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Abstract

In this research, it was aimed to investigate the effect of online 5E instructional model on the 6th grade music lesson of secondary school in terms of students' course achievement, attitude and retention. The research had a pretest-posttest control group, which is one of the semi-experimental models. The research was carried out on 40 students studying in a private secondary school in Turkey in accordance with the purpose of the study. A teaching program based on the online 5E instructional model was developed for the experimental group. For this purpose, an 8-week instruction program was designed. Applications were carried out simultaneously in the experimental and control groups. In the research, secondary school 6th grade music lesson achievement test and attitude scale were used as data collection tools. Mann Whitney U test was applied to compare the scores of the achievement test, attitude scale and retention test of the groups. Significant differences were found between the music lesson posttest and attitude scores of the experimental group that was taught online according to the constructivist 5E model and the control group, which was taught using the traditional teaching method.

Introduction

In the current information age, learners are no longer perceived as passive recipients of information, and are more inclined to question what they have been taught than in the past. Therefore, the way knowledge is presented must be effective for students to understand why they need certain skills (Cuccio-Schirripa & Steiner, 2000; Fredericks & Alexander, 2000). For the student-centred learning, effective methods must be used in order to keep up the student with his or her environment. This theory is based on the understanding of the reconstruction of knowledge. Basically, the learner constructs the knowledge in a meaningful way and turns it into practice. Constructivism, which emerged as a theory about how learners process information, what processes they employ, and what they learn has evolved over time into an approach about how learners construct knowledge. In constructivism, it is important not to take, memorize, and repeat the knowledge, but to make it meaningful, transfer and restructure it. According to this theory, learning is a versatile and dynamic internal process that occurs in the mind of the individual. The individual is not a passive receiver of the stimuli from the environment, but is in a position to select, assimilate, accommodate and transform them into behavior (Karagiorgi & Symeou, 2005; Phurikultong & Tuntiwongwanich, 2021).

According to Driscoll (2000), constructivism learning theory is an epistemology that increases students' logical and conceptual development. The underlying concept of constructivist learning theory is the role played by experiences or connections with the adjacent atmosphere in student education. Constructivist learning theory argues that individuals produce knowledge and create meaning based on their experiences. Two of the key concepts in constructivist learning theory, which constitute the construction of an individual's new knowledge, are accommodation and assimilation. Assimilation causes the individual to incorporate new experiences into old ones. This causes the individual to develop new perspectives, rethink what was once misunderstood and evaluate what is important, and ultimately change their perception. Accommodation is reframing the world and new experiences according to the mental capacity already present.

The perceived benefits of constructivist learning can be particularly valuable when it comes to teaching complex skills such as problem solving or critical thinking skills (Arends, 2012; Bada, 2015; Baeten, Kyndt & Struyven, 2010; McQueen & McMillan, 2020; Tam, 2000). In this approach, learners think independently (cognitive), create their own knowledge, use independent thinking processes. Instead of taking the information as it is, the learner is expected to ask questions, understand and make sense of it (Fosnot, 2005). If we accept that constructivist theory is the best way to describe learning, then it is necessary to create learning environments that directly expose students to the material being studied in order to foster student learning because students make sense of it only by directly experiencing the world. This leads to the view that constructivist learning must take place in an appropriate constructivist learning environment. One of the basic principles of constructivist learning is that learning should be an active process (Bada; 2015; Tam, 2000). Therefore, any constructivist learning environment should provide opportunities for active learning.

In music education, constructivist learning is effective and meaningful when it supports students' learning through their experiences (Brennan, 2013). In this sense, it is important for students to be able to transform their ability to define and maintain learning goals into practice. In this way, they can take the initiative in their own development, adapt to teaching process and renew themselves (Kaleli, 2018; Kaleli & Nayir, 2020; Saral, 2019). Music lessons, by their nature, are active and based on their practical skills, put the student in the center that the achievements of the lesson will be realized more easily while they impose much more duties and responsibilities on the teacher in terms of practices that will keep the student in the center. Especially in teaching musical concepts and musical technical knowledge, the teacher is at the center. Imitation, memorization and teacher role-model structures can be employed when necessary. However, the music teacher cannot leave the student alone with the activities. A class that sings en masse can give the appearance of 'in action', 'hands-on' or 'by doing'. However, this image does not guarantee that the activities will actually generate the gains. While acting with the responsibility of making the activities work, the teacher should also determine whether the achievements have occurred. Therefore, students should gain self-regulation skills in overcoming the problems they encounter (Aksu, 2015; Kaleli, 2018).

Many teaching models, methods and techniques can be used in terms of employing the constructivist approach in schools. Of these, the 5E Model can be used effectively in many courses (Kozcu Cakir, Guven, & Celik, 2021; McQueen & McMillan, 2020; Supena, Darmuki & Hariyadi, 2021; Polgampala, Shen & Huang, 2016;

Borah, 2020; Siddiqui, 2016; Turan & Matteson, 2021). 5E is an instructional model based on a constructivist approach to learning. This model basically aims to help students develop new ideas on their existing ideas and to implement rich learning experiences accordingly (Brooks & Brooks, 2007; Ross & Cartier, 2015; Selley, 1999). The 5E instructional model can be used with students of all ages, including adults, in all branches, in general, and in music education, in particular.

Each of the 5Es describes a phase of learning which begins with the letter "E": Engage, Explore, Explain, Elaborate and Evaluate. The 5Es enable students and teachers to experience common activities, use and construct previous knowledge and experiences, construct meaning, and continuously evaluate their understanding of an event, phenomenon or concept (Çelebi, 2006; Maier & Marek, 2006). The stages of 5E are as follows:

Engage: This is the starting phase. Students come to the classroom with a certain level of prior knowledge. This information may or may not be compatible with the concepts presented at this stage. The engage phase allows teachers to learn whether students have knowledge about the subject or what they think about the subject and concepts they will develop. It also gives each student the opportunity to consider what their current ideas and thoughts are on the subject. The activities to be carried out at this stage should attract the attention of students and arouse curiosity about the learning outcomes of the course (Çelebi, 2006; Kaleli, 2018; Maier & Marek, 2006). At this stage, it is important for students to interact with the stimuli of the music lesson. For this purpose, it is aimed to determine the current understanding and skills of students about music lesson achievements. Students are encouraged and challenged to ask their own questions about the musical process. Students are informed about the goals of the music lesson, connections are established between their past and present learning experiences (Kaleli, 2018; Kaleli & Nayir, 2020; Sarah, 2019).

Explore: In this phase students explore their environment with a common base of experience by defining and developing concepts, processes and skills. At this stage, students actively explore their environment or manipulate materials (BSCS, 2009; Kaleli & Nayir, 2020). In the explore phase of the model, students explore the nature of the artistic content. Students examine musical examples and produce their own questions. This phase provides a shared set of experiences from which students can begin to form their own understanding. Students perform small group activities. They interact with musical materials and ideas. They think in different ways to perform a work or an activity. They define, record, compare, and share their ideas and experiences related to the activity performed (Campbell, 2006; Kaleli, 2018; Kaleli & Nayir, 2020; Saral, 2019).

Explain: This stage of the 5E helps students by explaining the concepts they've discovered. They offer opportunities to articulate their conceptual understanding or demonstrate new skills or behavior. This phase also provides opportunities for teachers to introduce scientific terms, definitions, and explanations for concepts, processes, skills, or behavior. In this respect, it is the stage in which teacher guidance takes place the most in the model. At this stage, concepts and ideas about the potential artistic problem are explained (in the teacher's own words). The music teacher associates his thoughts and ideas with what the students tell. In the relevant learning outcome, the music terminology is clarified (Kaleli, 2018; Kaleli & Nayir, 2020; NSES, 1996; Saral, 2019).

Elaborate: This phase of the 5E broadens students' conceptual understanding and allows them to practice skills and behavior (BSCS, 2009). Through new experiences, students develop a deeper and broader understanding of key concepts, rules or principles, learn more about their interests and develop their skills. For this reason, a lot of practice and transfer activities are included at this stage. The course content and learning outcomes learned are adapted to new situations at this stage. Students make conceptual connections between their new and old experiences, understand aspects of artistic skill and scientific terminology at this point. They combine examples, ideas, perform works, solve problems and apply the outcomes they have achieved to new situations. They use terms and explanations related to the work when appropriate. They deepen the meanings of musical rules and processes (Campell, 2006; Kaleli, 2018; Kaleli & Nayir, 2020; Saral, 2019).

Evaluate: This phase of the 5E encourages students to evaluate their understanding and abilities, and allows teachers to assess students' understanding of key concepts and skill development. At this stage, multidimensional evaluation and feedback processes come into play (Çelebi, 2006). This phase provides a “snapshot” of how far students are from where they started. It usually begins with an assessment of students' ability to understand concepts or rules and use skills. Evaluation can be done at all stages of 5E. In addition, it provides an assessment that demonstrates what students know and what they can do. At this stage, what music achievements mean and the the level of the students in terms of development is evaluated by comparing their existing understanding with their prior knowledge, and questions are asked in order for the students to obtain deeper achievement in music lessons (Kaleli, 2018; Kaleli & Nayir, 2020; Saral, 2019).

Arts education is a discipline aimed at developing talent and innovation skills in primary and secondary schools in general. Online learning for arts education is also important because it mediates the transfer of certain content through all kinds of information devices (Kara, 2020; Wang et al, 2021; Yang, 2000; Kara, 2021; Kaleli, 2021). However, it requires further research on how to perform activities in an online learning environment due to the practical necessity of music education. In addition, developing and implementing successful teaching requires understanding how technology relates to pedagogy and content (Koehler et al., 2007; Koyuncuoğlu, 2021; Öner & Yaman, 2020). Although the factors affecting the process of integrating educational technologies are multidimensional, the planning and implementation of teaching methods related to the use of technology in music education is an important source of problems (Kibici & Kızılkaya, 2021; Rehmat & Bailey, 2014; Kara, 2020).

According to Anderson (2008) and Bogdanović (2012), online learning is a broad concept that defines an organized teaching technique in which students are provided the opportunity to engage in self-teaching or facilitating communication in various times and places. The student is separated from the instructor by technology (e.g. a computer) and can communicate in a variety of ways (e.g. posted materials, TV, Internet). Bogdanović (2012) argues that the importance of distance education has increased and it is irreversible. When teaching and learning activities are primarily obtained through the internet, it is called online learning or e-learning (Bates, 2019; Simonson, Zvacek & Smaldino, 2019; Watson, 2005). Online learning is founded on the principle of using information technology to improve the quality of education. Online learning is now widely used in undergraduate education, sometimes in conjunction with more traditional learning methods. While

online learning provides enhanced convenience and accessibility to information regardless of location or time, it also has limitations such as difficulties such as internet access, poor internet connection quality, and limited digital capabilities of participants (Howlett et al., 2009; Koyuncuoğlu, 2021; Sadeghi, Sedaghat & Ahmadi, 2014; Niebuhr et al, 2014, Bączek et al, 2021; Yıldız et al, 2004).

Although many studies have found that students have positive attitudes towards online learning (Al-Zahrani, 2015; Teo, 2009; Alshwaier, Youssef & Emam, 2012; Lis & Paula, 2015), some studies have also revealed that students face difficulties (Saekow & Samson, 2011; Tashkandi & Al-Jabri, 2015). These barriers can hinder student participation in online learning and lead to negative attitudes (Hartnett, St George & Dron, 2011; Poellhuber, Chomienne & Karsenti, 2008). Online learning can take place in both synchronous and asynchronous modes. The former requires that learning takes place at a fixed location at a fixed time, similar to traditional offline learning while the latter is relatively flexible in timing, allowing for self-paced learning and the exchange of resources over a network.

Regardless of the mode, online learning has advantages over face-to-face learning, such as balancing educational resources and development, reducing costs, and promoting equity in education (Johnson & Aragon, 2003; Khan, 1998). Compared to traditional learning, online learning is fraught with many factors influencing online learning engagement that requires students to be more disciplined (Huppert, 2009; Montgomerie et al., 2016). Online education programs can change teachers' understanding of teaching. In other words, even a short online training course can affect teachers' understanding of various situations, especially the new teachers who may lack teaching experience and skills (Vilppu et al., 2019). This not only places more responsibilities on online students, but also creates more opportunities and possibilities for teaching practice and innovation.

The aim of online art education is to realize the learning environment or learning content according to the individual needs and course requirements of the students on the basis of the curriculum. However, in terms of art education, it is seen that today's e-learning systems are insufficient in terms of individual differences, individual learning and realization of the goals of the music lesson (Doğru, 2020; Kaleli, 2020, 2021; Kara, 2021). Existing e-learning systems place great responsibility on the student for learning. Teachings offered with e-learning models can often fail due to the difficulties of realizing music lessons on online platforms, the fact that individuals have different technological competencies, learning styles, learning abilities, cognitive entry behaviour and learning objectives related to the lesson.

In addition, in areas where there is insufficient preparation and electronic resources, students receiving e-learning lessons may fail to realize learning by using e-learning systems (Mendes & Martinez, 2002). With the rapid proliferation of online courses in schools in recent years, more online music education programs are likely to emerge in the near future, raising the question of what impact this new development will have. Can online music education really be of the same quality as a traditional face-to-face education? How is it possible to run these online and constructivist music programs effectively, especially at the secondary school level? In this context, it is thought that the effective implementation of constructivist learning activities with online

technologies will be effective in terms of secondary school students' achievements and attitudes in music lessons.

In this study, the effect of online teaching practices based on the constructivist 5E Model on secondary school 6th grade students' attitudes towards and achievement in music lessons was investigated. For this purpose, answers to the following questions were sought:

1. Is there a significant difference between music achievement of the students in the experimental group who received online instruction based on the constructivist 5E Model and the students in the control group who received traditional instruction in secondary school 6th grade music lessons?
2. Is there a significant difference between the students' attitudes towards music in the experimental group, who received online instruction based on the constructivist 5E Model and the students' attitudes towards music in the control group, who received traditional teaching, in secondary school 6th grade music lessons?
3. Is there a significant difference between the retention mean scores of the experimental group, who received constructivist 5E Model-based online instruction, and the control group, who received traditional instruction in secondary school 6th grade music lessons?

Method

The effects of the constructivist online 5E method on the students' music achievement, attitude and retention mean scores in the 6th grade music lesson in secondary school were examined in the research. The study used the pretest-posttest control group quasi-experimental design. For this purpose, the study is similar to the experimental design in terms of the operations, experimental units, and measurement of dependent variables, but differs from the experimental design in that the experimental and control groups cannot be determined randomly (Morgan & Winship, 2007). Since it is not possible to randomly assign students to groups in music lessons at the school where the research was conducted, the quasi-experimental design was used instead of the experimental design. Thus, 6th grade music lesson was conducted through constructivist online 5E instruction in the experimental group, and the traditional music teaching program was used in the control group.

Before the research, the 6th grade music achievement test and the attitude towards music scale were applied to the experimental and control groups as a pretest. The same measurement tools were applied to both groups as a posttest. Two weeks after the posttest, a music achievement test was applied to both groups as a retention test. During the experimental stage of the research, the phases of the 5E model were carried out online in relation to the 6th grade music lesson in the experimental group, which are engage, explore, explain, elaborate and evaluate. Thus, in the engage phase on the online platform, students' curiosity and interest in the relevant achievements of the music lesson were aroused.

In the explore phase, students were provided to think in different ways to perform the musical works and related activities and to compare them with their classmates. In the explain phase, the music lesson teacher associated

his own thoughts, determination and ideas with the students' narratives and discourses, and enabled the students to define the rules of music. In the elaborate phase, the students worked individually and in groups on different sample musical works and pieces on the online platform. In the evaluate phase, students evaluated the activities in the lesson on the basis of self-assessment, group evaluation and online open-ended questions.

Participants

The research was carried out with students of a secondary school. Factors such as the permission of the administrators and parents, the willingness of the teachers and administrators in the school for the research, the suitability of the research groups and school environment for the application were effective in the selection of the participants from this school. Two equivalent 6th grade classes for the experimental and control groups of the research were determined. These two classes were then assigned as the experimental and control groups by lot. There were 11 females and 9 males in the experimental group and 10 females and 10 males in the control group. Thus, there were a total of 40 secondary school 6th grade students in the experimental and control groups.

Data Collection Tools

6th Grade Music Achievement Scale

An achievement scale based on the secondary school Music Lesson Curriculum developed by the Ministry of National Education (2021) was used to determine to what extent secondary school students achieve music within the scope of the research. There are 25 items in the 6th grade music achievement scale. While the scales were prepared, the achievements in the music lesson curriculum were taken into account, and an observation question measuring each outcome was included. A 5-point rating system was used in scoring the scales designed as an observation form. A general score between 1 and 5 is obtained by dividing the scores obtained from the scale by the number of items. Scores of 5 and close to 5 indicate that the outcomes of the music lesson have been achieved to a large extent. In this study, the alpha coefficient calculated for the 6th grade music achievement scale was found as 0.90.

Attitudes towards Music Scale

The attitudes towards secondary school music lesson scale developed by Varış and Cesur (2014) was used to determine the attitudes of the secondary school students towards music lesson. The measurement tool, which is a Likert type, consists of 18 items. The measurement tool has a single-factor structure. A general score between 1 and 5 is obtained by dividing the scores obtained from the scale by the number of items. Scores of 5 and close to 5 indicate that the attitudes towards the music lesson are positive. In this study, alpha coefficient was used to determine the reliability of the measurement tool. The alpha coefficient of the one-dimensional scale was found as 0.86.

Data Analysis

Since middle school students' attitudes towards music lesson and their achievement scores violated the assumptions of normal distribution, Mann Whitney U test technique, one of the non-parametric statistical techniques, was used in the analysis of the data.

Results

Table 1 shows the results of the Mann Whitney U test performed on the pretest music lesson achievement levels of the experimental group, who received online instruction based on the constructivist 5E learning activities, and the control group, who received traditional instruction based on the current curriculum. According to the analysis, a Z value of 0.804 was found between the pretest mean scores of the two groups. The results showed that there was no significant difference between the pretest music achievement scores of the experimental and control groups. Before the experimental procedures of the research, the students in the experimental and control groups were equally distributed in terms of music achievement.

Table 1. Mann Whitney U Analysis between Pretest Attitude Scores of Students in Experimental and Control Groups

Group	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	p
Experimental	20	19.03	380.50	170.500	-.804	.422
Control	20	21.98	439.50			

Table 2 shows the results of the analysis performed on the attitude towards music lessons scores of the students in the experimental and control group at the beginning of the research. The Z value was found as 1.02 between the score rankings of the two groups. This value shows that there was no significant difference between the pretest attitude scores of the groups. It can be said that the attitudes of students towards music lesson in both groups show an equal and moderate distribution at the beginning of the research.

Table 2. Mann Whitney U Analysis of Students' Pretest Achievement Scores in the Experimental and Control Groups

Group	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	p
Experimental	20	18.63	372.50	162.500	-1.021	.307
Control	20	22.38	447.50			

Table 3 shows the results of the Mann Whitney U test performed on the posttest achievement scores of the students in the experimental group, receiving online constructivist 5E learning activities and the students in the control group, receiving activities based on the current music teaching curriculum. According to the analysis results, the posttest mean score of the two groups was found as 2.32 Z value. Thus, there was a significant

difference between the posttest music achievement scores of the experimental and control groups. Considering the mean scores of the groups, the experimental group students who performed constructivist 5E learning activities online achieved higher in music lesson posttest than their peers in the control group.

Table 3. Mann-Whitney U Analysis of Students' Posttest Achievement Scores in the Experimental and Control Groups

Group	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	p
Experimental	20	24.70	494.00	116.000	-2.326	.020
Control	20	16.30	326.00			

Table 4 shows the results of the posttest attitude towards music lesson scale applied to both groups as a result of the experimental study. In the posttest attitude scores, the mean value of the students in the experimental group was 28.30; the mean value of the students in the control group was 12.70. The mean of the students in the experimental group revealed a high and significant difference ($Z=4.23$; $p<0.05$). The reflective curriculum applied in the experimental group caused a significant difference in the students' attitudes towards music lesson compared to the method applied in the control group. Attitude towards music lesson scores of both groups are shown in Figure 1.

Table 4. Mann Whitney U Analysis of the Posttest Attitude Scores of the Students in the Experimental and Control Groups

Group	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	p
Experimental	20	28.30	566.00	44.000	-4.230	.000
Control	20	12.70	254.00			

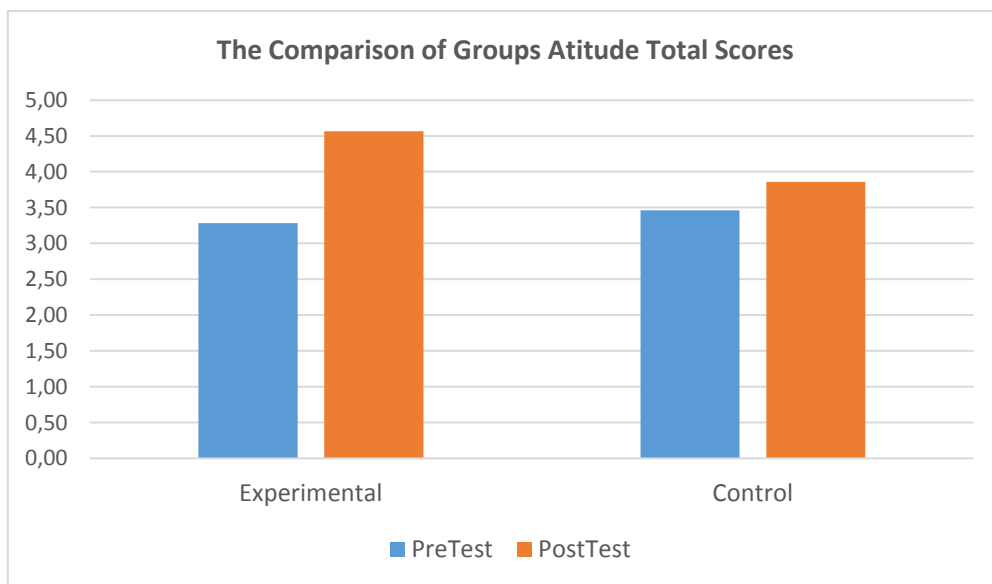


Figure 1. The Comparison of Groups Attitude Total Scores

Table 5 shows the results of the Mann Whitney U test performed on the retention test scores of the students in the experimental group, to whom constructivist 5E learning activities were applied online, and of the control group students, who received traditional instruction. According to the analysis, a Z value of 1.53 was found between the retention test score values of the two groups. This finding shows that no significant difference was found between the retention test scores of the experimental and control groups. Considering the mean values of the groups, the difference is not significant although the students in the experimental group who were given reflective thinking activities achieved higher retention levels than their peers in the control group. The pretest, posttest and retention test scores of the students in the experimental and control groups are shown in Figure 2.

Table 5. Mann Whitney U Analysis of Students' Retention Test Scores in the Experimental and Control Groups

	Group	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	P
Retention	Experimental	20	23.28	465.50	144.500	-1.535	.125
	Control	20	17.73	354.50			

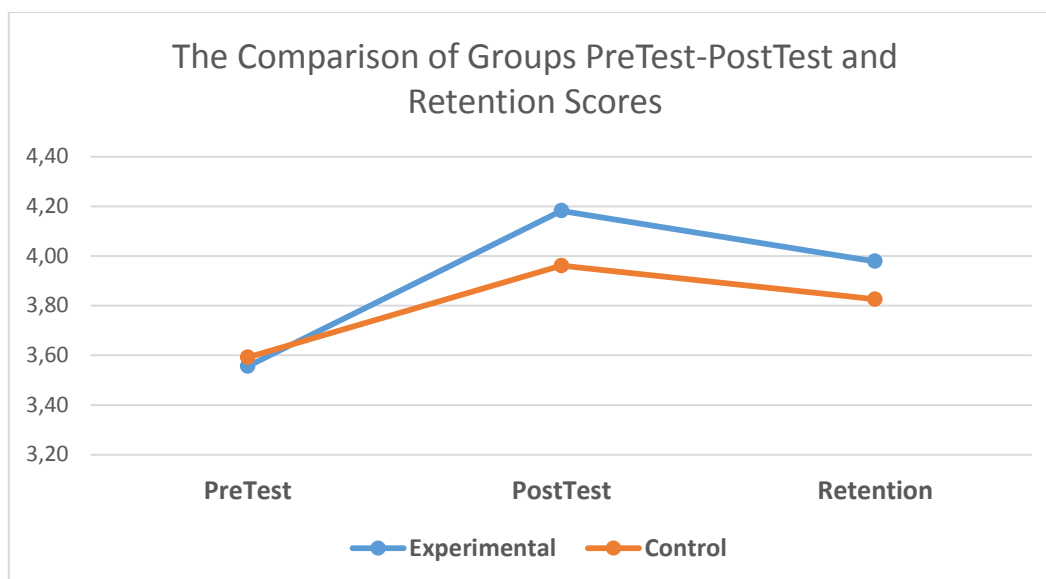


Figure 2. The Comparison of Groups Pre-Test, Post-Test and Retention Scores

Discussion

The students in the experimental group, in which online 5E method was applied in the music lesson, had higher achievements in music lesson compared to their peers in the control group, in which traditional teaching was applied. While the students in the experimental group were learning with online interaction tools in the 5E model process according to the constructivist learning principles, they also achieved high musical gains. It has been observed that online music education, which will be carried out on the basis of a teaching model in music lessons, is effective in students' cognitive and psychomotor learning products. These findings (Akyurek, 2020; Kaleli, 2018; Kaleli, 2021; Karahan, 2016; Keast, 2009; Koutsoupidou, 2014) are similar to the findings of the studies carried out. In this respect, if the individual characteristics of the students are taken into account in the

learning-teaching processes of the music lesson and all activities are supported by technology, it can be ensured that the students are more active in their lessons and achieve higher learning. According to Aksu (2015), in music lessons with constructivist approach applications, students realized the gains of the lesson more easily based on their active and practical skills. In addition, according to Sarıkaya (2021), online teaching practices about practices that will keep the student in the center have increased the interaction with the students by reducing the lesson load of the music teacher. In this context, online constructivist 5E activities have made significant contributions to the learning of students, especially in teaching musical concepts and musical technical knowledge. In both online education and constructivist learning models, activities that allow students to take more responsibility and be more active in the learning process are generally included (Jonassen, Davidson, Collins, Campbell, & Haag, 1995). In this respect, the students in the experimental group, who controlled their own learning initiative, achieved high performance. In the online constructivist education environment, the experimental group students were not passive like in the traditional education environment, on the contrary, they were more active and assumed more responsibility in the learning process. This situation not only facilitated their learning, but also enabled them to benefit from the technological opportunities at the maximum level at the point of realizing the gains of the music lesson.

One of the findings of the research is about the students' attitudes towards music lessons in the experimental group, where online 5E method was applied, and the students in the control group, where the traditional teaching method was applied. The students who received online constructivist 5E method exhibited higher levels of attitudes towards music lessons compared to their peers in the control group, who received traditional teaching. These findings corroborate the findings of the studies conducted by Güneş and Yalın (2017) and Kaleli et al. (2008). While the constructivist 5E model enabled students to make sense of the activities in the music lesson, online teaching applications also activated the social interaction process with lots of stimuli. Thus, learning activities with these two methods in experimental practice came together in a versatile and rich environment. All these rich activities have increased students' positive attitudes towards music lessons. When the findings of the research are evaluated as a whole, in music education based on online constructivist method, teaching methods, learning environment, measurement-evaluation techniques are arranged in online platforms by considering the preferences, interests, needs, learning experiences and individual differences of each student. In music lesson learning environments organized with rich learning activities, technical opportunities provided by online platforms, students actively took responsibility in learning process and tried to achieve more in the lesson by applying a systematic model (5E). All these contributed to higher achievement, retention and positive affective learning outcomes in secondary school music lessons.

Conclusion

As a general result of this research, it can be argued that constructivist 5E-based practices carried out on online platforms were more effective on achievement and attitudes in learning music. There were significant differences in favor of the experimental group between the students in the experimental and the control group in terms of music achievement and attitudes towards music lesson. Students in the constructivist 5E-based learning group achieved higher gains in establishing processes that are structured to create positive purpose commitment,

sharing goals with technological support, enabling the group to learn along with their own learning, explaining information on musical notes, giving samples by playing and singing, doing the exercises on the worksheet together and independently, in monitoring-examining the sample knowledge and skills, making a connection between previous music information and newly-learned music information, taking exams and interacting effectively in each lesson as a result of using long-term learning strategies in line with the goals of the music lesson. At the same time, it can be concluded that in the constructivist 5E-based learning carried out on online platforms in music education, many components that affect the motivation of the student and lead to their success and failure are noticed, and therefore attitudes of the students towards music lesson increase in a positive way. However, there is a need for more research on the constructivist 5E-based teaching, success, attitude, motivation and participatory learning, which is carried out on online platforms at different levels and grades in music education. In addition, considering the flexibility and diversity of constructivist 5E-based learning carried out on online platforms, it is recommended to organize music lesson curricula in line with this approach.

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