



The Effect of Online Application on Academic Achievement and Attitude in Musical Hearing Reading and Writing (MHRW) Lesson*

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ABSTRACT

This research was conducted to reveal the effect of the online application on academic achievement and attitude in the musical hearing reading and writing lesson and to determine the students' opinions about the application. The research was organized in a semi-trial model with a pretest, posttest paired control group pattern, and the study group consisted of 24 first-class students of the department of music education. The data were obtained with the attitude scale towards the musical hearing reading and writing lesson developed by the researcher, the academic achievement test, and a semi-structured interview form to determine student views on the online practice. As a result of the research, it was concluded that the online application was effective on the academic achievements and attitudes of the students who received professional music education in the musical hearing, reading and writing lesson. However, student views on online practice are also in line with academic achievement and attitude results. Online application work; Providing a visual, auditory, and interactive learning environment by providing equal opportunity and individual work in education, the student's decision to learn time, working in a comfortable environment where the student can be farther away from some worries such as the wrong answer while working alone, and in a fun working environment It is thought that it will support learning and increase academic achievement.

Keywords: Online practice, music education, musical reading, listening and writing (MHRW) lesson, academic achievement, attitude

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1. INTRODUCTION

Innovations in technology, which are rapidly entering our daily life, affect education as in every field. According to Karasar (2004), an education deprived of technological opportunities cannot respond to today's individual and social needs. The effects of technology on education are also seen in the field of music education. Computer assisted musical education; note reading, dictation, rhythmic exercises, scales, arpeggios, etc. It includes exercises for music theory, composing, musical symbols and terminology, music analysis by listening, notation with midi structure, ear training, instrumental performance, creativity, and enables practice. (Burunkaya & Yorulmaz, 2009). There are various studies in different fields of music education for technology-based applications. For example; As a result of Bauer's (2001) case study to determine student views and attitudes towards web-based music education, a positive perspective towards web-based music education has emerged. Sağer, Eden, and Şalliel (2014) stated that as a result of the practice they carried out with orchestra conductors through Skype and similar platforms for the education of musical ensembles through distance education, plenty of positive results were obtained in the management of music ensembles where distance education was practiced and that the use of the application in theoretical lessons could have positive effects. In computer-aided instrument training, Lee (2007) evaluated the experimental group's performances based on correct pitch and rhythm using the SmartMusic software in his thesis, in which he examined the previous experiences of students playing instruments and their effects on the time variable. There was a significant difference in favor of the experimental group. Lou, Guo, Zhu, Shih, and Dzan (2011), in their study, which determined the effectiveness of computer-aided music education in learning Chinese music instruments, it was reported that computer-aided education increases the learning success of students more than the traditional method, and it attracts

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students with the interfaces of the developed software, It has concluded that it is suitable for use outside the classroom and that the students have expressed positive opinions about the software used.

1.1. Statement of the Problem

Musical hearing, reading, and writing are some of the general fields of applied education of music education, which aims to provide individuals with certain musical behaviors and skills and to develop these behaviors and skills from childhood (Say, 2005). This lesson, which is carried out as a musical hearing reading and writing (MHRW) lesson at the undergraduate level, aims to improve students' sense of rhythm, note reading, hearing, and writing skills, musical memory, and attention, and increase their musicality and general musical success. According to Albuz (1996), the MHRW lesson is used in many of the theoretical lessons such as harmony, counterpoint, music styles; Orchestra is a prerequisite for applied lessons such as choir and instrument, and the difficulties experienced in the field of MHRW also hinder educational success in other fields. The view that the MHRW lesson constitutes the basis for other field lessons conducted in the music education process is often supported in research (Sevgi, 1982; Albuz, 1996; Bař, 2000; Akgül Barıř & Karkın, 2003; Umuzdař & Umuzdař, 2012; Gençel Ataman, 2013; Yařmut; 2013).

In music education, musical skills such as playing an instrument, reading solfege, singing, and composing can be easily carried out individually in extracurricular studies. However, very important studies such as single sound perception, interval and chord perception, melodic and rhythmic dictation, and tone perception in the content of the MHRW lesson, which are made to improve music theory and hearing skills, require an observer or guide with the help of the piano. It is thought that it is important to reinforce these issues, which are so important in vocational music education, but do not allow for individual study, by the student during extracurricular times or to eliminate their deficiencies. Today, there are online applications that support students to continue their studies outside of class. However, studies on the recognition and use of software and online applications that can be used in technology-supported music education reveal the view that these applications are not widely used in our country for various reasons (Koç, 2004; Yüksel, 2004; Önlü, 2007; Bařuęur, 2009; Sevinç & Koldemir, 2009; Çevik & Alkan, 2012; Lehimler & řengül, 2014; Özgül & Tanınmıř, 2016; Okay, 2016). During the MHRW lesson, which is generally carried out using the piano in crowded classes, limited lesson hours and is known to be the basis for other field education lessons in professional music education, it is often not possible to control the students one by one and the students have problems in reaching the targeted level and achieving success in the lesson.

Significant features such as access to education at a lower cost, regardless of time and place, and the opportunity to work individually with technology-supported MHRW education support students who are studying music to be more successful and better equipped. Some studies are describing and applying the positive effects of technology-supported musical hearing, reading and writing education (Means, 1994; Jonassen & Reeves, 1996; Bauer, 2001; Levendoęlu, 2004a; Levendoęlu, 2004b; Koç, 2004; Azizi, 2005; Webster, 2007; řen, 2011; Özgül & Tanınmıř, 2016; Nazlımoęlu, 2016; Karademir, Cesur, Büyükergene, Kaba & Kesici, 2018). For example, Azizi (2005) found in his research that he measured secondary school students' musical knowledge and their interest in music with computer-aided music teaching method, and concluded that students achieved absolute success in their musical knowledge. As a result of his research on musical nota software, Chang (2003) aimed to learn how the composition training, which is actively used with third-grade primary school students in Korea, using the (Finale) note writing program, affects the creativity of students in terms of talent and composition found significant differences between the group. In the study of Nazlımoęlu (2016) aiming to measure the effectiveness of computer-aided programmed teaching method in MHRW lessons, it was concluded that the education received by fine arts high school students was effective through the teaching software designed by the researcher.

1.2. Purpose of the Study

Online applications can make it easier for students to practice in extracurricular times to improve their music theory and hearing skills, to study or reinforce what they do not know, and to contribute to reaching the targeted level in the MHRW lesson. Besides, it is seen that the existing practices have more coverage for hearing than this lesson, which is conducted in a limited time. This study is considered important in terms of examining whether the online application will have any effect on the academic achievement of undergraduate students who receive professional music education, that the use of this application in professional music education can constitute an important model, and that no similar study has been found before in our country for the sample group. For this reason, this research was conducted to reveal the effect of the online application on academic achievement and attitude in the musical hearing reading and writing (MHRW) lesson of undergraduate students who receive professional music education and to determine the students' opinions about this application. For this purpose, two hypotheses have been developed and a research question has been prepared:

1. When the academic achievement test post-test mean scores of the experimental and control groups are compared, there is a significant difference in favor of the experimental group.
 2. When the attitude post-test mean scores of the experimental and control groups are compared, there is a significant difference in favor of the experimental group.
- What are student views and suggestions for online practice?

2. METHODOLOGY

The experimental pattern was used in the research. Accordingly, a pretest-posttest paired control group pattern was used, which is one of the half-trial models in which two groups are matched over certain variables and the groups are randomly assigned (Büyüköztürk et. al., 2018). Qualitative data were collected through interviews to understand the experiences of the students participating in the study and to learn their opinions and suggestions regarding the process.

2.1. Participants

The study group of the research consists of 24 students attending the first-year undergraduate students of the Department of Music Education, Department of Fine Arts Education, Nigde Omer Halisdemir University, in the 2017-2018 academic year. In the research, two groups of school numbers were divided into odd and even numbers by systematic sampling method; 12 students were determined as experimental group and 12 students as the control group. The equivalence of the groups in terms of Achievement Test and Attitude Scale pretest scores towards the MHRW lesson was examined, and no significant difference was observed in the achievement test ($z = -1.51, p > .05$) and attitudes ($z = -1.73, p > .05$). Thus, it can be said that there is no difference in the knowledge levels and attitudes of the groups and the groups are equal.

2.2. Data Collection Tools

An achievement test and an attitude scale for the MHRW lesson were developed by the researcher to collect quantitative data in line with the purpose of the research. A semi-structured interview form was created for the qualitative data obtained from the interview.

2.2.1. Musical hearing reading and writing achievement test

The scope of the research was determined by examining the MHRW undergraduate 1st-grade curriculum and online program contents to develop the achievement test. In line with this scope, a question pool of 49 items was created and expert opinion was received for content validity. The multiple-choice test, which was reduced to 29 items after expert opinion, was applied to 103 music education students for pre-application. The difficulty (Pj) and discrimination index (Rjx) of each item were examined in the item analysis test. According to Şeker and Gençdoğan (2014), since items with a discrimination power between 0.40 and 0.60 are considered to be very distinguishing, the first preferred questions were the questions between these values. Items with discrimination power below 0.30 were excluded from the test, it was envisaged that the 4th, 7th and 15th items of the test, which had Rjx and Pj values at the border and provided the scope integrity, remained in the test. The KR-20 value for the reliability of the test, which received expert opinion for validity and item analysis, was determined as 0.81. According to Fraenkel and Wallen (1993), when looking at the KR-20 value, which is expected to be at least 0.70 for reliability, it can be said that the developed test is reliable (as cited in Fraenkel & Wallen, Şeker & Gençdoğan, 2014). The achievement test developed consists of 22 items in total.

2.2.2. Musical hearing reading and writing (MHRW) lesson attitude scale

During the development of the attitude scale towards the MHRW lesson, firstly similar researches were examined and a 25-item question pool was created following the theoretical structure. In line with 3 expert opinions of the scale, whose content validity was obtained, the trial form consisted of 12 positive and 5 negative items and was applied to 169 students of the department of music education. The scale items were arranged in five-point Likert type as "Strongly Agree, Agree, Less Agree, Disagree and Not Agree".

Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were performed, respectively, to reveal the implicit structure of the attitude scale. Cronbach Alpha coefficient, KMO coefficient, and Bartlett Sphericity test were applied using the SPSS program to determine whether the data obtained from the students to whom the scale was applied in EFA were suitable for factor analysis (construct validity). The KMO value was found to be 0.86, and the result of the Bartlett test ($\chi^2 = 1408.600; p < .001$), which was used to determine that the data set has multivariate normality, was found to be significant. As a result of the rotated principal components analysis, the 17-item scale shows a four-factor structure and when the values of the item-total correlation are examined, it is seen that all items have a value above 0.30.

After determining the latent structure of the measurement tool with AFA, the AMOS program was used to verify this latent structure with DFA. The ratio of the chi-square value to the degree of freedom (χ^2 / sd) as a result of CFA is 2.65. According to Bollen (1989), Jöreskog (1993), Schermelleh-Engel and Moosbrugger (2003), χ^2 / sd ratio should be a small value for a good model. If this ratio is between 2 and 3, it shows that the fit of the data with the model is acceptable or good (Bollen et. al. as cited in Çelik & Yılmaz, 2016). Fit index values for the model were calculated as GFI = 0.83, CFI = 0.86 and RMSEA = 0.09. To determine the reliability of the measurements obtained from the scale, the Cronbach Alpha value, which is considered as one of the most important indicators in determining the quality of a scale, was found to be 0.89. According to this value obtained, it can be said that the scale has a good level of reliability.

2.2.3. Interview form

A semi-structured interview form was prepared to understand the experiences of the experimental group students participating in the online application and to learn their opinions and suggestions regarding the process. The form consists of 5 questions including the content of the application, the process, the laboratory, and equipment used in the study. For the content validity of the interview questions, necessary arrangements were made by referring to expert opinion and all interviews were conducted by the researcher.

2.3. Data Collection Process

2.3.1. Online application

Music theory and hearing education applications to be used in the experimental part of the research; The subject of the application, its purpose, lecturing, classification of the content, the scope of exercise questions, questionnaires, and application forms were examined and categorization was made within the online applications. Among these applications, the three most comprehensive online applications (www.musictheory.net, www.musicalmind.org, and www.teoria.com) with MHRW lesson content were selected and expert opinion was sought. Accordingly, it was decided to use the online application "www.teoria.com" in the research, it was compared with YÖK's first-year undergraduate MHRW lesson curriculum and the scope of the subject to be covered in the application was determined (Table 1).

Table 1.

Online Application Content

Theory Studies

Key Reading: It is requested to find the names of the notes on the designated key.

Hardware (1): It is called tone, the hardware is requested on the staff.

Hardware (2): Hardware is given on the staff, the tone name is requested.

Arrays: A string written on a staff is given. You are prompted to select one of the following answers.

A tone name is given and the scale is asked to be notated in the staff.

Interval (1): The first sound is given and the subject is requested to select an interval from among the choices as rising/descending.

Interval (2): An interval is given on staff or keyboard. The subject is requested to select the name of the interval among the answers below.

Chord (1): A chord is given in the staff. The subject is requested to select one of the answers below.

Chord (2): The root note is given and a chord setup is requested. The subject is requested to select the correct chord from the answers below.

Harmonic Exercises (3-Voiced, 7-Chords): It is requested to create a chord according to the given tone, degree, and conversion state, and the notes are notated on the staff. Hardware and a chord are given in the staff. From the answers below, it is asked to know the degree of the chord, and in the next step, the chord should be defined (minor, major).

Ear-Training Studies

Scale Ear Training: A series is given. The subject is requested to select one of the answers below.

Interval Ear Training: The first sound is given and the subject is requested to notate the desired interval to the staff and to select one of the following answers.

Chord Ear Training: The subject hears a chord, and she/he is requested to select in the following answers the type of chord.

2.3.2. For pre-trial application

A pre-trial was conducted to predict the difficulties that the researcher may encounter during the application process such as the adequacy of the application period in the lecture, difficulties that may be encountered in the online application, increasing the validity-reliability, application of the pre and post-tests and to contribute to the actual application. During the seven-week practice process conducted with 34 first-year students of Necmettin Erbakan University Department of Music Education, the MHRW lesson was held with the control group, while the online application "teoria.com" was studied with the experimental group. As a result of the pilot application, the time allocated for the pre-test and post-test, the time required for the processing of the subjects included in the study, the sufficient time required for the reinforcement of the studied subjects, and the problems that may occur in the computer laboratory were envisaged before the actual implementation process, and these predictions were applied to the preparation of the new study schedule.

2.3.3. Experimental procedure

The same subject content and study studies were applied by the researcher in parallel to both groups during the process that was carried out with the experimental and control groups for 10 weeks and 2 lesson hours (90 minutes) per week. The lessons given in the music class with the control group using the piano and blackboard were conducted with the experimental group in the computer laboratory. With the help of the sourcebooks for the explanation of their subjects with the control group, firstly theoretical questions on the board and then studies with piano questions were conducted. In the studies to be

carried out with the experimental group, the headphones to be used by the students and the tools such as the mouse, keyboard, external USB sound card that were missing in the laboratory were provided before starting the study (Károlyi, 1996; Özgür & Aydoğan, 2002; Elhankızı, 2008; Yavuzoğlu, 2010; Elhankızı & Elhankızı, 2017). Each student carried out the studies with his/her own computer headset. At the beginning of each study, subjects such as how many studies they will do on the subject previously determined by the researcher, how long they will continue the study, how long the question should be answered, and these data were marked on the online application. After these adjustments, study studies started and at the end of the study, each student's success percentage was obtained. However, this feature of the application was not recorded by the researcher, and the student shared it with their friends if they wanted. Besides, students' answering time to each question is limited to 60 seconds in the study studies. In general terms, the 10-week (20-lesson hours consisting of 90 minutes) program is as follows:

1st-Week: "Achievement Test" and "Attitude Scale for Musical hearing, reading and writing lesson" pretest was applied. The process was explained to the experimental group, the online application (teoria.com) was introduced, and preliminary information was given about its use, while the control group was informed about the teaching of the lessons and the curriculum.

2nd-Week: Lectures and studies on note values, porters, and different keys (G and F keys), notes, weights, ties, rests, sharps, and flats have been done.

3rd-week: Studies have been done on note values, porters, and note locations on different keys (G and F keys), weights, ties, rests, sharps, and flats. The subject is explained about the scales.

4th-Week: Studies related to the scales have been done.

5th-week: Lectures and studies about hardware have been done.

6th-Week: Lectures and studies about intervals have been done.

7th-Week: Lectures about the etudes and chords about the intervals were made.

8th-Week: Studies about chords have been done.

9th-Week: Studies have been done to reinforce the scales, hardware, intervals, and chords.

10th-Week: "Achievement Test" and "Attitude Scale for Musical Hearing Reading and Writing (MHRW) Lesson" post-test were applied.

2.4. Data Analysis

2.4.1. Quantitative data analysis

In the research, firstly, whether the data show normal distribution or not was examined with skewness and kurtosis values and a P-P plot graph. According to Huck (2008), the Skewness value should be between +1 and -1 and the Kurtosis value should be between +2 and -1 for the normality of the data (Cited from Huck, Seçer, 2015). Levene test was used to examine the homogeneity of variances in the posttest for the achievement test and as a result ($F(1-22) = 4.38, p < .05$), it was found that the variances of the data met the assumption of homogeneity. When the distribution and homogeneity of the MHRW academic achievement test and attitude scale pre-test and post-test data of the experimental and control groups were examined, it was concluded that the data did not show a normal distribution. In the comparison of the groups, the non-parametric Mann-Whitney U Test was used because the distribution was not normal and the number of samples was small (Pallant, 2017). To recalculate the reliability of the attitude scale, the internal consistency (Cronbach's Alpha) value of the items was examined, within the scope of the reliability studies of the achievement test, the item difficulty and discrimination indexes, and the KR-20 value of the test were examined.

2.4.2. Qualitative data analysis

The semi-structured interview form applied to the experimental group students was made face to face by making an appointment with the students after the experimental process. The descriptive analysis technique was used in the analysis of the data obtained as a result of student interviews participating in the online application. The data obtained by voice recording was initially transferred to the computer environment and classified in the excel program. In the last stage, these data were defined, interpreted by making frequency distributions, and supported with direct quotations. For the reliability of the qualitative data, coding was made by two researchers by comparing and a consensus was achieved.

3. FINDINGS

In this study, in which the effect of online application on the academic achievement and attitude of undergraduate students who receive professional music education in the MHRW lesson was examined, the data obtained by two hypotheses and a research question were analyzed and presented below with the findings.

In order to measure the effectiveness of the online application on the academic achievement of the MHRW lesson, the Mann-Whitney U Test's analysis results regarding whether there is a significant difference in favor of the experimental group when the achievement test post-test mean scores of the experimental and control groups are compared are given in Table 2.

Table 2.

The Mann-Whitney U Analysis Results Regarding Post-Test Scores Obtained from the Academic Achievement Test

	n	Average Rank	Sum of Ranks	U	p
Experimental Group	12	15.58	187.00	35.00	.03
Control Group	12	9.42	113.00		

When the analysis results are examined in Table 2, it was determined that there is a significant difference ($z = .03$, $p < .05$) between the academic achievement test posttest scores in favor of the experimental group, and the first hypothesis of the research was confirmed. Accordingly, it is seen that the online application for the MHRW lesson contributes positively to the academic success of the students.

In order to measure the effectiveness of the online application on the attitude towards the MHRW lesson, the Mann-Whitney U Test's analysis results regarding whether there is a significant difference in favor of the experimental group when the attitude scale posttest mean scores of the experimental and control groups are compared are given in Table 3.

Table 3.

The Mann-Whitney U Analysis Results Regarding Post-Test Attitude Scores Obtained from the Attitude Scale Test

		n	Average Rank	Sum of Ranks	U	p
Contentment	Experiment	12	13.04	156.50	65.50	.68
	Control	12	11.96	143.50		
Relevancy and Importance	Experiment	12	14.88	178.50	43.50	.09
	Control	12	10.13	121.50		
Eagerness	Experiment	12	15.54	186.50	35.50	.02
	Control	12	9.46	113.50		
Belief	Experiment	12	15.83	190.00	32.00	.02
	Control	12	9.17	110.00		
Total	Experiment	12	15.58	187.00	35.00	.03
	Control	12	9.42	113.00		

According to the analysis results in Table 3, it is found in attitude post-test scores, desire extent ($z = -2.22$, $p < .05$), belief extent ($z = -2.33$, $p < .05$), and attitude total scores ($z = -2.14$, $p < .05$) that a significant difference in favor of the experimental group and the second hypothesis of the research was confirmed. There is no significant difference between satisfaction and interest and importance extents of the scale. Accordingly, it can be said that the experimental group students have a more positive attitude towards the MHRW lesson as a result of the online application.

The findings obtained as a result of the interview conducted in order to understand the experiences of the experimental group students participating in the online application during the application process and to learn their opinions and suggestions regarding the process were collected under two themes.

3.1. Opinions and Recommendations for Online

When the views of the students about the online application in the MHRW lesson were examined, 9 of the students who participated in the application stated that the online application helped to reinforce what they learned and to see their weaknesses regarding the subjects. In this respect, it can be said that online practice makes the theoretical skills for musical hearing, reading and writing even more practical with question types, and helps to reinforce the learned knowledge faster and with various questions.

"... There was definitely a difference between before and after. Even if I answered the questions incorrectly, I was conscious. I mean, I was giving the wrong answer not because I didn't know the subject, but because I wasn't a judge. Previously, I was trying to do it through trial and error. ... We need to learn not only theoretical information but also practice because a hearing practice I did here was also the subject I used in my musical instrument lesson. So it was an issue that I encountered in my musical instrument lesson. I also use the series in my instrument class."S8 "... We saw these in the fine arts high school as well, but I have forgotten most of them. This study reinforced it, it made me practice." S4 "... I think MHRW contributed a lot to my lesson, reinforced what I did in the lesson. I did it by hearing what we do in theory." S1 "... For example, when we did the first test, I was a little stunned, but the test you made later came to me very easily. I think like this; While I had difficulties in some issues such as finding equipment, now I have not had any problems, it has been a big plus in my hearing lesson."S5 "I can say I learned what I do not know, I speeded up what I know." S12 "... I knew the subjects but I reinforced them very well." S11

7 of the students stated that they wanted to continue the application due to the ease of individual study and the opportunity to work regularly outside of the classroom. Thanks to this application, it can be said that the opportunity of students to work

individually is not only limited to the piano in the lesson but also anywhere they want outside the school because they can use the application wherever they want.

"This work has helped me, I would like to continue working outside of the classroom. By the way, I knew about this program before, but I didn't know how to use it. Now I will be able to work anywhere." S6 "We are in a crowded class in MHRW class and I don't understand much there. Our teacher had to train the curriculum and I was afraid to ask questions. But this application was an application that I could work on alone outside of the classroom. There is also a lecture in practice ..." S8 "Now I can use this application and study on my own. Because I understand from the computer, I also understood the language of the program, my English is not bad, I solve it, I work now." S11 " From now on, if homework or something is given, I will continue to study the application." S3

7 of the students for the online application stated that they do not understand the use of computers, they have difficulties in understanding the program due to the foreign language of the application and it is complicated, therefore they have difficulties in the working process and have difficulty in doing the application. This is an important finding in terms of revealing that we need to see our deficiencies in technology and information literacy, although we are now intertwined with technology. Educational promotion, informative and instructional-oriented panels, workshops, etc. on how students should use technological innovations in the field are considered important.

"... I learned to use the program more or less, but it still gets harder to use it after all that time." S10 "I would like to continue using the application in my own studies, but I don't think I can do it alone, because the language of the application was a bit difficult. I cannot discern where to choose what without you. Although I speak English, I alone do not know how to take which steps." S1 "... I had difficulty understanding the program on the computer because it was in a foreign language, so it is difficult for me to study by myself." S8 "... If I am given homework from now on, I will continue to work, so if I have to, I will work gladly, but I do not open frequently and browse through by myself. Because it is a bit difficult to find from where I should do the selection." S3 "... The language is hard, I wouldn't be able to understand it if you didn't show it." S12

During the online application process, 5 of the students stated that they answered the questions more accurately and quickly, 3 of them stated that the speed of answering the questions during the application was slow and therefore they had difficulty in the study. However, 2 of the students who gave the correct answer during the application process stated that they were happy and their self-confidence increased, and 1 student reported that the application helped him in how to study. At this point, even the application process itself, regardless of the outcome, can be considered as a highly effective method in increasing students' knowledge and skill speed and providing self-confidence.

"I had a hard time answering some of the questions asked on the computer because I was slow to think. ... Although it is easier to write by hand, the computer has accelerated my work. I unintentionally accelerated and after a while began to memorize. For example, I had memorized the hardware of the sharp major. Every time it came out, I was typing. ... When I saw that I could do it, and especially when my friends came to see this and ask me for help, I was happy. I like it so much. I also thought I was speeding up. When you gave the first exam, I gave the exam paper at the latest and I was embarrassed that I stayed too long in the exam, this time I was able to do it very quickly. My self-confidence increased, I am not afraid of the lesson." S2 "My truths have increased. It made me speed up even when I didn't know." S8 "... I saw the topics again both in high school and here, but because I heard it with practice, it became more permanent and gave me speed as I moved a little faster. I will not easily forget these issues anymore." S4 "... There were parts I was missing on some subjects, when I started to apply them I noticed them and speeded up my answers." S5 "The response time in the study came to me very quickly, so I was not successful." S7 "I used to write my dictations in my hearing lesson with more confidence. For example, the teacher plays 2 times, I would still be stuck in the first 2 measures in the 3rd repetition, but now it is not like that. I write the first 2 measures, check them on the second ring, and then move on to the 3rd and 4th measures. This gave me confidence, I dictate better " S3 "... Because I am a straight high school graduate and I think I am behind in matters compared to my other friends. There are some conditions of the talent exam, you can meet them and win the school, but my friends who are AGSL (Anatolian High School of Fine Arts) graduates are more advanced in music lessons. I am far behind them. But the work we did set an example for me on how to study. It was supportive and helpful. Theory contributed to my lesson and formed the basis." S6

When the suggestions for online practice in the musical hearing reading and writing lesson were examined, 4 of the students stated that the online application should be included in the lesson curriculum, 3 of them stated that the application should be done more and the duration could be increased. In this respect, it can be said that the students' approach to practice is very positive and as their success in online application increases, the interest and desire to practice will increase.

"... It was very good for me to practice in the lesson, so I wish it was included in the lecture." S4 "... I wish we had always done without this work in the lesson." S8 "... Our opportunities could have been better, this study could be included in the lesson so that we could study better out of fear of grades. I wish it was in our class hour." S2 "... It was supportive for me, I would agree if it continued. I wish the process had even been longer." S6 "... Now I know the

*topics better and I would like to reinforce them in the program if the time had been longer. Because what we do in the MHRW lesson is not enough for those who know it or for me, I think we cannot do enough to practice."*S9

3 of the students participating in the online application stated that they wanted the school to be a computer lab where they could study regularly, 3 of them suggested that the application could be used for other classes and music department students preparing for the special talent exam, while 1 student stated that the application language should be Turkish.

*"... I wish there was another laboratory where we could work continuously every week. Separate for musicians. There are always lessons in the other. If we were told that you have to work on the subject and come. I would study more. And if we had always done this work in the lesson... this application was an application that I could study alone outside of the lesson. There is also a lecture in practice. But I wish his language was Turkish."*S8 *"I wish we had a separate laboratory because I think going to another department's laboratory would have cost us time."*S5 *"Students who are preparing for exams should also perform this study, for example, I recommended the subject of intervals to a friend to contribute to the special talent entrance exam."*S6 *"I recommend working to my friends who will be preparing for these episodes and if they want to learn, I will teach them as much as I can."*S3 *"This study should definitely be applied to the upper classes because I think they are also lacking a lot."*S2

4. RESULTS, DISCUSSION AND RECOMMENDATIONS

In this study, in which the effect of online practice on academic achievement and attitude in the musical hearing, reading and writing lesson of students receiving professional music education was examined, it was concluded that the online theory application was effective on students' academic achievements and attitudes.

It is thought that the online application for the MHRW lesson contributes positively to the academic success of the students, supports the lesson, can be as effective as conventional methods, and will positively contribute to the field application in theory and practice. The result for academic success is in line with the results of research on technology-supported music education. It is possible to provide more efficient and effective learning and contribute to the increase of academic success with the technological tools used in the music education process (Parrish, 1997; Bauer, 2001; Arapgirlioğlu, 2003; Koç, 2004; Levendoğlu, 2004b; Azizi, 2005; Webster, 2007; Lou, Guo, Zhu, Shih & Dzan, 2011; Şen, 2011; Lehimler & Şengül, 2014; Yüksel & Mustul, 2015; Özgül & Tanınmış, 2016; Nazlımoğlu, 2016); some studies argue that it is possible to increase the interest, motivation and knowledge level of the lesson, to increase self-confidence, to use time better (Parrish, 1997; Arapgirlioğlu, 2003; Koç, 2004; Azizi, 2005; Başuğur, 2009; Lou, Guo, Zhu, Shih & Dzan, 2011; Petersen, Mortensen, Hansen & Vuust, 2012; Yüksel & Mustul, 2015) and to make the learning permanent (Başuğur, 2009). Besides, with the technological tools used, it is also possible to enable students to develop their abilities and creativity for composition, to write notes, compose, arrange, vocalize, broadcast their musical knowledge and gain critical listening skills (Chang, 2003; Arapgirlioğlu, 2003; Koç, 2004; Babacan & Babacan, 2011).

While the online application created a significant difference in the students' total attitude scores and the extents of willingness and belief, it did not make a difference in the extents of satisfaction and interest, and importance. Considering the extent of the attitude scale, this situation is thought to be related to the results of the interviews. For example, the inadequate level of student satisfaction or interest is thought to be due to reasons such as students having difficulty understanding the instructions because they do not use the computer or not knowing the application language, and difficulty keeping up with the pace of practice questions. The fact that students have a more positive attitude as a result of online application is in line with similar research results on the positive effects of technology-supported music education on attitude (Şen, 2011; Andaç & Temiz, 2016). The application used in the online application-process also has advantages such as enabling individual study, low cost, and being able to be used without separation of time and place (Levendoğlu, 2004a; Tecimer Kasap, 2007; Başuğur, 2009; Sağer, Eden & Şalliel, 2014). It can be said that these applications have the advantages of individually preparing for the lesson or repeating, eliminating the missing, and collective use in the classroom environment (Başuğur, 2009).

When students' views on online practice in the MHRW lesson were examined, many students stated that the application helped reinforce what they learned, to see their weaknesses in the subjects and that the application enabled individual study and regular study outside of the classroom. Since the application used will improve the theoretical skills for musical hearing reading and writing with the kinds of questions in its content, it will help to reinforce the learned information faster and with various questions, and by allowing students to work individually. It is not only limited to the piano in the lesson but also can be used anywhere outside the school. It is thought to be easier. Similarly, Rudolph (2005), as a result of his research investigating many internet-based applications that can be used in music theory and hearing education, stated that when online applications are used effectively, they can create great differences in the learning process, and as a result of regular work, programs will enable students to gain new information in the field of music theory and hearing and reinforce existing knowledge.

It was concluded that it was arduous to understand the program interface and use it on desktops since the use of computers and application language for online application was foreign. This is an important result that shows that we have deficiencies in technology and information literacy, although we are now intertwined with technology. Educational promotion, informative

and instructional-oriented panels, workshops, etc. activities are considered important. Although there is no similar application in our country yet, the applications originating from abroad are not well known. Apaydınlı (2006) supports the view in his research that computer-aided music programs are not widely known and used in MHRW education. The fact that the language is Turkish in online applications will make it easier for students to understand the application while studying alone, and will also eliminate the failure they may experience due to language difficulties. Concerning the applications and Turkish language support, Koç (2004) stated that it is necessary to benefit from these software products, which are related to the basic structure of music, to provide facilities for education personnel to follow such software easily and to inform music instructors through seminars or special lessons at certain periods. Also, he stated that the terminology used in music is a different area of expertise, without ignoring the fact that all kinds of sources are in foreign languages, and that it is necessary to work on this subject and to provide unity in the languages used by the software.

The students who stated that they answered the questions more accurately and quickly during the online application process, stated that they were happy with this situation, their self-confidence increased, and a student stated that the application helped him in how to study. MHRW lesson content constitutes the basis in terms of providing the necessary background for many branches such as instrument, sound, and harmony training. Different studies are stating that there is a significant relationship between academic achievement in this lesson and other lessons in the music education process (Ece & Kaplan, 2008; Umuzdaş & Umuzdaş, 2012; Sağır, Gürpınar & Zahal, 2013; Avşar, 2014). For example, Gencil Ataman (2013) and Uyan (2013) emphasize the conclusion that there is a significant relationship between MHRW lesson success and individual instrument, piano, and individual vocal training success, which are the basic lessons of music education. At this point, even the application process is considered to be a very effective method in increasing the knowledge and skill speed of the students and providing self-confidence. Önlü (2007) stated that computer technologies used in music education improve the student's creativity, increase the ability to engage in social communication, enable the student to progress at his own pace and level, increase the student's self-confidence and save the time of learning, improve the sense of sharing, the student has the opportunity to reach more information. Emphasized that it is positive in terms of giving.

When the student suggestions for online application in the MHRW lesson are examined, there are opinions that the online application should be included in the lesson curriculum, and the application content and duration may increase. Also, suggestions were made that it is a computer lab where regular studies can be done, the application can be used for other classes and music department students preparing for the special talent exam, and the application language should be Turkish. In the online application process, the opportunity to do many and various studies on the subject covered during the lesson hour and the opportunity to do individual work appropriate to each student's level will greatly contribute to student development in theory and practice. Based on the opinions obtained as a result of the interviews, it is thought that the students' approach to practice is very positive and as their success in online application increases, the interest and desire to practice will increase.

The results of the study's academic achievement and attitude towards online application and student views are parallel. Online application work; Providing a visual, auditory, and interactive learning environment by providing equal opportunity and individual work in education, the student's decision to learn time, working in a comfortable environment where the student can be farther away from some worries such as the wrong answer while working alone, and in a fun working environment It is thought that it will support learning and increase academic achievement.

This research is limited to online theory programs in the field of music and the musical hearing, reading and writing (MHRW) lesson, which is a basic field lesson in music education. The solid theoretical background in MHRW education directly affects the field lessons that require polyphony such as instrument training, voice and choral training, and harmony in music education. For this reason, it is recommended to examine the effect of online applications on other field lessons.

The result of the research has shown that online education has certain conditions and limits. In addition to online application studies, in order to increase the technological equipment in educational institutions and to enable students to work with other technology-supported music applications, a computer laboratory must be equipped with the equipment where they can perform functions such as music creation, writing, listening, recording, composing, editing, and vocalization. For this reason, it is recommended to obtain computer laboratories with well-equipped infrastructure and music software program licenses for online education. In addition, thanks to these laboratories, it is also recommended to introduce online education to students, do exercise studies together, and encourage students to use laboratories actively in extracurricular individual studies.

The literature review during the research process has shown that the majority of online applications and applications related to online music theory and hearing education are from abroad and in foreign languages. It is recommended to develop Turkish applications to explain and study the structure of maqam scales, especially in Turkish music.

Research and Publication Ethics Statement

This research was carried out by obtaining the necessary permissions from Necmettin Erbakan University Scientific Research Ethics Committee. Ethical principles and rules were taken into consideration in the collection, analysis and reporting of data.

Contribution Rates of Authors to the Article

This study is based on the first author's doctoral dissertation, written under the supervision of the second author.

Statement of Interest

There is no conflict of interest between the authors.

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