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Iteration strategy in violin education and its effect on learning

Büşra İnci GÜMÜŞ[1], Gamze Elif TANINMIŞ[2]

[1]Ağrı İbrahim Çeçen University, Faculty of Education, Ağrı, Turkiye
[2]Gazi University, Faculty of Education, Ankara, Turkiye

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Abstract

The purpose of this study is to reveal the Effect of Iteration Strategy in Violin Education on Learning. 3 studies applied in pretest and posttest, 1 study applied in equivalence test, observation form used in pretest, posttest and equivalence test scoring, and performance record were used to collect data related to the study. In the study, a total of 10 violin students selected from each grade level in the Department of Music Education in Ağrı İbrahim Çeçen University Education Faculty in the 2019-2020 academic year, 5 of whom were in the experimental group and 5 were in the control group. Lessons were conducted with the experimental group by applying iteration strategies, and lessons were conducted with the control group using ongoing methods. After the lessons, a performance record was made for the students in the groups and again the data were scored by 3 experts. The averages of these scores formed the posttest scores of the students. Afterwards, Wilcoxon ordinal signs test was used to compare the pre-test and post-test scores of the control and experimental group students to determine their own development, and the Mann Whitney-U test was used to compare the post-test scores of the control and experimental group students. According to the results obtained from the study, it was determined that the average posttest scores of the experimental group, who were taught by applying iteration strategies, were higher than the average pretest scores and this difference of scores was statistically significant. Then, the difference between the posttest scores of the control and experimental groups was found to be statistically significant. The fact that this increase in average scores was statistically significant revealed that the lessons made by applying the iteration strategy had a positive and high level of effect on the learning of the students.

Keywords: Music education, instrument education, violin education, learning strategies, iteration strategies

Keman eğitiminde yineleme stratejisi ve öğrenme üzerindeki etkisi

Öz

Bu çalışmanın amacı, keman eğitiminde yineleme (iterasyon) stratejisinin öğrenme üzerindeki etkisini ortaya koymaktır. Araştırma kapsamında, ön test ve son testlerde üçer çalışma, denklik testinde ise bir çalışma uygulanmış; veri toplamak amacıyla gözlem formu ile performans kayıtları kullanılmıştır. Çalışma grubu, 2019-2020 eğitim-öğretim yılında Ağrı İbrahim Çeçen Üniversitesi Eğitim Fakültesi Müzik Eğitimi Anabilim Dalı'nda öğrenim gören her sınıf düzeyinden seçilen toplam 10 keman öğrencisinden oluşmaktadır. Bu öğrencilerden 5'i deney grubuna, 5'i kontrol grubuna dâhil edilmiştir. Deney grubunda yer alan öğrencilere yönelik dersler, yineleme stratejileri uygulanarak yürütülmüş; kontrol grubundaki öğrencilere ise geleneksel yöntemlerle eğitim verilmiştir. Derslerin ardından her iki gruptaki öğrencilerin performansları kaydedilmiş ve bu kayıtlar üç uzman tarafından değerlendirilmiştir. Uzman puanlarının aritmetik ortalaması, öğrencilerin son test puanlarını oluşturmuştur. Araştırma verilerinin analizinde, kontrol ve deney grubu öğrencilerinin ön test ve son test puanları arasındaki gelişimi belirlemek amacıyla Wilcoxon sıralı işaretler testi, iki grup arasındaki son test puanlarının karşılaştırılmasında ise Mann Whitney U testi kullanılmıştır. Araştırma bulgularına göre, yineleme stratejisiyle eğitim verilen deney grubunun son test puan ortalamalarının, ön test puan ortalamalarına kıyasla istatistiksel olarak anlamlı bir şekilde yüksek olduğu belirlenmiştir. Ayrıca, deney ve kontrol gruplarının son test puanları arasındaki fark da istatistiksel olarak anlamlı çıkmıştır. Bu sonuçlar, yineleme stratejisinin uygulandığı derslerin, öğrencilerin öğrenme düzeyleri üzerinde olumlu ve yüksek düzeyde etkili olduğunu ortaya koymaktadır.

Anahtar Kelimeler: *Müzik eğitimi, çalgı eğitimi, keman eğitimi, öğrenme stratejileri, yineleme stratejileri*

Sorumlu Yazar/ Corresponded Author: Büşra İnci GÜMÜŞ, **E-posta/ e-mail:** busraincigumus@gmail.com

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INTRODUCTION

It can be said that many factors affect the realization of learning, from readiness to critical periods of development, from inheritance to environment. Some of the main points are to facilitate learning while providing it, to make it permanent and to motivate the individual about how to learn and to make him / her to think. There are some learning strategies that make it easier for the individual to learn alone and make the individual aware of how best he / she learns at the same time. Learning strategies are the method followed to realize learning, the processes used by the individual to learn on her / his own, the behaviors and thoughts that the individual uses during learning and that aim to affect the coding process of information (Açıkgöz, 2005). Learning strategies contribute to the raising of a generation that knows how to learn, therefore, is constantly open to learning, recognizes itself and strives to improve (Arends, 1998). In the studies of Weinstein and Mayer (1986) and Eggen (1992), it has been demonstrated with research data that effective learning strategies benefit learning, memory supports have a positive effect on free recall, recall by associating and recall sequences. Recognition of learning strategies in education by individuals can be used as a method to influence individuals. The privilege of learning strategies can be used when an individual who prefers visual learning is taught by showing the material to be taught, by verbally telling an individual who prefers auditory learning, and by touching the object to an individual who prefers to learn by doing and experiencing (Alder, 1998).

Along with the developments in the education world, when the studies on instrument training in the field of music education are examined, it shows that students' use of learning strategies enables them to realize the difficulties they have in the process of playing the instrument, evaluate their learning and find strategic working methods to improve their performances (Nacaroğlu, 2019). Violin education, which is a type of instrument training, is the process of creating some desired changes in the behavior of the learner and transforming these behaviors into skills, and in this process, the violin teacher must take measures to create suitable environments for learning and apply different learning methods (Şendurur, 2001, p.145-155). Instrument lessons have a versatile and complex structure with its content technically, musically, collectively playing, presenting, and improving life skills (Albuz, 2001). In addition, violin education has an effective and distinguished place among the most important branches of instrument education (Uçan, 1997). It is extremely important for the student to gain regular, systematic, and continuous study habits. For this reason, it is thought that the correct use of iteration strategies in violin education is of great importance. Considering that the

concept of iteration strategy in violin education is an important concept, the problem sentence of the study was formed as "What is the effect of the iteration strategy in violin education on learning?"

Sub Problems:

1. Is there a difference between the pretest-posttest success scores of the experimental group?

2. Is there a difference between the pre-test and post-test success scores of the control group?

3. Is there a difference between pre-test and post-test success scores between the control group and the experimental group?

Learning strategies

Cognitive learning approaches argue that the learner should take responsibility for learning and take an active role in the learning activity. For this reason, research on this subject are concentrated around today's learning strategies (Subaşı, 2000, p. 1-4). Learning strategies are generally considered among the cognitive strategies in the literature. Although there is a consensus on the importance and usefulness of learning strategies in the studie, it is very difficult to talk about this consensus on the definition of learning strategies (Çalışkan, 2010). There are many different definitions of learning strategies in the literature. Learning strategies are personal skills that involve people learning information, recalling learned information from memory, and interpreting this information (Gagne, 1974, p. 3-8). On the other hand, Weinstein and Mayer (1986) defined learning strategies as attitudes or thoughts that are expected to affect the events of retrieving, encoding, and retrieving and using information from the stored location when needed in the learning process. The definition of learning strategies of Lenz (1992) is in the form of cognitive and behavioral elements that shed light on individuals in showing and evaluating the activities of individuals related to a task. According to Nannete and Branda (1995), the definition of learning strategies is in the form of a cognitive process that enables learners to be constantly prepared to increase understanding and retrieval of information and affects the success of learners at all levels. Arends (1997) explains learning strategies as attitudes and thinking processes that influence learner's learning, along with cognitive methods such as transferring information to memory and recalling it. Sünbül (1998), on the other hand, defined learning strategies as all activities that help students solve the problems they encounter at school and gather the elements of cognitive and metacognitive processes. Riding and Rayner

(1998) explained learning strategies as the type of response given by individuals to stimuli coming from the external environment. According to Subaşı (2000), learning strategies are attitudes and thoughts that learners can do in the learning process and what is expected to affect the coding time. Tay (2004) 's definition of learning strategies is the efforts that learners need to make sense of and identify the information given to them during the learning period or in their preparations before the learning period, through mental processes. When the definitions of learning strategies in the literature are examined, it is determined that learning strategies are examined in the form of process, action, thought and plan. If a general definition is made in line with these definitions, learning strategies can be defined as cognitive methods that people use in the process of implementing and organizing their behavior (Türkyılmaz, 2016). When the literature was examined, it was seen that many different classifications were made regarding learning strategies. Table 1 shows the classifications of learning strategies in the literature.

Table 1. Classification of learning strategies

Researchers	**Classification of Strategies**				
Brown(2000)	Cognitive Strategy	Socio Affective Strategy		Metacognitive Strategy	
Stern(1992)	Cognitive Strategy	Experimental Strategy	Interpersonal Stragey	Affective Strategy	Planning Strategy
Wenden(1991)	Cognitive Strategies (select, memorize, store, recall)			Self Management Strategies (Planning, monitoring, evaluation)	
Oxford (1990)	Direct Strategies (Memory, cognitive, compensatory)			Indirect Strategies (Social, affective, metacognitive)	
Weinstein and Mayer(1986)	Iteration Strategy	Understanding Strategy	Organizing Strategy	Monitor Understanding Strategy	Affective Strategy
Rubin (1981)	Direct Learning Strategies (Annotation / verification, guessing / reasoning, practice, memory, monitoring)			Indirect Learning Strategies (Production stages, creating exercise opportunities)	

Source: Akdeniz (2013).

Iteration strategies

The information storage volume of the short-term memory and the time for the information to stay here is very low. Iteration strategies are used here to retain information for a longer period. Iteration strategies increase the retention time of information in short-term memory and allow the individual to remember the information for a longer time (Harris, 1990). It is known that iteration strategies are mostly used in basic learning. Weinstein and Mayer (1986) mention two types of iteration: basic iteration and complex iteration. In basic iteration, the learning tool is simply iterated as it is. In complex iteration, the person also attributes a meaning to the learning tool to a small extent (Çalışkan, 2010). Iteration strategies are examined in two which are mental iteration and grouping. Mental iteration enables information to be

remembered as it is. This strategy can also be used for memorization. Grouping is a strategy that facilitates retaining more information in short-term memory (Senemoğlu, 2015). The basic usage approaches of iteration strategies are as follows (Selçuk, 2008):

• Reading a learning material with lots of repetitions mentally, aloud or silently

• Explaining the learning material to oneself or to someone else after reading

• Writing down the information in the learning material

• While reading the learning materials, stopping at regular intervals, and repeating the part up to that place

• Repeating a phenomenon in the learning material in different ways

• Underlining the important places with colored pencils

Use of iteration strategies in instrument education

In music education, iteration studies for the correct playing of the work or etude studied play an important role in the acquisition of the expected learning outcome and skill. Working repeatedly allows the learned information to be kept in short-term memory for a longer time. However, it is difficult to remember information in short-term memory unless it is transferred to long-term memory. To solve this problem, even if it is a track that needs to be played fast, it is necessary to repeat this track slowly and in sections. In this way, this kind of study helps memorization and easy recall of the work. According to Newman (1984), studying the work at a slow pace and fulfilling the requirements helps the muscles to memorize the movement easily and to learn the track more easily. After the work is studied in this way and learned completely, it should be played at its normal tempo (Nacaroğlu, 2019).

The repetition of the whole or part of the track to be played by mentally animating the position and finger movements without touching the instrument with mental iteration methods such as mental playing, seeing and hearing, is performed by mental playing method. With this method, the learner can repeat the rhythm of the track to be played by hitting somewhere with her / his hand or with another tool, or sing the melody of the track, without touching the instrument. This type of study makes it easier for the learner to remember the work she / he is working on and allows her / his to play it in different places and at different times.

Grouping method can be called the rearrangement of the work according to a certain method. In this method, a difficult section in the work is made meaningful by the learner and grouped in clusters. With such a working method, an unconscious work is prevented, and it

becomes easier to remember because the information is grouped together. However, the routine working method, which makes her / him repeats too often, may lose the learner's ability to see mistakes and her / his sensitivity to the work. Çimen (2008) stated that playing with different rhythms, nuances and tempo, instead of repeating a section in the work in the same way, provides a more effective learning. For this reason, it is thought that a learner who works with the iteration strategy should analyze the work well (Nacaroğlu, 2019).

In this context, certain iteration strategies that can be used in violin education can be as follows (Afacan, 2018):

• Repeating the work or study to be studied in the mind.

• Repeat the work or study at a slower pace than it is

• Playing the studied work or study with different bow techniques

• Repeating the sections that are difficult in the work or study

• Memorizing the finger numbers of the work or study

• Playing the studied work or study with different weighing patterns

• Repeating the entire work or study until it is played clean.

• Before starting to work, study a series in the same tone as the work or etude to be studied.

• Repeating the work or study until it is played at the desired tempo.

Purpose of the research

In this study, it was aimed to determine the effect of repetition strategy on learning by conducting an experimental study with undergraduate violin students in Music Education Departments of Education Faculties.

The importance of research

When the literature is examined, it has been seen that there are many studies on accepted learning strategies under five titles. However, it was seen from these studies that studies on the iteration strategy are relatively less than other studies. Although there are few studies about the iteration strategy in the music education literature, it has been revealed that the repetition strategy in instrument training is of great importance in the studies of (Kurtuldu & Güçlü,2010, p.196-204.) (Kılınçer & Uygun, 2013, p.206-238.) There is no study in the literature about the effect of the repetition strategy in violin learning education. This study is thought to be

important in terms of filling this gap in the literature and providing new clues and a basis for further research in the field of violin education.

Literature review

Mcpherson (1997) investigated four different musical development areas with a group of high school instrument teachers for three years in his article titled "Cognitive strategies and skill acquisition in musical performance". By creating different age groups, tests were applied to the subjects to measure their capacity to play what they see, to play what they hear, to play from memory, and to improvise. Additional data which is believed to affect some factors of the development of these abilities and the content analysis of students' comments in face-to-face interviews with the questionnaire were taken.

According to the results of the study, it shows that there has been a noticeable improvement in each of the abilities for three years, and there are also changes in auditory and improvisational activities in the practices of the players. Reflective comments show that there are visible differences in the areas of strategy used by the players. According to these results, the study includes the effects of teaching ranging from re-evaluation of teaching practices limited by the development of performance repertoire and technique to guidance on auditory and improvised performance styles and cognitive strategies of this study.

In Nielsen (1999)'s article on learning strategies named "Learning strategies in instrumental music practice", it is aimed to reveal the extent to which two musicians church organ use learning strategies during their performance studies. As a result of the study, it was determined that the musicians used learning strategies to first distinguish, pattern and combine information based on their verbal expressions during and after the performance.

Pitts and Davidson (2000) investigated the cognitive strategies young musicians directed during their studies in their articles titled "Developing effective practice strategies: Case studies of three young instrumentalists". The study group of the research consists of three students, ages 9 and 10, whose instruments are flute, saxophone, and trumpet. The research was conducted to determine students' benefiting from learning strategies in their studies and the effectiveness of these strategies during musical development. The emotional state, behavior and display styles of the students while playing the instrument were observed. When students realized that they did not know how to learn while playing their instruments, they emphasized the need for teaching study strategies by showing an expression of concern on their faces and behaviors.

Hallam (2001) investigated the relationship between the use of learning strategies and the development in instrument learning by considering the individual differences of students in his article titled "The development of expertise in young musicians: strategy use, knowledge acquisition and individual diversity". The study group consists of 55 students, ranging in age from 6 to 18 and ranging from students who are new to the instrument to music college students. Students were asked to play a piece that everyone in this group could easily play, and this performance was recorded. The performances of the enrolled students were examined by two experts. According to the findings obtained at the end of the study, it has shown that the development of learning strategies is closely related with the development of instrument expertise.

Nielsen (2008) investigated the success, instrument playing levels and learning strategies applied by music students in his article titled "Achievement goals, learning strategies and instrumental performance". The study was conducted with the aim of guiding the teachers by determining the motivation sources of music students. In the study, a questionnaire was applied to 130 students to determine the motivation of the student. The data obtained from the questionnaire were subjected to factor analysis and it was determined that there were three factors. These factors are talent approach goal, talent avoidance goal, and mission goal. According to the results of the study, low correlations were found between learning strategies and task goals, and between talent avoidance goal and learning strategies.

Otacıoğlu (2008) conducted a study in which she examined preschool learning and music strategies in her article titled "Preschool child-centered learning and music strategies". In this study, issues such as child and teacher-centered practices in music education and differences between child-centered music lessons and problem-solving strategies were examined. According to the results of the study, it has been argued that giving children more freedom and creativity in preschool music education may have positive reflections on the music education program. In addition, the researcher stated that the music education course should be added to the compulsory courses at undergraduate level.

Akın (2010) investigated whether the use of the interpretation strategy of fine arts high school students had an effect on their learning in the article titled "The effect of signification strategy on violin learning in Anatolian fine arts high schools". Pre-test-post-test model with control group was used in the study. The performances of the control and experimental group students were recorded with a camera and evaluated by three experts. According to the results

of the study, it was seen that the interpretation strategy had a positive contribution to the violin learning process.

Kurtuldu and Güçlü (2010) have conducted an article titled "The effects of planned equal repetition in piano education on the success of students". In the study, pre-test-post-test model with control and experimental groups consisting of 10 students were used. The trainer taught the selected piece to the control group with the ongoing method, and he did an iterative study with the experimental group. As a result of the equal work done with both groups, the performances of the students were measured. As a result of the study, the performance scores of the experimental group students who did the iteration study were higher than the students in the control group.

Şimşek and Balaban (2010) applied a questionnaire to 278 students in their study to measure the learning strategies most used by undergraduate students in their article titled "Learning strategies of successful and unsuccessful university students" and the effect of these learning strategies on students' academic success. According to the results of the study, it was revealed that the students who used the learning strategies more were more successful, and the female students used the learning strategies more than the male students. It was seen in the study that the most preferred strategy was metacognitive strategy, and the least preferred strategy was the organization strategy. In general, it has been observed that there is a positive and statistically significant relationship between the use of learning strategies and students' achievement levels.

Yokuş (2010) investigated the effect of metacognition on guitar playing level in his article titled "The effect of metacognition on guitar performance success", and in his study, an experimental model with pretest-posttest control group and 10 students were used. While the lesson was taught with the ongoing method with the control group, the guitar lesson was taught with a method prepared for the development of metacognition with the experimental group. According to the results of the study, it was concluded that the guitar playing levels of the students in the experimental group were much higher than the students in the control group.

Kocabaş and Sever (2011) conducted a study in which they examined the learning strategies used by primary school students in terms of some psychosocial variables in their article titled "Analysis of music learning strategies used by students in terms of some psychosocial variables". The data of the study was obtained with the learning strategies scale developed by the researchers. According to the results of the study, statistically significant

differences were found among the music learning strategies used by students according to gender, type of school and whether they play an instrument.

Kurtuldu (2011) applied a questionnaire to 30 students in order to reveal the effect of individual attitudes based on executive cognition on piano playing performance in his article titled "The effect of individual attitudes based on executive cognition on the success of playing the piano". According to the data obtained from the survey, two students whose attitudes towards piano education were very different and opposite from each other were selected. These two selected students were included in an experimental study consisting of four applications. Measurements were made more than once to ensure the reliability of the experimental work. According to the experimental results, it was seen that individuals with positive personal attitudes used the steps that form executive cognition strategies more effectively and their positive attitudes towards studying piano lessons directly affected the piano playing levels and performances of the individuals.

Er and Özer (2011) aimed to measure the effect of interpretation strategies used in piano lessons on students 'learning levels and behaviors in their article study titled "The effect of interpretation strategies used in piano lessons on students' learning levels and attitudes". The study group of the research was formed as a control and experimental group consisting of piano students studying at the fine arts high school. According to the data obtained as a result of the study, the use of interpretation strategies level increases, the success of students in piano performances increases and students' attitudes towards the lesson are positively affected.

Kurtuldu (2012) investigated whether attention strategies can be used in piano education in his article titled "The use of warning signs for attention strategies in piano education". A total of 6 students, three of which were experimental and three of which were control groups, were tested for equivalence and found to be equivalent to the study. While an ongoing study was conducted with the control group, a study in which warning signs were used was conducted with the experimental group. Later, the performances of the students were measured by scoring with the developed scale. In the study, it was seen that focusing the attention of the students on the important places in the work and where mistakes are likely to help, prevent possible mistakes and increase success. In the study, although the pretest and posttest scores of the control group showed a certain increase, the pretest and posttest scores of the experimental group increased more than the control group. In the study, it was observed that the experimental group was more successful than the control group.

Uygun and Kılınçer (2012) in their research titled "Investigation according to some variables used at the levels of learning strategies in learning the piano repertoire: samples of fine arts and sports high schools " using levels of learning strategies in piano education and studies that examine the relationship among achievement levels of 644 students who study in fine arts high school in Turkey. The scale of the study was developed by the researchers. According to the data obtained using one-way analysis of variance (ANOVA), a statistically significant difference was found between the levels of using learning strategies in piano lessons and the success levels of the students has been observed.

Akın (2013) investigated the use of learning strategies of music teacher candidates and the effect of this on academic success. In the study, a questionnaire with 30 questions consisting of superficial cognitive, deep cognitive and metacognitive dimensions of learning strategies was applied to 131 students. The data obtained from the questionnaire were analyzed with the help of t-test, ANOVA test and regression. As a result of the study, there was no statistically significant difference in the average achievement of students in terms of gender; it was observed that there was a statistically significant difference in favor of female students according to the gender variable in terms of using superficial cognitive learning, deep cognitive learning, and metacognitive learning strategies. In the study, it was also determined that there are statistically significant differences in the average achievement of the students according to the classes they study; On the other hand, in the use of learning strategies, no statistically significant difference was found in terms of the classes that students attended.

Kılınçer and Uygun (2013) examined the levels of music teacher candidates' use of learning strategies in piano education in their article titled "Examination of the level of using learning strategies in piano lesson". As a result of the study, it was seen that the students used the iteration strategy most and the least attention strategies while studying the piano. In the study, statistically significant differences were found between the levels of students' use of learning strategies, according to the variables of gender, class, study planning and piano lesson success levels.

Benton (2013), in his article titled "Promoting metacognition in music classes", conducted a study on the development of metacognition in music education classes. As a result of the study, suggestions for reflective writing and self-assessment were presented to encourage students to think metacognitive. According to the results of the study, it was observed that using metacognitive strategies increased students' self-confidence and independent learning ability.

Ertem (2014) used a descriptive and experimental model in his study, which aims to reveal the effectiveness level of using organizing strategy in piano education in his article titled "Learning process in piano education and the place and importance of using learning strategies". In the descriptive part of the study, a questionnaire was applied to determine the learning strategies used by the students in piano education, and the opinions and suggestions of the students and teachers about these learning strategies were consulted with this questionnaire. While the students participating in the study stated that they mostly used organization strategies among learning strategies, the teachers stated that they mostly used organization and interpretation strategies. In the experimental part of the study, how the students, consisting of control and experimental groups, used the organizing strategy was observed and scored. According to the data obtained, it was determined that the organizing strategy had a positive and significant effect on students' piano performance success and significantly contributed to the development of students.

Nielsen (2015) in his article titled "Learning pre-played solos: Self-regulated learning strategies in jazz / improvised music" aimed to reveal how two advanced students use their self-regulated learning strategies while learning jazz music melodies. While the students were playing their instruments, they were videotaped, and interview questions were asked. As a result of the study, it was seen that the students used more than one cognitive strategy rather than a learning strategy. While playing their instruments, it was seen that they chose and study a difficult part of the passage as well as integrate and associate it with their own knowledge to facilitate memorization. Another result of the study is that students do not always use the strategic activities they planned based on their self-evaluations during their performance.

Deniz (2015) conducted a study in which she applied a questionnaire to 139 pre-service teachers to determine the level of using metacognitive learning strategies of music teacher candidates in her article titled "The level of metacognitive learning strategies used by music teacher candidates". In the study, the differentiation between metacognitive learning strategies and the variables of gender, the class in which they graduated, the type of high school graduated from and the time allocated to piano study were investigated. The scores obtained by the students participating in the study from the answers they gave to the questionnaire questions and these variables were analyzed with the help of t-test and ANOVA. According to the results of the study, it was determined that the students frequently used the aspects of planning, organization, supervision, and evaluation, which are sub-aspects of metacognitive learning strategies. It has been determined that female students use the strategies in the planning

dimension more than boys, and students who devote more time to piano study use planning and organizing strategies more. It has been determined that the level of using metacognitive learning strategies does not differ statistically according to the type of high school they graduated from.

Yokuş and Yürüdür (2015) in their study titled "The relationship between the metacognitive awareness and self-efficacy levels of music teacher candidates", conducted a questionnaire on 440 students in their study in which they investigated the connection between the metacognitive awareness and self-efficacy levels of music teacher candidates. As a result of the study, it was seen that there was a statistically significant relationship between metacognitive awareness and self-efficacy levels.

Ercan and Orhan (2016) investigated the use of learning strategies in the education of adult students who receive instrument training at beginner level in their article study titled "Learning-teaching strategies in adult instrument education". According to the results of the study, it was mentioned that the effective use of learning strategies can enable students to learn more easily.

Colombo and Antonietti (2017) investigated the improvised metacognitive behavior of the instructor during the piano lesson with advanced and beginner students in their article titled "The role of metacognitive strategies in learning music: A multiple case study". According to the results of the study, it was revealed that the teachers used metacognitive strategies while teaching, but the students were not aware of this situation.

Virkkula and Nissla (2017) conducted an experimental study with the aim of determining the learning strategies observed in conservatory students themselves in their article titled "Towards professionalism in music: self-assessed learning strategies of conservatory music students". In this 6-8-week study, a popular and jazz music workshop was organized for students. In this process, professional musicians have helped these students in their studies. Later, the students organized concerts with the works they worked on during this period. After the concert, the students were asked questions about collaborations with professional musicians, what they learned in the workshop and what they could do in another way. In-depth analysis was made from the answers given by the students to the questions.

Uygun and Kılınçer (2018) conducted a questionnaire with 273 students to examine the learning strategies used by students while studying and learning instrumental music in their article titled "Examination of the strategies used by vocational music education students while studying and learning instrumental music". As a result of the study, it was determined that

students mostly used iteration strategies. It was determined that students used the sub-aspects of organizing strategies at a statistically significantly lower level than other strategies. It was observed that students' levels of using learning strategies differ statistically significantly according to the variables of gender, age, experience, duration of study, proficiency level perception and academic achievement level.

In the study of Pirgon (2018) titled "Evaluation of Carl Philipp Emanuel Bach's work named Solfeggio in terms of learning strategies", in Bach's work Solfeggio, the working methods that students can apply in the personal study process were examined within the scope of learning strategies. Working styles that students can choose in accordance with their own learning situation in their individual piano study processes are presented as options. As a result of the study, students should divide the work by using a iteration strategy, analyze the work first cognitively while using an interpretation strategy, then divide the work into small sections and establish the relationship between the sections, use strategies to help coding the work, such as organizing, grouping and creating consistent structures, and monitoring understanding. It has been explained that when a problem is encountered in the work while using the strategies, it will be useful to work on identifying the problems and errors, and to motivate the students by the teachers while using affective strategies.

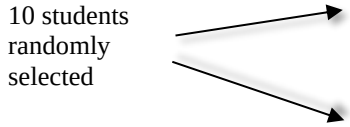
Akbel (2018) aimed to measure the level of using learning strategies of cello students in his study titled "Using the learning strategies of cello students studying in the field of Turkish music". In the study, a total of 9 cello students at different levels were divided into groups of three. Instrument playing levels, grade grades and cello lesson grades were taken into consideration in determining the equivalence of the groups. According to the results of the study in which semi-structured interview forms were used, it was determined that the violoncello students used all the cognitive and affective strategies in the learning process. In the study, it was also seen that intermediate and advanced students use learning strategies more and more widely than beginner students.

Concina (2019) conducted an extensive literature research in her study investigating the role of metacognitive skills in music learning and performance in her article titled "The role of metacognitive skills in music learning and performing: Theoretical features and educational implications" and examined all studies on the subject. In the study, metacognitive skills are a basic component of playing an instrument and these skills should be considered more in music lessons.

METHOD

Research model

The quantitative research model was used in this study. In the study, random design method with pretest-posttest control group, which is one of the quantitative research methods and is one of the sub-aspects of the real experimental design method, was applied. In this method, an experimental group consisting of 5 people and a control group was formed among the students to be experimentally studied by random assignment method. The imaginary representation of this method is as in Figure 1.



Group	Pre-test	Process	Post-test
D	***O₁***	***X***	***O₃***
5 students in experimental group randomly	Expert ratings	Implementation of iteration strategies	Expert ratings
K	***O₂***	***X***	***O₄***
5 students control group randomly	Expert ratings	Implementation of the ongoing education model	Expert ratings

Figure 1. Random pattern with pretest-posttest groups

By examining the previous individual instrument lesson (violin) notes of the students selected for the groups, and by taking the opinions of their teachers, it was tried to provide equivalence between the experimental and control groups. In the experimental study process, three tonal studies with equivalent features including the basic spring techniques “detach” and “legato” bow techniques were selected to be used in the pretest / posttest. To play these pieces correctly and effectively, the experimental group was given a certain training with predetermined exercises, etudes, and other studies. The reason for choosing “etude” to be used in the lessons is that it has an important place in the foundation of instrument education and that students can express themselves well technically and musically according to their level. All techniques such as bow techniques, positions, position transitions, double sounds, chords, trills can be learned in this way, and the correct handling of the violin and bow are determinant in the formation of the technique by taking shape in this process. The etudes used in the study were selected according to the students’ violin playing levels and expert opinions. Studies were videotaped and scored by three experts. The pattern of the study is as shown in Figure 2.

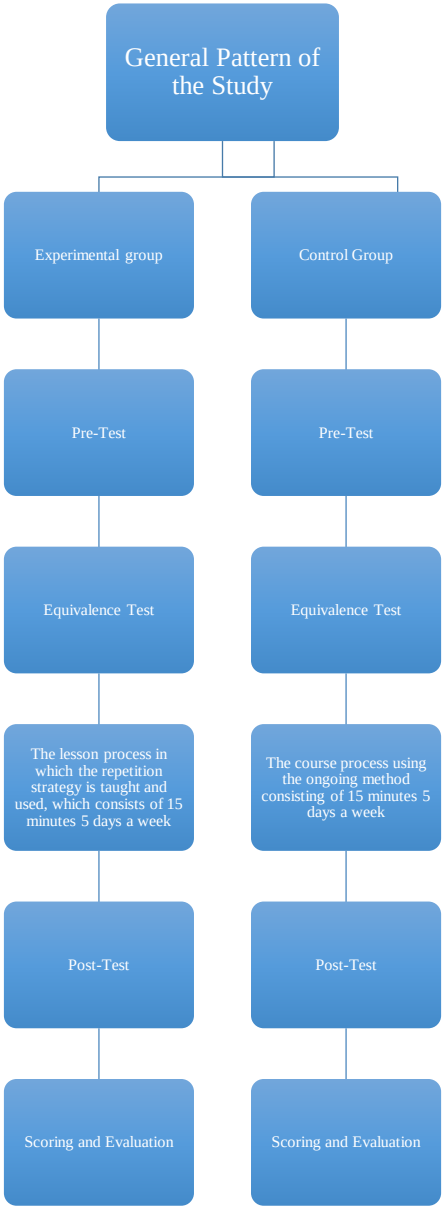


Figure 2. Working pattern

Research process

In the first step of the research process, a total of 10 undergraduate violin students, five undergraduate (4th year), three undergraduate (2nd year) and two undergraduate (1st year), studying at the Department of Fine Arts Education at the Faculty of Education of Ağrı İbrahim Çeçen University, were randomly assigned. It has been tried to provide equivalence by considering the students' individual instrument notes and teachers' opinions; it is divided into two groups as experimental and control groups. For these students, 5 of them in the experiment and 5 of them in the control group, 6 studies to be used in their practice for a total of 3 weeks were selected. Three of the studies are in the teaching of repetition strategy and equivalence

study; the other three were used for pre-test and post-test scoring. The first study used in pretest was also used in the context of equivalence test. Two studies were selected for each week, one for teaching repetition strategy and the ongoing study method, and the other for pre-test and post-test. The duration of the one-on-one lesson with students is limited to 15 minutes and 5 days a week due to time constraints. During these lessons, repetition strategy teaching and work was done with the experimental group, and a study based on ongoing methods was conducted with the control group.

In each week of the 3-week study period, the experimental and control group students were given the studies to be used in the pre-test and post-test half an hour before the pre-test and the students were asked to study these for 30 minutes. Later, the experimental and control group students played these studies at time intervals allocated for them, these applications were videotaped, and the studies were collected from the students in order not to work on the stolen studies again. These studies, which were recorded with video, were scored by 3 experts for pretest and inter-group equivalence. In teaching the repetition strategy for the experimental group on the same day after the pretest was completed; for the control group, lessons were started with the other study to be used in the ongoing study. This study to be run in the lessons was distributed to the students and was not collected. In the lessons held at the scheduled times with each student in the experimental group; the importance of the repetition strategy in musical education and individual instrument training was mentioned, and some tactics were given about how to study the studies. Considering the individual differences of the students, the studies were played from the beginning to the end and then the places where the bow techniques, complex weighing patterns, nuances e.t.c were taught has been rounded with colored pencils. Students were asked to play the places circled with colored pencils repeatedly. (The number of repetitions and duration differed for each student.) During this repetition, the sounds were asked to be pressed clearly and the bow pressure to be at a sufficient point, and these playing conditions were tried to be established. With the control group, the same studies were carried out with ongoing study methods, and continuous iteration was not applied. After the study, it was aimed that the experimental group learned to work with the repetition strategy and be able to apply this strategy in other studies. At the end of each week, a posttest video was taken to understand the playing difference between the experimental and control groups of the study played by the students who were recorded in the pre-test video. The exercises were distributed to the students as they were done every week half an hour before the posttest and they were asked to work for 30 minutes. During this 30-minute period, the experimental and control

groups were aimed to apply the strategy they learned or the methods of working with the ongoing method in the study they played in the pre-test. This study was applied for 3 weeks. Performance records obtained from the study were monitored by three experts. Experts recorded the student performances on the observation form developed by the researcher and gave points according to the five-point Likert scale.

Working group

The experimental study group of the research consists of 10 violin students studying in the undergraduate program of Ağrı İbrahim Çeçen University, Faculty of Education, Department of Fine Arts Education, Department of Music Education.

Data collection tools

Before creating data collection tools, studies such as these, articles and books were examined, and a comprehensive literature review was made. Based on the information obtained as a result of the examinations, it was decided which data collection tools would be selected and the content of these data collection tools. The data collection tools chosen in this way are:

- 3 studies used in pretest and posttest
- 1 study used in the equivalence test
- Observation form and performance test used in pretest, posttest and equivalence test

In the study, a total of 6 studies were used in 3 weeks, 2 per week, based on expert opinion. One of the studies used every week is to teach and study the repetition strategy in the experimental group; In the control group, it was used to work with the ongoing method. The other study was used for pre-test and post-test scoring. The study, which was used for the pre-test in the first week of the study, was also used in the equivalence test applied to ensure that the groups that were thought to be equivalence were equal by considering the success scores and teachers' opinions. The studies used in the study were selected in line with the levels of all students and expert opinions.

In the study, an observation form was prepared by taking expert opinions in order to make pre-test and post-test scoring. This observation form consists of three evaluation dimensions: cleaning the sounds, vocalization in accordance with the rhythmic structure, and the use of basic bow techniques. A student participating in the experiment can get a maximum of 15 points in total, with a maximum of 5 points from each dimension. In the observation form, 1 means very

poor, 2 means poor, 3 means medium, 4 means good and 5 means very good. An example of the measurement form is shown in Table 2.

Table 2. Measurement and Evaluation Form

EVALUATION CRITERIA	Clean Sounds	Voiceover Suitable for Rhythmic Structure	Using Basic Spring Techniques
POINTS	*Very weak = 1 point* *Poor = 2 points* *Medium = 3 points* *Good = 4 points* *Very good = 5 points*	*Very weak = 1 point* *Poor = 2 points* *Medium = 3 points* *Good = 4 points* *Very good = 5 points*	*Very weak = 1 point* *Poor = 2 points* *Medium = 3 points* *Good = 4 points* *Very good = 5 points*

Methods Used in Data Analysis

In line with the aims, problem and sub-problems of the study, the data of the experimental studies were transferred to the computer environment and the statistical analysis of these data was made using the SPSS 25 package program. In statistical analysis, frequency, percentage, means techniques, normality tests, Mann Whitney-U test, Wilcoxon test and Kendall's W test were used. The level of significance in the tests used was determined as 95% ($p < 0.05$).

In the study, Mann Whitney-U test was applied to the data obtained from the observation form in the pretest-posttest and equivalence tests of the control and experimental groups. Thanks to this test, it was revealed whether there is a significant difference between the experimental and control groups in terms of the scores they got. The Wilcoxon test was used to measure the development of the control and experimental groups before and after the experimental process. In addition, some descriptive evaluations were made by looking at the scores obtained by the students from each study and the average of their total scores.

In order to measure the harmony between the scores given by three experts who scored the observation form used to evaluate the performance of the students in the study, the Kendall's W test was used. With this test, the level of harmony between k measurement values in the b ($b > 2$) row set is tried to be calculated. Data should be measured with a ranking scale. The W test takes a value between 0 and 1. If there is 0, no harmony is 1, it means full harmony is achieved. As the value approaches 1, the harmony between the scorers increases (Karagöz, 2010, p.18-40). The level of harmony between the 3 experts who scored in this study is as shown in Table 3.

Table 3. Expert Scoring compliance levels

Student Groups and Students	Number of observations	Average of Points	Standard deviation	Minimum Average Score	Maximum Average Score
control_1	6	8.99	2.06	6.00	11.33
control_2	6	7.88	1.64	5.00	9.33
control_3	6	11.99	0.19	11.67	12.30

Student Groups and Students	Number of observations	Average of Points	Standard deviation	Minimum Average Score	Maximum Average Score
control_4	6	8.39	1.25	7.00	10.00
control_5	6	8.72	0.74	7.33	9.33
experiment_1	6	12.00	1.50	9.67	13.67
experiment 2	6	12.77	1.42	10.67	14.33
experiment 3	6	13.94	1.67	10.67	15.00
experiment_4	6	12.00	1.71	9.33	14.33
experiment_5	6	11.11	2.04	9.00	13.67
Kendall's W value = 0.888					

According to the Kendall W test results (W = 0.888), the scores given by the scoring experts in this study are consistent with each other.

FINDINGS

Findings and comments of the study will be included in this section. In the experimental part of the study, a total of 10 students were divided into two groups as control and experimental groups. The pre-test average scores given by the experts of the three studies used in the scoring of the experimental study were analyzed with the Mann Whitney-U test to measure whether the groups that were considered to be equivalent with the individual instrument success scores and teachers' opinions were equal before (Table 4). Wilcoxon signed ranks test to compare the pre-test and post-test scores of the control group and the experimental group; Mann Whitney-U test was used to compare the pre-test and post-test scores between the control and experimental groups.

Table 4: Equivalency test

Group	Mean	S.d.	Minimum Score	Maximum Score
Control	8.47	2,0761	7	12
Experiment	9.06	0.4037	8,7	9,7
Significance (Sig)= 0.151 (p>0.05)				

As seen in Table 4, there is no statistically significant difference between the control and experimental groups in terms of pre-test scores (p> 0.05). This result shows that the control and experimental groups used in the study are equivalent.

Findings and comments on the experimental group's pretest-posttest success scores

In this part of the study, as a result of the lessons conducted with the experimental group in the form of applying repetition strategies, the Wilcoxon signed rank test was used to monitor the development of the students in this group. The resulting results are as stated in Table 5, and the interpretation of the results are as stated under the table.

Table 5. Experimental group pre-test-post-test results

Tests	N	Mean	S.d.	Min. Mean	Max. Mean	Score Increased	Score Decreased	Those whose points do not change	Significance (Shallow)
Study-1 pre-test	5	9.14	0.70	8.30	10.00	5	0	0	p=0.042*
Study-1 post-test	5	13.26	0.73	12.30	14.00				
Study-2 pre-test	5	10.14	1.20	9.00	11.70	5	0	0	p=0.039*
Study-2 post-test	5	13.88	0.82	12.70	15.00				
Study-3 pre-test	5	7.88	1.37	6.70	9.70	5	0	0	p=0.043*
Study-3 post-test	5	13.28	1.13	11.70	14.70				
Total pre-test (Study 1-2-3)	5	9.06	0.40	8.70	9.70	5	0	0	p=0.043*
Total post-test (Study 1-2-3)	5	13.47	0.74	12.57	14.60				

Notes: The test was conducted at a significance level of 0.05. * And ** symbols showing significance levels in the table mean that there is a statistical significance between groups, respectively, and no statistical significance was found between groups.

The average pre-test scores of the students in Study 1, as a result of the lessons conducted by applying iteration strategies, were from 9.14 to 13.26, from 10.14 to 13.88 in study 2, and 7.88 in study 3. and the average total average scores of the three studies increased from 9.06 to 13.47. When Table 5 is examined, it is seen that there is an increase between the pre-test and post-test scores as a result of the lessons conducted with the experimental group students by applying iteration strategies. According to the results of the Wilcoxon signed ranks test, it is seen that the difference between the students' pre-test and post-test success scores is statistically significant in all studies and in total average study scores. For this reason, it can be said that the courses conducted by applying iteration strategies with students increased the total posttest success scores of the students according to their total pretest success scores and this increase was at a high level.

According to the results, in all studies, it was determined that all students increased their posttest achievement scores according to their pretest success scores (The number of students with increased scores is 5, the number of students with decreased scores is 0, the number of students whose scores do not change is 0).

In summary, all students increased their achievement scores at the end of the courses made by applying repetition strategies. When analyzed in terms of average scores, it is seen that there is an increase in the posttest success scores of the students compared to their pretest

success scores. Since the increase in total average scores is statistically significant, it can be said that this increase is at a high level and the lessons made by applying repetition strategies have a positive and high level of effect on students' learning.

Findings and comments regarding pretest-posttest success scores of the control group

In this part of the study, as a result of the lessons conducted with the control group according to the ongoing methods, a measurement was made using the Wilcoxon signed rank test in order to monitor the development of the students in this group. The resulting results are given in Table 6, and the interpretation of the results are given under the table.

Table 6. Control group pre-test-post-test results

Tests	N	Mean	S.d.	Min. Mean	Max. Mean	Score Increased	Score Decreased	Those whose points do not change	Significance (Shallow)
Study-1 pre-test	5	8.02	2.26	6.70	12.00	2	1	2	p=0.285**
Study-1 post-test	5	8.56	2.27	6.70	12.00				
Study-2 pre-test	5	9.82	2.64	7.70	14.00	3	2	0	p=0.588**
Study-2 post-test	5	10.40	0.73	9.30	11.00				
Study-3 pre-test	5	7.86	1.41	6.30	10.00	5	0	0	p=0.043*
Study-3 post-test	5	10.28	1.59	8.70	12.70				
Total pre-test (Study 1-2-3)	5	8.47	2.07	7.00	12.00	4	1	0	p=0.080**
Total post-test (Study 1-2-3)	5	9.74	1.39	8.47	11.80				

The test was conducted at a significance level of 0.05. * And ** symbols showing significance levels in the table mean that there is a statistical significance between groups, respectively, and no statistical significance was found between groups.

In Study 1, the average pre-test scores of the students, as a result of the courses conducted according to the ongoing method, were changed from 8.02 to 8.56, from 9.82 to 10.40 in study 2, from 7.86 to 10.28 in study 3, and total scores of the three studies increased from 8.47 to 9.74. When Table 6 is examined, it is seen that there is an increase between the pre-test and post-test scores as a result of the lessons conducted with the control group students according to the ongoing method. However, according to the results of the Wilcoxon signed ranks test, it is seen that the difference between the students' pre-test and post-test success scores is

statistically significant only in study 3. For this reason, although it is observed that the courses conducted with the students according to the ongoing methods increase the total posttest success scores of the students according to the total pre-test success scores, it can be said that this increase is not statistically significant and remains at a low level.

According to the results, while the success score of 2 students in study 1 increased as a result of the lessons conducted according to the ongoing method, the score of 1 student decreased, and the score of 2 students remained unchanged. In this case, in study 2, 3 students' success score increased, 2 students decreased; In the study 3, the increase of the score of 5 students and the average of the total scores (Study-1, Study-2, Study-3) was determined as the increase of 4 students' points and the decrease of 1 student's score.

In summary, some students increased their achievement scores at the end of the course they did according to the ongoing methods, some decreased, and some did not change their scores. However, when analyzed in terms of average scores, it is seen that the posttest scores of the students increased according to their pretest scores. Since the increase in the total average scores is not statistically significant, it can be said that this increase remains at a very low level and the lessons given according to the ongoing method have a positive but low effect on students' learning.

Findings and comments on the pre-test and post-test success scores of the control and experimental groups

As a result of the analyzes made in the previous sections of the study and the lessons made by applying iteration strategies, it was determined that the students in the experimental group were more successful than the students in the control group who were teaching the lessons with the ongoing methods. In this part of the study, which investigates whether this result, which is significant within the groups, is significant between the groups, the pre-test and post-test scores of the students in the control group and the students in the experimental group will be compared with the Mann Whitney-U test and it will be examined whether there is a statistically significant difference between them.

Table 7 shows the pre-test results of the students in the control group and the students in the experimental group. Since the results shown in this table are the success scores of the groups that were divided into two as equivalent at the beginning and a statistically significant difference between the groups is not expected, it is possible to be seen as a confirmation of the previous equivalence test.

Table 7. Control-experimental group pre-test results

Studies	Number	Average	Standard Deviation	Minimum Score	Maximum Score	Significance (sig.)
Study-1 scores	10	8.51	1.74	6.70	12.00	0.115**
Study-2 scores	10	9.98	1.94	7.70	14.00	0.458**
Study-3 scores	10	7.87	1.31	6.30	10.00	0.916**
Total Average Scores	10	8.76	1.44	7.00	12.00	0.116**

Notes: The test was conducted at a significance level of 0.05. * And ** symbols showing significance levels in the table mean that there is a statistical significance between groups, respectively, and it means that no statistical significance was found between groups.

As can be seen in Table 7, no statistically significant difference was found between the control and experimental groups in terms of both the pre-test scores of the individual studies and the total average pre-test scores of the studies ($p > 0.05$). This is because, before the experimental procedure, the success scores and violin playing levels of both groups were almost the same and equal.

In the previous parts of the study, the control group, who was taught according to ongoing methods; It was determined that the posttest scores of the experimental group who were taught were higher than their pretest scores by applying iteration strategies. This difference was higher in the experimental group compared to the control group and was statistically significant. However, to determine whether this difference is due to the application of repetition strategies, an intergroup (experiment-control) significance test should be performed. Table 8 shows the results of the Mann Whitney-U test conducted to determine whether the increase in the success scores of the students in favor of the experimental group is due to the application of iteration strategies.

Table 8: Control-experimental group post-test results

Studies	Number	Average	Standard Deviation	Minimum Score	Maximum Score	Significance (sig.)
Study-1 scores	10	10.91	2.94	6.70	14.00	0.008*
Study-2 scores	10	12.14	1.97	9.30	15.00	0.009*
Study-3 scores	10	11.78	2.05	8.70	14.70	0.016*
Total Average Scores	10	11.61	2.22	8.47	14.60	0.009*

Notes: The test was conducted at a significance level of 0.05. * And ** symbols showing significance levels in the table mean that there is a statistical significance between groups, respectively, and it means that no statistical significance was found between groups.

According to Table 8, it is seen that there is a statistically significant difference between the control and experimental groups in terms of both the post-test scores of the individual studies and the total average posttest scores of the studies. ($p < 0.05$). In this case, the success scores of the students in the experimental group who participated in the lesson by applying iteration strategies; it is an indicator that there is a statistically significant difference with the success scores of the control group students who attended the course taught according to the ongoing methods.

In summary, it can be said that students who apply iteration strategies in the learning stages of violin education are more successful in learning than students who learn and work according to ongoing methods.

DISCUSSION AND CONCLUSION

A total of 10 students of the study were divided into two groups as control and experimental groups. The performances of the control and experimental group students before and after the experimental process were scored by 3 experts and these scores were averaged. The development of the control and experimental group students after the experimental process was examined by comparing the pre-test and post-test scores, and it was also investigated whether there was a statistically significant difference between the two groups post-test scores. In this context, the results of the experimental part of the study are given below:

1. When the pre-test-post-test scores of Study 1 were examined, the average scores of the students in the control group increased from 8.02 to 8.56 as a result of the experimental process.

2. When the pre-test-post-test scores of Study 2 were examined, the average scores of the students in the control group increased from 9.82 to 10.40 as a result of the experimental process.

3. When the study 3 pretest-posttest scores were examined, the average scores of the students in the control group increased from 7.86 to 10.28 as a result of the experimental process.

4. When the average of the three studies was taken, the average scores of the students in the control group increased from 8.47 to 9.74 as a result of the experimental process.

5. When Study 1 pretest-posttest scores were examined, the average scores of the students in the experimental group increased from 9.14 to 13.26 as a result of the experimental process.

6. When the study 2 pretest-posttest scores were examined, the average scores of the students in the experimental group increased from 10.14 to 13.88 as a result of the experimental process.

7. When the study 3 pretest-posttest scores were examined, the average scores of the students in the experimental group increased from 7.88 to 13.28 as a result of the experimental process.

8. When the average of the three studies was taken, the average scores of the students in the experimental group increased from 9.06 to 13.47 as a result of the experimental process.

9. When the study 1 post-test scores of the students in the experimental and control groups were compared, a statistically significant difference was found between the success scores of the experimental group students participating in the lesson conducted by applying repetition strategies, and the success scores of the control group students who participated in the lesson taught according to the ongoing methods ($p < 0.008$).

10. When the study 2 post-test scores of the students in the experimental and control groups were compared, a statistically significant difference was found between the success scores of the experimental group students participating in the lesson conducted by applying repetition strategies and the success scores of the control group students who participated in the lesson taught according to the ongoing methods ($p < 0.009$).

11. When the study 3 post-test scores of the students in the experimental and control groups were compared, a statistically significant difference was found between the success scores of the experimental group students participating in the lesson conducted by applying iteration strategies and the success scores of the control group students who participated in the lesson taught according to the ongoing methods ($p < 0.016$).

12. When the average posttest scores of the students in the experimental and control groups from three studies were compared, a statistically significant difference was found between the success scores of the experimental group students who participated in the lesson conducted by applying iteration strategies and the success scores of the control group students who participated in the lesson taught according to the ongoing methods ($p < 0.009$).

According to the pre-test and post-test scores, both the control group students and the experimental group students increased their post-test scores according to their pre-test scores. However, while this increase remained at a low level in the control group students who attended

the lessons taught according to the ongoing methods; this increase reached a significant level in the experimental group students who attended the lessons in which the iteration strategies were applied. This result is also supported by statistical analysis. There was no statistically significant difference between the pre-test and post-test scores of the control group students ($p > 0.05$), but a statistically significant difference was found between the experimental group students' pre-test and post-test scores ($p < 0.05$).

By applying iteration strategies, it was determined that the post-test scores of the experimental group who were taught were higher than the pre-test scores and this difference was statistically significant. In order to determine whether this difference is due to the application of iteration strategies, the intergroup (experiment-control) significance test was performed, and a statistically significant difference was found between the control and experimental group post-test scores ($p < 0.05$).

In summary, since this increase in average scores is statistically significant, it can be said that the courses conducted by applying iteration strategies have a positive and high level of effect on the learning of undergraduate violin students who study in the Music Education Departments of the Education Faculties of the universities, according to the courses made according to the ongoing methods.

Suggestions

Some solution suggestions were tried to be made based on the results of the study, which are;

1. According to the results of the study, it was determined that the use of iteration strategies in violin education has positive effects on students' achievement.

2. Violin educators are required to explain the positive effect of iteration strategies on violin learning, to make them understand the importance, and to make suggestions for them to study.

3. It is thought that more importance and emphasis should be given to the teaching of this strategy to enable students to use iteration strategies more effectively in violin education.

4. It is thought that it would be beneficial to develop an education program that encourages the use of iteration strategies in violin education.

5. It is thought that information about the use of iteration strategies should be included in violin education textbooks.

6. It is thought that it would be useful for violin educators to inform violin students about the effective use of iteration strategies applicable in violin education in their personal studies.

7. To enable violin educators to use iteration strategies more effectively in their lessons, seminars can be organized on the use of iteration strategies in violin education.

8. In new studies, it will be appropriate to develop the data collection tool and to include other instruments and all learning strategies.

9. Positive results were obtained as a result of conducting the lessons of the study in 15 minutes. It is thought that the efficiency to be obtained will increase considerably if the future studies are carried out in a larger period and in a more comprehensive manner.

10. In future studies, it is thought that increasing the number of students in the experimental study group and thus making parametric tests can give healthier results.

11. It is thought that performing this study conducted in violin education on other instruments, especially other string instruments, in future studies will give more comprehensive results.

12. It is thought that the transformation of this study, which investigates the effect of iteration strategy on learning in violin education, into a research covering all learning strategies in future studies will provide more reliable information.

Limitations of the study

The limitations of this study are as follows:

1. Only with violin undergraduate students from Ağrı İbrahim Çeçen University, Faculty of Education, Department of Fine Arts Education, Department of Music Education, so that the experimental practice, which lasts for three weeks, can be carried out in a healthy way,

2. With violin training, which is one of the sub-aspects of instrument training,

3. With the dimension of playing etude in violin education,

4. With repetition strategies from learning strategies,

5. The studies given to the experimental and control groups for their work, in terms of technical content, with detailing and legato spring techniques,

6. The exercises given to the experimental and control groups for their work in C major, A minor and Re major tones,

7. The studies given to the experimental and control groups for their work with the 1st position,

8. With three observing instructors,

9. Student performance evaluations with the degrees of clarity of sounds, vocalization in accordance with rhythmic structure and use of basic bow techniques.

10. Reachable resources, related research and related documents related to the subject of the research,

11. Limited by the statistical methods used.

In order to conduct the study, necessary permissions were obtained from the Directorate of Gazi University Educational Sciences Institute with a letter dated 23.12.2019 and numbered 80287700-044-162937.

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KATKI ORANI ***CONTRIBUTION RATE***	**AÇIKLAMA** ***EXPLANATION***	**KATKIDA BULUNANLAR** ***CONTRIBUTORS***
Fikir ve Kavramsal Örgü *Idea or Notion*	Araştırma hipotezini veya fikrini oluşturmak *Form the research hypothesis or idea*	Büşra İnci GÜMÜŞ Gamze Elif TANINMIŞ
Tasarım *Design*	Yöntem ve araştırma desenini tasarlamak *To design the method and research design.*	Büşra İnci GÜMÜŞ Gamze Elif TANINMIŞ
Literatür Tarama *Literature Review*	Çalışma için gerekli literatürü taramak *Review the literature required for the study*	Büşra İnci GÜMÜŞ Gamze Elif TANINMIŞ
Veri Toplama ve İşleme *Data Collecting and Processing*	Verileri toplamak, düzenlemek ve raporlaştırmak *Collecting, organizing and reporting data*	Büşra İnci GÜMÜŞ Gamze Elif TANINMIŞ
Tartışma ve Yorum *Discussion and Commentary*	Elde edilen bulguların değerlendirilmesi *Evaluation of the obtained finding*	Büşra İnci GÜMÜŞ Gamze Elif TANINMIŞ

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Etik Kurul Beyanı/ *Statement of Ethics Committee*

Bu araştırma, Gazi Üniversitesi Etik Kurulunun 23.12.2019 tarihli ve 80287700-044-162937 sayılı kararı ile yürütülmüştür.

Gazi University Institute of Educational Sciences, ethics committee approval was obtained with the letter dated 23.12.2019 and numbered 80287700-044-162937.