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Research Article

Performance, impact and recommendations for video-assisted violin education

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Abstract

This research was done to investigate the effects of developing technology in the subject violin education within music education. In the study, the students of the control group who took the subject violin course were given violin courses, and the study group students were taken with different and multi-camera angles prepared by the researcher in addition to violin courses, and the course videos containing special effects, which follow the narrative, subtext, stolen note, were prepared. While these videos are being produced, an environment with no image and noise pollution is set in the area where the video was taken, high audio and video quality is used, and custom video preparation programs have been set up and completed. This study uses an unselected pattern with a sontest control group. The study was conducted with 10 people, and 10 people with 20 people to form the control group. As a data collection tool, the researcher used the gradual scoring key prepared by the researcher to evaluate the performance of Mozart's "Morgen Kommt der Weichnactsmann" tune. The student performance recorded in the video has been evaluated by three experts through the graduated scoring key prepared. In the analysis of the data, the number of participants in the experiment and control groups has been taken into account to use a non-parametric test, the Mann-Whitney U test. The study revealed that the experiment group, composed of the self-violin students who received video support, was more successful than the control group. In the subject violin training, video course research should be developed by further research over the coming years. Violin, music, for the expansion of art education; the displaced province, district, etc. due to developing technology it is recommended to search for video, online (online) training in locations.

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Introduction

Music is a cultural movement. Culture is a process, not a product, but an ongoing action (McGregor, 2000). The art of music has been fed from many different branches in history. This interaction with different disciplines has enriched the content of music, contributing to the fascinating beauty of music. For example, French pastor Mersenne, who has made a reputation for Mathematics, determined the frequency that corresponds to the pitch in which the voice belongs, and said that the sound coming out of the string (the note) is in reverse proportion to the length of the string (Feyzioğlu, 2004). Researchers also point out that music is being used socially and individually for other areas and purposes in the subjects' philosophy and kinesthetic field education (Mercin & Alakus, 2007).

Amateur music training is called the training that individuals receive at their own request without any obligation. It is known that the word amateur is derived from the Latin word "Amo". For amateur music education, it is known that it aims to provide the musical behaviors necessary to provide relaxation, stress disposal, pleasure and satisfaction

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to those who are willing to learn (ages, 2011). Examples of amateur music courses include websites, online instructors, private music courses, school clubs. For individuals who have amateur music education, the lack of age, talent and test anxiety can be shown as an advantage for this training (Kesendere, 2017). It is thought that the primary purpose of amateur music education is to play or sing songs with melodies that sound good. The disadvantage of this training can be given as there is uncertainty about how long individuals will continue with the subject music education (Kesendere & Acar, 2018). As a researcher, I would like to point out that it is important for amateur students to learn the basic information that can and can be self-sufficient.

Music Education and Technology Usage

One of the first studies for remote violin training can be shown as an example of the "Training in letters" practice conducted by Günay and Ucan in Turkey in 1974. They studied the training by conducting a study called "Content Analysis for the Training of violins in letters" by Canbay and Nacakci (2011). The results of the analysis, analysis and analysis of the materials prepared for the violin courses used in the violin training were evaluated in the letter beginning in the 1974-1975 academic year. The research uses content analysis and descriptive analysis. According to the results of the study, the letter-to-letter teaching model, which many of the workshop instructors may approach with caution, was prepared by the authors of the letters as a result of important studies. In the study of Canbay and Nacakçi, it is stated that "it is advisable to use the master players in the environment to imagine students based on written narratives for some subjects in the letters of violin education written by Günay and Ucan". In addition to the universal violin repertoire, Gunay and the Turkish music repertoire were included in the letter-specific teaching method for the flying violin training. Canbay and Nacakci emphasized that the remote education, which is intended to be done in accordance with the technology and facilities of 1975, should be tried with music software and simulation techniques thanks to today's technology, and that commissions should be established to be researched and developed by experts (Canbay & Nacakci, 2011).

The first use of technology for music was known to begin in 1865 when the voice of Édouard-Léon Scott de Martinville was recorded in the phonograph. With the American company Remington Rand launched the computer in 1951, computer technology is now advanced and continues to evolve to handle extremely complex operations, from virtual sound to video-animation creation (Canyakan, 2013; Ozer, 2015).

In this age, called the era of technology, we can say that literacy is no longer considered adequate, and the ability to track technology, to use technological tools up-to-date, quickly and accurately is also sought in ordinary features under normal circumstances. When the technology tools are used correctly, it can be said that the people involved in music are helping to improve their knowledge, skills and performance (Yüksel & Mustul, 2015). Work with artificial intelligence is increasing, so that the talents and skills for the violin can be better detected. These studies are not yet seen to be sufficient for daily use. Over time, I think basic information can be taught through technology such as robots, videos, augmented reality, virtual reality (Liang et al., 2017; S.Hendricks et al., 2014). I think artificial intelligence will help people who are not trained professionally through technology-assisted education to prevent people from misleading societies in the field of art and education, and to make it easier to raise awareness of societies (Haug et al., 2020). So I think that technology will not finish music, art, or even bring more expert artists and teachers to the fore (Della, 2017; DergesKastner, 2014) .

The ultimate goal in technology development is to make a job "easier and more permanent" in less time. with distance violin training according to the technological facilities of 1975, the courses conducted in 2022 were different from the development of technology. Teachers can easily send notes to their students through applications such as emails, whatsapp, messages, etc. When the student loses his grade or is not with him, he can make a note out of a phone, computer or tablet. He can watch videos of famous virtuoses, teachers, online. He can easily text teachers from his phone to artists he tried to reach with a letter before. Teachers can help their students by sending audio recordings, videos. There are no limits for the ease of Internet access and the transfer of information between countries. The fact that information is available so quickly and easily is a very important development for researchers who want to improve

themselves. So a researcher, willing person, can access the world's most important information in the field, their most prominent people, their authorities, and in that respect, can begin to light up the environment in which he was present, and change his life and the lives of those around him. Music and music education can also be more permanent and educational, developmental effects in people's lives, as well as the same linear method, when more selfless and expert instructors, composers, artists and the lowest level, are properly spread.

According to Zhang (2022) online violin training is becoming more and more common. But he hasn't yet gone into a full-capacity training system. The occupational intensity of the trainees also affects the working time. Children spend 1-2 hours working on the violin daily, while adults decrease the time. It is difficult for students to evaluate their work at home because their time with their teachers is limited. Considering these problems, the PESQ results of the original mixed sound, separated sound and violin sound in the SNR were analyzed by the researcher. The results show that the model has a good separation effect for mixed sound. This method can provide control and scoring functions for the online violin learning system, supporting the work of students with the autopsyn system.

Luttrell, Goold and Ward (2021) have created a great opportunity for Covid-19 pandemic to change traditional learning methods and to develop and promote new learning methods. This pandemic period has provided researchers with a unique situation to test ideas for online education. Researchers recommend rethinking applications in higher education music education. The applications of music in the MacGyver approach to execution, production, information transmission are recommended by researchers.

Calderón-Garrido and Gustems-Carnicer (2021) Covid 19 pandemic research the adaptation of music education. Because of the pandemic, the closing of schools and the disrupting of education, he has mobilized school management, teachers, academics for new methods. As the best way to continue training, smart electronic devices such as computers, phones, tablets have been tested for Internet-based, online education systems and methods. Due to the compulsory and rapid change, music teachers had to go online without experience, knowledge and unprepared. This lack of experience, ignorance and unprepared has made the quality of the training extremely questionable. Based on the outcome of the investigation, online training should be more important than being implemented as a backup plan due to Covid-19.

According to the research done by Ramirez, Volpe and others (2018), learning instruments enables complex skills to be developed. The most preferred method of teaching is the traditional "master-apprentice" relationship, despite the technology that is evolving today. The use of technology in violin training remains simple, such as watching videos, listening to music, reaching notes. Based on state-of-the-art multimodal audio, video and motion sensor technologies, researchers conducted TELMI (Technology-Enhanced Learning of Musical Instrument Performance) as case studies. According to the results of this two-year demonstration of the project on violin training, participants who had never studied violin have been able to improve their violin play skills.

Video-assisted Training

It is tried on videos that the teacher has prepared specifically for a particular topic. In this case, the teacher cannot see the student and interfere with his work. The student can only reach the teacher by writing messages, comments (Kesendere et al., 2020). Amateur violin training with video support also has many benefits for students. Examples of these benefits can be sampled as follows;

- Easy access to the source of the student
- More active role in the learning process
- Enrich, diversify the learning process
- The student takes more responsibility in the training process
- It is more useful for the student to gain cognitive processes such as interpretation and evaluation
- Provides an opportunity to check and correct over and over again. So it's economically advantageous
- Increase student's ability to observe
- Saves money and time on the road
- The student can work comfortably and in a comfortable area.

According to the research conducted, it has been determined that learning is more permanent when using tools and materials that are more relevant to the sensory body in the courses (Aksoy, 2015). For video-assisted courses, it is

necessary for the teacher to determine the issues in advance. The teacher can make these videos for a professional shooting team, this time the cost for the teacher will increase. Camera angles must be set for hand, wrist, or finger display, which must be emphasized on topics to prepare economical video lessons. The teacher needs to speak at a clear speed. The speaker or headset of the computer for students to listen to may be defective. Therefore, the video lectures should be subtitle added as a precaution. In order to do all this work, the teacher needs to know how to use edit programs on the computer.

You can click here for Turkish video courses made by the researcher and uploaded to YouTube, or you can read the QR code from your phone.

You can click here for English video lessons or you can read the QR code from your phone.

Figure 1. QR for Bilingual Violin Lessons

In the face of emerging technology and new events such as "metaverse", virtual reality (VR), increased reality (AR) is estimated to be of great importance. I will use VR technology as a researcher in my next work. But I think people with knowledge of VR technology are very few. I believe that the use of these technologies, along with the metaverse phenomenon, will be rapidly widespread.

In video classes, the student has to recognize his own mistakes. With auxiliary attachments, it can learn more quickly and easily to minimize the error. The attachments I recommend for use in the course are shown below. You can also access the required websites when you click on the photos (Kesendere, 2021).

Figure 2. Shoulder Rest

Figure 3. Tuner & Metronome

Figure 4. Rosin

Figure 5. Music Stand

Figure 6. Bow Retaining Attachment

Figure 7. Bow Pull Attachment

Figure 8. Cloth Violin

Figure 9. Muted

Figure 10. Polishes

Figure 11. Method

Table 1. Online Available Sample Training Videos

Violin Trainer	The Course is Based on Which Stage It is Prepared	Content	Youtube Links
KayCee Galano & Boyun Li & Skye Park ve diğerleri	Entry Level, Mid-Level, Advanced	Video recordings of the works that provide reference studies for violin students from the start to the next level.	YouTube
Jascha Heifetz	Advanced	Virtuosity	YouTube
Maxim Vengerov	Advanced	Virtuosity	YouTube
Julie Artz Becker	Entry Level, Mid-Level,	Vibrato and position transition	YouTube

Yiğitcan Kesendere	Entry Level,	Presentation of materials to be used for storytelling and detailed demonstrations and spring handling and violin lesson	YouTube
Yiğitcan Kesendere	Entry Level, Mid-Level,	There are 10 courses, 43 downloadable documents, including initial to mid-level information.	YouTube
Yiğitcan Kesendere	Entry Level, Mid-Level,	With violin learning attachments; English, German, Arabic, French, Spanish, Swedish and subtitled courses.	YouTube

Note: You can open them by clicking on the Youtube logo

Research Problem

With this research, I wanted to prove that violin students can become more efficient through technology. Many violin teachers use old ways and books like in 1900. These methods have been very successful in the past years. But I have observed that today's amateur and young masses are bored by these methods and have moved away from music and violin.

Here are the topics I want to measure in this research, my sub-problems:

- What are the things to be careful about in the videos to be used in the subject violin course?
- What are the differences between students who receive video support in the subject violin training and students who do not receive it?

Procedure

Between October and December of 2017, I conducted the research with 20 students who participated in a free and voluntary violin course in the Music Community of the Culture and Arts communities Association of Bursa Uludağ University Health Culture and Sports Department. None of the students had ever taken a violin class before. I've done 1 days a week, 1 hours a week, and I've been studying in groups of 10. I've done 12 classes with each group. I used the "Yigitcan Kesendere violin method" as a textbook. At the end of the 12 course, I asked them to play the "Yigitcan Kesendere violin method" on page 96 of Mozart's "Morgen Kommt der Weichnactsmann" piece. I videotaped students' performance and asked 3 different teachers in their field to watch videos and score.

The Kendall W coefficients have been calculated by examining the scores given for each behavior to determine the reliability of the points awarded by the experts. Once the measurements have been found to be reliable, the analysis of the data uses the Mann-Whitney U test, a non-parametric test, taking into account the number of participants in the experiments and control groups.

Findings

Content of Courses

1st Week: The first lesson is to introduce tools such as introductions, books to be used in the courses, music tables and to be taught about the course process as written in the introduction section of the violin sections earlier. It was reported that the teacher will first explain the subject and actions related to violin play and will be invited to the stage individually afterwards. In this case, other students will have the opportunity to observe. One of the key points, especially for students, is to be able to love the violin, to ensure that information about the violin can be easily remembered in memory-subconsciously, more important than how long the muscle movements we practice when playing the violin are working in order to become a habit, they are asked to work every day with full concentration, so students will enjoy regular, disciplined violin work.

2nd Week: The fitting of the shoulder-rest to the violin is shown by holding the violin through the jaw without two hands on the left shoulder, holding the left hand position from the body of the violin, bow grip and wrist exercise for the right hand.

3th Week: Previous (2. Week) a repeat of the course and a repeat of the course to reinforce the basic traction movements.

4th Week: Önceki derslerin tekrarları yapılarak kontrol edilmiş ve öğrencilerin hatalarını düzeltmeleri için gerekli bireysel çalışmalar verilmiş, yayı koy ama çekme çalışması anlatılmıştır. Yayı koy ama çekme çalışması ile öğrencilerin yay çekmeye yeni başladıkları sırada ortaya çıkan problemleri azalttığı ve kasların daha kısa sürede alışabilmesini sağlayan çalışmadır. Öğrenci derslerde öğretildiği gibi yayın alt kısmını tel üzerine koyar ve hareket etmeden durur, daha sonra bu hareketi yayın alt, orta, üst kısımlarında da tekrar eder. Böylelikle komşulardan şikayet gelmesi, ev halkından psikolojik baskı gelmesi gibi durumları olmadığından dolayı, yayı çekmeye başladığı zaman daha özgüvenli olduğu gözlemlenmiştir (Kesendere, 2017).

5th Week: Previous courses, repeated individual studies, checked, musical language, spelling rules, weighing-rhythmic molds calculated by hand-foot beat unity (4 strokes beats-counting time), binary (2 beats-counting time), four (1 beat-counting time), eight (half-beat-count time), note values - times, which are easy to keep memorable words in Turkish "İzmir, Van", as well as their "time" The four decorations and their application in the 4 strings of the violin are taught to give assignments for play in the center of the publication by the method used in the course "A, B, C".

6th Week: Previous courses, repeated assignments, checked. In addition, the names of the empty strings of the violin and the writing on the sheet as notes, using the decoration, without using the decoration, with the staccato and detaching techniques, and the transitions between the center of the bow and the strings as the whole bow have been described, shown, and executed and asked to repeat.

7th Week: The previous courses and assignments have been receded and checked. In addition, holding the left hand position from the beginning of the handle for finger-pressing movements rather than holding the left hand position from the body of the violin, left hand 1.2, 3. Finger presses, pizzicato technique, accidental (sharp, flat, natural) explained, study 12 has been programd, executed and requested to repeat.

This method has been observed in this study, which is useful for the student in the left hand exercise in less time, since the study with the Pizzicato technique has provided more concentration to the left hand movements, as there are no bow pull movements, instead of the left hand and right hand movements.

8th Week: Week 7 has been repeated, study 12 has been reworked and given as homework.

9th Week: Study 12 repeated and determined as part of the exam, Wolfgang Amadeus Mozart's composition "Morgen Kommt Der Weihnachtsmann", was studied according to the method used.

10th Week: Wolfgang Amadeus Mozart's composition, "Morgen Kommt Der Weihnachtsmann", was checked and worked at a slightly faster metronome. As the metronome accelerates, students were rested by playing one at a time and students were accelerated based on the metronome each student stole, rather than playing in bulk, because it is difficult to ensure solidarity as a disadvantage of the classes being crowded.

11th Week: The individual students were taken to the stage and tried to retry and suppress the excitement of the students for the registration to be carried out.

12th Week: Study 12 was studied for warm-up in the last course, students were recorded on the stage one by one after working on the part set for the exam. Students who have previously performed better in the courses have been individually recorded in another music store because they cannot suppress their excitement and perform adequately because they are on stage and being recorded with the camera. Some students will not interfere with violin-playing techniques due to their beliefs and concerns, but their faces are censored in the videos with the approval of the research advisor.

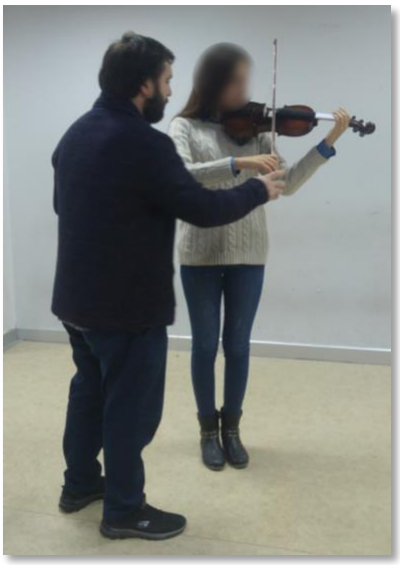

Figure 12. Photo from the Experiment Group 1

Figure 13. Photo from the Experiment Group 2

Figure 14. Photo from a course with a Control Group

Video Course Contents

The course videos used for the experiment group are prepared by the researcher.

- In video course 1, bow and violin hold, book, note stand, shoulder rest, rosin, tuner to be used in the courses, the metronome is described.

Figure 15. Video Course 1

- In video course 2, the bow is described but don't the pull is described. The purpose of this study is to be able to exercise the muscles first.

Figure 16. Video Course 2

- Video course 3 describes the duration of notes, rhythm patterns and the application of the violin.

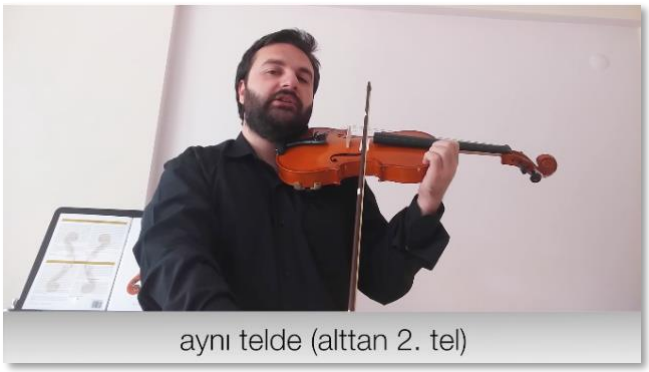

Figure 17. Video Course 3

- Video course 4 describes the reminding of previous courses, arc shooting, legato, staccato techniques and switching between strings.

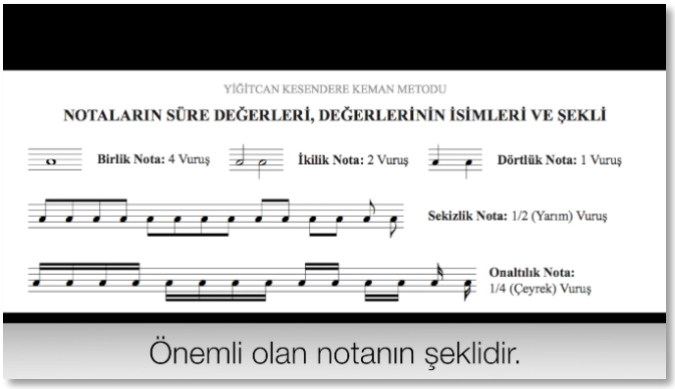

Figure 18. Video Course 4

- In video course 5, the left hand position is 1 from the top of the keyboard. the position holding, finger-pressing movements, notation on the sheet as notes, marking the violin with paper for the entonation study, described the pizzicato technique.

Figure 19. Video Course 5

During the course of the application, the experimental and control groups are given entry level amateur violin training. The participants in the experiment group are also given the course videos. At the end of the 12th week, participants played Mozart's "Morgen Kommt der Weichnactsmann" and were recorded on camera. The records were sent to three specialist with the graduated scoring key that was prepared.

Findings for Comparison of Test and Control Groups

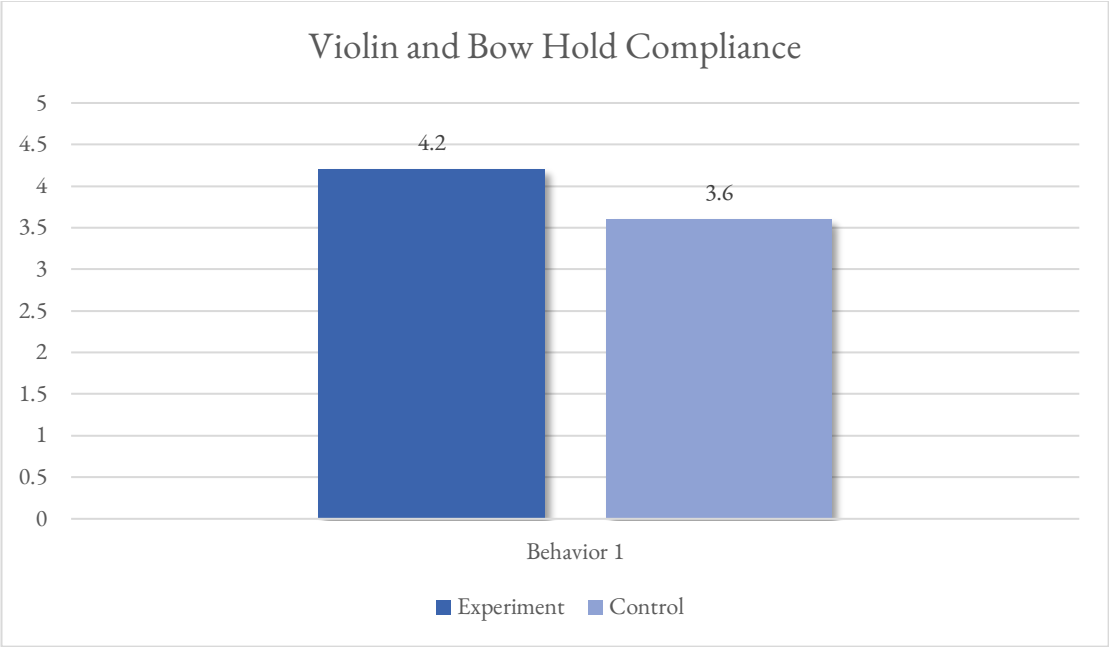

Figure 20. Violin and Bow Hold Compliance

The test group ($\bar{X}$=4.33) is more successful than the control group ($\bar{X}$=3.50) when the points of proper hold of the violin and bow are analyzed (U=15.00; z=2.715; p=0.007). Video courses have a positive effect on violin and bow handling.

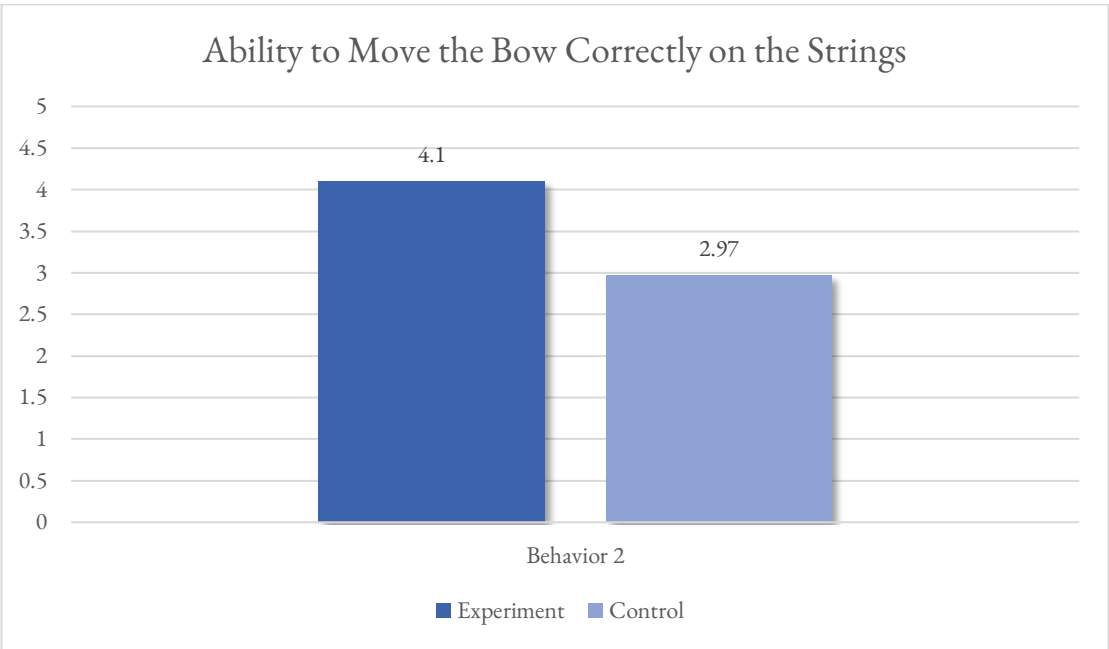

Figure 21. Ability to Move the Bow Correctly on the Strings

The test group ($\bar{X}$=4.17) is more successful than the control group ($\bar{X}$=2.67) when the correct points for moving the bow over the strings are analyzed (U=8.00; z=3.23; p=0.001). Video courses can be said to have a positive effect on the correct movement of the bow on the strings.

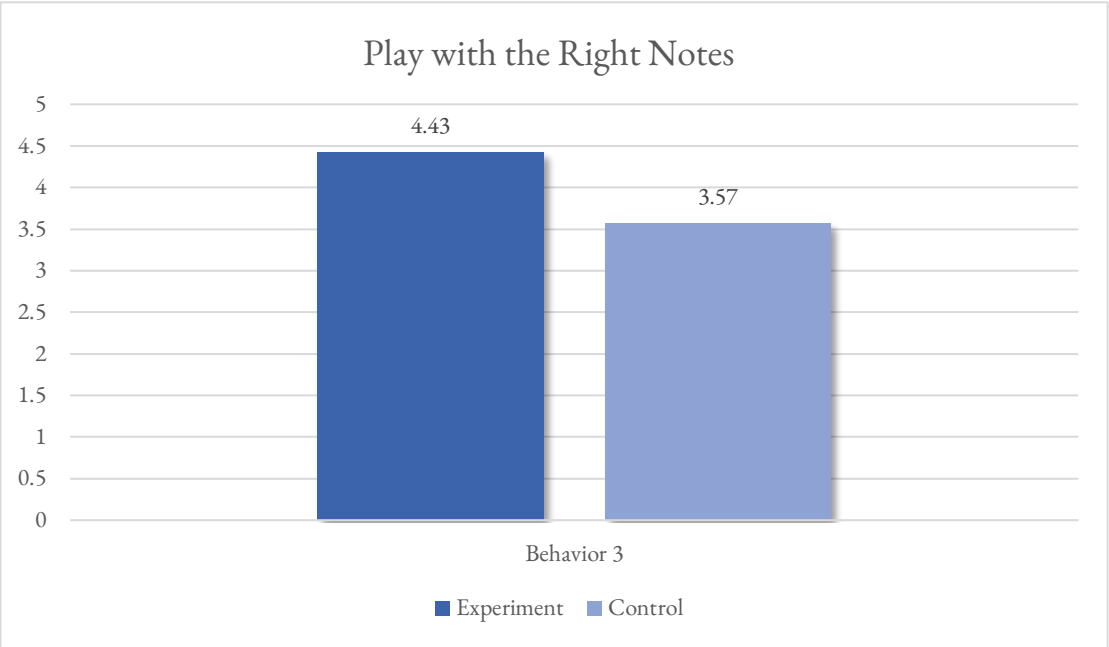

Figure 22. Play with the Right Notes

When the correct grades and playability scores are analyzed, it is shown that the experiment group ($\bar{X}$=4.50) is more successful than the control group ($\bar{X}$=3.50) (U=3.50; z=3.599; p<0.001). Video courses have a positive impact on the ability to play with the correct notes.

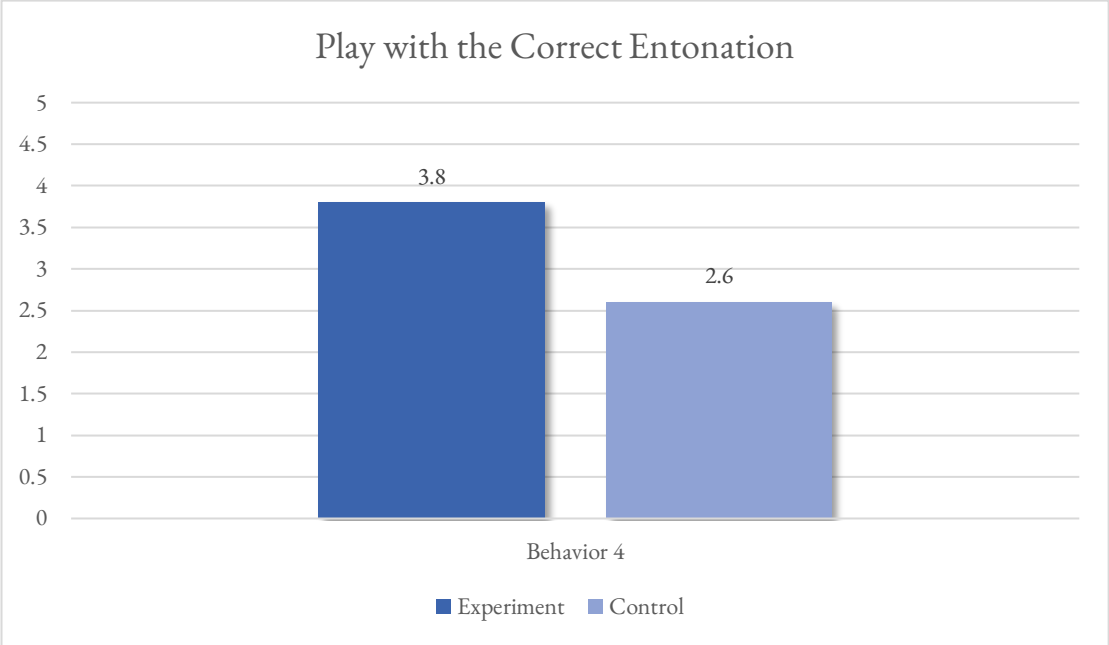

Figure 23. Play with the Correct Entonation

When the accuracy of the ability to play with the correct entonation points are analyzed, it is shown that the experiment group ($\bar{X}$=3.67) is more successful than the control group ($\bar{X}$=2.67) (U=7.00; z=3.279; p=0.001). Video courses have a positive impact on the ability to play with the correct entonation.

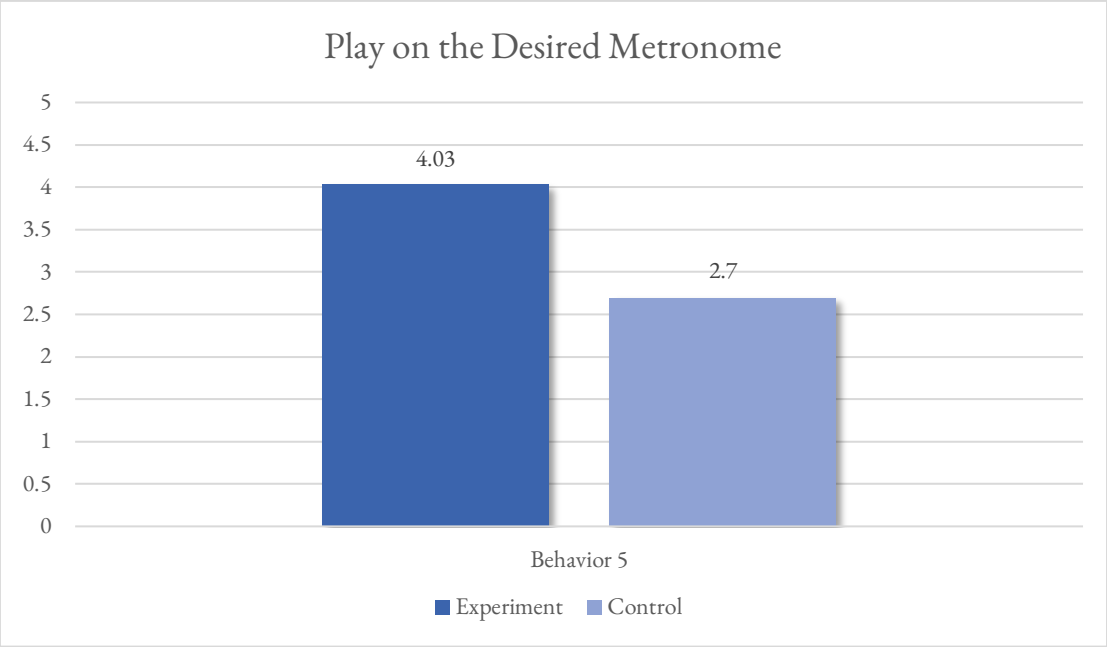

Figure 24. Play on the Desired Metronome

When the desired metronome playability points are reviewed, it is shown that the experiment group ($\bar{X}$=4.00) is more successful than the control group ($\bar{X}$=2.83) (U=6.00; z=3.405; p=0.001). Video courses have a positive impact on the ability to play at the specified speed.

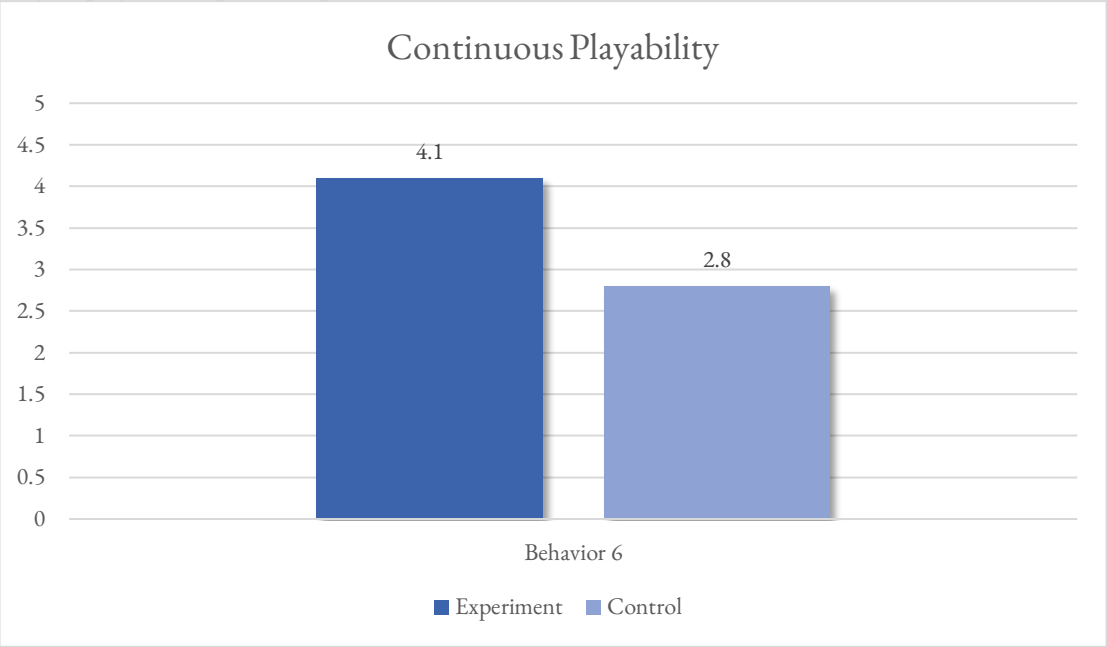

Figure 25. Continuous Playability

When the non-stop playability points are reviewed, the experiment group ($\bar{X}$=4.0) is more successful than the control group ($\bar{X}$=2.67) (U=4.50; z=3.478; p=0.001). Video courses have a positive impact on the ability to play fluently.

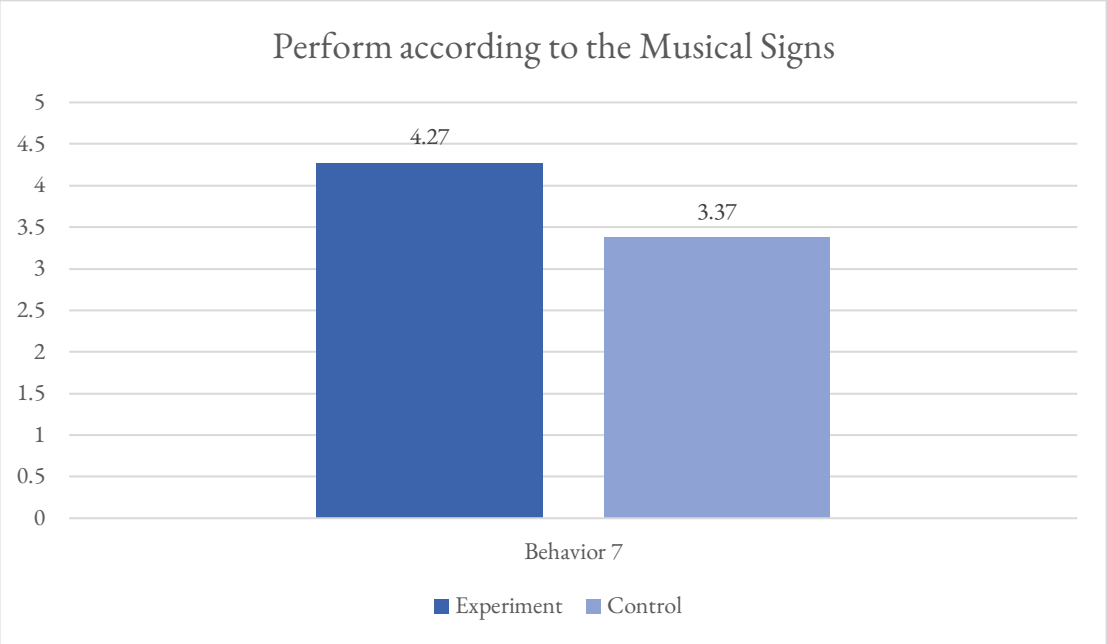

Figure 26. Perform According to the Musical Signs

When reviewing the musical musical rating, it is shown that the experiment group ($\bar{X}$=4.33) is more successful than the control group ($\bar{X}$=3.33) (U=1.50; z=3.742; p<0.001). Video courses have a positive impact on the ability to play according to musical signs.

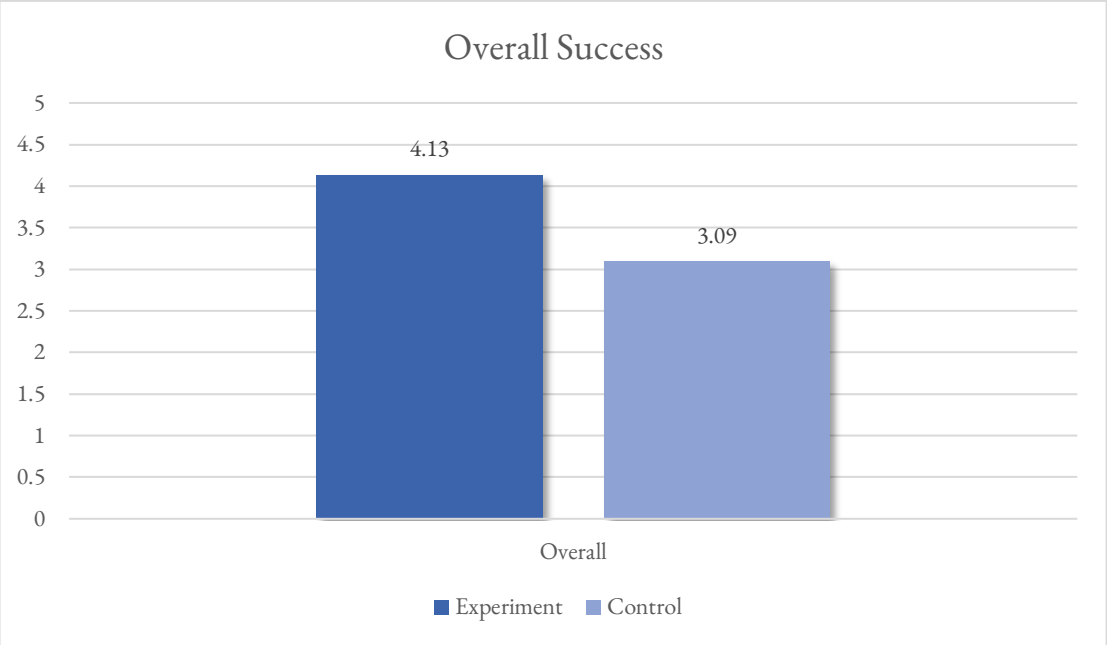

Figure 27. Overall Success

Overall success has shown that the group of experiments ($\bar{X}$=4.19) is more successful than the control group ($\bar{X}$=3.05) (U=0.00; z=3.782; p<0.001). Video courses have a positive impact on the subject violin training.

Results and Discussion

According to the control group students of the experiment group; it was determined that it was more successful in violin and bow holding, which made the bow pull on the strings more accurate, read the notes more accurately and played with better entonation, played at the desired pace, speed, played more fluently while playing, and played soundly while reading the music, without disturbing the whole of the track.

It was observed that the students who received video support increased interest in the courses and expected the classroom to be opened before the classes, and after the courses they were doing some very personal and collective work

as the classroom was available. No behavior of the control group that would make a difference in the courses has been observed. The video of the violin course prepared for amateur violin training was observed to be positively welcomed by the study group students with interest and curiosity.

As a result of this study, it has been determined that the students of the experiment group have found positive differences in knowledge and skills. As a result of the qualitative examination of the research, it was also observed that the study group students were more active in the courses, increased interest, more conscious about their work aspirations, their confidence and how to work. The increase in participation of the study group students, the attitudes in the courses, the arrival of the courses before their time, and the work of the class as empty after their time, has shown that there are also gains other than the target behavioral gains set out. These course videos are thought to have achieved their goals, which are thought to be productive and likable.

Erim and Yöndem (2009) stated that in his study "impact of Video Model-supported Teaching on Guitar Performance" he taught guitar in a traditional way for 3 weeks. As a result of the study, video-assisted courses have a positive effect on "guitar traction, right hand, left hand techniques and single-voice work performance". In this respect, it has been found that our research has similar benefits to the results.

Yüksel and Mustul (2015) concluded that with his work titled “computer-assisted Parity Practice and Student Insights on Application in Music Education”, students increased motivation and confidence, increased integrity of entonation and musical integrity, and beneficial in correcting errors from rhythmically perspective. However, students also stated that they have reduced costs for a hall rent and a company company with acoustics that are suitable for parity. The positive development of field-specific technical teachings is in the same direction as the results of this study. As stated in the results of the higher and higher work, the gain of self-confidence and motivation has also shown similarity as a result more than expected in my work.

Tecimer (2006) says that the technology used in music education in his study on “Internet and Lifetime Music Training” is not intended to break communication between teacher and student or to destroy the classical education system currently being implemented, but to support the benefits he has brought. I share the same views as Tecimer and think that new teaching methods are beneficial to teachers and students. I believe that there will be a precaution against those who introduce themselves as teachers, even though they are not teachers, as students will be more aware of these methods. In his experience, he said that remote music training would be beneficial to everyone, regardless of amateur, professional, major and country. The study that I've done has determined the limitations of this research only with amateur students who have just begun violin. Tecimer’s views are important for future studies.

Ramirez and others (2018) stated that violin training has been taught in traditional ways and that the technology-benefit phase is used in simple ways, such as video monitoring, audio listening, and so forth in their study titled “Enhancing Music Learning with Smart Technologies”. Researchers stated that “the TELMI project aims to take care of and develop violin learning processes”. The main purpose of the project was to look at how we learned musical instruments from a pedagogical and scientific perspective, taking the violin training as a case study, and to provide support for traditional education by creating new interactive, helpful, self-learning, increased feedback and social awareness systems. Researchers have added audio, video and motion capture capabilities within the TELMI system they have developed. The data of the violin student is collected by the TELMI system via microphones and range imagers. The data collected is a system that offers the potential to support and guide planning and execution strategies to improve engagement and benefit. This project has not been completed and has no test results on the students. As a different aspect of my work, we understand that they are taking the self-learning process at key stages, such as the sound accuracy and rhythm. For differences with the video-assisted violin course, it is understood that the computer-generated animation and student follow the note. According to the data they have now explained, it is not known what kind of practice students are making for violin traction and muscle movement.

Blanco and Ramirez (2019) "Evaluation of a sound quality visual feedback system for bow learning technique in violin beginners: An EEG study" and 2 experiments and 1 control groups. One of the experimental groups (N=9) in

this study has been selected students who do not know how to play violins, and these students have been given video training and offline feedback. In the other experimental group (N=7), violinists with more than 6 years of experience were asked to steal the parts identified without training. In the control group (N=9), only video training and violin training have been applied. In this 3-group study, the effects of the "SQVFS" system, which has a visual feedback function in sound quality, were investigated and the participants' EEG activities were examined. Participants were asked to play a 4-gauge piece of bow exercise. apart from the 6-year veteran experiment group, major developments have occurred in the participants in the experiment group and control group that have just begun violin. In addition, the experiment group taking offline loopers has been identified as increased interest and development in relation to the control group. Blanco and Ramirez both stated that there is a meaningful relationship between the levels of pre-gamma bandwidth and voice development throughout the mission, both in the experiment and in the control group. The video violin course, which is the way the research is implemented, is actually a result of students learning a violin by themselves without a teacher. In this respect, students who receive video support are positively improved, and students who receive feedback are more likely to improve their development and interest, and their results are directly proportional to the work I have done.

Reiter (2020) prepared 15 courses for the use of baroque semesters in violin and viyola training in his book "the Baroque Violin Viola a Fifty-Lesson Course". He explained the written narrative of these courses in his book and presented the course videos to students on the CD supplied with the book. But Reiter didn't follow the students' development. My research has determined that the content of course videos is prepared and written.

Recommendations

For Applicants

Students who will take video-assisted violin courses are given the right quality materials selection at the very beginning of my recommendation. According to the student's physical structure, the violin must be chosen. According to the violin, the shoulder rest must be chosen. A note stand (music stand) of the quality that can carry the book must be selected. A precise "Tuner" must be selected to make the violin correct tuning. In particular, I recommend the "bow-holding attachment, bow-pulling attachment" to minimize errors and speed up the learning process, especially during the most difficult stage of violin training.

You should only watch course videos without applying them first. Stop, apply, reverse and control yourself while watching the second one again. Be patient and disciplined. Volunteer to participate in emerging technological teaching experiments. Try new learning methods, share them with your surroundings.

For Researchers

It has been found that the room where the videos are prepared has a little echo, making it difficult to understand the sound in the videos. It is preferable to add subtitles to videos as it is economically difficult to resolve this situation with acoustic insulation, regulation, high quality special microphones and coffee tables. According to the age groups of students, the language of expression can be understood and should be tried to be chosen in a way that is not to be bored. Different camera angles are set so students can see their right hand fingers, the shoulder of the violin, the grit grip, the left hand position from the body and keyboard in detail. It is recommended that the screen be split and the images are stitched together and each gain highlighted separately, in case students do not understand the rhythm, note tracking, bow movement, left-hand thumb movement at once.

Similar studies can be applied to different age groups. Applicable for different instruments and lessons. Courses can be updated easily and economically. I suggest they do research on VR and AR technology.

Limitations of Study

This study is limited to a total of 20 people participating in a free 10-person course group for amateurs who have just begun violin. The courses are planned 1 times a week and 12 weeks in total. Within the course, the limits of the research were determined by the "Yigitcan Kesendere violin method" and the course videos prepared by the researcher.

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Appendix 1. Amateur Training Assessment Scale

Amateur Violin Training Assessment Scale					
This scale is a scale prepared for the evaluation of the trainers as a result of the violin training of amateur musicians. Rate them from 1 to 5 in terms of their ability to perform the skills on the left. Please write your comments about the trainee below.					
Gender: Female ( ) Male ( ) **Age** : ..... **Grade**: **Date**:					
Skills Very Bad: 1 Bad: 2 Medium: 3 Good: 4 Very Good: 5					
The trainee's	**1**	**2**	**3**	**4**	**5**
Grip on the violin and the bow is in order					
Correct movement of the bow on the strings					
Playing with the right notes					
Playing with the right entonation					
Playing at specified speed					
It's fluent					
Plays according to musical signs					
Total:					
Comments by Judgment					