Review of the Technology-Utilization Level of String Instrument Teachers

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ABSTRACT
The purpose of this study is to determine the technology-utilization level of Fine Arts High School string instrument teachers. A pattern based on descriptive method has been used to conduct the researchers. Research data has been collected via literature review and questionnaire developed and prepared by the researcher. SPSS program has been utilized for processing the data. As a result of the analysis carried out in the research, this paper concludes that string instrument teachers make use of computers at the intermediate level and have adequate knowledge on its area of utilization in the Internet and music, and benefit from the Internet in instrument courses as well. The paper also concludes that in the classes the technology-utilization level of viola teachers is the highest; cello and contrabass teachers rather make their students watch videos while viola teachers mostly make use of tuning programs. Moreover, string instrument teachers commented that video camera recording can be used for beginner level instrument courses but that there were not adequate resources to teach viola as the technological advancement in Turkish Music is not enough. One of the string instrument teachers also stated that technology-utilization is not necessary for instrument training. Taking these findings into account, the paper offers some views and suggestions in order to respond to today's requirements and to guide instrument training course in this direction.

Keywords: Music education, string instrument training, technology-utilization.

INTRODUCTION
The last century witnessed a significant technological advancement in human history. Technology and new gadgets became indispensible part of daily life. Thanks to smart phones, tablets, laptop computers and the Internet, it is now possible to access information instantly and easily all over the world. In line with these developments, technology-utilization has also become mandatory in the field of education.

The use of technology in education is evaluated in terms of its purposes, methods and proportion as a new field, namely the "educational technology" emerged (Başuğur, 2009: 1). Educational technology has been developed to improve learning process. Educational technology is a set of a systems and techniques used for improving learning process. Educational technology is fundamentally the activity of putting certain content into practice through appropriate processes and to assess their application results (Demirel, Seferoğlu and Yağcı, 2001:115). Educational technology also found place in music education as well.

As it is case in all fields, technological advancement in the field of music is rapid in today's world and its area of use is constantly expanding. Technology was the most effective tool for changing music perspective in the last century. Another remarkable point is that, when compared to other fields in technological development, music is placed among the fastest changing fields (Arapgirlioğlu, 2003:160).

Technology, which made a haphazard progress starting from the end of the 19th century and especially in the 20th century, made music to be listened widely and resolved the disconnection between the composer and the audience. Thanks to the instruments provided by new technology, music gained an unprecedented diffusivity (Say, 1997:507).

Without any doubt, the invention of numerous new electronic instruments directly affects music education and training at schools. Now, in many countries, education is carried out with the support of technology at all levels of music education similar to other fields of education. Latest developments in the field of musical technology present new opportunities in basic music fields and such subfields as music theories, music history, music

literature, music education and performance for the teachers and students as well. Music instructors use the Internet, television, video, video cameras DVDs, CDs, electronic pianos, computers, computer software, MIDI and similar technologies in the classrooms to advance their students' with knowledge and skills, to increase performances, improve their abilities to play instruments and singing skills and increasing creativity and motivation for themselves and their students (Tecimer, 2006: 8).

Supporting music education carried out with the help of technology using audio-visual elements will not only smooth students' perception of instruction, but it may also help memorability. Furthermore, it is possible to claim that the technology-backed courses may increase the performance of the teachers.

Currently, basic activities like notating, composing, arrangement, vocalizing, broadcasting music data, developing music software, organizing music data, sharing all kinds of information via internet have become easier thanks to advanced technology. Along with the facilitation of those important activities, the development of the instruments called "keyboard" and "synthesizer" and invention of a common protocol enabling the communication between instruments ("Musical Instrument Digital Interface – MIDI), which can be considered as the continuation of this structure, marked a new epoch in terms of both education and performance. Also in music education, thanks to the increase in the number of software created for specific targets, the structure of education in this field has been changing and developing. The software development not only assist music teachers for improving themselves, but it also contribute to the individual and group works of the students studying in this field through new methods (Wilkinson, 1997).

When Computer-Assisted Instruction (CAI) in music is examined, it is observed that it facilitates practices in various fields of music and themes like music theory, composing, reading crotchet, dictation, ear-training, instrumental performance, rhythmic works, musical symbols and terminology, musical analysis through listening, creativity, fret and rhythm familiarization exercises, scale and arpeggio studies (Koç, 2002: 2).

In today's world, the Internet is an indispensible part of human life. Sending and receiving e-mails, searching the Internet for any subject and shopping online has become a daily habit. In any given subject, the amount of information presented on the Internet is unbelievable (Tecimer, 2006:8). Without any doubt, it is possible to make use of the opportunities presented by the Internet in music education as well. By means of instrument teachers can improve their knowledge and can also share their knowledge via social networks. The Internet can be considered as a resource for instrument and for teachers and students in many aspects such as listening to music, video tracking, copying, downloading musical notes and having access to any kind of information instantly.

One of the most important Internet technologies assisting instrument training is online education. Thanks to online education systems, music education is no longer limited to usual classroom environment. It is possible to engage an audio-visual training activity with an instrument via the Internet. In such a setting the teacher could be anywhere in the world without having to be in the same place with students. This system is also used in numerous areas of music education including music theory, vocal training, music history and composers.

It is possible to claim that difficulties faced by instrument teachers in the past are now over, albeit to some degree. It can be said that as long as the correct key is used, no information is inaccessible. Until a few years ago it was quite difficult to reach the notes of any musical piece/study let alone its sound recording; however thanks to social networks, even live performances in different interpretations are now easily accessible (Ayhan, 2012: 176).

Using the knowledge through carrying latest technology to the classrooms by teachers will definitely contribute to the development of students. In any case, exchange of knowledge is inevitable in our information age and this process operates rapidly. Adaptability of the institutions to this period of rapid change depends on their ability to fulfil the tasks expected from them and to play required roles (Langenberg and Spicer, 2001: 45). In this direction, this research aims to review technology-utilization level of string instrument teachers.

Problem Status
It is possible to claim that, similar to other areas of education, active utilization of technology in instrument training will influence the development of instrument for teachers and students to a great extent and increase the efficiency. In order to respond to today's requirements and to lead education and training processes in this direction, teachers are expected to actively utilize technology. The idea that considerable increase in the availability of technology in education and its easy accessibility and attainability for the classrooms may

contribute to more efficient teaching and to increased operability of the string instrument training courses constitutes the problem status of this study.

Sub Problems
- What is the computer-utilization level of string instrument teachers?
- What is the Internet-utilization level of string instrument teachers?
- Is there a meaningful relationship between the technology-utilization level of string instrument teachers and gender?
- Is there a meaningful relationship between the technology-utilization level of string instrument teachers and period of service?
- Is there a meaningful relationship between the technology-utilization level of string instrument teachers and instruments?
- What are the opinions of string instrument teachers about utilizing technology in the instrument training courses?

Purpose of the Research
The purpose of this research is to review the technology-utilization level of string instrument teachers in Fine Arts High Schools as technology has become an indispensible part of education in recent years and has a vast area of use in music education.

The Significance of the Research
The development of new methods and techniques in the field of music education together with the technological advancement has opened new doors in music education. It is thought that teachers have to follow, search and use these latest developments in the classroom in order to benefit from these novelties and to respond to the necessities of the time. Based upon this idea, this research is significant in terms of identifying the technology-utilization level of string instrument teachers in Fine Arts High Schools and locating the degree of advantages of technology used in string instrument training as supportive sources.

METHOD
This research is a descriptive study for determining the current situation. The data is collected through literature review and questionnaire. One Way Anova Test has been used to process the collected data comparing figures, percentages, averages, standard deviation and data.

Population Sample
The string instrument teachers working in the Fine Arts High Schools constitute the population of this research. The sample of the research is a total of 32 string instrument teachers working in Diyarbakir Fine Arts High School, Istanbul Avni Akyol Fine Arts High School, Izmir Umran Baradan Fine Arts High School, Mersin Nevit Kodallı Fine Arts High School, Nigde Fine Arts High School, Trabzon Akcaabat Fine Arts High School and Van Fine Arts High School, which were selected randomly from different seven geographical regions for the 2012-2013 school year.

Data Collection
Research data has been collected through literature review while the questionnaire has been developed and prepared by the researcher. There are seven questions about personal information, 14 close-ended questions and 1 open ended question on the opinions of string instrument teachers about technology-utilization in the questionnaire.

Analysis of Data
The data collected in the research has been analysed using SPSS (Statistical Package for Social Sciences) Windows 21.0 Program. Descriptive statistical methods (figures, percentages, averages and standard deviation) have been put into use during data evaluation. To compare quantitative data One Way Anova Test has been used. Acquired findings have been evaluated at 95% confidence interval and 5% significance level.

FINDINGS AND INTERPRETATION
This part includes the findings acquired as a result of the analysis of data collected through the questionnaire from the Fine Arts High School teachers who participated in the research to solve research problem. Explanations and interpretations have been made based upon the research findings.

Table 1: Specific Characteristics of String Instrument Teachers

Tables	Groups	Frequency (n)	Percentage (%)
Gender	Male	20	62.5
	Female	12	37.5
	Total	32	100.0
University	Marmara	7	21.9
	Yüzüncü Yıl	6	18.8
	Gazi	5	15.6
	Karadeniz Teknik	4	12.5
	İnönü	3	9.4
	Niğde	3	9.4
	Dokuz Eylül	2	6.2
	Uludağ	1	3.1
	İzzet Baysal	1	3.1
	Total	32	100.0
String Instrument	Violin	18	56.2
	Viola	10	31.2
	Violoncello	3	9.4
	Contrabass	1	3.1
	Total	32	100.0
Period of Service	More than 10 years	13	40.6
	5-10 Years	12	37.5
	1-5 Years	7	21.9
	Total	32	100.0
Computer Ownership Status	Yes	32	100
	No	-	-
	Total	32	100
Computer and its Area of Use in Music Knowledge Level	Yes	14	43.8
	Partial	13	40.6
	No	5	15.6
	Total	32	100.0
Internet and Musical Websites Knowledge Level	Yes	19	59.4
	Partial	11	34.4
	No	2	6.2
	Total	32	100.0

Table 1 illustrates that 20 (62.5%) of the participant string instrument teachers are male while 12 (37.5%) are female.

As far as universities are concerned, ,7 (21.9%) of the participant string instrument teachers are from Marmara University, 6 (%18.8) of them from Yüzüncü Yıl University, 5 (%15.6) of them from Gazi University, 4 (%12.5) of them from Karadeniz Teknik University, 3 (%9.4) of them from İnönü University, 3 (%9.4) of them from Nigde University, 2 (%6.2) of them from Dokuz Eylül University, 1 (%3.) of them from Uludağ University and 1 (%3.1) of them from Abant İzzet Baysal University.

When the string instrument teachers participated in this research and were evaluated in accordance with their instruments, the research revealed that 18 (%56.2) of them are violin teachers while 10 (%31.2) of them are viola, 3 (%9.4) of them are violoncello and 1 (%3.1) of them is contrabass teachers.

In terms of period of service, 13 (40.6%) of the string instrument teachers have served for 10 years and more while 12 (%37.5) of them served for 5-10 years, and 7 (%21.9) of them served for 1-5 years.

It is also observed that all of the participant string instrument teachers own a computer. This situation can be interpreted that the string instrument teachers are not too distant from technology.

14 (43.8%) of the participant string instrument teachers have adequate knowledge about computers and their use in music education, while 13 (40.6%) have partial knowledge and 5 (18.8%) do not have adequate information. This situation leads to a conclusion that most of the string instrument teachers have adequate knowledge about computers and their use in music education.

19 (59.4%) of the participant string instrument teachers have adequate knowledge about the Internet and musical websites while 11 (34.4%) have partial knowledge and 2 (6.2%) does not have adequate information. This situation again leads to the conclusion that most of the string instrument teachers have an adequate knowledge of the Internet and musical websites.

Table 2: Technology Utilization Level

	N	Mean	SD	Min.	Max.
Technology Utilization Level	32	3.281	0.789	1.330	4.530

"Technology utilization level" of the string instrument teachers participated in this research has been determined as medium level (3.281 ± 0.789).

Participant string instrument teachers' responses to the statements about technology utilization level are given in the Table 3.

Table 3: Variance of the responses of string instrument teachers to the statements about technology utilization level

	Never		Rarely		Partially		Usually		Always		Mean	SD
	f	%	f	%	f	%	f	%	f	%		
Benefiting from computers in instrument training courses	2	6.2	4	12.5	10	31.2	12	37.5	4	12.5	3.370	1.070
Benefiting from instrument training courses	2	6.2	0	0.0	10	31.2	14	43.8	6	18.8	3.690	0.998
Benefiting from the musical note archives on the Internet for the musical pieces to be performed by students	1	3.1	0	0.0	6	18.8	16	50.0	9	28.1	4.000	0.880
Benefiting from the methods available on the Internet apart from the textbooks used for instrument training courses	3	9.4	2	6.2	4	12.5	14	43.8	9	28.1	3.750	1.218
Having students listen to sound recordings of the musical pieces to be performed	1	3.1	1	3.1	4	12.5	12	37.5	14	43.8	4.160	0.987
Having students watch the videos of the musical pieces to be performed	1	3.1	5	15.6	7	21.9	8	25.0	11	34.4	3.720	1.198
Benefiting from the accompaniments available or in MIDI format for the accompaniments of musical pieces to be performed	13	40.6	4	12.5	10	31.2	4	12.5	1	3.1	2.250	1.218
Enabling students to listen to their own performances by recording their studies/pieces	7	21.9	8	25.0	9	28.1	4	12.5	4	12.5	2.690	1.306
Giving assignments to students to encourage Internet research for their musical instruments	2	6.2	3	9.4	5	15.6	12	37.5	10	31.2	3.780	1.184
Benefiting from the musical dictionary websites in instrument training courses	6	18.8	4	12.5	12	37.5	6	18.8	4	12.5	2.940	1.268
Benefiting from websites to teach students theoretical information (instruments, composers, epochs etc.)	1	3.1	3	9.4	4	12.5	14	43.8	10	31.2	3.910	1.058
Using tuning programs in courses	17	53.1	4	12.5	3	9.4	2	6.2	6	18.8	2.250	1.606
Using metronome programs in courses	19	59.4	7	21.9	4	12.5	2	6.2	0	0.0	1.660	0.937

Exchanging opinions with string instrument teachers in other cities via social networks	5	15.6	8	25.0	8	25.0	6	18.8	5	15.6	2.940 1.318
Opinion of technology utilization will increase the instrument motivation of students	1	3.1	2	6.2	4	12.5	10	31.2	15	46.9	4.120 1.070

The research found that while 12 (37.5%) of the string instrument teachers participated in this research usually benefit from computers, 10 (31.2%) partially benefit, 4 (12.5%) always benefit, 4 (12.5%) rarely benefit and 2 (6.2%) never benefit. It is clear that string instrument teachers moderately agree (3.370 ± 1.070) with the statement that "I benefit from computers for instrument training courses". This leads to a conclusion that the string instrument teachers carry out their courses with the help of computers.

It is observed that while 14 (43.8%) of the string instrument teachers participated in this research usually benefit from the Internet, 10 (31.2%) partially benefit, 6 (18.8%) always benefit and 2 (6.2%) never benefit. It can be said that string instrument teachers highly agree (3.690 ± 0.998) with the statement that "I benefit from internet for instrument training courses". This leads to a conclusion that the string instrument teachers adequately make use of the Internet.

The study found that while 16 (50.0%) of the string instrument teachers participated in this research usually benefit from the musical note archives on the Internet for the musical pieces to be performed by students, 9 (28.1%) always benefit, 6 (18.8%) partially benefit and 1 (3.1%) never benefits. Accordingly, teachers highly agree (4.000 ± 0.880) with the statement that "I benefit from the musical note archives on the Internet for the musical pieces to be performed by students". This leads to a conclusion that the string instrument teachers are aware of the websites where musical note archives exist and actively use this websites in their courses.

The study found that while14 (43.8%) of the string instrument teachers participated in this research usually benefit from the methods on the Internet apart from textbooks used for instrument training courses, 9 (28.1%) of them always benefit, 4 (12.5%) partially benefit, 3 (9.4%) never benefit and 2 (6.2%) rarely benefit. Based on this data it observed that teachers highly agree (3.750 ± 1.218) with the statement that "I benefit from the methods on the Internet apart from the textbooks used for instrument training courses". This leads to the conclusion that most of the string instrument teachers use methods available on the Internet, in addition to the textbooks, as supportive resources in their courses.

The study revealed that while 14 (43.8%) of the string instrument teachers participated in this research always encourage students to listen to sound recordings of the musical pieces to be performed, 12 (37.5%) usually do this, 4 (12.5%) do this partially, 1 (3.1%) do it rarely and 1 (3.1%) never does this. Clearly, teachers highly agree (4.160 ± 0.987) with the statement that "I have students listen to sound recordings of the musical pieces to be performed". This data leads to the conclusion that the string instrument teachers attach importance to having students listen to sound recording of the musical pieces which enables students to gain insight about the interpretation of the pieces performed.

It is observed that while 11 (34.4%) of the string instrument teachers participated in this research always encourage students to watch videos of the musical pieces to be performed, 8 (25.0%) usually encourage, 7 (21.9%) partially encourage, 5 (15.6%) rarely encourage and 1 (3.1%) never encourage their students. The data indicates that teachers highly agree (3.720 ± 1,198) with the statement that "I ecourage students watch the videos of the musical pieces to be performed". When this data is interpreted, it can be concluded that most of the string instrument teachers benefit from the existing video recordings on the Internet.

It is observed that while 13 (40.6%) of the string instrument teachers participated in this research never benefit from the accompaniments available or in MIDI format for the accompaniments of musical pieces to be performed, 10 (31.2%) partially benefit, 4 (12.5%) usually benefit, 4 (12.5%) rarely benefit and 1 (3.1%) always benefit. The research suggests that teachers weakly agree (2.250 ± 1.218) with the statement that "I benefit from the accompaniments available or in MIDI format for the accompaniments of musical pieces to be performed". This situation leads to the conclusion that the string instrument teachers do not adequately benefit from technology-aided accompaniments.

It is observed that 9 (28.1%) of the string instrument teachers participated in this research partially enable students to listen to their own performances by recording their studies/pieces, while 8 (25.0%) do it rarely, 7 (21.9%) never do it, 4 (12.5%) usually do it and 4 (12.5%) always do it. These figures tell us that teachers moderately agree (2.690 ± 1.306) with the statement that "I enable students to listen to their own performances by recording their studies/pieces". This situation leads to the conclusion that a minor part of the string instrument

teachers enable students to listen to their own performances by recording their studies/pieces and increase awareness level of the students.

The study found that while 12 (37.5%) of the string instrument teachers participated in this research usually give assignments to students to encourage them research the Internet for their instruments, 10 (31.2%) always do this, 5 (15.6%) partially do this, 3 (9.4%) rarely do this and 2 (6.2%) never do this. This means that teachers highly agree (3.780 ± 1.184) with the statement that "I give assignments to students to encourage them research the Internet for their instruments". This situation leads to the conclusion that most of the string instrument teachers enable students to familiarize themselves with their instruments by giving Internet-based research assignments to students.

It is observed that while 12 (37.5%) of the string instrument teachers participated in this research partially benefit from the musical dictionary websites for instrument training courses, 6 (18.8%) usually do benefit 6 (18.8%) never benefit, 4 (12.5%) rarely benefit and 4 (12.5%) always benefit. Accordingly, teachers moderately agree (2.940 ± 1.268) with the statement that "I benefit from the musical dictionary websites for instrument training courses". This data can be interpreted that string instrument teachers do not adequately benefit from the musical dictionary websites.

It is observed that while 14 (43.8%) of the string instrument teachers participated in this research usually benefit from websites to teach students theories 10 (31.2%) always do this, 4 (12.5%) partially do this, 3 (9.4%) rarely do this and 1 (3.1%) never does it. The data suggests that teachers highly agree (3.910 ± 1.058) with the statement that "I benefit from websites to teach students theories (instruments, composers, epochs etc.)". According to this, most of the string instrument teachers benefit from websites to teach their students theories.

It is observed that while 17 (53.1%) of the string instrument teachers participated in this research never use tuning programs in their courses, 6 (18.8%) always do, 3 (9.4%) partially do, 2 (6.2%) usually do and 4 (12.5%) rarely do. Accordingly, teachers weakly agree (2.250 ± 1.606) with the statement that "I use tuning programs in courses". According to this, it can be concluded that string instrument teachers do not benefit from tuning programs in courses.

It is observed that 19 (59.4%) of the string instrument teachers participated in this research never use metronome programs in courses, while 7 (21.9%) rarely do, 4 (12.5%) partially do and 2 (6.2%) usually do. Apparently, teachers very weakly agree (1.660 ± 0.937) with the statement that "I use metronome programs in courses". According to this, it can be concluded that string instrument teachers do not benefit from metronome programs in their courses.

It is observed that 8 (25.0%) of the string instrument teachers participated in this research partially exchange opinions with string instrument teachers in other cities via social networks, while 8 (25.0%) rarely do, 6 (18.8%) usually do, 5 (15.6%) always do and 5 (15.6%) never do. This indicates that teachers moderately agree (2.940 ± 1.318) with the statement that "I exchange opinions with string instrument teachers in other cities via social networks". It is been observed that the string instrument teachers do not have an adequate communication. However, it is thought that communication is a necessity in order to be aware of the developments and innovations in the field of education and to provide a sound education to the students around the country.

It is observed that 15 (46.9%) of the string instrument teachers participated in this research are always of the opinion that technology utilization increases the instrument motivation of students, while 10 (31.2%) usually feel that way, 4 (12.5%) partially feel that way, 2 (6.2%) rarely feel that way and 1 (3.1%) never feel that way. It means that teachers highly agree (4.120 ± 1.070) with the statement that "I am of the opinion that technology utilization increases the instrument motivation of students". This figures suggest that string instrument teachers attach importance to technological support and that technology has positive influence on students.

Table 4: Technology Utilization Level by Gender

	Group	N	Mean	SD	T	P
Technology utilization level	Male	20	3.340	0.725	0.537	0.595
	Female	12	3.183	0.912		
Benefiting from computers for instrument training courses	Male	20	3.500	1.051	0.849	0.402
	Female	12	3.170	1.115		
Benefiting from internet for instrument training courses	Male	20	3.750	0.967	0.451	0.655
	Female	12	3.580	1.084		

Benefiting from musical note archives on the Internet for the musical pieces to be performed by students	Male	20	4.200	0.696	1.711	0.097
	Female	12	3.670	1.073		
Benefiting from the methods available on the Internet apart from the textbooks used for instrument training courses	Male	20	3.850	1.268	0.593	0.557
	Female	12	3.580	1.165		
Having students listen to sound recordings of the musical pieces to be performed	Male	20	4.350	0.745	1.459	0.155
	Female	12	3.830	1.267		
Having students watch the videos of the musical pieces to be performed	Male	20	3.900	1.210	1.109	0.276
	Female	12	3.420	1.165		
Benefiting from accompaniments available or in MIDI format for the accompaniments of musical pieces to be performed	Male	20	2.400	1.231	0.896	0.377
	Female	12	2.000	1.206		
Enabling students to listen to their own performances by recording their studies/pieces	Male	20	2.750	1.333	0.344	0.733
	Female	12	2.580	1.311		
Giving assignment to students to encourage Internet research for their instruments	Male	20	3.650	1.089	0.805	0.427
	Female	12	4.000	1.348		
Benefiting from the musical dictionary websites for instrument training courses	Male	20	2.950	1.395	0.071	0.944
	Female	12	2.920	1.084		
Benefiting from websites to teach students theories (instruments, composers, epochs etc.)	Male	20	3.800	1.005	0.728	0.472
	Female	12	4.080	1.165		
Using tuning programs in courses	Male	20	2.250	1.585	0.000	1.000
	Female	12	2.250	1.712		
Using metronome programs in courses	Male	20	1.650	0.933	0.048	0.962
	Female	12	1.670	0.985		
Exchanging opinions with string instrument teachers in other cities via social networks	Male	20	3.050	1.356	0.617	0.542
	Female	12	2.750	1.288		
Opinion of technology utilization will increase the instrument motivation of students	Male	20	4.050	1.146	0.506	0.617
	Female	12	4.250	0.965		

The results of the t-test was applied to the data in order to find out whether technology utilization level of the string instrument teachers participated in the research shows a meaningful variation by gender. However, no statistically meaningful variation was observed (p>0.05).

Table 5: Technology Utilization Level Averages by Period of Service

	Group	N	Mean	SD	F	P
Technology utilization level	1-5 Years	7	3.343	0.858	1.407	0.261
	5-10 Years	12	3.533	0.610		
	+ 10 Years	13	3.015	0.871		
Benefiting from computers for instrument training courses	1-5 Years	7	3.290	1.113	0.354	0.705
	5-10 Years	12	3.580	0.900		
	+ 10 Years	13	3.230	1.235		
Benefiting from the Internet for instrument training courses	1-5 Years	7	4.000	0.816	2.517	0.098
	5-10 Years	12	4.000	0.739		
	+ 10 Years	13	3.230	1.166		
Benefiting from musical note archives on the Internet for the musical pieces to be performed by students	1-5 Years	7	4.140	1.069	0.742	0.485
	5-10 Years	12	4.170	0.718		
	+ 10 Years	13	3.770	0.927		
Benefiting from methods on the Internet apart from the textbooks used for instrument training courses	1-5 Years	7	4.290	1.113	1.316	0.284
	5-10 Years	12	3.830	0.937		
	+ 10 Years	13	3.380	1.446		
Having students listen to sound recordings of the musical pieces	1-5 Years	7	4.430	1.134	1.108	0.344

		N	Mean	SD	F	p
to be performed	5-10 Years	12	4.330	0.778		
	+ 10 Years	13	3.850	1.068		
Having students watch the videos of the musical pieces to be performed	1-5 Years	7	4.000	1.155		
	5-10 Years	12	3.920	0.996	0.855	0.436
	+ 10 Years	13	3.380	1.387		
Benefiting from accompaniments available or in MIDI format for the accompaniments of musical pieces to be performed	1-5 Years	7	1.860	1.215		
	5-10 Years	12	2.750	0.965	1.726	0.196
	+ 10 Years	13	2.000	1.354		
Enabling students to listen to their own performances by recording their studies/pieces	1-5 Years	7	2.290	1.380		
	5-10 Years	12	3.080	1.240	0.965	0.393
	+ 10 Years	13	2.540	1.330		
Giving assignments to students to encourage Internet research for their instruments	1-5 Years	7	3.430	1.512		
	5-10 Years	12	3.920	1.165	0.392	0.679
	+ 10Years	13	3.850	1.068		
Benefiting from the musical dictionary websites for instrument training courses	1-5 Years	7	3.140	1.345		
	5-10 Years	12	3.170	1.586	0.693	0.508
	+ 10Years	13	2.620	0.870		
Benefiting from websites to teach students theories (instruments, composers, epochs etc.)	1-5 Years	7	4.140	1.069		
	5-10 Years	12	4.000	0.739	0.471	0.629
	+ 10 Years	13	3.690	1.316		
Using tuning programs in courses	1-5 Years	7	1.860	1.574		
	5-10 Years	12	2.750	1.765	0.945	0.400
	+ 10 Years	13	2.000	1.472		
Using metronome programs in courses	1-5 Years	7	1.140	0.378		
	5-10 Years	12	2.250	1.138	5.054	**0.013**
	+ 10 Years	13	1.380	0.650		
Exchanging opinions with string instrument teachers in other cities via social networks	1-5 Years	7	3.860	1.464		
	5-10 Years	12	3.000	1.414	3.281	0.052
	+ 10 Years	13	2.380	0.870		
Opinion of technology utilization will increase the instrument motivation of students	1-5 Years	7	4.290	0.756		
	5-10 Years	12	4.250	0.965	0.376	0.690
	+ 10 Years	13	3.920	1.320		

According to the results of the one way variance analysis (Anova), which was applied for determining whether average points of use of metronome programs the string instrument teachers participated to the research shows a meaningful variation by period of service, the variation between group averages was found as meaningful (F=5.054; p=0.013<0.05). Complementary post-hoc analysis was carried in order to locate the origins of the variation. Metronome use points (2.250 ± 1.138) of teachers with 5-10 years period of service have been measured as higher than that (1.140 ± 0.378) of the teachers with 1-5 years period of service. Metronome use points (2.250 ± 1.138) of teachers with 5-10 years period of service have been measured as higher than that (1.380 ± 0.650) of the teacher with more than 10 years period of service.

According to the results of the one way variance analysis (Anova), which was applied for determining whether period of service variable of the string instrument teachers participated to the research shows a meaningful variation with other variables, any meaningful statistical variation was not located between group averages (p<0.05).

Table 6: Technology Utilization Level Averages by String Instrument

	Group	N	Mean	SD	F	p	Difference
Technology utilization level	Viola	10	3.767	0.510			
	Violin	18	2.989	0.844	3.712	**0.037**	**1 > 2**
	Others	4	3.383	0.553			
Benefiting from computers for instrument training courses	Viola	10	4.000	0.667	2.835	0.075	
	Violin	18	3.060	1.162			

	Others	4	3.250	0.957		
Benefiting from the Internet for instrument training courses	Viola	10	4.200	0.789		
	Violin	18	3.390	1.092	2.313	0.117
	Others	4	3.750	0.500		
Benefiting from the musical note archives on the Internet for the musical pieces to be performed by students	Viola	10	4.500	0.707		
	Violin	18	3.780	0.943	2.591	0.092
	Others	4	3.750	0.500		
Benefiting from the methods on the Internet apart from the textbooks used for instrument training courses	Viola	10	4.000	1.054		
	Violin	18	3.500	1.383	0.922	0.409
	Others	4	4.250	0.500		
Having students listen to sound recordings of the musical pieces to be performed	Viola	10	4.500	0.527		
	Violin	18	3.890	1.183	1.563	0.227
	Others	4	4.500	0.577		
Having students watch the videos of the musical pieces to be performed	Viola	10	4.100	1.197		
	Violin	18	3.280	1.127	3.786	**0.035** 3 > 2
	Others	4	4.750	0.500		
Benefiting from accompaniments available or in MIDI format for the accompaniments of musical pieces to be performed	Viola	10	2.900	1.287		
	Violin	18	1.830	1.098	2.870	0.073
	Others	4	2.500	1.000		
Enabling students to listen to their own performances by recording their studies/pieces	Viola	10	3.200	1.476		
	Violin	18	2.440	1.247	1.133	0.336
	Others	4	2.500	1.000		
Giving assignments to students to encourage Internet research for their instruments	Viola	10	4.300	0.675		
	Violin	18	3.560	1.247	1.439	0.254
	Others	4	3.500	1.732		
Benefiting from the musical dictionary websites for instrument training courses	Viola	10	3.500	1.269		
	Violin	18	2.610	1.290	1.651	0.209
	Others	4	3.000	0.816		
Benefiting from websites to teach students theories (instruments, composers, epochs etc.)	Viola	10	4.100	0.994		
	Violin	18	3.780	1.215	0.302	0.742
	Others	4	4.000	0.000		
Using tuning programs in courses	Viola	10	3.500	1.581		
	Violin	18	1.670	1.283	5.762	**0.008** 1 > 2 1 > 3
	Others	4	1.750	1.500		
Using metronome programs in courses	Viola	10	1.800	0.789		
	Violin	18	1.440	0.856	1.418	0.259
	Others	4	2.250	1.500		
Exchanging opinions with string instrument teachers in other cities via social networks	Viola	10	3.500	1.509		
	Violin	18	2.560	1.199	1.879	0.171
	Others	4	3.250	0.957		
Opinion of technology utilization will increase the instrument motivation of students	Viola	10	4.400	0.966		
	Violin	18	4.060	1.162	0.598	0.557
	Others	4	3.750	0.957		

The one way variance analysis (Anova), which was applied to the data fo find out whether average points of technology utilization level of the string instrument teachers participated in the research shows a meaningful variation by string instrument variable, the variation between group averages was found as meaningful (F=3.712; p=0.037<0.05). Complementary post-hoc analysis was carried in order to locate the origins of the variation. Technology utilization points (3.767 ± 0.510) of viola teachers have been measured as higher than that (2.989 ± 0.844) of the violin teachers. According to this, it can be concluded that viola teachers follow technological developments more closely and apply them in their courses.

According to the results of the one way variance analysis (Anova), which was applied ot the data to determine whether average points of having students watch the videos of the musical pieces to be performed of the string instrument teachers participated in the research shows a meaningful variation by string instrument variable, the variation between group averages was found as meaningful (F=3.786; p=0.035<0.05). Complementary post-hoc analysis was carried out in order to locate the origins of the variation. The points of having students watch the videos of the musical pieces to be performed (4.750 ± 0.500) of violoncello and contrabass teachers have been measured as higher than that (3.280 ± 1.127) of the violin teachers.

According to the results of the one way variance analysis (Anova), which was applied to the data to determine whether average points of using tuning programs downloaded from internet in the courses of the string instrument teachers participated in the research shows a meaningful variation by string instrument variable, the variation between group averages was found as meaningful (F=5.762; p=0.008<0.05). Complementary post-hoc analysis was carried out in order to locate the origins of the variation. The points of using tuning programs downloaded from the Internet in the courses (3.500 ± 1.581) of viola teachers have been measured as higher than that (1.670 ± 1.283) of the violin teachers. The points (3.500 ± 1.581) of viola teachers have been measured as higher than that (1.750 ± 1.500) of the violoncello and contrabass teachers.

According to the results of the one way variance analysis (Anova), which was applied to the date in order to determine whether technology utilization level of string instrument teachers participated in the research as regards to string instrument variable shows a meaningful variation with other variables, any meaningful statistical variation was not located between group averages (p<0.05).

Table 7: Opinions of String Instrument Teachers about Technology Utilization in Instrument Training Courses

If you have any other opinions with regard to technology utilization in string instrument training, please add
Added Opinions
1	At the beginner level of instrument training, students can be assisted to correct dynamics such as positioning and holding, by video recording the courses.
2	Because I cannot find adequate internet content and resources, I cannot use them in my courses.
3	Turkish music has to be included in instrument training courses but resources and technological developments in this field are inadequate. For example, I experience difficulties in writing notes in programs and reflecting them. Technology is not adequately utilized in the field of Turkish music.
4	I believe technology utilization is not really necessary. I believe in learning through experience.

CONCLUSION AND RECOMMENDATIONS
Conclusion Concerning the First Sub Problem
It is understood that string instrument teachers own a personal computer and that they moderately benefit from computers in their instrument training courses.

Conclusion Concerning the Second Sub Problem
It is understood that string instrument teachers have adequate knowledge of the Internet and its use in the field of music and that they benefit from the Internet.
Conclusion Concerning the Third Sub Problem
No meaningful variation was observed between technology utilization level of string instrument teachers and gender variable.

Conclusion Concerning the Fourth Sub Problem
Metronome usage points of string instrument teachers with 5-10 years of period of service in their courses have been found as the highest. No meaningful variation was observed between other variables concerning the period of service and technology utilization level of the teachers.

Conclusion Concerning the Fifth Sub Problem
A meaningful variation was observed concerning technology utilization level of the string instrument teachers vis-à-vis to their instruments. According to this, technology utilization points of the viola teachers have been found as the highest. Furthermore, violoncello and contrabass teachers tend to have their students watch video more during their courses while viola teachers tend to benefit from tuning programs most.

Conclusion Concerning the Sixth Sub Problem
It is recommended that video camera recording can be used at the beginner level of instrument training and problems such as inadequate resources for viola training and inadequate technological development in Turkish

music were noted. One string instrument teacher has also expressed that technology is not necessary for instrument training.

Recommendation regarding the results derived from the research can be enumerated as follows:

1. String instrument teachers should assist student performances in courses or in concerts by benefiting from the existing accompaniments on the Internet or from the ones they created with the help of music software.
2. String instrument teachers should create ideal condition for students in which students can listen to their own music by recording their performances.
3. As mobile technology has become an indispensable part of daily life, string instrument teachers should benefit from supportive programs such as tuning and metronome and contribute to the individual efforts of the students by encouraging students to use these programs as well.
4. String instrument teachers should be in close communication with each other via social networks in order to maintain standards in string instrument training.
5. In order to solve resource problem in Turkish Music, websites should be designed to be used in string instrument training courses and appropriate music software should be developed for Turkish Music.
6. Music teachers of Fine Arts and Sports High Schools should be encouraged to use technology. Necessary educational and informational support should be provided by Ministry of National Education.

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