksak rhythm performance scores of the experimental group that received midi support and the control group not applied.
H_1: There is a significant difference between the aksak rhythm performance scores of the experimental group with midi support and the control group not applied.

Ethical permissions of research

In this study, all rules within the scope of publication ethics were followed, and none of the actions contrary to publication ethics were carried out. Ethical board permissions were obtained in accordance with the principles of research ethics. Within the scope of the ethics committee permission, an ethical evaluation certificate was obtained from Çankırı Karatekin University with the decision dated 24.12.2020.

METHOD

Research Model

Research was carried out using the experimental design. Since the participant group consisted of students with equal levels of piano proficiency, a post-test control group experimental design was used. In the application of this experimental design, ″both groups are given the same test at the same time, as the post-test. Changes in the participants' playing forming the experimental group caused by the experimental process at the end of the application are measured and a decision is reached by comparing them with that of the control group″ (Sönmez and Alacapınar, 2019:60). In order to have an idea of the piano levels of the students in the experimental and control group, their latest studies and works were examined and their levels were found to be equal (Table 1).

Working group

In this study, in which the experimental method was used, the institution where the researcher worked was selected within the possibilities of the researcher. The students studying at Çankırı Karatekin University, Faculty of Fine Arts, Design and Architecture, Department of music were included in the study group. Compulsory piano lessons are carried out in the first 2 years at the institution. As part of the study, it was considered appropriate to work with students studying in the second grade in terms of their ability to play a piece with aksak rhythm. Although there are 11 students enrolled in the 2nd grade piano lesson, the study was carried out with 8 students considering the similarity of the piano level, participation in the lessons, and the studying patterns of the students (n = 8). The last studies and works of these students whose piano backgrounds were identical with each other were also examined, their last piano exam grades were also taken into consideration (8 students': A) and experimental-control groups randomly formed (n = 4, n. = 4).

Table 2. Performance evaluation form.

Student code number:	Evaluation						
Criteria	**Very low**	**Low**	**Mid**	**Good**	**Very good**	**Factor**	**Student score**
	1	**2**	**3**	**4**	**5**		
Playing notes correctly						4x	
Correct perception of the metric structure						4x	
Smooth playing of the piece at the appropriate tempo						3x	
The harmony of the right and left hand						3x	
Paying attention to musical expressions						3x	
Specifying dynamics						3x	
Total							

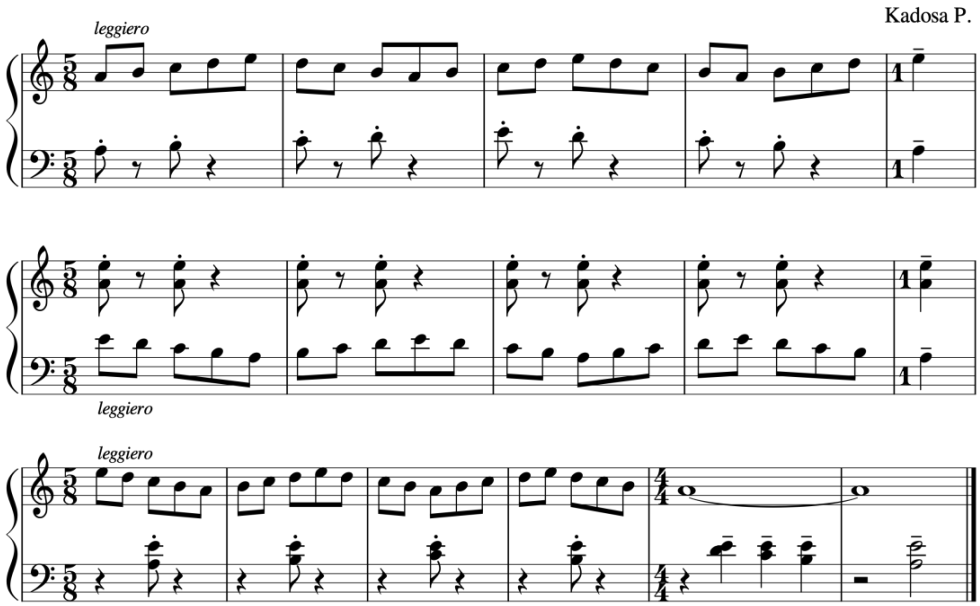

Figure 2. The piece used in the study (Teöke, 1981, 21).

Data collection tools

In this study, in which the effect of using midi with melodic nuclei practice on piano performance was measured in works with aksak rhythm in synchronous distance piano education, the performance evaluation form prepared by the researcher was used to reach the data. In the preparation of the performance evaluation form, the achievements for the work studied were taken into account and the evaluation criteria were established in this context. The performance evaluation form was presented to the expert opinion, and the form was finalized with the changes made in two items. The performances of the students were scored using the performance evaluation form consisting of 6 criteria (Table 2).

The recorded student performances were monitored by 3 field experts and scored using the performance evaluation form.

Data collection

In this study, in which research data were reached with an experimental approach, firstly the work with a aksam rhythm was identified. An exercise with an aksak rhythm by the Hungarian composer and pianist Pál Kadosa has been chosen. This piece, which starts at 5/8, turns back to 5/8 as 1/4 measure at the end of the 4 measures, and this rhythmic pattern repeats in the same way 3 times (Figure 2).

This work, which has rhythmic modulation, is thought to be a good example in understanding the aksak rhythm. After the selection of the piece, the melodic nuclei of this piece was written to be used in the study with the experimental group, and a midi file was created by adding the rhythmic structure to this melody. A music notation program (MuseScore) was used at this stage. First of all, the melodic structure of the work has been examined and the melodic nuclei of the work have been written. Subsequently, a rhythmic substructure supporting the rhythmic structure of the piece was added to the melodic nuclei and indicated strong times using accents. This study, given in Figure 3, has been recorded as a midi file. In the sound recording in the midi file, the melodic nuclei was recorded using the piano sound and the rhythmic structure was recorded using clap in strong times and tambourine in weak times.

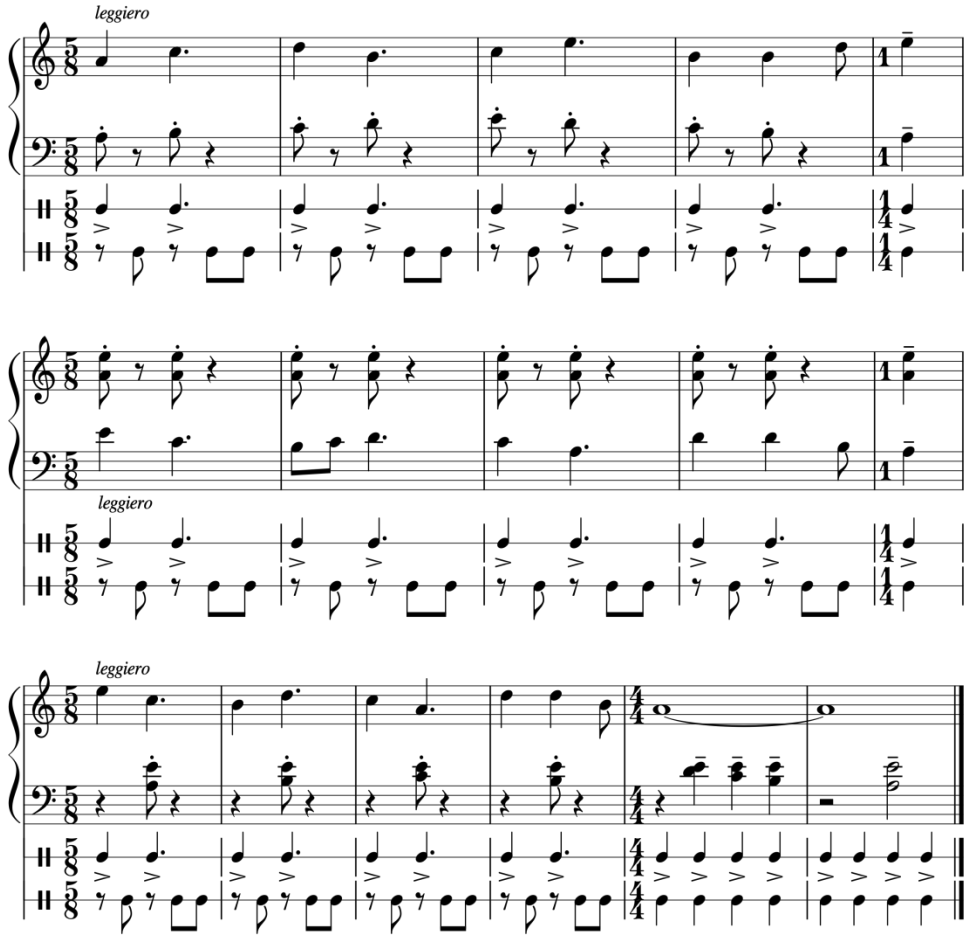

Figure 3. Midi file content used in experiment group.

During the application of the experimental procedure, every student was found under equal conditions. All of the students studied works that were equivalent to each other in level and studied the same etude and got similar scores (A) from the midterm exam. Also each student has a suitable study place and a piano or keyboard in their home. During the pandemic, in piano lessons conducted online with distance education, students were instructed one-on-one with teachers and students during the course of a lesson (30 min). The teaching of the piece to the control group was carried out with the traditional method, and the rhythmic structure was trained by the educator through rhythmic reading, then played on the piano. In practice with the experimental group, midi recording was used after the theoretical introduction of the work. First of all, the students were asked to listen to the midi recording while following the score, and after listening the rhythmic structure they started to play on piano. After this study, which was carried out in one class hour, the students recorded their performances by video and these recordings were evaluated by the experts using a performance evaluation form.

Data analysis

As a result of the application, the scores obtained by the students within the scope of the performance evaluation form were computerized and a data set was created. *R Studio* statistics program was used in the analysis of the data. In order to determine the effect of midi-supported melodic nuclei exercises on aksak rhythm practices, the performance scores of the experimental and control groups were analyzed with two independent samples t test. ″For small samples, t table is used instead of normal probability table to determine statistical significance″ (Best and Kahn, 2017:456).

FINDINGS

In this part of the study, statistical analyses are included in accordance with the scores obtained by the piano performance evaluation form of the students.

In the analysis of the data obtained for the question "How is the use of midi with a melodic nuclei effect practice of pieces with aksak rhythm in distance piano training?", The Shapiro-Wilk normality test was applied to determine whether the groups showed normal division or not. ″For the continuous data, test of the normality is an important step for deciding the measures of central tendency and statistical methods for data analysis. When our data follow normal distribution, parametric tests

Table 3. Shapiro-Wilk test results regarding the performance scores of the experimental and control groups.

Group	W	p
Experimental	0.90608	0.4619
Control	0.86414	0.2753

Table 4. Results of the F test regarding the performance scores of the experimental and control groups.

Group	V	F	p
Experimental Control	0.136206	0.13621	0.1357

Table 5. T test results for the performance scores of the students in the experimental and control groups.

	Group	N	M	T	P
Post-test	Experimental	4	68.25	0.43396	0.6795
	Control	4	65.25		

otherwise nonparametric methods are used to compare the groups″ (Mishra et al., 2019: 67). The results of the test are given in Table 3.

According to the test results, it is seen that p> 0.05 division are normal in both groups.

The results of the F test applied for the homogeneity of the variances of the experimental and control group performance scores are given in Table 4.

In line with the test results, variances are considered similar since the p value of 0.1357 is p> 0.05. At this stage, t test results and p value related to the performance scores of the experimental and control groups are given in Table 5.

When the results of the t test in Table 5 are examined, it is seen that the average of the experimental group is 68.25 and the control group is 65.25 in line with the performance scores of the groups. As a result of the test, the t value was found to be 0.43396 and the p value was 0.6795. In line with this result, there was no significant difference between the performance scores of the groups since p> 0.05. Accordingly, by accepting the H_0 hypothesis, it is possible to say that midi-supported melodic nuclei exercises do not significantly change the aksak rhythm accuracy in students' playing.

DISCUSSION

As a result of the study, no significant difference was found between the performance scores of the aksak rhythm of the experimental group in which midi support was applied in distance piano training and the control group in which Midi support was not applied. In line with this result, it can be said that midi-supported melodic nuclei exercises in distance piano education have an equal effect on student performance to traditional online piano instruction. In other words, it can be said that the use of traditional teaching techniques and midi-supported melodic nuclei exercises in the applications of aksak rhythms in distance piano education contributes equally to student performance.

This finding is similar to findings by Karahan (2016) and Gürman (2019), who researched about distance piano education and technology supported piano education. In his study, Karahan (2016) investigated the effects of traditional piano training and distance piano training on student achievement, and according to the post-test analysis of the experimental and control groups, no significant difference was found between the groups in terms of piano performance. Gürman (2019), in his master's thesis, investigated the effect of piano education using the traditional method and synthesis program on student performances. As a result of the research, it was determined that there was no significant difference regarding the post-test scores of the experimental and control groups.

Conclusıon

Unlike the results of the research, Kalkanoğlu and Albuz (2019) found a significant difference between the

performance scores of the students regarding Czerny Etude and Haydn Divertimento work applied to the experimental and control groups in their study, in which they investigated the effects of the Home Concert Xtreme program on the performance of piano students within the scope of computer-assisted piano teaching. They concluded that the experimental group students played the study etude with improved accuracy the etude and piece used in the study, and in this context, the Home Concert Xtreme program made a significant contribution to the development of piano students.

Topalak (2016) found a significant difference between the performance scores of the experimental and control groups in which Topalak applied the traditional learning model and the translated learning model in her doctoral study in which she investigated the effect of the flipped learning model from blended learning models on piano teaching at the beginning level. This significant difference is in favor of the experimental group. Lehimler and Şengül (2014) used Sibelius software in their research, in which they examined the effects of the use of music software in piano education, and found that technology support contributed to piano education.

Recommendatıons

Based on the results obtained in this study, it is suggested that midi-supported melodic nuclei exercises in distance piano education can be used in aksak rhythm applications; in cases where the student cannot work with the teacher; in the individual work of the student. It is recommended that midi-supported studies can be used with supportive meaning in traditional teaching, as they provide students with the opportunity to practice on their own. In addition, it may be suggested that the study can be repeated by increasing the number of students in the study group.

CONFLICT OF INTERESTS

The author has not declared any conflict of interests.

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