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Analysis of Music Teachers' Attitudes Toward Music Software

Erkan Demirtaş¹

¹ Faculty of Performing Arts, Ankara Music and Fine Arts University, Türkiye
E-mail: dr.erkandemirtas@gmail.com

Abstract

Technological innovations cause significant changes in educational environments as in all areas of life. Thanks to software, the locomotive of digitalization, innovations are experienced in many branches, from teaching materials to the teaching environment. Software products have influenced every stage of music, from production to distribution. This study aims to determine the level of music teachers' attitudes toward music software, which is one of the most important reflections of technological advances in music. The survey design was used as the research method. Attitude Scale towards Music Software was used as a data collection tool. The online scale was sent to 416 music teachers in the Ankara-Çankaya region in the 2021-2022 academic year. According to the research findings, music teachers' attitudes toward music software are reasonable. While teachers' attitudes towards music software show a significant difference according to their gender, professional seniority, and the type of school they work in, there is no significant difference according to their undergraduate program.

Keywords: Music Education, Music Programs, Instructional Technology

1. Introduction

With economic and technological advances, digitalization has become indispensable in today's world (Jeremić et al., 2020). With the computer, web, internet, mobile devices, cloud technology, and software industry, disruptive shifts are affecting every aspect of life (Amershi et al., 2019). From daily life routines to health, from agriculture to space technologies, these innovations are seen wherever human beings need them.

Technological innovations are also causing significant changes in the field of education. Societies that want to best prepare their future generations are looking for better ways of teaching and learning. This change accelerated, especially with the prevalent use of personal computers and the emergence of the internet. The change that started with specialized teaching materials has progressed to the change in learning environments. Learning types and approaches such as computer-assisted, electronic, mobile, web-based, blended, and flipped classroom have started to be used. Technology-supported learning applications yield positive results in academic achievement, motivation, and attitude (Harandi, 2015; Jenő et al., 2019; Korkmaz & Kadirhan, 2020). With the learning environment realized this way, learners' high-level thinking skills are contributed (Lee & Choi, 2017). In addition, it can be said that renewal in education is a necessity for raising new generations of so-called digital natives (Prensky, 2001).

Classical teaching methods are being renewed using technological opportunities in music education and other fields (Ye Yang, 2020). For example, the use of technology in popular music education has become indispensable (J. C. W. Chen, 2020). Music education, which is seen as one of the most challenging disciplines to teach (Mabini, 2022), has facilitated developments due to technology. This situation can be further diversified with software produced for music and general software used in education.

When the basic features of music software are considered, they can be generally classified as follows: Educational software for theory, history, hearing, instrument, and voice education; production-oriented software such as music creation, editing, and notation; auxiliary software such as tuning, metronome, sound recording; music listening and sharing software. Considering the applications produced for mobile devices today along with computer programs, the number and variety of music software is increasing considerably. Many programs and applications can be used for multiple purposes. For example, so-called Digital Audio Workstations (DAWs) are very comprehensive music production tools. DAW software can be used to record an extensive musical work, produce sounds, write notes or use it for tuning and metronome purposes. This diversity also increases the places of use. From amateur musicians to professionals, from preschool music classes to PhD-level students, everyone interested in music uses music software at the level of their needs. The number of music applications in mobile app markets alone is in the thousands. This data shows that music software is functional and useful, so the demand for it is increasing.

Watson (2011) states that the variety of materials used in music classrooms is more significant than ever in history. The main reason for this statement is natural technological advances. Apart from general educational technology tools, music software can be used as teaching aids for all levels. Frankel (2022) stated that production-oriented software such as DAW and notation are essential for developing the musical creativity of middle school students. In their study, Gower and McDowall (2012) found that interactive music video games attracted children's attention and could contribute to musical knowledge and skills development. Juntunen et al. (2013) made faster progress in instrument training supported by notation programs. Debevc et al. (2020) conducted a study with students in the 9-11 age group and concluded that those who worked with mobile applications were more successful in musical intervals and rhythmic accuracy. Chen (2020) found that the use of DAW in composition studies increased students' motivation.

Scientific studies on the use of music software as educational materials are increasing. The most crucial point is that music teachers should follow current technological advances and apply them in their classrooms. Teachers are expected to have a positive attitude towards music software. Inceoğlu (2010) explained attitude as follows: a mental, emotional and behavioral reaction that an individual organizes based on his/her experience, knowledge, feelings, and motives towards himself/herself or any object, social issue, or event in his/her environment. There is a significant positive relationship between achievement and attitude (Hussain et al., 2016). Individuals who are successful in a subject also have a positive attitude toward that subject (X. Chen, 2022).

1.1 Purpose

This study aims to determine the level of music teachers' attitudes toward music software. Depending on the purpose of the research, answers to the following questions were sought:

1. What is the level of music teachers' attitude towards music software?
2. Do attitudes towards music software vary according to gender, professional seniority, school type, and graduated school type?

2. Method

2.1 Study Design

A survey was used in this research. "A survey is a study of lots of cases from the same category" (Newsome, 2016, p. 410). Surveys collect information about people's attitudes, values, beliefs, opinions, motivations, incentives, past behaviors, intended behaviors, and demographic characteristics (Newsome, 2016; O'Leary, 2017).

2.2 Participant

The research was conducted with music teachers working in schools in Ankara-Çankaya in the 2021-2022 academic year. According to Ankara Provincial Directorate of National Education data, the distribution of music teachers in Çankaya is given below.

Table 1: Music teachers in Ankara-Çankaya

	Group	f	%
Gender	Female	265	63.7
	Male	151	36.3
School Type	Public	186	44.7
	Private	230	55.3
Total		416	100

As seen above, most teachers working in Ankara-Çankaya work in private schools. The majority of music teachers are women. Sampling was not done in the study, and all teachers were tried to be reached. The distribution of the music teachers who responded to the online questionnaire form and formed the study group is shown below.

Table 2: The demographic characteristics of the participants

	Group	f	%
Gender	Female	64	62.1
	Male	39	37.9
Professional seniority	1-5	38	36.8
	6-10	42	40.8
	11-20	23	22.4
School Type	Public	40	38.8
	Private	63	61.2
Graduated	Music Education	65	63.1
	Other	38	36.9
Total		103	100

Table 2 shows the distribution of the participants. Most music teachers who responded to the online survey were women (62.1%). The majority of the participants work in private schools (61.2%). This data seems to be consistent with the data of music teachers working in Çankaya. The participation rate in the survey was 24.76%.

2.3 Data Collection

The Attitude Toward Music Software Scale developed by Demirtaş ve Özçelik (2020) was used as a data collection tool in the study. The scale includes positive and negative emotion component factors and consists of 17 statements. In order to determine the demographic characteristics of music teachers, a personal information form was prepared and added to the scale. The personal information form and attitude scale were transferred to the online environment. The online questionnaire and an informative letter about the study were sent to the teachers.

Table 3: Reliability statistics

Factor	N of Items	Cronbach's Alpha
Positive emotion	11	,877
Negative emotion	6	,851

The reliability analysis results of the factors measured in this study are given above. According to the results obtained, the reliability of the scale is at a reasonable level (Morgan et al., 2011).

2.3 Data Analysis

The data collected online were transferred to the SPSS 21 program. Items with negative expressions were reverse-coded. Normality control was performed to select statistical tests required to solve the research problem. It is recommended to conduct normality tests separately for each variable group to be analyzed (Kilmen, 2015). For this reason, the results of the Kolmogorov-Smirnov normality test for each variable group are given in Table 4.

Table 4: Normality test results

	Group	F1	F2	General
Gender	Female	.016	.031	.047
	Male	.138	.011	.072
Professional seniority	1-5	.200	.200	.200
	6-10	.017	.000	.007
	11-20	.200	.200	.200
School Type	Public	.176	.003	.074
	Private	.031	.008	.003
Graduated	Music Education	.078	.000	.060
	Other	.200	.078	.200

When the normality test results were examined, it was determined that the data did not show the normal distribution in other variable groups except for the Graduated variable ($p < .05$). In the Graduated variable, the distribution of only one group is not normal. For this reason, skewness and kurtosis values were examined, and it was observed that they were within the (± 1) normal distribution range (George & Mallery, 2019). For this reason, the Independent Samples t-Test was used to analyze the Graduated variable. Mann-Whitney U test was used to analyze other two-group variables, and the Kruskal-Wallis test was used to analyze the professional seniority variable. The effect size (r) of the differences found was calculated by dividing the z value by the square root of the sample size (Field, 2018). The determining effect size was explained according to the criteria of 0.10 low, 0.30 medium, and 0.50 high (Field, 2018, p. 179).

3. Finding

The first sub-problem of the research is as follows: What is the level of music teachers' attitudes toward music software?

Table 5: Scale scores

	N	Minimum	Maximum	Mean	Std. Deviation
F1	103	2.00	5.00	3.97	.63
F2	103	2.00	5.00	3.90	.66
Total	103	2.12	5.00	3.95	.61

The data collected from music teachers with the Attitudes Toward Music Software Scale are presented in Table 5. The overall mean score of the scale was calculated as 3.95. The factor mean of the positive emotional component was 3.97, and the factor mean of the negative emotional component was 3.90. According to these results, music teachers' attitudes toward music software are at a good level.

The second sub-problem of the research is as follows: Do attitudes towards music software vary according to gender, professional seniority, school type, and graduated school type? Analyses for the gender variable are presented below.

Table 6: Mann-Whitney U test for the gender

	Group	N	Mean Rank	Sum of Ranks	\underline{x}	p
F1	Female	64	41.98	2685,50	3.76	.00
	Male	39	68.45	2669,50	4.32	

F2	Female	64	46.00	2944.00	3,74	.01
	Male	39	61.85	2412.00	4,13	
General	Female	64	42.95	2749.00	3.75	.00
	Male	39	66.85	2607.00	4.25	

A substantial difference was found in behalf of the Mann-Whitney U test conducted to determine whether music teachers' attitudes towards music software vary according to gender ($p < 0.05$). Male teachers' attitude scores towards music software are statistically significantly higher than female teachers. This situation is the same in the factors dimension and overall scale. The effect size computed because of the test ($r = 0.38$) shows that this difference is at a moderate level.

Table 7: Kruskal-Wallis test analysis of professional seniority variable

Factor	Professional seniority	N	Mean Rank	df	χ^2	p
F1	1-5	38	62.23	2	24.41	.00
	6-10	42	57.42			
	11-20	23	25.20			
F2	1-5	38	62.00	2	19.69	.00
	6-10	42	55.95			
	11-20	23	28.26			
General	1-5	38	62.97	2	25.07	.00
	6-10	42	55.86			
	11-20	23	25.00			

The table shows the results of the Kruskal-Wallis test to determine whether attitudes toward music software vary according to professional seniority. Subsequently the analysis, a significant distinction was found in each factor ($p < 0.05$). The Mann-Whitney U test was used to determine which groups this difference. Consequently, in the analysis, a statistically clear difference was found between the 11-20 group and the other groups. According to these results, those teaching music for 1-10 years has higher attitudes toward music software than those teaching for more than 11 years.

The analysis results according to the type of school where music teachers work are presented below.

Table 8: Mann-Whitney U test for the school type variable

	Group	N	Mean Rank	Sum of Ranks	\underline{x}	p
F1	Public	40	41.25	1650.00	3.77	.00
	Private	63	58.83	3706.00	4.10	
F2	Public	40	42.64	1705.50	3.71	.01
	Private	63	57.94	3650.50	4.02	
General	Public	40	41.26	1650.50	3.75	.00
	Private	63	58.82	3705.50	4.07	

According to Table 8, music teachers' attitudes towards music software differ significantly according to the type of school they work in ($p < 0.05$). The attitude scores of music teachers working in private schools differ statistically significantly and positively compared to the attitude scores of music teachers working in public schools. This situation is the same for the positive and negative emotion component factors and the scale in broad. The effect size computed as a result of the test ($r = 0.28$) shows that this convincing is at a low.

Table 9: Independent samples t-test results of the graduated variable

	Group	N	\underline{x}	Sd	df	t	p
F1	Music Education	65	3.95	.72	100.97	-.45	.65
	Other Departments	38	4.00	.43			

F2	Music Education	65	3.87	.75	100.62	-.76	.44
	Other Departments	38	3.96	.47			
General	Music Education	65	3.92	.71	100.90	-.60	.55
	Other Departments	38	3.99	.40			

The results of the independent samples t-test to determine whether the attitudes towards music software vary according to the undergraduate major are presented in Table 1. No significant difference was found due to the analysis ($p > 0.05$). According to this, it can be said that the attitudes towards music software are similar among music teachers who graduated from the music education department and other music departments.

4. Results and Discussion

In this study, music teachers' attitudes toward music software were examined in terms of different variables. The Attitude Toward Music Software Scale was sent online to 416 music teachers in the Ankara-Çankaya region. The study group consisted of 103 music teachers who contributed by filling out the scale.

The overall mean score of the scale was calculated as 3.95. This result indicates that music teachers' attitudes towards music software are good. Similar results were found in the positive and negative emotion component factors. In like manner, Bannerman & O'Leary (2020) found that attitudes toward music technologies were overwhelmingly positive in their study with preservice music teachers. Wise et al. (2011) found that music teachers used music software intensively in their classrooms. In the same study, it was stated that students showed a high level of participation in the studies conducted with music software, and successful results were obtained. Eyles (2018) stated that music teachers need to receive adequate training in information and communication technologies in tertiary education. When the music teaching undergraduate program in Turkey is examined, it is seen that there is no technology-based course specific to the field of music (Yükseköğretim Kurulu, 2018). Despite this situation, the reason why teachers' attitudes towards music software are at a good level may be that teachers are individually interested in music technologies. Additionally, it is recommended that in-service training situations should be examined in different studies.

A statistically significant difference was found in the comparison analysis according to gender. Male teachers' attitude scores toward music software (4.25) were significantly higher than female teachers (3.75). Doherty (2018) found that men have higher self-efficacy in music technology. Bannerman & O'Leary (2020) stated that men have more experience with music technologies. Marpa (2020) states that men's attitudes toward technology-supported instruction are higher than women's. In the studies on mobile devices, it is observed that gender is not a variable that makes a difference. (Hilao & Wichadee, 2017). For this reason, planning in-service training on using mobile devices and applications for teaching is recommended.

A significant difference was found in the analysis conducted to determine whether attitudes towards music software vary according to professional seniority. It was measured that those teaching music for 1-10 years have higher attitudes toward music software than those teaching for more than 11 years. In the comparisons made according to the age factor in technology use, results indicate that the use of technology decreases as the age group increases (Czaja et al., 2006). In the studies conducted on teachers, it is stated that the age factor is ineffective in using technology for instructional purposes (Chow, 2015; Serin & Bozdağ, 2020). In this study, it was found that the attitudes of teachers with less professional experience were higher than those with more professional experience. It is thought that this difference may be due to the teacher's professional commitment and plans, the school's and the teacher's economic situation, and the school administrators' approach. It is recommended that the factors affecting the attitudes of music teachers be examined in different studies.

It was determined that music teachers working in private schools had higher attitude scores than public school teachers. Private and public schools may differ in terms of physical structure, the way courses are taught, social and sportive opportunities, and following educational innovations. Private schools aim to provide a better teaching process and achieve better results due to their structure. Canitez ve Kocabaş (2020) stated that private school administrators contributed more positively to teachers' motivation than public school administrators. Başturan ve

Görgü (2020) found that public school teachers faced higher problems related to school conditions, classroom materials, and class size. Music teachers who receive support in terms of the school administration's approach, the physical infrastructure of the school, and access to necessary classroom materials may be more motivated to follow and use current music technologies.

It was determined that attitudes towards music software did not change according to music teachers' undergraduate department. The primary source of music teachers in Turkey is the music teaching department of the faculties of education. It is also possible for students from the music departments of fine arts faculties and conservatories to become teachers by taking pedagogical formation training. Different studies have been conducted on music teachers' graduating departments. Tokatlı ve Can (2018) determined that the level of perception about the constructivist approach did not change according to their undergraduate departments. Türkmen (2018) stated that conservatory students receiving pedagogical formation education are inadequate in knowing teaching methods and using instructional technologies. Gündoğdu et al. (2018) determined that preservice teachers receiving pedagogical formation education were sufficient in terms of professional and general cultural knowledge, but they were insufficient in the lesson plan, material preparation, and evaluation. Music teaching is a profession that requires multidimensionality (Albuz, 2004). The vocational education process and the on-the-job training process should be organized accordingly. In addition to current teaching methods, following developments related to music and innovations related to music technologies and integrating them into their lessons will contribute to the professional development of music teachers.

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