THE EFFECT OF UTILIZING VIDEO RECORDING TECHNOLOGY ON THE PERFORMANCE OF THE INSTRUMENT IN DAILY PRACTICES IN THE VIOLIN EDUCATION PROCESS

Research article

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Abstract

The aim of the research is to examine the effects of violin students' use of video recording technology in their daily practices on violin performances. The research was designed in a mixed design in which quantitative and qualitative research methods were used together. In the quantitative part of the research, the single-group pretest-posttest model was used, and in the qualitative part, the case study model was used in which the opinions of violin students on the use of video recording technology in their daily practices were determined. The study group of the research consists of 6 first-year violin students studying at Balıkesir University Necatibey Faculty of Education, Department of Fine Arts Education, Department of Music Education. In the research, "Performance Evaluation Scale for Musical and Technical Skills" developed by Parasız (2009) and structured interview form developed by the researcher were used as datas collection devices. The daily practices of violin students, which were recorded using video recording technology, were evaluated by both 6 violin students and 6 violin educators who are experts in their field, using a performance evaluation scale. The interview method was used to determine the opinions of 6 violin students about the use of video recording technology in their daily practices. As a result of the research, it was determined that there was a significant difference in terms of pre-test-post-test scores in the performance evaluations of field experts and violin students. In addition, the opinions obtained from the students indicated that the students were able to realize their mistakes and deficiencies in self-assessment through video recording and that they were able to correct them to a large extent.

Keywords: Violin education, daily practices, video recording technology, instrument performance

1. Introduction

Science and technology have become the common language of our age as concepts that define and complement each other. The most important factor in the formation of these two concepts is education. There can be no science without education and no technology without science. Raja & Nagasubramani (2018) states that the 21st century is generally regarded as an age of technology. Gudanescu (2010), on the other hand, states that technology brings a new trend to the field of education and is applicable at all levels.

Technology develops new systems that facilitate learning and teaching in today's educational practices. Lazar (2015) emphasized that the new generation of children is ready to work with these new technologies in their education processes, therefore, educational technology should be included in the curriculum of the future. Gudanescu (2010) stated that technology-based learning such as internet, audio and video conferencing, web broadcasts, etc., is derived from modern technology concepts of technology-based learning a synonym for technology-based learning e-learning, which has now spread to a large extent at all levels of the educational process. With the spread of multiple technological innovations in life and

learning, information technology has changed people's learning-teaching styles and has had a significant impact on teaching as in all fields (Xia, 2020).

The modern on-line education environment, which is heavily saturated with technology, is strongly associated with the Internet or what some researchers refer to as web-based learning and teaching (Barry, 2003). Gu (2018) emphasizes that in the 21st century, advanced technology has revolutionized both business and personal communication, making it possible to conduct courses on-line at various levels of education. He stated that thanks to the internet, students can attend the lesson from wherever they want and repeat the lesson when necessary and thus, technology provides benefits and conveniences to the teaching and learning systems.

With the Covid-19 pandemic experienced in the world in 2019, face-to-face education has left its place to on-line education for a while in Turkey, as in many countries. Many definitions have been made to understand on-line education. Kentnor (2015) defines on-line education as "…a teaching method in which the teacher and the student are physically separated". Altun, Telli, and Yamamoto (2020) describe on-line education as a modern and effective way of learning that can be presented independently of place and time, with features such as structuring educational materials electronically and flexibly, updating and adding different technologies to the learning process, and being accessible. Groulx and Hernly (2010); Albert (2007) calls it on-line learning in its simplest form.

Videos are one of the most important educational materials that we frequently use in on-line education and videos are also indispensable for face-to-face education. Bates (2015) mentions the power of video as one of the factors that make learning powerful, and its ability to show the relationships that exist between concrete examples and abstract principles.

It is an undeniable fact that videos, which can be watched via smartphones, computers, and tablets, are available on-line and offline, and their advantages. The increasing prevalence of video in daily life is also reflected in educational environments (Woolfitt, 2015). Greenberg & Zanetis (2012) state that a video is a powerful tool that adds value and improves the quality of the learning experience and is ready to make a significant contribution to the change in the educational environment. Bransford, Brown, and Cocking (2000) emphasize the correct use of technology in an interactive way in the use of video in the classroom and students' learning by revisiting and reviewing the material.

Video, a product of technology, started to be used in education in the middle of the 20th century due to its features as combining sound and image and being a knowledge store. In the 1960s, at Stanford University in the United States, to increase the quality of teacher education, the method called micro-teaching method based on video or tape recording (Öztürk, 2006) was designed and developed by Dwight Allen, Robert N. Bush, and Frederick J. McDonald in 1963 (Mustul, 2017). Dwight (1980) evaluated microteaching as a form of teaching by limiting the objectives, behaviors, skills, teaching process, and the number of students involved in this process. According to Moore (2003), microteaching is a scaled-down teaching activity that takes place with a few students, lasting five or ten minutes, in which few skills are practiced or demonstrated.

In this research, violin students were asked to record their weekly homework day by day by using video recording technology and to evaluate themselves through these daily video recordings. In this way, it is aimed to contribute to the violin performance development of students. Gökbudak (2004) states that video cameras can be used in instrument teaching to use visual capacity more effectively. He states that through the use of video cameras, students can watch and evaluate themselves, develop musical behaviors, and learn to be educated listeners and observers. These evaluations, which students will make by recording their daily

performances on video during their extracurricular work processes, will enable them to realize the problems they experience in instrument performance and to correct these problems significantly. From this point of view, the problem statement of the research is; What are the effects of violin students' use of video recording technology in their extracurricular practices on their instrument performance? The sub-problems of the research are given below.

1- What is the level of the effect of violin students' use of video recording technology in their daily practices on their instrument performances?

2- According to the evaluations of the field experts, what is the level of the effect of the violin students' use of video recording technology in their daily practices on the instrument performance?

3- What is the level of the relational situation between the pretest-posttest scores of the field experts and the pretest-posttest scores of violin students?

4- What are the opinions of violin students regarding the use of video recording technology in their daily practices?

2. Method

2.1. Model of the Research

This research was designed in a convergent parallel mixed design in which quantitative and qualitative methods were used together and simultaneously. In the study, both qualitative and quantitative datas collection techniques were applied simultaneously, and the findings were interpreted in a way that complements each other. Due to this analysis approach, the study was conducted in a convergent parallel mixed design (Creswell & Plano Clark, 2018). In the quantitative part of the study, one group pretest-posttest experimental design, which is one of the weak experimental designs, was used. In this design, the effect of the experimental treatment is tested by the effect of the treatment on a single group. The measurements of the subjects regarding the dependent variable are obtained by using the same subjects and the same measurement tools as the pretest before the application and the posttest afterward (Büyüköztürk, et al. 2008). In the qualitative part of the research, the case study model was used, in which the views of violin students on the use of video recording technology in their daily practices were determined. The case study is an empirical research method that studies a current phenomenon in its real-life context and is used in situations where the boundaries between the phenomenon and its content are not clearly defined and there is more than an evidence or data source (Yıldırım & Şimşek, 2016).

2.2. Study Group

The study group of the research consists of 6 violin students randomly selected from the 1st-grade undergraduate students studying at Balıkesir University Necatibey Education Faculty Fine Arts Education Department Music Education Department in the Fall Semester of the 2022-2023 Academic Year. Ethics committee decision dated 28.03.2023 and numbered 52899066/302.08.01/242241 was taken from the social and human sciences ethics commission for the research.

2.3. Data Collection

In the research, the "Performance Evaluation Scale for Musical and Technical Skills" developed by Parasız (2009) and a structured interview form developed by the researcher were used as data collection tools. In the quantitative aspect of the study, violin students were asked to record their weekly violin homework with their smartphones every day during the 6-day practice period, watch their daily recordings and evaluate them with the "Performance

Evaluation Scale for Musical and Technical Skills". At the end of the study process, 6 video recordings and 6 performance evaluations of each student were created. These videos of the students were then scored daily by 6 field experts with the "Performance Evaluation Scale for Musical and Technical Skills". In the qualitative aspect of the research, a structured interview form prepared by the researcher and created with expert opinions was used to determine the views of 6 violin students on their daily practice of using video recording technology. The questions in the structured interview form were formed by taking the opinions of 3 field experts by using the "Performance Evaluation Scale for Musical and Technical Skills" used in the evaluation of the quantitative datas of the research.

2.3. Analysis of Data

The Cronbach's Alpha reliability coefficient of the scale developed by Parasız (2009) used to collect the quantitative datas of the research is 800. As a result of the analyzes made, the Cronbach's Alpha reliability coefficient of the scale for this study was determined as 942. Normality tests and statistics were used to determine whether the quantitative data related to the study showed normal distribution or not. In addition, as a result of normality analysis, it was determined that the datas did not show normal distribution. According to the sub-problems, One-Way Analysis of Variance (Friedman's Test), Wilcoxon Signed Rank Test, and Point Double Series Correlation Analysis were used for Repeated Measures. Kendall's Coefficient of Coefficient analysis was used to test whether there was agreement among the experts whose opinions were consulted in the study, and there was a significant agreement between the evaluations made by 6 different evaluators for 6 students (W=0.802; p<0.05). Statistical evaluations were calculated according to the p<0.05 significance level. In the qualitative aspect of the research, an structured interview form was used. In structured interviews, there are predetermined questions in fixed phrases, usually in a pre-formed order (Robson, 2011/2015, s. 347). The procedures used to administer structured interviews are in almost every respect the same as those for survey interviews. However, sometimes it is necessary to make sure that the open-ended questions we need answers to are captured word for word (Robson, 2011/2015, s. 353).

Textualized student opinions were placed in the table without changing their own sentences. Finally, students' views on the items were discussed. Due to the convenience in the number of students and interview items, the data were not coded, instead, all the students' opinions were interpreted by including them in the research as they were.

3. Results

3.1. The Effect of Violin Students' Use of Video Recording Technology in Their Daily Practices on Instrument Performances

Table 1. *Findings on the Ability to Play the Right Note*

n	$\bar{x}$	Average of Ranks	x^2	sd	p
Day 1	10,00	1,92			
Day 2	12,50	3,33			
Day 3	14,17	4,25	16,929	5	**,005**
Day 4	11,67	2,75			
Day 5	13,33	3,75			
Day 6	15,83	5,00			

When the scores given by the students to the skill of "playing the right note" in Table 1 were compared with the Friedman test, a statistically significant difference was observed between

them [X2(5, N=6) =16,929, p<0.05]. The Wilcoxon Signed Ranks test result, which was performed to determine between which groups the difference was, is given in Table 2.

Table 2. *Findings for the Determination of the Difference Between the groups*

Days	D2-D1	D3-D2	D4-D3	D5-D4	D6-G5	D6-D1
Z	-1,732	-1,414	-1,732	-1,414	-1,732	-2,070
p	,083	,157	,083	,157	,083	**,038**

In the comparisons made according to the ranking scale scores in Table 2, a significant difference was observed at the level of (p<0.05) between the 6th day and the 1st day.

Table 3. *Findings on the Ability to Play With the Right Rhythm*

n	$\bar{x}$	Average of Ranks	x^2	sd	p
Day 1	10,83	1,75			
Day 2	12,50	2,50			
Day 3	15,83	4,25	18,000	5	**,003**
Day 4	14,17	3,33			
Day 5	16,67	4,58			
Day 6	16,67	4,58			

When the scores given by the students to the skill of "playing with the right rhythm" in Table 3 were compared with the Friedman test, a statistically significant difference was observed between them [X2(5, N=6) =18,000, p<0.05]. The Wilcoxon Signed Ranks test result, which was performed to determine between which groups the difference was, is given in Table 4.

Table 4. *Findings for Determining the Difference Between Groups*

Days	D2-D1	D3-D2	D4-D3	D5-D4	D6-D5	D6-D1
Z	-1,414	-2,000	-1,414	-1,732	,000	-2,070
p	,157	**,046**	,157	,083	1,000	**,038**

In the comparisons made according to the ranking scale scores in Table 4, a significant difference was observed at the level of (p<0.05) between the 3rd day and the 2nd day, and between the 6th day and the 1st day.

Table 5. *Findings Regarding the Ability to Perform Right Hand Technical Behaviors*

n	$\bar{x}$	Average of Ranks	x^2	sd	p
Day 1	7,50	1,92			
Day 2	8,33	2,25			
Day 3	10,00	2,83	19,413	5	**,002**
Day 4	12,50	3,83			
Day 5	15,00	5,00			
Day 6	15,83	5,17			

When the scores given by the students to the skill of "performing right hand technical behaviors" in Table 5 were compared with the Friedman test, a statistically significant difference was observed between them [X2(5, N=6) =19.413, p<0.05]. The Wilcoxon Signed Ranks test result, which was performed to determine between which groups the difference was, is given in Table 6.

Table 6. *Findings for the Determination of the Difference Between the Groups*

Days	D2-D1	D3-D2	D4-D3	D5-D4	D6-D5	D6-D1
Z	-,577	-1,414	-1,342	-1,732	-,577	-2,060
p	,564	,157	,180	,083	,564	**,039**

In the comparisons made according to the ranking scale scores in Table 6, a significant difference was observed at the level of (p<0.05) between the 6th day and the 1st day.

Table 7. *Findings Regarding the Ability to Perform Left Hand Technical Behaviors*

n	$\bar{x}$	Average of Ranks	x^2	sd	p
Day 1	10,00	2,17			
Day 2	10,83	2,42			
Day 3	11,67	3,17	15,300	5	**,009**
Day 4	14,17	3,75			
Day 5	15,00	4,50			
Day 6	16,67	5,00			

In Table 7, when the scores given by the students to the skill of "performing left hand technical behaviors" were compared with the Friedman test, a statistically significant difference was observed between them [X2(5, N=6) =15,300, p<0.05]. The Wilcoxon Signed Ranks test result, which was performed to determine between which groups the difference was, is given in Table 8.

Table 8. *Findings Regarding the Determination of the Difference Between the Groups*

Days	D2-D1	D3-D2	D4-D3	D5-D4	D6-G5	D6-D1
Z	-,577	-,577	-1,089	-,577	-1,414	-2,060
p	,564	,564	,276	,564	,157	**,039**

Table 9. *Findings Regarding the Ability to Play at an Acceptable Tempo With Musical Expression*

n	$\bar{x}$	Average of Ranks	x^2	sd	p
Day 1	8,33	1,92			
Day 2	10,83	3,08			
Day 3	11,66	3,50	11,850	5	**,037**
Day 4	12,50	4,00			
Day 5	12,50	4,00			
Day 6	14,16	4,50			

In Table 9, when the scores given by the students to the skill of "playing with musical expression at an acceptable tempo" were compared with the Friedman test, a statistically significant difference was observed between them [X2(5, N=6) =11,850, p<0.05]. The Wilcoxon Signed Ranks test result, which was performed to determine between which groups the difference was, is given in Table 10.

Table 10. *Findings Regarding the Determination of the Difference Between the Groups*

Days	D2-D1	D3-D2	D4-D3	D5-D4	D6-D5	D6-D1
Z	-1,732	-,447	-1,000	,000	-1,000	-2,070
p	,083	,655	,317	1,000	,317	**,038**

In the comparisons made according to the ranking scale scores in Table 10, a significant difference was observed at the level of (p<0.05) between the 6th day and the 1st day.

Table 11. *Findings Regarding the General Average Score Differences of Violin Students' Daily Practice Evaluations*

n	$\bar{x}$	Average of Ranks	x^2	sd	p
Day 1	9,33	1,08			
Day 2	11,00	1,92			
Day 3	12,66	3,33	29,272	5	**,000**
Day 4	13,00	3,67			
Day 5	14,50	5,08			
Day 6	15,83	5,92			

When the general average scores of the students in Table 11 were compared with the Friedman test, a statistically significant difference was observed between them [X2(5, N=6) =29,272, p<0.05]. The Wilcoxon Signed Ranks test result, which was performed to determine between which groups the difference was, is given in Table 12.

Table 12. *Findings for Detecting Differences Between Groups*

Days	D2-D1	D3-D2	D4-D3	D5-D4	D6-D5	D6-D1
Z	-2,060	-2,232	-,557	-2,264	-2,070	-2,214
p	**,039**	**,026**	,577	**,024**	**,038**	**,027**

In Table 12, the comparisons made according to the ranking scale scores show that a significant difference (p<0.05) was observed between the 2nd day and the 1st day, the 3rd day and the 2nd day, the 5th day and the 4th day, the 6th day and the 5th day, the 6th day and the 1st day.

3.2. According to the Evaluations of Field Experts, the Effect of Violin Students' Use of Video Recording Technology in Their Daily Practices on Their Instrument Performances

Table 13. *Findings on The Ability to Play the Correct Note*

n	x̄	Average of Ranks	x^2	sd	p
Day 1	9,83	4,20			
Day 2	10,33	5,20			
Day 3	8,83	2,60	8,590	5	,127
Day 4	8,83	2,60			
Day 5	9,50	3,50			
Day 6	9,00	2,90			

In Table 13, when the scores given by the experts to the skill of "playing the right note" were compared with the Friedman test, no statistically significant difference was observed between them [X2(5, N=6) =8.590, p<0.05].

Tablo 14. Findings on the Ability to Play With the Right Rhythm

n	x̄	Average of Ranks	x^2	sd	p
Day 1	10,97	5,50			
Day 2	8,61	3,75			
Day 3	8,61	3,50	14,500	5	**,013**
Day 4	7,63	2,25			
Day 5	7,50	2,25			
Day 6	8,75	3,75			

In Table 14, when the scores given by the experts to the skill of "playing with the right rhythm" were compared with the Friedman test, a statistically significant difference was observed between them [X2(5, N=6) =14,500 p<0.05]. The Wilcoxon Signed Ranks test result, which was performed to determine between which groups the difference was, is given in Table 15.

Table 15. *Findings for the Determination of the Difference Between the Groups*

Days	D2-D1	D3-D2	D4-D3	D5-D4	D6-D5	D6-D1
Z	-2,032	-,135	-,680	,000	-1,604	-1,761
p	**,042**	,892	,496	1,000	,109	,078

In Table 15, in the comparisons made according to the ranking scale scores, a significant difference was observed between the 1st day and the 2nd day (p<0.05).

Table 16. *Findings regarding the ability to perform right hand technical behaviors*

n	x̄	Average of Ranks	x^2	sd	p
Day 1	12,08	5,58			
Day 2	7,77	3,17			
Day 3	7,50	2,67	11,807	5	**,038**
Day 4	8,75	3,25			
Day 5	8,33	3,25			
Day 6	8,33	3,08			

In Table 16, when the scores given by the experts to the skill of "Performing right hand technical behaviors" were compared with the Friedman test, a statistically significant difference was observed between them [X2(5, N=6) =11.807 p<0.05]. The Wilcoxon Signed Ranks test result, which was performed to determine between which groups the difference was, is given in Table 17.

Table 17. Findings regarding the determination of the difference between the groups

Days	D2-D1	D3-D2	D4-D3	D5-D4	D6-D5	D6-D1
Z	-2,023	-,552	-1,461	-,184	,000	-2,023
p	**,043**	,581	,144	,854	1,000	**,043**

In Table 17, in the comparisons made according to the ranking scale scores, a significant difference was observed at the level of (p<0.05) between the 2nd day and the 1st day, and between the 6th day and the 1st day.

Table 18. *Findings regarding the ability to perform left hand technical behaviors*

n	x̄	Average of Ranks	x^2	sd	p
Day 1	9,4433	4,42			
Day 2	9,7233	4,92			
Day 3	8,3333	3,58	11,667	5	**,040**
Day 4	7,3600	2,83			
Day 5	6,2483	1,92			
Day 6	8,1950	3,33			

In Table 18, a statistically significant difference was observed between the scores given by the experts to the skill of "Left hand technical behavior" when compared with the Friedman test. [X2(5, N=6) = 11,667, p<0.05]. The Wilcoxon Signed Ranks test result, which was performed to determine between which groups the difference was, is given in Table 19.

Table 19. *Findings for the determination of the difference between the groups*

Days	D2-D1	D3-D2	D4-D3	D5D4	D6-D5	D6-D1
Z	-,210	-1,461	-,730	-1,512	-1,857	-,944
p	,833	,144	,465	,131	,063	,345

In Table 19, no significant difference was observed between the groups at the level of (p<0.05) in the comparisons made according to the ranking scale scores.

Table 20. *Findings regarding the ability to play at an acceptable tempo with musical expression*

n	x̄	Average of Ranks	x^2	sd	p
Day 1	6,80	5,33			
Day 2	5,13	3,75			
Day 3	5,55	4,17	17,013	5	**,004**
Day 4	4,44	3,25			
Day 5	3,33	2,58			
Day 6	2,22	1,92			

In Table 20, when the scores given by the experts to the skill of "playing at an acceptable tempo with musical expression" were compared with the Friedman test, a statistically significant difference was observed between them [X2(5,N=6)=17.013, p<0.05]. The Wilcoxon Signed Ranks test result, which was performed to determine between which groups the difference was, is given in Table 21.

Table 21. *Findings for the Determination of the Difference Between the Groups*

Days	D2-D1	D3-D2	D4-D3	D5-D4	D6-D5	D6-D1
Z	-1,761	-,135	-1,633	-1,414	-1,069	-2,032
p	,078	,893	,102	,157	,285	**,042**

In the comparisons made according to the ranking scale scores in Table 21, a significant difference at the level of (p<0.05) was observed between the 6th day and the 1st day.

Table 22. *General Average Score Differences in Daily Practice Evaluations of Experts*

n	$\bar{x}$	Average of Ranks	x^2	sd	p
Day 1	47,77	6,00			
Day 2	37,77	4,67			
Day 3	34,58	2,67	24,064	5	**,000**
Day 4	36,25	3,58			
Day 5	31,94	1,33			
Day 6	34,30	2,75			

In Table 22, when the general average scores of the experts were compared with the Friedman test, a statistically significant difference was observed between them [X2(5, N=6) = 24,064, p<0.05]. The Wilcoxon Signed Ranks test result, which was performed to determine between which groups the difference was, is given in Table 23.

Table 23. *Findings for the Determination of the Difference Between the Groups*

Days	D2-D1	D3-D2	D4-D3	D5-D4	D6-D5	D6-D1
Z	-2,201	-2,207	-1,826	-2,207	-1,761	-2,201
p	**,028**	**,027**	,068	**,027**	,078	**,028**

In Table 23, in the comparisons made according to the ranking scale scores a significant difference was observed between the 2nd day to the 1st day, the 3rd day to the 2nd day, the 5th day to the 4th day, the 6th day to the 1st day. (p<0, 05).

3.3. The Relational Situation Between Pretest-Posttest Scores of Field Experts and Violin Students

Table 24. *Expert-Student Correlation Pretest*

	Expert-Student	Pretest Score
Expert-Student	1	
Pretest Score	,872*	1

Table 24 shows a significant and high correlation (p<0.05) between the pre-test results (r=.872) of students and experts.

Table 25. *Expert-Student Correlation Posttest*

	Expert-Student	Posttest Score
Expert-Student	1	
Posttest Score	,532	1

In Table 25, no correlation was found between the post-test results of the students and the experts (r=.532) (p>0.05).

Table 26. *Pretest-Posttest Correlation Relationship*

	Pretest	Posttest
Pretest	1	
Posttest	,773*	1

In Table 26, there is a significant and high level of correlation between the pretest and posttest results (r=.773) (p<0.05).

3.4. Violin Students' Views on Using Video Recording Technology in Their Daily Practice

Table 27. *Student Views on the Ability to Play the Right Note*

K1	*"I didn't realize that there was a disturbance in the sounds while playing. However, both after watching the videos and after the lesson, I realized better in which sounds I made mistakes."*
K2	*"It helped me correct my intonation mistakes."*
K3	*"It had great positive effects on intonation."*
K4	*"I noticed and corrected certain notes I played incorrectly. Video recording helped with that.."*
K5	*"I started to pay attention in the last videos when I was not pressing the sounds correctly on the D and G strings because I kept my elbow steady while going from string to string."*
K6	*"While I wasn't pressing correctly when going from string to string, I started paying attention in recent videos."*

In Table 27, when the students' views on the ability to play the right note are examined, they stated that working with video recording contributed significantly to their performances in recognizing faulty sounds and producing correct sounds.

Table 28. *Student Opinions on the Ability to Play With the Right Rhythm*

K1	*"...I was also making rhythmic mistakes. But while I was playing, I didn't notice. However, when I saw it in the videos, I realized that sometimes I made rhythmic mistakes, although not too many."*
K2	*"It helped me check myself. It helped me correct the rhythmic mistakes I made."*
K3	*"It had a positive effect in terms of duration values and rhythmic playing."*
K4	*"There was no difference rhythmically."*
K5	*"At first, I couldn't keep the rhythm constant throughout the whole piece. I kept it steady in the last videos."*
K6	*"At first, I couldn't keep the rhythm constant throughout the whole piece. In recent videos, I've kept it more steady. It had a positive effect in terms of duration values and rhythmic playing."*

In Table 28, when the students' views on the ability to play with the right rhythm are examined; The students stated that the video recording contributed significantly to their performance in recognizing the rhythm errors and in better adjusting the duration values.

Table 29. *Findings regarding the ability to perform the right hand technique correctly*

K1	*"I think there is no problem in my right hand."*
K2	*"It helped improve my right hand techniques."*
K3	*"It had a positive effect on improving my bow technique."*
K4	*"While I was playing the violin, I could miss the grip most of the time because I was focusing on many things, but when I recorded a video and watched myself, I realized my mistakes. It was easier for me to correct the mistakes in my grip as I noticed it myself."*
K5	*"My bow technique was not correct in the first videos, I fixed it in the last videos. The spring does not slip out of my hand and my grip does not deteriorate."*
K6	*"When I recorded a video and watched myself, I realized my mistakes. Since I noticed the mistakes in my grip myself, it was easier for me to correct them."*

In Table 29, when the students' opinions on the ability to perform the right hand technique are examined, the students stated that working by video recording allows them to realize the mistakes better in bow techniques and to correct and improve them.

Table 30. *Findings regarding the ability to perform the left hand technique correctly*

K1	*"It helped me realize that I sometimes forget to do the elbow movement while changing strings in my left hand."*
K2	*"It contributed to the improvement of my left hand technique."*
K3	*"It had positive effects on my development of left hand techniques."*
K4	*"There have been significant improvements in my left hand."*
K5	*"I realized that as long as I use my elbow, I press the right sounds, but sometimes when I'm not confident, all the sounds get mixed up."*
K6	*"It contributed to the improvement of my left hand technique."*

In Table 30, when the students' opinions on the ability to perform the left hand technique correctly are examined, the students stated that working by video recording allowed them to better notice the mistakes in bow techniques and correct them and improve them.

Table 31. F*indings regarding the ability to play at an acceptable tempo with musical expression*

K1	*"Although I noticed while playing that I was speeding up at some points and slowing down at other times, I noticed it even more in the video."*
K2	*"It helped me see and correct the mistakes I made in terms of tempo."*
K3	*"It had a positive effect on being able to play at a constant tempo."*
K4	*"It helped me to detect and correct my tempo irregularity from the video recording. I noticed that I was playing the parts that I had difficulty with slowly and corrected it."*
K5	*"In general, I slow down because I use the bow short in some parts, and I accelerate the tempo where I play more comfortably."*
K6	*"It helped me see and correct the mistakes I made in terms of tempo."*

In Table 31, when the students' opinions on the ability to play at an acceptable tempo in musical terms are examined, the students stated that they could see and correct the tempo errors better and that they could play at a constant tempo at the end of the study.

4. Conclusion, Discussion and Recommendations

4.1. Conclusion

A significant difference was found between the scores of the students for the ability to play the correct note. It is understood that this difference occurred between the 1st day and the 6th day, that is, between starting and end time of the study. The students stated that working with video recording contributed significantly to their performance in noticing faulty sounds and producing correct sounds. When the expert evaluations were examined, no process-based difference was found in the ability to play the right note.

There was a significant difference between the scores of the students for the ability to play with the right rhythm. It is seen that this difference occurs between the 2nd and 3rd days and between the 1st and 6th days. In the expert ratings, there was a significant difference in the ability to play with the right rhythm. It is seen that this difference occurred between the 1st and 2nd days. When the students' opinions were examined, the students stated that the video recording made a significant contribution to their performance in recognizing the rhythm errors and adjusting the time better.

A significant difference was found between student scores for the ability to perform right hand technical behaviors. It is seen that this difference occurs between the 1st and 6th days. In the expert ratings, a significant difference was found in the ability to perform technical behaviors in the right hand. It is seen that this difference occurred between the 1st and 2nd days. The students stated that working by video recording allowed them to notice the errors in bow techniques better and to correct and improve them. However, one student, K1: "I think there is no problem in my right hand." commented as.

A significant difference was found between student scores for the ability to perform left hand technical behaviors. It is seen that this difference occurs between the 1st and 6th days. In the expert ratings, a significant difference was found in the ability to perform technical behaviors in the left hand. It is seen that this difference occurred between the 1st and 2nd day and the 1st and 6th day. The students stated that working by video recording allowed them to notice the errors in bow techniques better and to correct and improve them.

A significant difference was found between student scores for the ability to play at an acceptable tempo with musical expression. It is seen that this difference occurs between the 1st and 6th days. In the expert ratings, a significant difference was found regarding the ability to perform technical behaviors in the right hand. It is seen that this difference occurred between the 1st and 2nd days. Students stated that they could see and correct tempo errors better and that they could play with a constant tempo.

When the general averages of students and field experts were examined, it was determined that there was a significant difference in the evaluations of both groups. In addition, it was concluded that the significant difference between the groups was similar based on days.

When the relational situation between the experts and the students was examined, it was determined that the relational situation between the pretest results was significant and high. There was no relational situation between the post-test scores, and the relational situation between the pretest-posttest scores was significant and high. This shows that student and expert

evaluations show a homogeneous distribution in the context of the whole study process and there is a high level of similarity between the scores.

Significant differences were obtained in all of the skills scored by the students. This shows that the way of working with video is effective in student success. The opinions of the students also support this situation. During this one-week period, the students stated that by evaluating themselves through video recording, they noticed their mistakes and deficiencies and corrected them to a large extent. In the expert evaluations, a significant difference was obtained in all other skills, except for the skill of "playing the right note". When the general averages of students and experts were examined, it was concluded that there was a significant difference and the relational situation between the scores was also significant and at a high level.

4.2. Discussion

There are many studies on the effects of video use in instrument education on student achievement. Although the studies performed differ in terms of method and application, when examined in terms of their results, they show similarities with the results of this study. Erim and Yondem (2009), in their study titled "The Effect of Video Model-Based Instruction on Guitar Performance", stated that video-assisted lessons had a positive effect on "guitar traction, right hand, left hand techniques, and monophonic performance". Aksoy (2015), in his study titled "The Efficiency of Video-Supported Teaching on Amateur Violin Training", concluded that the video-assisted education program has more positive effects on students than the non-video-supported education program. In addition, in the conversations with the experimental group students, it was determined that video-assisted education contributed a lot to the music performances. Gökbudak (2004) conducted a study using video technology with 18 students from Fine Arts High School in his article titled "The Role of Video Technology in Piano Education". According to the results of this 3-stage study, it was seen that the students in the study group improved in a short time and it was determined that the video accelerated the teaching. Öztürk (2006) applied the microteaching method based on video camera recording in his doctoral thesis titled "The Effect of Video Camera Recording Based Micro Teaching Method on Student Success in Piano Education". As a result of his study, it was concluded that piano playing 27 skills related to posture, reading, technique, musicality, and tempo were significantly affected, so the success rates of the students were high in the experimental group. As can be understood from these studies, the use of video recording technology in instrument education significantly increases student success.

When this research is considered in terms of student ratings and opinions, it can also be considered as a self-evaluation study. The students expressed their opinions by noticing the mistakes and deficiencies they made during the process. At the same time, they showed a serious effort to correct this situation and improve their instrument performance. As a result, they stated that this way of working contributed significantly to their instrument performance. Uysal (2008) defines self-assessment as determining what, how, and how much the student has learned, with the criteria determined by himself or the teacher, and in this way, the student gets to know himself better, realizes his strengths and weaknesses, and develops himself.

The results of the self-evaluation studies in the field of instrument education are similar to the results of this study in terms of the contributions they provide to the students. Güdek and Öztürk (2016) emphasize the importance of using methods that enable students to participate in the evaluation process and realize their strengths and weaknesses, and state that these assessment approaches will positively affect students' knowledge, skills and attitudes towards the instrument they learn. Kılıç and Türkmen (2020) stated that all of the violin students who participated in the self-assessment study were satisfied and happy with this experience, that it contributed positively to their motivation, and that they were motivated to work more carefully,

interestedly, and diligently the pieces they played. The data obtained in the study of Uyan (2019) titled "An Investigation of the Pre-Listening/Speaking Relation in Guitar Students from Undergraduate Level and Self-Evaluation" were also examined in terms of students' level of experience in the field and their ideas about their performance, and the importance of self-evaluation was emphasized.

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