Education and Science

Original Article

Vol 47 (2022) No 209 111-131

A Model Proposal for the Use of *Hicaz Saz Semais* in Cello Training *

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Abstract

This research study was carried out to propose a model for the use of *Hicaz saz semais* in cello training and to determine the effectiveness of the proposed model in addressing the difficulties faced by cello students in performing *Hicaz saz semais*. In this study, two methods were simultaneously used, namely, the survey model (descriptive) and the experimental model (empirical). The study group of the study consists of eight cello students. Yusuf Pasha's *Hicaz Humayun Saz Semai* was adapted to the cello to be used in this study and performed by the students in the study group, and the challenges the students encountered in performing this *saz semai* were identified. A six-part model proposal has been created, and this proposal includes exercises to address the difficulties faced by students. The exercises were carried out with the students in the experimental group for a period of six weeks. The "pre-test–post-test control group design" was applied in the experimental phase of the study, and the obtained data were analysed using the t-test, a parametric test. The t-test results showed a statistically significant difference between the post-test scores of the students in favour of the experimental group. It has been found in this study that the proposed model was effective in eliminating the challenges faced by cello students in performing the *Hicaz Humayun Saz Semai*.

Keywords

Instrument training
Cello
Hicaz makam
Saz semai
Model proposal

Article Info

Received: 04.14.2021
Accepted: 01.18.2022
Online Published: 02.04.2022

DOI: 10.15390/EB.2022.10805

* This article is derived from Osman Önder's PhD dissertation entitled "A Suggested Model as to the Use of Hicaz Saz Semai in Violoncello Training in Music Education Departments", conducted under the supervision of Gökay Yıldız and R. Erol Demirbatır.

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Introduction

As a result of the national movements that emerged in the late 19th century, the use of folk elements in music became prevalent in many countries. In countries such as erstwhile Czechoslovakia, Hungary, Poland, and Russia, composers produced works inspired by the national folk tunes of their respective countries (İlyasoğlu, 1999). In these countries, folk music was integrated into musical education and instrument training, exemplified by Bartok's Mikrokosmos (Kasap, 2005). This way, composers were able to have a substantial presence in the sphere of international music and art thanks to their unique approach to music and art based on folk elements.

A similar approach began to spread throughout Turkey upon the declaration of the Republic. Ataturk's views on music as a part of education, culture and art policies formed the basis of the musical revolution that would take place in the future, and this revolution constituted the foundation whereupon national music was built. According to Uçan (1994), "The underlying idea of the musical revolution envisaged by the great leader Ataturk is the modernization–universalization of music while preserving and building upon its national essence" (p. 51). Accordingly, a number of steps were taken as part of the musical revolution, among which are the compilation of Turkish folk songs with contributions by Bela Bartok, who was an important figure in the development of Hungarian music as well; the production of compositions with Turkish folk elements by composers known as the Turkish Five; and opening institutions, such as the Music Teaching School (1924) and the Ankara State Conservatory (1936) (Uçan, 1994). Since the opening of the Music Teaching School, commissioned to train music teachers, many music education departments have been opened under education faculties of universities to that end. Today, the teacher training of prospective music teachers is carried out in the music education departments of fine arts faculties. In these institutions, instrument training is a sub-dimension of music education training, and cello training is a sub-dimension of instrument training. It can be maintained that considering the foundations of the intended music revolution, it is necessary to continue providing cello training in these institutions in line with the approach that instrument training should be provided compatibly with Turkish music (Günay & Uçan, 1980; Nacakcı, 2007) and the principles of near-to-far and local-to-global (Günay & Uçan, 1980). Accordingly, the point of departure of this study is the idea that *saz semai*, a type of folk music deep-rooted in history, can be utilised in cello training. *Hicaz semais*, a type of *saz semai*, was chosen as the study subject because there are more *saz semai* works in the *Hicaz makam* than there are in others.

A literature review showed that the number of studies carried out on the use of *saz* works or *saz semais* in cello training is very less. In fine arts high schools, the students of which are potential students of music education departments of universities, the course books used for cello training include several adaptations of *saz* works, including *saz semais*, in different *makam*s (Aysu, 2018a, 2018b; Cansu, Aysu, Kiremitçi, & Kaçar, 2019; Şahin, Aysu, & Kaçar, 2018). However, in these course books, mostly *Hicaz* peshrev and *saz semais* in *makam*s other than *Hicaz* are featured. In addition, no course book or note compilation that featured cello adaptations of *Hicaz saz semais* or *saz* works was found. It has been seen that the sources of traditional music adaptations for the cello are mostly books containing Turkish folk melodies (Çiftçibaşı, 2021; Çilden, 2008; Demirci, 2019; Kumtepe, 2021).

In a study where lecturer opinions on the use of *Hicaz saz semais* in cello training were presented, Önder (2020) determined that more than half of the interviewed cello instructors do not use *saz* works in cello training. These lecturers stated that they do not make use of *saz* works in cello training because of the lack of notes belonging to *saz* works adapted for the cello, their lack of training in traditional Turkish art music, and the students' inadequate readiness to perform *saz* works (Önder, 2020).

There are studies in the literature on *makamic* or *aksak*-rhythm works for various instruments (Aydıner, 2008; Değirmencioğlu, 2011; Demirci, 2013b; Kaya, 2010; Köroğlu & Sevinç, 2017; Lehimler, 2014; Öner, 2011; Özdek, 2013; Özkan Köse, 2019; Topaloğlu, 2019). However, no comprehensive study that considers the form, *usul* and *makam* elements of *saz semais*, similar to the model proposed in this study, has been found on the use of *Hicaz saz semais*, and even more broadly, *saz semais* in all other *makam*s, in instrument training.

Hicaz saz semais have an *aksak* rhythm and a *makamic* structure. In his study, Topaloğlu (2019) found that cello students experience *makam* scale and rhythm-related difficulties in performing *makamic* and *aksak*-rhythm folk songs. It is thought that in addition to the problems identified by Topaloğlu (2019) in performing *makamic* and *aksak*-rhythm songs, cello students might encounter some difficulties in performing these works because *saz semais*, too, have an *aksak* and *makamic* structure. Moreover, it is possible to assume that cello students experience problems in performing *saz semais* for reasons other than these works having an *aksak* rhythm, such as *makam*, rhythm transitions and augmented second interval in the *Hicaz* scale.

Owing to the lack of a comprehensive study on the use of *saz semais* in instrument training and in line with the consideration that cello students may experience a number of problems in performing *Hicaz saz semais*, this study aims to create a model proposal for the use of *Hicaz saz semais* in cello training and to determine the effectiveness of the created model in eliminating the difficulties that cello students encounter in performing *Hicaz saz semais*. Accordingly, this study seeks answers to the following research question: "What kind of a model can be proposed to overcome the difficulties experienced by cello students in performing *Hicaz saz semais*, and what is the effectiveness of the model to be proposed?" Also, in line with the purpose of the study, answers were sought for the following sub-problems as well:

- What are the difficulties that cello students might encounter in performing *Hicaz saz semais* based on the example of *Hicaz Humayun* by Yusuf Pasha?
- What kind of model can be proposed that includes exercises to overcome the difficulties faced by cello students in performing *Hicaz saz semais* based on the example of *Hicaz Humayun* by Yusuf Pasha?
- What is the effectiveness of the proposed model in overcoming the mentioned difficulties?

The model proposed in this study is believed to be important in that it is the first comprehensive study on the use of *Hicaz saz semais*, and even more generally, *saz semais*, in cello training and in that it offers many exercises aimed at eliminating problems related to the performance of *saz semais* with the cello.

Various exercises for the use of *saz semais* in the training of other instruments can be easily created by implementing the model proposed in this study as an example. In this sense, the proposed model is thought to be of great significance as it can be adapted for use in training in instruments other than the cello and holds the promise of contributing to the conduct of relevant studies in the future.

Limitations

The limitations of this study are as follows:

- Cello training carried out in the music education departments of education faculties of universities;
- Students receiving cello training who agreed to participate in the study;
- *Hicaz Humayun Saz Semais* in the TRT repertoire composed by Yusuf Pasha;
- The difficulties experienced by students who participated in the study while performing the mentioned works with cello;
- The proposed model and exercises constituting the model.

Method

Research Model

"The research model is a plan or process with which the researcher works towards finding solutions to problems and answers to questions" (Kaptan, 1998, p. 78). There are two basic models utilised in research studies, depending on the purpose and conditions of the respective studies, namely, survey and experimental models. Survey models aim to describe a past or current situation. Experimental models, on the other hand, are models wherein data to be examined are produced directly under the control of the researcher to determine cause–effect relationships. While survey models are used to observe an existing situation, in the experimental model, data to be examined are created by the researcher (Karasar, 1999). In the experimental model, the researcher does the groundwork for new situations to occur by adjusting, changing or eliminating events, variables and factors and observes their effects. In other words, the aim is to determine the reactions or behaviours (output) that occur in response to a certain effect or action (input) under carefully controlled conditions (Kaptan, 1998).

In this study, two methods were used, namely, the survey model (descriptive) and the experimental model (empirical). In the descriptive phase of the study, a literature review was carried out and a questionnaire was administered to the experimental and control groups before implementation. In the experimental part, the "pre-test–post-test control group design" was applied. The pattern of the study is shown in Figure 1.

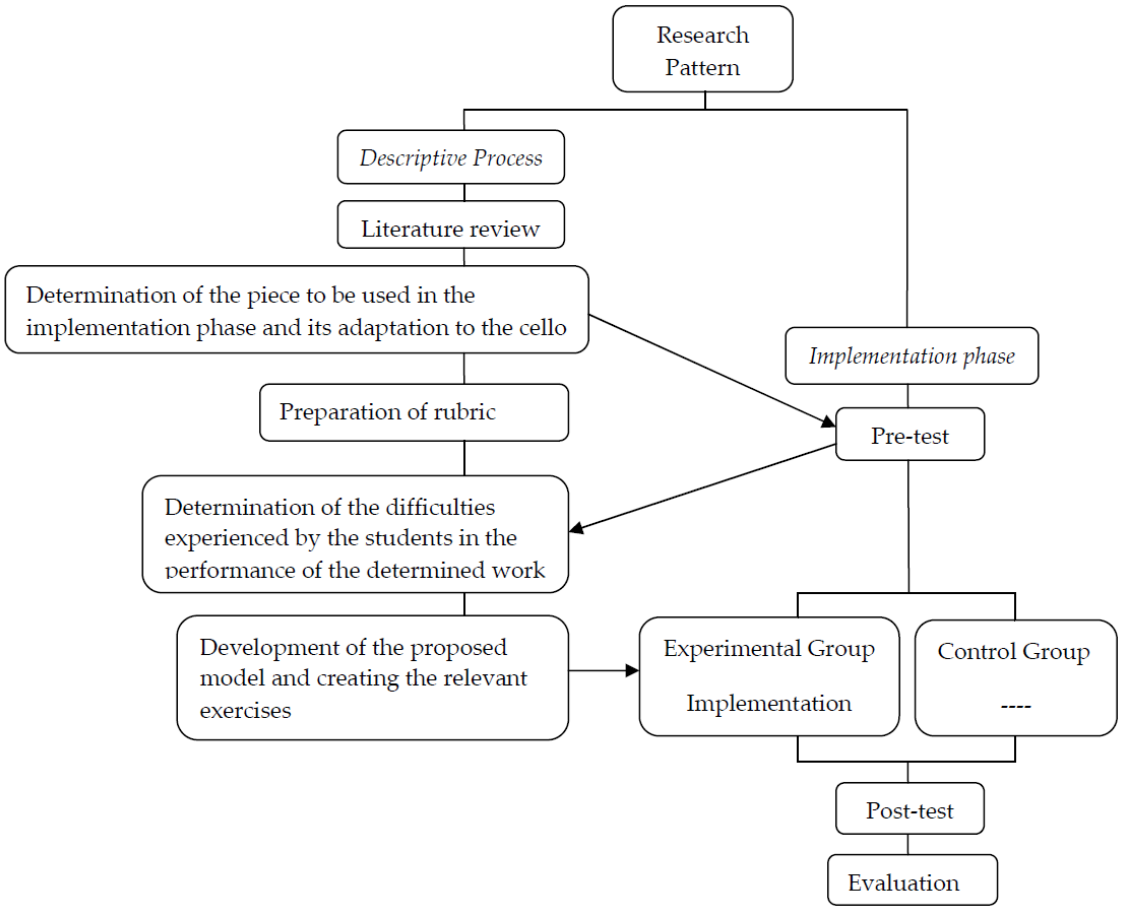


Figure 1. Pattern of the Study

In the "pre-test–post-test control group design" applied in the empirical phase of the study, the participants were measured before and after implementation in terms of the dependent variable, and these results were compared afterward (Büyüköztürk, 2016, p. 19). The symbolic view of the experimental model of the research is shown in Figure 2.

G_D	O_1	X	O_3
GK	O_2		O_4

Figure 2. Symbolic View of the Experimental Model of the Research

Of the symbols in Figure 2, G_D represents the experimental group; G_K represents the control group; O_1 and O_3 represent the pre-test and post-test results, respectively, of the experimental group; O_2 and O_4 represent the control group's pre-test and post-test results; and X represents the independent variable (implementation) applied to the students in the experimental group.

Study Group

The study group consists of eight third- and fourth-year students studying at Music Education Department, Bursa Uludağ University, in academic year 2018–2019 and receiving instrument/cello training. Information about the students in the study group is given in Table 1.

Table 1. Information on Students in the Working Group

Student Code	Group	Gender	Year	Graduated High School
S1	Experiment	Female	4th-year	Fine Arts High School
S2	Control	Female	4th-year	Fine Arts High School
S3	Experiment	Female	3rd-year	Fine Arts High School
S4	Control	Female	4th-year	Fine Arts High School
S5	Experiment	Male	4th-year	Fine Arts High School
S6	Control	Male	4th-year	Fine Arts High School
S7	Experiment	Female	3rd-year	Fine Arts High School
S8	Control	Female	3rd-year	Fine Arts High School

While choosing the members of the study group for the experimental phase, two groups of four each were formed by means of matching among the students whose instrument/cello grade was 80 and above, also considering the opinions of the instructors conducting the cello lesson. The experimental and control groups were formed via the random method. In his study, Büyüköztürk (2016) found that the two methods used in dividing the subjects into two groups were, namely, matching and the random method. "The random method is used in determining from the formed groups which will be the control group and which will be the experimental group" (Büyüköztürk, 2016, p. 22). In their study, Eckhardt and Ermann (1977) also stated that subject matching, group matching and the random method can be used in the selection of subjects (as cited in Büyüköztürk, 2016). The independent samples *t*-test was performed to determine whether there was a difference between the pre-test scores of the students in the experimental and control groups, and no statistically significant difference was found [$p > 0.05$] (Table 6). It is possible to say that the students in the experimental and control groups were initially at similar levels in terms of their ability to perform the given work.

Determination of the Work Used in the Experimental Stage and its Adaptation to Cello

To select the work to be used in the experimental phase, a literature review was carried out, and academic studies on the subject were examined. In the TRT Turkish classical music archive, which consists mostly of vocal works (85%), the most prevalent *makam* among *saz* works was found to be *Hicaz* (10%) (Sarısaray, 2010). It was seen that in the TRT Turkish classical music repertoire of *saz* works, which includes 3773 works composed in various forms and *makam*s, most of the works were composed in the *Hicaz* family *makam*s (264), and among them, a majority were works composed in the form of *saz semais* (116) (O. Önder, individual effort[1], October 25, 2017). In light of this information, it was decided that the *saz* work to be used in the implementation phase would be in one of the *makam*s in the *Hicaz* family and in the form of *saz semai*. Among other reasons, why the *saz semai* form was chosen to be used in the implementation phase is the fact that *saz semais* with peshrevs are more deeply-rooted than other

[1] In order to obtain the up-to-date list of instrumental works in the TRT repertoire, a phone call was made with Mehmet Yurdakul, Director of Turkish Art Music of the TRT Music Department, and the file "Turkish classical musical instrument repertoire" (Excel file) was sent via e-mail.

instrumental forms as well as the fact that in *saz semais*, the first three *hanes* and the *teslim*s are composed in the 10/8 *aksak semai* rhythm; there is a *makam* transition in the third *hanes* and there is an *usul* transition in the third *hanes*.

After sorting out the works in the desired *makam* and instrumental form, the notes of the *saz semais* in the *Hicaz* family *makam*s were examined to decide on the work to be used in the implementation phase, and relevant audio and video recordings on the Internet were reviewed. At this stage, experts in the field of traditional Turkish classical music were also consulted. Consequently, the "*Hicaz Humayun Saz Semai*" by Yusuf Pasha (1821–1884) was selected as the work to be used in the implementation phase. Gürtunca (1998) found that Yusuf Pasha's *Hicaz Humayun Saz Semai* is a good example in the traditional sense, with its rhythmic and melodic structure. Aksüt (1993) hailed Yusuf Pasha as one of the leading *saz* composers of 19th-century traditional Turkish classical music and believed it possible to describe his peshrevs and *saz semais*, which are extremely enjoyable, elegant and emotional, as "perfect".

The work chosen for the implementation phase, *Hicaz Humayun Saz Semai* by Yusuf Pasha, was adapted to the cello by considering the cadence sound, finger numbers, bowing symbols, and metronome value and was annotated in the digital environment using the Finale software package. A sample section of the *Hicaz Humayun Saz Semai* adapted for the cello is given in Figure 3.

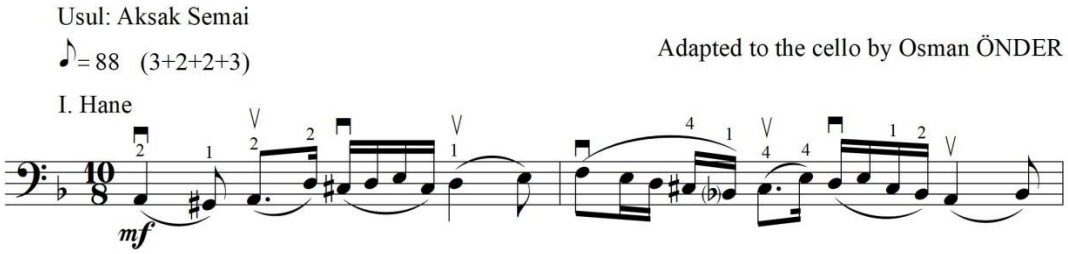
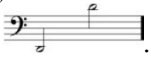


Figure 3. A Sample Section of the Cello Adaptation of *Hicaz Humayun Saz Semai*

Yusuf Pasha's *Hicaz* humayın *saz semai* consists of four *hanes* and repeated *teslim* parts between *hanes*. The musical form is (A B C B D B E B). The *usul* of the first, second and third *hanes* sections and the *teslim* section is an *aksak semai* of 10/8 (3+2+2+3). In the fourth *hanes*, there is a transition to the *sengin semai* (6/4) *usul*. In the third *hanes*, there is a transition to the *sehnaz makam*. In the notation in the TRT repertoire, the return to the *teslim* section, which is repeated after each *hanes*, is indicated by a segno (𝄋); in the cello adaptation, the *teslim* section after each *hanes* is clearly annotated. Also, it was observed that the metronome value was not specified in the fourth *hanes* of the notation in the TRT repertoire. In the cello adaptation, the metronome value was found to be ♪= 88 for the first, second and third *hanes* and the *teslim* section (for the 10/8 time signature) and ♩= 88 for the fourth *hanes* (for the 6/4 time signature). In the cello adaptation of the *Hicaz Humayun Saz Semai*, the cadence pitch is in the "A" note, and the pitch covers two octaves between the notes  . Detache and legato bowing are used in the right hand. The cadence pitch covers the half position on the left hand, as well as the first, second, third and fourth positions.

Data Collection Tools

Questionnaire Applied in the Experimental and Control Groups

The students in the experimental and control groups were asked to fill in a questionnaire to determine the difficulties that the cello students might encounter in performing *Hicaz saz semais* based on the example of *Hicaz Humayun Saz Semai* by Yusuf Pasha. This questionnaire form was prepared by the researcher and expert opinion was obtained. The prepared questionnaire was applied in the pre-test phase of the study, right after the students in the experimental and control groups performed Yusuf Pasha's *Hicaz Humayun Saz Semai*, which was determined to be used in the implementation phase.

Rubric

In the pre-test and post-test phases, the researcher, to enable the evaluators to evaluate the students' performances, created a rubric (Appendix 1). While creating the rubric, rubrics and performance observation forms in similar studies were examined. Items regarding the difficulties students in the study group encountered while performing the *Hicaz Humayun Saz Semai* of Yusuf Pasha, the work to be used in the implementation phase, were also included in the rubric. The created rubric was presented to expert instructors in the field of string instruments, consisting of 10 people, for their opinions. The draft rubric submitted for expert opinion was made up of seven items; two items in the rubric were separated into different items on the grounds that they contained statements about more than one skill to be measured. In line with expert opinion, a new item not included in the draft rubric was added to the rubric. Finally, the number of items was increased to 10 after a number of corrections were made in line with expert opinion. Four cello instructors teaching at different universities evaluated and scored students' pre-test and post-test performances using a rubric.

Analysis of the Data

The data obtained by the questionnaire administered to the students in the study group were presented in tables along with the frequency of repetition (f).

The students in the study group performed the *Hicaz Humayun Saz Semai* by Yusuf Pasha in both the pre-test and post-test stages, video recordings of which were evaluated by four cello instructors and scored using a rubric. The Spearman's rank correlation coefficient was used to ensure the reliability of the evaluations. According to Büyüköztürk (2005), the correlation coefficient is used to find and interpret the extent of the relationship between two variables. If the distribution of the variables is continuous but not normal, Spearman's rank correlation coefficient is used to explain the relationship between the two variables. "A correlation coefficient of 1.00 indicates a perfect positive relationship, −1.00 indicates a perfect negative relationship, and 0.00 indicates no relationship. A correlation coefficient between 0.70 and 1.00 in absolute value can be regarded as high-level, between 0.70 and 0.30 as medium-level, and between 0.30 and 0.00 as low-level relationship" (Büyüköztürk, 2005, p. 32).

The results of the Spearman–Brown correlation analysis carried out to examine the relationship between evaluators are shown in Table 2.

Table 2. The Results of the Spearman–Brown Correlation Analysis Carried Out to Examine the Relationship Between Evaluators

		Evaluator 1	**Evaluator 2**	**Evaluator 3**	**Evaluator 4**
Evaluator 1	r	1.000			
	p				
Evaluator 2	r	0.881**	1.000		
	p	0.000			
Evaluator 3	r	0.922**	0.899**	1.000	
	p	0.000	0.000		
Evaluator 4	r	0.880**	0.762**	0.880**	1.000
	p	0.000	0.001	0.000	

**p<0.01

Table 2 shows that there is a positive and high-level relationship between evaluator 1 and evaluator 2 (r=0.881, p<0.01), that there is a positive and high level of correlation between evaluator 1 and evaluator 3 (r=0.922, p<0.01), that there is a positive and high level of correlation between evaluator 1 and evaluator 4 (r=0.880, p<0.01), that there is a positive and high level of correlation between evaluator 2 and evaluator 3 (r=0.899, p<0.01), that there was a positive and high level of correlation between evaluator 2 and evaluator 4 (r=0.762, p<0.01) and that there is a positive and high-level relationship between evaluator 3 and evaluator 4 (r=0.880, p<0.01). A positive and high correlation between the evaluators indicates that the reliability between the evaluators is high.

The data obtained during the implementation phase of the study were analysed using the SPSS 15.0 software package. Although the sample size was small, the *t*-test, a parametric test, was used in the analysis of the data. In their studies, Fritz, Morris, and Richler (2012), Janusonis (2009) and Winter (2013) stated that there is no harm in using the *t*-test in small samples. There are many studies wherein comparisons are made with respect to effect size, sample size, and population distribution for the t-test. For example, Fritz et al. (2012) investigated the smallest possible sample size required for the *t*-test and concluded that a sample size of 6 is sufficient for a large effect size (0.8) and low statistical power (25%). As a result of the simulation study he carried out, Janusonis (2009) suggested that the *t*-test be used if N=3 or N=4 and that in the event of there being 3 or 4 subjects in one group and 3 or 4 subjects in the other group, the Wilcoxon test not be performed. Janusonis (2009) also suggested that small samples be used only in cases where the effect size was very large. Winter (2013) investigated the usability of the *t*-test in small samples (N=2, N=3, N=5) and stated that the *t*-test could be performed on small samples (N≤5), provided that the effect size was large. It may not always be possible to work with large samples in real life because of reasons such as time, ethical limitations or budget. By considering the suggestions in relevant studies that the t-test should be used, especially in cases where the sample size is less than 5, the analyses were conducted using the t-test.

The fact that a test is statistically significant does not imply that its effect size is meaningful or significant. The effect size can be regarded as an indicator of the practical significance of study findings and provides a standard and objective measurement of the magnitude of the observed effect. Accordingly, the effect size was calculated, and the "r" value was included in the tables. Cohen's d coefficient and Pearson's r correlation coefficient are the most widely accepted methods in the literature in calculating effect size. Using Pearson's correlation coefficient (r) as the magnitude of the effect is much more useful in terms of interpretation (Field, 2005; Özsoy & Özsoy, 2013). Cohen (1988, 1992) suggested that the effect size can be interpreted as small if r=0.10, medium if r=0.30 and large effect if r=0.50. In this study, the effect magnitude (r) for the *t*-test results, which were found to be statistically significant, was calculated with the help of the formula seen in Figure 4. The "t" in the formula represents the "*t* statistic" value and the abbreviation "df" represents the "degree of freedom" (as cited in Field, 2005).

$$r = \sqrt{\frac{t^2}{t^2+sd}}$$

Figure 4. Effect Size Calculation Formula

Creation of the Model Applied to the Experimental Group

The model applied to the experimental group was created to overcome the difficulties cello students experience in performing the *Hicaz Humayun Saz Semai* of Yusuf Pasha (See Table 5). The exercises that make up the model proposal consist of six parts. In the first part, there are *Hicaz* exercises based on an average *Hicaz* scale. In the second part, there are four-string exercises in various positions on the b flat - c sharp augmented second interval in the scales of the *Hicaz* family *makam*s. In the third part, there are technical exercises based on the technical exercises on universal cello methods that focus on an average *Hicaz* scale. In the fourth part, there are exercises on melodic exercises in the *Hicaz makam*, in the fifth section on the *aksak semai usul* and in the sixth section on the *makam* and *usul* transitions. While creating the scales and exercises that make up the model proposal, the tempered tuning system (12 equally spaced, well-tempered) was taken as a basis as in Sun's (2007) book "Turkish Music *Makam* Sequences" and Demirci's (2013a) book "Turkish Music Sequences for Cello". The model created for the use of *Hicaz saz semais* in cello training and administered to the experimental group is shown in Figure 5.

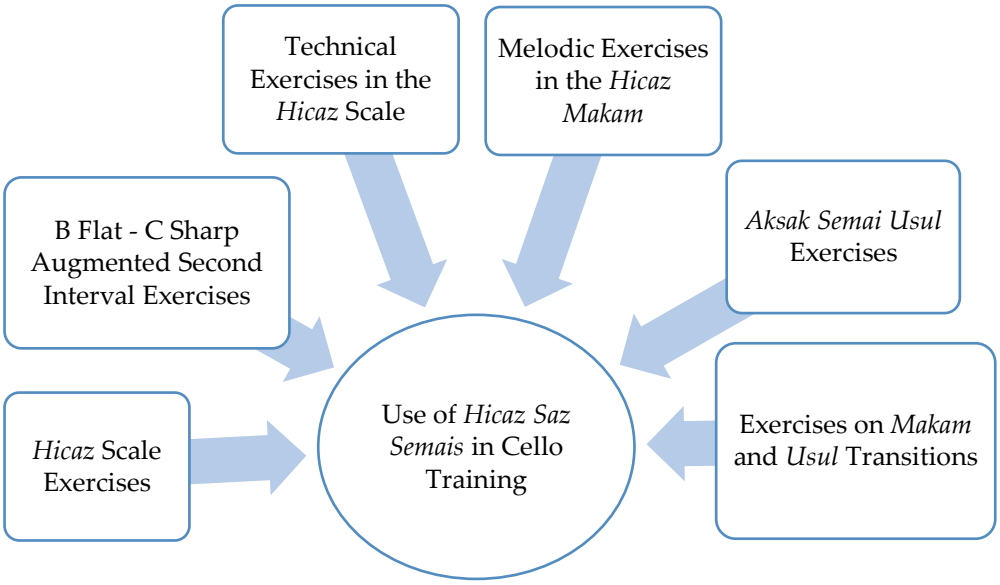


Figure 5. Model Created for the Use of Hicaz Saz Semais in Cello Training

Implementation of the Proposed Model

Before applying the model, some preliminary preparations directly related to the implementation phase were made. First, the work to be used in the implementation phase was selected and adapted to the cello. Students were chosen for the study group, and experimental and control groups were formed. After the pre-test, a questionnaire form to be administered to the students in the experimental and control groups was drawn up. Necessary permissions were obtained from the relevant authorities for the implementation of the model. Afterward, to obtain the necessary data for the pre-test phase, the students in the study group were invited for a video shoot in the Fall semester of academic year 2018–2019. The students were taken to the recording studio one at a time, and it was ensured that they could not hear each other's performances. Right before the recordings, each student was given 20 minutes to transcribe the notes of Yusuf Pasha's *Hicaz Humayun Saz Semai*. The name and composer of the work were redacted; the students were allowed to see the notes during transcription and during the video recording made for the pre-test as well. After transcription, the metronome value of the work was announced via the metronome to indicate the tempo at which the students were to perform the work. Then, the metronome was turned off, and the performance of each student playing the *saz semai* was recorded using a camera. The researcher using a digital video camera recorded the students' renditions of *Hicaz Humayun Saz Semai* by Yusuf Pasha. Immediately after the recordings, a questionnaire form was administered to each student regarding the difficulties they experienced in performing the work while the sheet music of the work was in front of them. The video recordings obtained for the pre-test phase were transferred to the computer and sent to four cello instructors along with a rubric (Annex-1) to evaluate the students' performances of *Hicaz Humayun Saz Semai* by Yusuf Pasha.

The exercises that constitute the model prepared to address the difficulties students faced when performing *Hicaz saz semais* based on the sample of *Hicaz Humayun Saz Semai* by Yusuf Pasha were carried out with the students in the experimental group for a span of six weeks, one hour a week, in the Spring semester of academic year 2018–2019. No exercises were carried out with the students in the control group in the meantime. The students in the control group continued their cello lessons according to their usual schedule. After the implementation phase that continued for six weeks, the students were invited again to shoot the same video recorded during the pre-test phase to obtain the necessary data for the post-test phase. As in the pre-test phase, the students were taken to the recording studio one at a time, and their performance of *Hicaz Humayun Saz Semai* by Yusuf Pasha was recorded with a camera. The said video recordings were sent to four cello instructors who evaluated the pre-test performances of students along with a rubric to evaluate their performance of *Hicaz Humayun Saz Semai* as a post-test.

Results

In this section, the findings obtained regarding the sub-problems of the study and the interpretations of these findings are given.

Findings and Remarks on the Challenges Cello Students Faced in Performing Hicaz Saz Semais Based on the Example of Hicaz Humayun Saz Semai by Yusuf Pasha

As stated earlier, the first sub-problem of the study is "What are the difficulties that cello students might encounter in performing *Hicaz saz semais* based on the example of *Hicaz Humayun* by Yusuf Pasha?" In finding a solution to this sub-problem, a questionnaire was administered to the cello students. The questionnaire was applied in the pre-test phase of the study, right after the students performed *Hicaz Humayun Saz Semai* by Yusuf Pasha. The students' answers to the questionnaire items are given in the tables below.

Table 3 shows whether the cello students had ever performed a *saz semai*.

Table 3. Distribution of Students in terms of Whether They Had Ever Performed a Saz Semai

Played a *Saz Semai* Before	**Makam**	**f**
Yes	Kurdili Hicazkar	1
No		7
Total		8

Table 3 shows that 1 of the 8 students in the study group had performed a *saz semai* and 7 of them had not. The *saz semai* performed was found to be in the kurdili Hicazkar *makam*. Thus, it can be said that all students in the study group except for one were unfamiliar with the *saz semai* form.

Table 4 shows whether the cello students had ever played any work in the *Hicaz makam*.

Table 4. Distribution of Students in terms of Whether They Had Ever Performed a Work in the Hicaz Makam

Performed a Work in the *Hicaz Makam*	**f**
Yes	1
No	7
Total	8

Table 4 indicates that 1 of the 8 students in the study group had performed some work in the *Hicaz makam* earlier, and 7 of them had not. In this case, it can be argued that all students in the study group except for one were unfamiliar with the *Hicaz makam*.

The difficulties faced by the cello students in performing *Hicaz Humayun Saz Semai* by Yusuf Pasha are enumerated in Table 5.

Table 5. Distribution of Difficulties Faced by Cello Students in Performing Hicaz Humayun Saz Semai by Yusuf Pasha

Difficulties Faced by Students	**f**
I had difficulty in performing in line with the *usul* transition in the fourth *hanes* (transition to the *sengin semai usul* of 6/4)	8
I had difficulty performing in line with the *aksak semai usul* (10/8 time signature in the form of 3+2+2+3)	5
I had difficulty in performing b flat - c sharp augmented second intervals	4
I had difficulty in performing the *makam* transition in the third *hanes* (transition to the *sehnaz makam*)	4
I had difficulty in performing in line with the *usul* change in the transition from the fourth *hanes* to the *teslim* part (transition from 6/4 time signature to 10/8 time signature)	1

Table 5 shows that all of the students who performed *Hicaz Humayun Saz Semai* by Yusuf Pasha had difficulty in performing in line with the *usul* transition in the fourth *hanes* (transition to the *sengin semai usul* of 6/4); five had difficulty in performing in line with the *aksak semai usul* (10/8 time signature in the form of 3+2+2+3); four had difficulty in performing b flat - c sharp augmented second intervals; four had difficulty in performing the *makam* transition in the third *hanes* (transition to the *sehnaz makam*) and one had difficulty in performing in line with the *usul* change in the transition from the fourth *hanes* to the *teslim* part (transition from 6/4 time signature to 10/8 time signature).

It can be argued the difficulties faced by the cello students in performing *Hicaz Humayun Saz Semai* by Yusuf Pasha are distributed as expected, especially when the characteristics of the work, such as the form, *makam* and *usul*, are considered. In addition, when the video recordings of the student performances recorded during the pre-test phase were examined by the researcher, the difficulties faced by the cello students in performing the selected work were clearly observable, and the observed difficulties were found to be consistent with the answers of the students in the questionnaire.

Findings and Remarks on the Creation of a Model Proposal Containing Exercises to Address the Difficulties Faced by Cello Students Faced in Performing Hicaz Saz Semais Based on the Example of Hicaz Humayun Saz Semai by Yusuf Pasha

As stated before, the second sub-problem of the study is "What kind of model can be proposed that includes exercises to overcome the difficulties faced by cello students in performing the *Hicaz saz semais* based on the example of *Hicaz Humayun* by Yusuf Pasha?"

Based on the difficulties faced by cello students in performing Yusuf Pasha's *Hicaz Humayun Saz Semai* (see Table 5), a model proposal has been developed, consisting of exercises prepared to overcome the said difficulties. The proposed model consists of six parts, seven scale exercises and thirty-three practice exercises. In the first part are *Hicaz* scale exercises, in the second part are b flat – c sharp augmented second interval exercises, in the third part are technical exercises in *Hicaz* scales, in the third part are melodic exercises in *Hicaz makam*, in the fifth part are *aksak semai usul* exercises, and in the sixth part are exercises on *makam* and *usul* transitions. One example from each type of exercise has been given in this study.

Hicaz Scale Exercises

Hicaz scale exercises were created on the basis of the average *Hicaz* scale proposed by Özkan (2007) in his book. The scale exercises were created using the detache and legato bowing techniques in a two-octave field, on the quarter, eighth and semi-quaver notes and in the measures of 4/4, 6/8 and 10/8. There are seven *Hicaz* scale exercises. An example of *Hicaz* scale exercises is given in Figure 6.

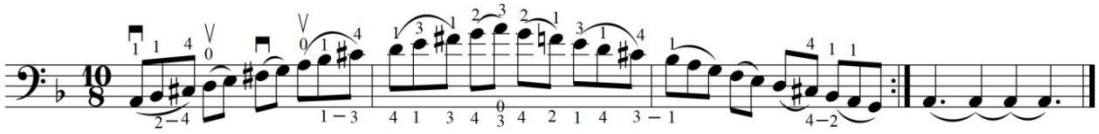


Figure 6. Example *Hicaz* Scale Exercise

B Flat- C Sharp Augmented Second Interval Exercises

B flat - c sharp augmented second interval exercises were created using detache and legato bowing techniques on four strings and in different positions, on the second, fourth and eighth notes, and in 2/4, 3/4 and 4/4 measures. There are 10 b flat – c sharp augmented second interval exercises. An example of b flat – c sharp augmented second interval exercise is given in Figure 7.

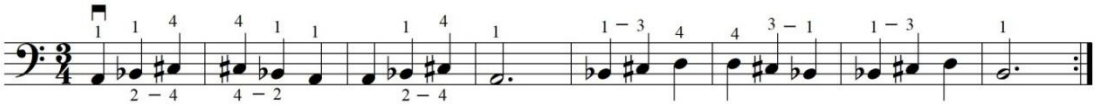


Figure 7. An example b flat – c sharp augmented second interval exercise

Technical Exercises in Hicaz Scale

Technical exercises in *Hicaz* scale are based on the technical exercises proposed by cello trainers, such as Klengel, Feuillard and Rüdinger (Feuillard, 1919; Klengel, n.d.; Rüdinger, 1891), and based on an average *Hicaz* scale. There are eight technical exercises in *Hicaz* scale. An example technical exercise in *Hicaz* scale is given in Figure 8.

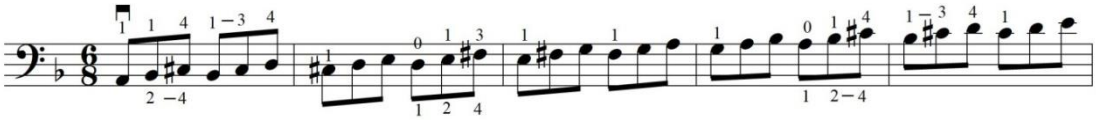


Figure 8. An Example Technical Exercise in*Hicaz* Scale

Melodic Exercises in the Hicaz Makam

The melodic exercises in the *Hicaz makam* were created to show the navigating characteristics of the *Hicaz* and *Hicaz Humayun makam*s, as well as their tonic, dominant and suspended *karar* cadences. There are two melodic exercises in the *Hicaz makam*. An example melodic exercise in the *Hicaz makam* is given in Figure 9.

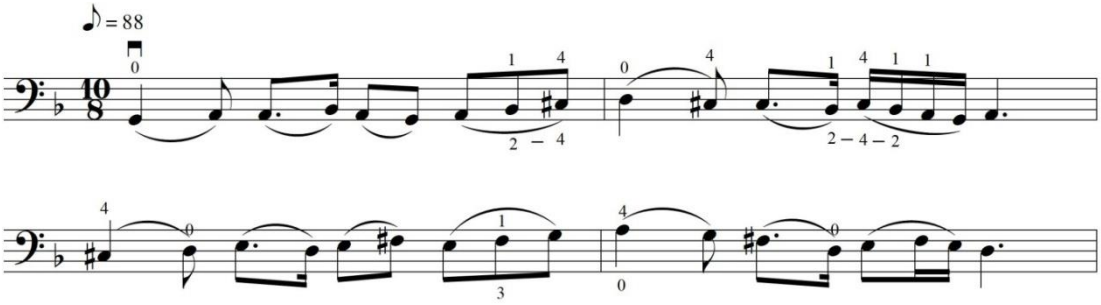


Figure 9. An Example Melodic Exercise in the *Hicaz Makam*

Aksak Semai Usul Exercises

Aksak semai usul exercises were created on a 10/8 time signature, in the form (3+2+2+3), in a sequence from simple to complex and including the rhythm patterns used in the *Hicaz* Humaun *Saz Semai* of Yusuf Pasha. There are eight *aksak semai usul*exercises. An example *aksak semai usul* exercise is given in Figure 10.

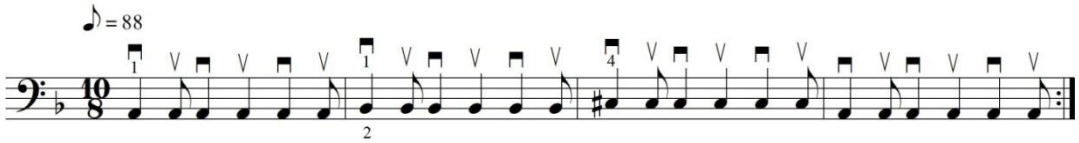


Figure 10. An Example *Aksak Semai Usul* Exercise

Exercises on Makam and Usul Transitions

Exercises on *makam* and *usul* transitions are about the transition from the *Hicaz Humayun makam* to the *sehnaz makam*. There is one *makam* transition exercise. A sample section from the *makam* transition exercise is given in Figure 11.

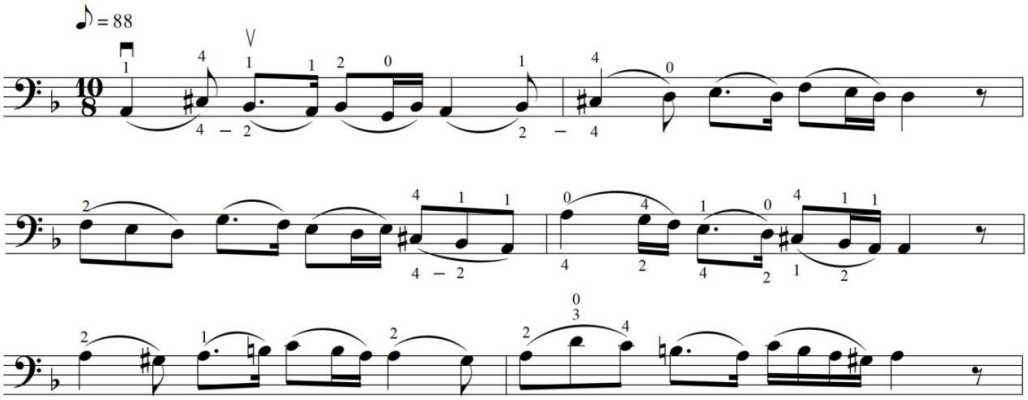


Figure 11. A Sample Section from the *Makam* Transition Exercise

The *usul* transition exercises are about the transition from the *aksak semai usul* (10/8) to the *sengin semai* (6/4). There are four *usul* transition exercises. A sample section from the *usul* transition exercises is given in Figure 12.

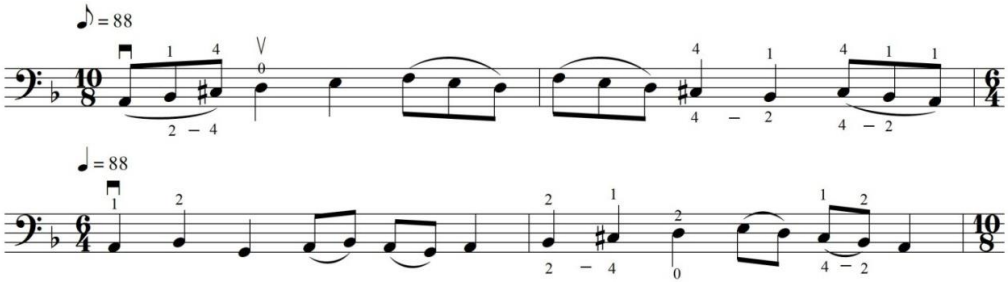


Figure 12. A Sample Section from the *Usul* Transition Exercises

Findings and Remarks on the Effectiveness of the Proposed Model in Addressing the Encountered Difficulties

As stated earlier, the third sub-problem of the study is "What is the effectiveness of the proposed model in overcoming the mentioned difficulties?" In this direction, the experimental design was applied in this phase of the study. The obtained data were analysed using the *t*-test, and the findings are presented in the tables below.

The independent samples *t*-test was performed to determine whether a difference existed between the pre-test scores of the students in the experimental and control groups. The findings of the test are given in Table 6.

Table 6. Findings on the Comparison of the Pre-test Scores of the Students in the Experimental and Control Groups

Groups	N	$\bar{X}$	S	df	t	p
Experiment	4	22.875	2.650	6	0.054	0.959
Control	4	22.688	6.482			

According to the information given in Table 6, there is no statistically significant difference between the pre-test scores of the students in the experimental and control groups [t6=0.054, p>0.05]. It can be said that the students in the experimental and control groups were initially at similar levels in terms of their ability to perform the given work.

The paired sample t-test was performed to determine whether there existed a difference between the pre-test and post-test scores of the students in the experimental group. The findings of the test are given in Table 7.

Table 7. Findings on the Comparison of the Pre-test and Post-test Scores of the Students in the Experimental Group

Group	Measurement	N	$\bar{X}$	S	df	t	p	r
Experimental Group	Pre-test	4	22.875	2.650	3	-176.363	0.000*	0.999
	Post-test		40.875	2.529				

*p<0.05

According to the information given in Table 7, a statistically significant difference existed between the pre-test and post-test scores of the students in the experimental group in favour of the post-test [t_3= −176.363, p<0.05]. Also, an effect size (r=0.999) greater than 0.50 indicates that the difference is statistically significant and large in practice as well.

To determine whether the pre-test and post-test scores of the students in the experimental group differed in terms of the skills in the rubric, the paired sample *t*-test was carried out. The findings of the test are given in Table 8.

Table 8. Findings on the Comparison of the Pre-test and Post-test Scores of the Students in the Experimental Group in Terms of the Skills in the Rubric

Skills	Measurement	N	$\bar{X}$	Avg. Diff.	S	df	t	p	r
Ability to perform the right sounds (intonation)	Pre-test	4	2.313	-1.437	0.826	3	-5.186	0.014*	0.948
	Post-test	4	3.750		0.354				
Ability to perform in accordance with the finger numbers specified in the note	Pre-test	4	3.313	-1.312	0.315	3	-7.000	0.006*	0.971
	Post-test	4	4.625		0.250				
Ability to perform in accordance with the bowing symbols indicated in the sheet music	Pre-test	4	2.563	-1.812	0.315	3	-6.539	0.007*	0.967
	Post-test	4	4.375		0.323				
Ability to perform in accordance with the *aksak semai usul*	Pre-test	4	1.938	-2.312	0.375	3	-37.000	0.000*	0.999
	Post-test	4	4.250		0.456				
Ability to perform in patterns by keeping fingers ready in passages that feature b flat - c sharp augmented second intervals	Pre-test	4	2.313	-1.750	0.898	3	-6.481	0.007*	0.966
	Post-test	4	4.063		0.427				
Ability to perform in accordance with the *makam* transition in the third *hanes*	Pre-test	4	2.688	-1.437	0.427	3	-12.011	0.001*	0.990
	Post-test	4	4.125		0.323				
Ability to perform in accordance with the *usul* transition in the third *hanes*	Pre-test	4	2.438	-1.687	0.554	3	-4.521	0.020*	0.934
	Post-test	4	4.125		0.433				
Ability to perform in accordance with the change in *usul* in the transition from the fourth *hanes* to the *teslim* part	Pre-test	4	2.188	-2.062	0.239	3	-17.234	0.000*	0.995
	Post-test	4	4.250		0.204				
Ability to perform at the right tempo	Pre-test	4	1.688	-2.125	0.315	3	-13.168	0.001*	0.991
	Post-test	4	3.813		0.239				
Ability to play without pausing and hesitation	Pre-test	4	1.438	-2.062	0.315	3	-17.234	0.000*	0.995
	Post-test	4	3.500		0.289				

*p<0.05

The findings in Table 8 show that the pre-test and post-test scores of the students in the experimental group differed significantly in favour of the experimental group in terms of the "ability to perform the right sounds (intonation)," "ability to perform in accordance with the finger numbers specified in the note," "ability to perform in accordance with the bowing symbols indicated in the sheet music," "ability to perform in accordance with the *aksak semai usul*," "ability to perform in patterns by keeping fingers ready in passages that feature b flat - c sharp augmented second intervals," "ability to perform in accordance with the *makam* transition in the third *hanes*," "ability to perform in accordance with the *usul* transition in the third *hanes*," "ability to perform in accordance with the change in *usul* in the transition from the fourth *hanes* to the *teslim* part," "ability to perform at the right tempo" and "ability to play without pausing and hesitation" skills. Also, an effect size (r) greater than 0.50 for all skills included in Table 8 indicates a statistically significant difference, large in practice as well.

The paired sample *t*-test was performed to determine the existence of a difference between the pre-test and post-test scores of the students in the control group. The findings of the test are given in Table 9.

Table 9. Findings on the Comparison of the Pre-test and Post-test Scores of the Students in the Control Group

Group	Measurement	N	$\bar{X}$	S	df	t	p
Control Group	Pre-test	4	22.688	6.482	3	0.063	0.953
	Post-test		22.563	3.023			

According to the information given in Table 9, no statistically significant difference existed between the pre-test and post-test scores of the students in the control group [t_3=0.063, p>0.05].

The independent sample *t*-test was performed to determine the existence of a difference between the pre-test and post-test scores of the students in the experimental and control groups. The findings of the test are given in Table 10.

Table 10. Findings on the Comparison of the Post-test Scores of the Students in the Experimental and Control Groups

Groups	N	$\bar{X}$	S	df	t	p	r
Experiment	4	40.875	2.529	6	9.292	0.000*	0.967
Control	4	22.563	3.023				

*p<0.05

The information given in Table 10 indicates the existence of a statistically significant difference between the pre-test and post-test scores of the students in the experimental and control groups in favour of the experimental group [t_6=9.292, p<0.05]. The mean post-test score of the students in the experimental group ($\bar{X}$=40,875) was found to be higher than those in the control group ($\bar{X}$=22.563). Also, an effect size greater than 0.50 (r=0.967) indicates a statistically significant difference, large in practice as well.

The independent sample *t*-test was performed to determine the existence of a difference between the post-test scores of the students in the experimental and control groups in terms of the skills in the rubric. The findings of the test are given in Table 11.

Table 11. Findings on the Comparison of the Post-test Scores of the Students in the Experimental and Control Groups in terms of the Skills in the Rubric

Skills	Groups	N	$\bar{X}$	S	Avg. Difference	df	t	p	r
Ability to perform the right sounds (intonation)	Experiment	4	3.750	0.354	1.687	6	5.713	0.001*	0.919
	Control	4	2.063	0.473					
Ability to perform in accordance with the finger numbers specified in the note	Experiment	4	4.625	0.250	2.000	6	5.060	0.002*	0.900
	Control	4	2.625	0.750					
Ability to perform in accordance with the bowing symbols indicated in the sheet music	Experiment	4	4.375	0.323	1.687	6	7.488	0.000*	0.950
	Control	4	2.688	0.315					
Ability to perform in accordance with the *aksak semai usul*	Experiment	4	4.250	0.456	2.062	6	7.441	0.000*	0.950
	Control	4	2.188	0.315					
Ability to perform in patterns by keeping fingers ready in passages that feature b flat - c sharp augmented second intervals	Experiment	4	4.063	0.427	1.937	6	6.041	0.001*	0.927
	Control	4	2.125	0.479					
Ability to perform in accordance with the *makam* transition in the third *hanes*	Experiment	4	4.125	0.323	1.750	6	4.950	0.003*	0.896
	Control	4	2.375	0.629					
Ability to perform in accordance with the *usul* transition in the third *hanes*	Experiment	4	4.125	0.433	1.250	6	5.477	0.002*	0.913
	Control	4	2.875	0.144					
Ability to perform in accordance with the change in *usul* in the transition from the fourth *hanes* to the *teslim* part	Experiment	4	4.250	0.204	1.875	6	9.820	0.000*	0.970
	Control	4	2.375	0.323					
Ability to perform at the right tempo	Experiment	4	3.813	0.239	2.000	6	11.817	0.000*	0.979
	Control	4	1.813	0.239					
Ability to play without pausing and hesitation	Experiment	4	3.500	0.289	2.063	6	9.661	0.000*	0.969
	Control	4	1.438	0.315					

*p<0.05

The findings in Table 11 indicate the existence of a significant difference in the post-test scores of the students in the experimental and control groups in favour of the experimental group in terms of the "ability to perform the right sounds (intonation)," "ability to perform in accordance with the finger numbers specified in the note," "ability to perform in accordance with the bowing symbols indicated in the sheet music," "ability to perform in accordance with the *aksak semai usul*," "ability to perform in patterns by keeping fingers ready in passages that feature b flat - c sharp augmented second intervals," "ability to perform in accordance with the *makam* transition in the third *hanes*," "ability to perform in accordance with the *usul* transition in the third *hanes*," "ability to perform in accordance with the change in *usul* in the transition from the fourth *hanes* to the *teslim* part," "ability to perform at the right tempo" and "ability to play without pausing and hesitation" skills. Also, an effect size (r) greater than 0.50 for all skills included in Table 11 indicates the difference to be statistically significant, large in practice as well.

Conclusion, Discussion, and Suggestions

In light of the findings of this study, it was concluded that almost none of the students in the study group had performed a *saz semai* work in the *Hicaz makam* with the cello before. Another finding is that the participants faced some difficulties in performing *Hicaz saz semais* based on the example of Yusuf Pasha's *Hicaz Humayun Saz Semai*. It was concluded that the students had difficulty in performing the work in line with the *aksak semai usul*, in performing b flat - c sharp augmented second intervals, in performing the *makam* transition in the third *hanes,* in performing the *usul* transition in the fourth *hanes*, and in performing in line with the *usul* change in the transition from the fourth *hanes* to the *teslim* part. It is possible to argue that the difficulties faced by the cello students in performing Yusuf Pasha's *Hicaz Humayun Saz* Semai related to usul, *makam* and form and were down to the fact that they had not performed a *saz* semai work in the *Hicaz makam* earlier. Topaloğlu (2019) reached a similar conclusion regarding the difficulties experienced by cello students in terms of usul and *makam*. In his study, Topaloğlu (2019) stated that cello students had some problems because of the official sequences and limp procedures while performing the songs.

In this study, a model proposal consisting of six parts, seven scale exercises and thirty-three practice exercises has been developed to address the difficulties experienced by cello students while performing *Hicaz saz semais* based on the example of *Hicaz Humayun Saz* Semai by Yusuf Pasha. The proposed model consists of *Hicaz* scale exercises, b flat - c sharp augmented second interval exercises, technical exercises in the *Hicaz* scale, melodic exercises in the *Hicazmakam*, *aksak semai usul* exercises, and exercises on *makam* and *usul* transitions.

As a result of the study, the proposed model to address the difficulties cello students experience in performing *Hicaz saz semais* was found to be effective. In the study, in the implementation phase of which the "pre-test–post-test control group design" was applied, the *t*-test results showed that while there existed no statistically significant difference between the pre-test scores of the students in the experimental and control groups, a statistically significant difference was found between their post-test scores in favour of the experimental group. Also, it has been observed that although there was no statistically significant difference between the pre-test and post-test scores of the students in the control group, the pre-test and post-test scores of the experimental group differed in favour of the post-test scores. In addition, the exercises constituting the proposed model were determined to be effective in eliminating the difficulties students faced in performing the *saz* semai selected for the implementation phase, and they were found to positively affect the skills of the students that were included in the rubric. In addition to the fact that the proposed model is effective in eliminating the difficulties encountered by students in performing Yusuf Pasha's *Hicaz Humayun Saz* Semai, it is thought that the exercises that make up the proposed model will be effective in eliminating the difficulties that might be encountered in performing other *Hicaz saz semais* as these *semais* are based on the average *Hicaz* scale (Özkan, 2007) as well.

There are some studies in the literature (Demirci, 2013b; Kaya, 2010; Lehimler, 2014; Topaloğlu, 2019) that are about the performance of *makamic* or *aksak*-usul works with cello, wherein the exercises were seen to be effective in improving the selected skills of the participants, similar to the findings of this study.

In addition to the studies wherein the difficulties of performing *makamic* or *aksak*-usul works with cello are addressed, there are studies wherein exercises are developed to help students gain the necessary skills to perform such works with instruments such as the piano (Aydıner, 2008), the flute (Öner, 2011; Şenol Sakin, 2016), the guitar (Özdek, 2013), classical kemancha (Köroğlu & Sevinç, 2017), and the violin (Özkan Köse, 2019), and in these studies, results similar to those of this study were obtained.

In light of the findings of this study, some recommendations are in order. Implementation-related recommendations: Contribution to the cello repertoire can be made by adapting *Hicaz saz semais* to the cello in line with the Tampere system. The model proposed in this study can be used in the performance of *Hicaz saz semais*. Recommendations for future research: The exercises that make up the model proposed in this study can be further diversified or improved. This model can be utilised to develop exercises on the performance of *saz semais* in other *makam*s with the cello. The model proposed in this study can be taken as an example in developing exercises on the performance of *saz semais* with other instruments.

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Appendix 1. Rubric

Student's Code:

Evaluator Name: Pre-test ☐ Post-test ☐

Skills		Performance Levels (Ranks)				
		Poor	Below Mediocre	Mediocre	Good	Excellent
		1	2	3	4	5
1	Ability to perform the right sounds (intonation)					
2	Ability to perform in accordance with the finger numbers specified in the note					
3	Ability to perform in accordance with the bowing symbols (⊓ ∨) indicated in the sheet music.					
4	Ability to perform in accordance with the aksak semai usul (10/8 time signature in the form of 3+2+2+3)					
5	Ability to perform in patterns by keeping fingers ready in passages that feature b flat-c sharp augmented second intervals					
6	Ability to perform in accordance with the makam transition in the third hanes (transition to the Sehnaz makam)					
7	Ability to perform in accordance with the usul transition in the third hanes (transition to the sengin semai usul)					
8	Ability to perform in accordance with the change in usul in the transition from the forth hanes to the teslim part (from 6/4 time signature to 10/8 time signature)					
9	Ability to perform at the right tempo					
10	Ability to play without pausing and hesitation (playing as a whole)					

INSTRUCTIONS: The number 1 refers to "poor" performance, 2 to "below mediocre" performance, 3 to "mediocre" performance, 4 to " good" performance and 5 to "excellent" performance in terms of the respective skills; so, put an "X" to the box corresponding to your evaluation.