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Musical Maps and Learning Strategies in Teaching Solfege the Context of Mental Schemas

Abstract

The aim of this research is to examine the musical map and learning strategies used in solfege teaching in the context of mental schemas. The research was carried out with 32 students consisting of 1st and 2nd year students receiving professional music education. The research was carried out with the case study pattern. As a data collection tool, the interview form consisting of two parts was applied to a group of 32 students. The obtained data were converted into frequency and percentage tables and analyzed by content analysis. As a result of the research, it was determined that the most frequently used strategies were attention and repetition, the students were not enough to visualize the theoretical knowledge in their minds, and they were not aware of the problems experienced while reading the notes.
Keywords: Musical maps, solfege, learning strategies, schema theory.

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Araştırma Makalesi

Zihinsel Şemalar Bağlamında Solfej Öğretiminde Müzikal Haritalar ve Öğrenme Stratejileri

Öz

Bu araştırmanın amacı, solfej öğretiminde kullanılan müziksel harita ve öğrenme stratejilerini zihinsel şemalar bağlamında incelemektir. Araştırma, mesleki müzik eğitimi alan 1. ve 2. sınıf öğrencilerinden oluşan 32 öğrenci ile gerçekleştirilmiştir. Araştırmada durum çalışması deseni ile gerçekleştirilmiştir. Veri toplama aracı olarak iki bölümden oluşan görüşme formu 32 kişiden oluşan öğrenci grubuna uygulanmıştır. Elde edilen veriler, frekans ve yüzde tablolarına dönüştürülmüş ve içerik analizi ile çözümlenmiştir. Araştırma sonucunda en sık kullanılan stratejilerin dikkat ve tekrarlama olduğu, öğrencilerin teorik bilgileri zihinlerinde canlandırma konusunda yeterli olmadıkları ve notaları okurken yaşanan sorunların farkında olmadıkları belirlenmiştir.
Anahtar Kelimeler: Müziksel haritalar, solfej, öğrenme stratejileri, şema teori.

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Research Article

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Genişletilmiş Türkçe Özet

Giriş

Solfej okumayı öğrenmek; öğrencinin kendini tanıdığı, öğrenme sürecini aktif olarak izleyerek problem çözmeyi öğrendiği, stratejik düşünmeyi kavrayabildiği ve birçok müzikal davranışı etkileyen sistematik bir bütünü doğru uygulayabildiği bir durumu ifade eder. Aslında solfej okumanın doğasından, içerdiği aşamalı ve zor becerilere, sistematik yapılara, sesler arasındaki ilişkilere ve müzikal bileşenlere kadar giden bu süreç zorlaştıkça beceri kalıcı hâle gelmektedir.

Öğrenmeyi inceleyen çalışmalara bakıldığında, öğrenmenin temel olarak dört başlık altında anlatıldığı görülmektedir. Koşullanma teorileri, sosyal bilişsel teori, bilişsel bilgi işleme teorisi ve yapılandırmacı teori olarak öğrenmenin temelini açıklayan bu yaklaşımlar, öğrenmeyi açıklarken farklı özellikleri ön planda tutmaktadır.

Her müzik metni sembolik ögeler içerir. Tuşlarla isimlendirilen ve bulundukları yere göre frekans özelliği gösteren bu semboller okunurken duyma, görme ve hissetme özellikleri eşit kuvvette kullanılır. Müzikal okuma (solfej) sırasında kişiler; notaların konumu, aralarındaki perde ve aralık ilişkileri, notanın vuruş süresi, notanın ritmik yapısındaki yeri gibi özelliklere dikkat ederek sesleri doğru okumaya çalışırlar. Kişinin notaya bakarken kurduğu sembolik ilişki, okuma sırasında sağlam bir ilişki olarak karşımıza çıkmaktadır. Solfej okumada kullanılan bu yapıda; zemin-şekil (porte-note), uzaklık-yakınlık (aralıklı bağlantılar) vb. ilişkilerin "Gestalt" ilkelerine benzediği düşünülmektedir. Müzikal şemalar, müziği oluşturan ögelerin perde, melodik ve armonik fonksiyonların ile aralık ilişkisini yorumlama özelliğine sahiptir. Perde alanındaki ilişkisel bilginin özellikle müzik şemalarının merkezinde olduğu düşünülmektedir" (Krumhansl & Castellano, 1983, s. 327). Solfej okuma, şema kullanımı açısından zihinsel ve somut özellikler içermektedir. Buna ek olarak solfej okuma sırasında kullanılan diğer bir özellik, öğrenme stratejileridir. Zihinsel şemayı oluşturan öğrenci, şemanın adımlarında ne yapacağını bilemez veya kendi öğrenmesi için öğrenmeyi ve çalışmayı kolaylaştıran yolları kullanmaz ise solfej okuması gelişemeyebilir. Bu noktada stratejilerin önemi ön plana çıkmakta ve öğrencinin stratejileri seçmesi ve uygulaması gerektiği düşünülmektedir. Öğrenmede kullanılan stratejileri anlama; öğrencilerin neye ihtiyaç duyduklarını, hangi durumda ve ne şekilde öğrenmeyi desteklediklerini belirlemek açısından önemlidir. Stratejileri belirleme ve solfej okuması sırasında öğrencinin kullanması gereken ve öğrenmeyi kolaylaştıracağı düşünülen materyaller, öğrencilerin öğretmen tarafından daha iyi tanınmasını ve ders içeriklerinin buna göre düzenlenmesini sağlayacaktır. Öğrencinin yeni bir bilgiyi öğrenirken veya var olan bir konuyu incelerken bilerek veya bilmeyerek bir strateji kullanması, problem çözme ve üretken düşünme açısından Gestalt psikolojisinin yaklaşımına benzemektedir. Her yeni bilgi ve beceri, öğrenci için çözülmesi gereken bir problem ise; bu problemi sezgisel olarak çözmeye çalışmak, problemi yeniden kurmak, olası çözümleri denemek, bir strateji oluşturmak, organize etmek ve yeniden düzenlemek gerekir.

Bu araştırmanın amacı, çalışma grubu bağlamında öğrencilerin solfej çalışması sırasında kullandıkları öğrenme stratejilerini ve solfej okuma zihinsel haritalarını belirlemektir. Bu bağlamda araştırmada:

1. Öğrencilerin solfej çalışmalarında kullandıkları öğrenme stratejilerinin cinsiyet ve sınıf değişkenine göre farklılaşma durumu,
2. Öğrencilerin solfej okumaya ilişkin müziksel haritalarının neler olduğu
3. Çalışma grubunun müzikal imajlarının sınıf düzeyine ve mezun olunan okula göre nasıl farklılaştığı belirlenmeye çalışılmıştır.

Yöntem

Araştırma, nitel araştırma desenlerinden biri olan durum çalışması ile desenlenmiştir. "Tek bir olgunun veya durumun ayrıntılı olarak incelendiği bu tasarım; çevrenin, bireyin ve sürecin bütüncül olarak incelenmesini sağlar. Vaka çalışmaları, nasıl ve neden sorularına dayalıdır ve derinlemesine betimleme ve anlamaya yöneliktir" (Sığrı, 2018, s. 162). Araştırmada, temel problem çerçevesinde öğrencilerin solfej çalışmalarında kullandıkları öğrenme stratejileri ve solfej okuma zihin haritaları belirlenmeye çalışılmıştır. Vaka çalışmaları "açıklayıcı-nedensel, betimleyici ve araştırmacı vaka çalışmaları" olarak ayrılmaktadır (Sığrı, 2018, s. 163). Araştırmada açıklayıcı durum çalışması tercih edilmiş, tür olarak bütüncül tek analiz birimi ve çoklu olay deseni seçilmiştir. Bu tasarımda, "her olay kendi içinde bütünsel olarak ele alınır ve ardından karşılaştırılır". Betimleyici durum çalışmaları "bir durum hakkında bilgi vermek için bir veya iki durumu kullanma"dır (Aytaçlı 2012, s. 3). Bu nedenle araştırmada, öğrencilerin zihinsel haritalarını ve kullandıkları öğrenme stratejilerini belirlemeye ve daha sonra birbirleriyle ilişkilendirmeye çalışmak için bu desen kullanılmıştır.

Araştırmanın çalışma grubunu, Batı Karadeniz Bölgesinde bir üniversitede yer alan ve güzel sanatlar kapsamında mesleki müzik eğitimi almakta olan 1. ve 2. sınıf lisans öğrencileri oluşturmaktadır. Araştırmada örneklem, amaçlı örnekleme türlerinden biri olan kolayda örnekleme ile belirlenmiştir. Bu yöntemde katılımcılar hem kolay ulaşılabilen hem de katılmaya istekli kişiler arasından seçilir. Kolayda örnekleme, "para, zaman ve kaynak ölçütlerine göre elde bulunan ve kendisinden hemen veri toplanabilecek örneklemdir" (Sığrı, 2018, s. 131). Çalışma grubunda 32 kişi yer almaktadır ve öğrencilerin 16'sı birinci sınıf ve 16'sı ikinci sınıfta öğrenim görmektedir.

Araştırmada veriler görüşme yöntemiyle elde edilmiştir. Öğrencilerin solfej çalışmaları sırasında kullandıkları öğrenme stratejilerini ve çalışmalara yönelik geliştirdikleri haritaları belirlemek için yapılandırılmış görüşme formu kullanılmıştır. Araştırmacı tarafından hazırlanan formun geliştirilmesi aşamasında ilgili literatür incelenerek sorular hazırlanmış, alan ve dil uzmanlarına sunulmuştur. Gerekli düzeltmeler yapıldıktan sonra oluşan form iki bölüm içermektedir. İlk bölümde öğrenme stratejilerini belirlemeye yönelik sorular yer almaktadır. Formun birinci bölümünde yer alan ifadeler 6 dikkat stratejisi, 3 duyuşsal strateji, 5 tekrar stratejisi, 1 biliş yönetimi stratejisi ve 2 yorumlama stratejisi içermektedir. Formun ikinci bölümünde ise solfej okumaya ilişkin zihin haritalarının belirlenmesine yönelik çizim soruları yer almaktadır. Araştırmada elde edilen veriler, görüşme formunun yapısına bağlı olarak analiz edilmiş, formun ilk bölümünden elde edilen yanıtlar olumlu-olumsuz görüşler doğrultusunda tablolaştırılmıştır. Formun ikinci bölümünde yer alan açık uçlu ve çizim gerektiren sorulara ait yanıtlar içerik analizi yöntemi ile çözümlenmiş, bu bağlamda kod ve kategoriler oluşturulmuş ve buna ek olarak öğrenci çizimleri doğrudan alıntılanarak, çizimlerde yer alan ortak ifadeler şemalaştırılmıştır.

Bulgular

Araştırma sonucunda, öğrencilerin en çok kullandıkları öğrenme stratejisinin dikkat stratejisi altında "aralığı belirleme" olduğu görülmektedir. Her solfejden önce ritmik artikülasyon yapan 4 birinci sınıf öğrencisi (E:3, K:4) ve 7 ikinci sınıf öğrencisi (E:3, K:4) bulunmaktadır. Toplam 32 öğrencinin diğer dikkat stratejilerini kullanma durumu göz önünde bulundurulduğunda; tema ve cümle belirleme için birinci sınıfta 2 öğrenci, ikinci sınıfta 3 öğrencinin bu stratejiyi kullandığı, uyarıcı not almada birinci sınıfta 5, ikinci sınıfta 4 öğrencinin bu stratejiyi kullandığı belirlenmiştir. Diğer taraftan, birinci sınıfta 5, ikinci sınıfta ise 7 öğrencinin bir notayı okurken diğer notaya bakma konusunda olumlu görüş bildirdiği görülmektedir. Dikkat stratejilerinde "aralık tespiti"nde, birinci sınıf öğrencilerinin bu stratejiyi daha yüksek oranda kullanmayı tercih ettikleri görülmektedir. Solfej çalışmalarından önce "ritmik artikülasyon yapma" ihtiyacının ikinci sınıf öğrencilerinde daha yaygın olduğu ve kız öğrencilerin her iki sınıfta da bu stratejiyi daha çok tercih ettikleri görülmektedir. Tema ve cümle belirlemede ise öğrencilerin sınıf ve cinsiyet değişkenlerine göre bu stratejik basamağı kullanmadıkları belirlenmiştir.

Tartışma ve Sonuç

Öğrencilerin en çok kullandıklarını ifade ettikleri stratejiler, dikkat stratejileri ve tekrarlama stratejileridir. Dikkat stratejilerini en çok kullanan öğrenciler erkek öğrencilerdir (N:29). Kız öğrencilerin bu stratejileri kullanma durumlarına bakıldığında, dikkat stratejilerinden daha çok tekrarlama stratejilerini kullandıkları belirlenmiştir. Öğrencilerin sıklıkla tercih ettikleri üçüncü strateji boyutu ise duyuşsal stratejilerdir. Biliş yönetimi stratejileri için tercih sayısı erkek ve kız öğrenciler arasında eşittir.

Öğrenciler yorumlama stratejilerini diğer stratejilere göre daha fazla tercih etmekte ancak biliş yönetimi stratejilerinin tercihi, tüm öğrenci grubunda diğer stratejilere göre daha azdır. Dikkat stratejileri en çok erkek öğrenciler tarafından tercih edilmektedir. İkinci sınıftaki kız ve erkek öğrenciler, tekrarlama stratejisini eşit derecede desteklemektedir. Duyuşsal stratejiler ağırlıklı olarak 2. sınıf öğrencileri arasında tercih edilmekte olup, bu stratejinin erkek ve kız öğrenciler tarafından kullanımları birbirine yakındır. Dikkat stratejilerini 1. ve 2. sınıf öğrencilerinin tercih ettiği gözlemlenirken, 2. sınıftaki erkek öğrencilerin de bu stratejiyi tercih ettikleri belirlenmiştir. Ek olarak, grup genelinde diğer stratejilerin kullanım durumları incelendiğinde, duyuşsal stratejilerin diğer stratejilere göre daha az tercih edildiği görülmektedir. Bu sonuç farklı çalışmaların sonuçları ile benzerlik göstermektedir. Nacaroğlu'nun (2019) müzik öğretmeni adaylarının kullandıkları stratejileri belirlediği çalışmasında, 536 kişi üzerinden ölçek aracılığıyla elde edilen sonuçlara göre öğretmen adaylarının en sık kullandıkları stratejilerin izleme, anlamlandırma ve düzenleme stratejileri olduğu ve tekrarlama ve duyuşsal stratejileri daha az kullandıkları belirlenmiştir.

Araştırmada, genel müzik öğrenme stratejilerinin kullanım durumlarının düşük olduğu ve bunun nedeninin araştırmamızın sonuçlarına benzer şekilde öğrencilerin herhangi bir strateji kullanma ihtiyacı ve alışkanlığı geliştirmemesi olduğu belirlenmiştir. Benzer bir çalışmada (Akın, 2013), 131 öğrenci üzerinde öğrenme stratejileri ölçeği kullanılarak elde edilen sonuçlar da kız öğrencilerin erkek öğrencilere göre daha fazla strateji kullandığını ortaya koymuştur. Bu çalışmada, katılımcı sayısının az olması nedeniyle strateji kullanımında cinsiyet açısından yakın sonuçların olduğu düşünülmektedir. Deniz'in (2015), 139 müzik öğretmeni adayından veri toplayarak yürüttüğü üstbilişsel strateji kullanımına ilişkin araştırmasının sonuçlarına göre öğrenciler tarafından üstbilişsel strateji sıklıkla kullanılmaktadır. Çalışmada, kız öğrencilerin erkek öğrencilere göre stratejileri daha fazla kullandıkları ancak bu farklılığın sadece planlama stratejisinde olduğu belirlenmiştir. Vujovic ve Bogunovic'in (2012) müzik öğrencilerinin deşifre sırasındaki bilişsel süreçlerinde kullandıkları stratejilerin türleri ve düzeylerine ilişkin araştırmalarında, öğrencilerin deşifre sırasında; hazırlık, uygulama, problem belirleme ve çözme aşamaları olduğu, buna ek olarak stratejilerin ortak olduğu ve öğrencilerin çoğunlukla fonksiyonel düşünme, tonal düşünme ve armonik bilgiye gönderme yaptıkları belirlenmiştir.

Solfej okumasında aralıkların kullanımına ilişkin çizimlerde; öğrencilerin sesleri tek tek sayarak aralığı hesapladıkları, daha çok çıta üzerinde düşünmeye yöneldikleri ve aralıkların akor içinde yorumlanmaya çalıştıkları görülmektedir. Çizimlerinde ses bilgileri, müzik haritalarında durucu-yürüyücü fonetik bilgilerinin doğru ifadeleri tespit edilmiştir. Ek olarak, öğrencilerin diğer teorik bilgilerinde eksiklikleri olduğu ve/veya var olan bilgileri resimle ifade edemedikleri düşünülmektedir. Solfej okumasında en çok problem yaşanan aralıklar ve çözüm önerileri ile ilgili çizimlerde; öğrencilerin 2'li, 6'lı ve 7'li aralıklarda problem yaşadıkları ve yaratıcı çözümler üretemedikleri belirlenmiştir. Tüm öğrenci grubunda (N:32), 17 öğrencinin okuma öncesi genel bir çalışma yaptığı ancak aralıklardan yararlanma çalışmalarının yetersiz olduğu görülmektedir. Aynı zamanda, öğrencilerin teorik bilgilerinde eksiklikler olduğu görülmektedir. Bu durumun sebepleri arasında; derste not almamanın, düzenli tekrarlar yapmamanın, stratejik çalışmanın farkında olmamanın ve buna göre bir çalışma stratejisi geliştirmemenin olabileceği düşünülmektedir. Elde edilen sonuçlarda, öğrencilerin düzenli

çalışmamaları, bilgiyi aktif olarak kullanamamaları, zihinsel imgelemelerinde bazı eksiklikler olması veya hayal ettikleri noktaları kâğıda aktaramamalarının yanı sıra algısal farklılıkların da etkili olabileceği düşünülmektedir.

Öğrencilerin yaşadıkları sorunların farkında olmadıkları, farkında olsalar bile bunları müzikal davranış bağlantısı kurarak ifade edemedikleri görülmektedir. "Eğitimde beklenen başarı için bireylerin kendi öğrenme stratejilerini geliştirmeleri, kullandıkları öğrenme stratejilerinin farkına varmaları ve kendi öğrenmelerinden sorumlu hâle gelmeleri atılması gereken önemli adımlardan biridir" (Şahin ve Uyar, 2013, s.168). Bu bağlamda öğretmenlerin öğrencilerden çalışmaları hakkında düzenli olarak geri bildirim almaları ve özellikle problem belirlemede öğretmenin rol üstlenmesi gerekmektedir. Problemin farkında olmayan öğrencilerin çözüm düşünemeyecekleri gerçeğinden hareketle, ders içerisinde solfej okuma problemleri ve çözüm önerileri hakkında konuşma fırsatları yaratmak öğrencileri cesaretlendirebilir.

Introduction

Solfeging is a learning and skill area that forms the basis of education for students receiving vocational music education and plays an important role in the development of many emotional, psychomotor and cognitive musical skills. Solfege education, which continues from the first year to the end of the education period, provides a prerequisite for other courses for individuals who receive professional music education. Hearing the sounds correctly, making sense of them and reading them correctly affects the individual instrument from success to harmonic comprehension.

Learning to read solfege indicates a situation in which the student recognizes himself, learns to solve problems by actively monitoring the learning process, and can comprehend strategic thinking, as well as correctly applying a systematic whole that affects many musical behaviors. In fact, as this process, which goes from the nature of solfeging to the gradual and difficult skills it contains, to systematic structures, relationships between sounds and musical components, the skill becomes permanent as it becomes more difficult. The important issue at this point is; It is the student's self-knowledge, organizing his knowledge in accordance with the structure of the solfege he reads, realizing what he is doing without giving up and thinking strategically, and being able to act productively/creatively in times of difficulty.

When we look at the studies examining learning, it is seen that learning is basically explained under four headings. These are; conditioning theories, social cognitive theory, cognitive information processing theory and constructivist theory (Schunk, 2014). Among these theories, the behaviors of to know something, paying attention, perceiving, storing, acting strategically, processing information and making mental imagery are included in the field of cognitive information processing theory and cognitive theories are "the way people select and associate information with previous information, organize, encode and schematize information" (Schunk, 2014, p.132). Each musical text contains symbolic elements. While reading these symbols, which are named by keys and show frequency characteristics according to their location, hearing, seeing and feeling features are used with equal force. During musical reading (solfege), people try to read sounds correctly by paying attention to features such as the location of the notes, their pitch and spacing relations with each other, the beat duration of the note, and its place in the rhythmic structure of the measure in solfege. The symbolic relationship that a person when looking at the note emerges as a sound relationship during reading. In this structure, which is employed in solfeging; ground-shape (porte-note), distance-proximity (interval connections), etc. Relationships are thought to be similar to the principles of "Gestalt's Schema Theory" included in information processing theories. Schemas consist of structures within a general framework and its subgroup operations. In other words, there is a general schema of a subject in the mind of the person and each action constitutes the sub-steps of the said schema (Schunk, 2014). At this point, the students' schemes for solfeging; Visually perceiving solfege or creating the overall performance of this skill, the ways of studying the elements that make up solfege and every action to be taken to read the whole solfege, every tried way, every strategy used will form the steps of this scheme. Musical schemes have the characteristics of interpreting the interval relationship and pitch, melodic and harmonic functions of the elements that constitute of the music. It is thought that the relational knowledge in the pitch area is especially at the center of the music schemes" (Krumhansl & Castellano, 1983, p. 327). In addition to the mental and concrete features of the solfeging schemes, another important aspect is the learning strategies used during solfeging. If the student who creates the mental schema does not know what to do in the steps of that schema or does not use ways that facilitate learning and working for his own learning, he may not be able to develop at least in the application dimension of the schema of the skill. The importance of strategies comes to the fore and it is thought that it is necessary for the student to choose and apply the strategies. Understanding the strategies used in learning; it is important in terms of determining what is needed by the students and in what situation and in which way they support learning. Identifying the strategies that the student

needs to use during solfeging and that are thought to facilitate learning will allow students to be recognized by the teacher in solfege teaching and the course content to be arranged accordingly.

Schemas in Processing İnformation

Schemas are “framework structures used to organize information” (Senemoğlu, 2009: 281). The charts cover the processes and activity plans necessary for decision making and problem solving. When examining the effects of these structures on learning, especially in terms of their relationship with pre-learning, it is stated that the previously created schemas are in the nature of preparing new schemas, that is, new information (Senemoğlu, 2009). “Schema is an organized set of decisions about objects, events, and phenomena of individuals. The individual's schemas show what he knows about a concept and the interrelationship between parts of this knowledge” (Burns, Roe, & Rons, 1992. As cited in Çakıcı, 2011, p. 79).

If a student can have content information about the text by looking at the title of a text, it is thought that the way the students express the information visually will give information about the mental image of that information and the application that the person will make. Considering the role of schema in the learning process; “From the interpretation of sensory data, it is seen that they guide the recall of the data in the mind, determining the goals and organizing the movements, and there are strong links between them and the strategies. Schemas are cognitive structures about how to use information” (Rumelhart, 1980. As cited in: Çakıcı, 201, p. 78). One of the important points about the schemas is that they contain visual, auditory and tactile elements due to their multimodal structure, during the imaging of the schemas; front-back, right-left, far-near, connection, matching, combining, part-whole, separation, repetition, big-small, fast-slow” (Hurtienne, 2017, p. 3). It is thought that these features and the features of musical elements overlap and it will be easier for the student to develop a schema and mind map for solfeging. At this point, it is necessary for students to recognize the steps of their own learning and to know that these structures perceived by the brain during learning are formed in a systematic way.

Schemas are included in the deep cognitive features of learning strategies, and they also constitute the strategy steps by serving as the primary structure in the use of the strategy. For example, İt is known that students who use deep cognitive strategies “create information schemes, construct gradual structures and schedule in the process and application steps related to the strategy (Özer, 2002, p. 20). According to Senemoğlu (2009), a schema “includes information networks, decision-making and problem-solving functions, and activity plans”. Therefore, schemas, learning strategies and problem solving strategies should not be considered separately from each other in the processing of information. For this reason, it is thought that every information, word, shape, mental image or spatial representative that will represent the schema and the expressed solution should be evaluated together while determining the cognitive schema of an individual's knowledge. Yüksel (2014, p.157) states that “the student can gradually schematize the information, create outlines, create a concept map and use figure-drawing in order to make the information meaningful, and argues that the student can visualize the relationships and differences between ideas by turning the information into a schema”. In the studies on the effects of Gestalt principles in the field of music, it is seen that "there are return rules, proximity rules in the data transferred to digital media" (Krumhansl, 1995. cited in Yazıcı, 2015, p. 500). “Perceptual grouping of auditory stimuli is not a haphazard process. This process is based on gestalt grouping principles. It is known that the results compared with the data of the models developed for determining the local level boundary covering the temporal and pitch relations between only three or four notes overlap with the rules of proximity and similarity. In addition, the expectation that the intervals following the large intervals in the curtain height direction and spacing differences will be smaller is again explained by the closeness-similarity rule” (Yazıcı, 2015, pp. 501-

502). In this context, it is thought that an individual who expects a perceptual-affective proximity-similarity relationship will schematize and image the information with similar reminders about the solfege he reads and hears in his mental images. Nunan (1999, Cited in: Çakıcı, 2011, p. 81) states that "texts offer some signs to the reader and the person combines these clues with their experiences and makes sense out of them". Then there are some signs for the reader in the written texts and notes specific to the field of music. At this point, some mental processing steps of notes, abstract and concrete schemes, maps and meanings that students can combine with information and previous readings during musical reading (sounds that create intervals and chords, repetitive beats, active-stable status of tone, etc.) thought to be formed. Studies investigating the relationship between Gestalt principles and reading notes deal with students' perceptions of note reading in terms of the laws of figure-ground, proximity, similarity, symmetry, simplicity and continuity. "The law of proximity is mostly used in reading notes and the notes are grouped according to the notes that follow them. According to the law of similarity, similar pieces are considered as a group and the notes that come under each other form the law of symmetry. According to the Gestalt understanding, integrating similar parts of the brain is an opportunity presented to musicians as a part of musical perception, and musical notes are perceived in melodic integrity thanks to these perception principles, similar to the perception of letters in literary language as a word, not one by one (Ünlü & Ece, 2019, s. 1107-1109). From this point of view, it is thought that when students put their notation reading styles into visual expressions, they will draw their thoughts by grouping them with expressions similar to these principles.

In order to explain the skill development in musical reading, it is predicted that determining the strategies, mind maps and schemas of the subject or skill will be beneficial in terms of the diversity of teaching methods to be applied in solfege lessons and the recognition of students. For this purpose, the concept of schema in the research was used both in the theoretical stage with the feature of abstract operations in the mind in cognitive development, and it was presented in the form of visualizable structures such as mind maps in order to indicate the mind image of the person's knowledge.

Learning Strategies

Learning strategy is defined as tools or techniques (Somuncuoğlu & Yıldırım, 1998) that will facilitate and activate the cognitive process. Learning strategy indicates that the student is in a conscious state and can manage the learning process by taking an active role. Learning strategy indicates that the student is in a conscious state and can manage the learning process by taking an active role. It can be said that learning strategies contain wide features from the most basic to advanced cognitive processes, and they are structures that can be diversified to the extent of creativity and knowledge, acting as a bridge between the learned knowledge and what will be learned. When we look at the classification of the strategies that individuals use in learning, it is seen that there are five groups of strategies consisting of basic and complex strategies. These are; "repetition strategies, meaning strategies, organizing strategies, strategies for monitoring comprehension and affective strategies" (Özer, 1998. As cited in: Güven, 2011, p. 233). According to the classification commonly used today, "repetition strategies, interpretation strategies, organizing strategies, strategies for monitoring comprehension and affective strategies" are used (Weinstein & Mayer, 1986. cited in Yüksel, 2014, p. 153). Based on these classifications, strategies as expressed by Yüksel (2014, p. 154) are; "attention strategies, repetition strategies, signification strategies, cognition management strategies and affective strategies". Possible strategic approaches that can be used in solfege teaching are also exemplified by making use of the theoretical knowledge of the strategies discussed under this title.

Attention strategies: "These are the strategies in which the student focuses his mental activities on the information to be learned. Behaviors such as underlining key words or basic ideas in

the text, marking the margins of the text, and circling the words are examples of these strategies" (Yüksel, 2014, p. 154).

Among the attention strategies that students can use during solfege practice; making determinations regarding the interval connections of the notes, indicating these determinations with warning signs, writing the interval codes on the margins of the relevant notes, specifying the sounds forming chords with a password, rest signs at the end of the measure, etc. In order to think like this, applications such as identifying the points that make time easier, determining the relations such as similarity-difference between the notes at the end and the beginning of the measure, and examining the rhythmic structure of the piece separately from the melodic course can be considered. According to Kurtuldu (2012, p. 239), "one of the areas in which the attention process, which is assumed as the beginning of learning strategies, is most effective, is the music education process. Among the activities based on playing instruments, singing and accompaniment, the concept of focusing attention is at the forefront. The concept of selective attention is a prerequisite for success, especially in reading notes, and the remarkable elements should be determined between the notes.

Repetition Strategies: "Strategies that increase the retention time of information in short-term memory". Reading aloud or silently during the study, repeating the previous information many times, trying to say the information in the text in different ways, reading it again by underlining the important parts are examples of this strategy. In solfeging, making the rhythmical articulation of solfege, reading the melodic structure only by changing the beats of the sounds without using the rhythmic structure, reading the solfege over and over at different speeds, the interval, chord, consonant sound, etc. determined and marked in the attention step. Singing the sections within themselves, reading the notes containing the specified interval-chord connection in different ways (for example, reading the sounds in the scale structure formed by do-mi-sol from the bottom up and from the top down) activities can be examples of repetition strategies.

Interpretation Strategies: "Strategies that ensure that the information is encoded into the long-term memory as a whole, instead of placing it in the memory exactly as it is" (Yüksel, 2014, p. 156). At this stage, high-level mental processes such as "associating new information with existing information, creating a mental image, summarizing, making analogies, taking productive notes, and explaining with other words are performed" (Güven, 2011, p. 236). In addition to these, "gradually schematizing information by creating spatial representatives, creating concept maps, etc. can create shapes and drawings such as The student can visualize the relationships and differences between ideas by turning the information into a schema" (Yüksel, 2014, p. 157).

Among the interpretation strategies that can be used during solfeging, making analogies based on the relationship between motifs and sentence structures in solfege with previously learned works, known songs or sung solfeges, creating a summary melody by detecting the stop sounds of the tone, determining the tonal sounds by determining the active, crossing or processing sounds. Determining the directions of the sounds, drawing melodic or rhythm structured schemes according to the characteristics of the sounds read.

Managing Cognition Strategies: These strategies refer to the processes in which cognition and metacognition are actively used and the student questions the plan they need" (Guven, 2011). Cognitive management strategies, which enable the individual to be aware of his own ways of thinking and learning and to regulate his learning accordingly, can be expressed as the student's awareness of what he thinks and how he does it.

During solfeging; attention and self-control, taking notes of the problems by identifying the problems and thinking about the causes, finding possible solutions to the problems and recording

these solutions, producing alternative ways to correct the mistakes and actively using these alternative ways can be examples of the implementation of this strategy.

Affective Strategies: These strategies are defined as "strategies that facilitate student self-motivation. Behaviors such as concentrating and maintaining attention, reducing anxiety (or working), awareness and effort to use time effectively, preparing one's own work environment, motivating oneself, thinking about why the learned subject is important, giving self-rewards are within the scope of this strategy (Yüksel, 2014, p. 158).

In solfege studies; maintaining attention, thinking over the features determined in the preliminary studies and other strategic steps and applying these steps, making the working environment comfortable, light, sound, materials, etc. Behaviors such as preparing from different perspectives can be an example of the use of affective strategies. In addition, possible behaviors related to the use of affective strategies may be the student's avoidance of negative motivation by thinking about the parts he can read rather than the notes he cannot read, reinforcing his belief that he can do it by using his attention and knowledge in a coordinated manner. At this stage, the teacher's positive expectations and encouraging behaviors towards the student are important because the student is expected to think about the importance of the solfege he reads, the musical details it contains, and that all of these details support them by providing preliminary learning to another musical skill, separately and together. The student's knowingly or unknowingly using a strategy while learning a new information or studying an existing subject is similar to the approach of Gestalt psychology in terms of problem solving and productive thinking. If every new knowledge and skill is a problem that needs to be solved for the student, it is necessary to try to solve this problem intuitively, to re-establish the problem, to try possible solutions, to establish a strategy and to organize and re-make sense of the incoming information because using a strategy and being aware of it is necessary for the student to be self-sufficient shows that he can make a decision. Some studies argue that "effective strategy use in practice depends on the acquisition of appropriate auditory schemes to facilitate monitoring of development and correction of errors (Hallam, 2001, cited in Tsabary, 2013, p. 51). Based on this information, it can be said that if the student's knowledge schema is not sufficient, he cannot use his current strategies adequately. This provides strong support for the relationship of schemas with strategy knowledge and use in knowledge retention.

The evidence for the student's use of strategy depends on their behavior during solfeging or practice. For this reason, it will be possible to say that a student who practices the above-mentioned musical behaviors uses a strategy and thinks about his own learning. Strategies alone do not make sense in the learning process. In the multidimensional and complex structure of learning, many steps become meaningful when they become interrelated. According to Yüksel (2014, p, 155), "in repetition strategies, there is no question of establishing a relationship between repeated information and previous information. For this reason, it is difficult to provide permanent information in these strategies". At this point, the importance and necessity of the strategy-schema relationship emerges due to the ability of cognitive schemas to establish a relationship between prior and subsequent learning. If revize or using repetition strategy allows the information to take place in the memory, but if the inter-information does not establish a relationship, then in addition to the repetition strategies, visual-mental images, mind maps or images of information, insight schemes are used to transfer the information from short-term memory to long-term memory. It is thought that information can be transferred from short-term memory to long-term memory in a shorter time.

Musical Maps

In order to understand what music maps are and how they function in learning, first of all, it is necessary to look at the concept of mind maps. "Mind maps provide a visual representation of thoughts and concepts and facilitate the recollection of the information transferred to the paper layout

with the help of the use of shapes, keywords and images" (Evrekli, İnel, & Balım, 2012, p. 232). The expression "listening maps-musical maps" is used for the musical equivalents of mind maps that allow the visual expression of information. Music maps are seen as a technique that enables features such as melody, rhythm, form and theme to be illustrated or organized graphically (Yiğit & Özeke, 2020, p. 347).

"Musical images are sound images of music" (Endestad, Goday, Sneve, Hagen, Bochynska, & Laeng, 2020, p. 2). Researches indicates that "musical images are produced in real time, encode fairly precise information about tempo and pitch height, and contain information about melodic and harmonic relationships. For this reason, musical images have a sensory quality similar to the experience of perception" (Hubbard and Stoeckig, 1988, 1992; Halpern, 1988, 1989, 1992, 2001; Halpern and Zatorre, 1996 and Zatorre, 1994. Cited in Brodksy, Henik, Rubinstein et al. & Zorman, 2003, p. 602). According to Brodsky et al. (2003, p. 602), "musical images encode real information about pitches and contain melodic harmonic relations and information. Therefore, musical imagery has a sensory quality similar to the experience of perception". The map of a musical note is a kind of imagery. Musical imagery as used by musicians; "it includes sounds and the musical movements necessary to create a sound, the image of a note or an instrument, and the emotions that the musician wants to express in performance" (Kohl, 2021: 14). Music creation-reading, listening etc. studies on the neural encoding of auditory features, perception and imagery during the course of the study make the following explanation for auditory imagery: "Musicians can imagine the sound of a piece of music while looking at a printed note" (Martin, Mikutta, Leonard, Hungote, Koelsch, Shamma & Chang, 2018, p. 4223). For this reason, it is thought that during the reading of the sounds, the audio-visual effects and the practice activities of that performance combine with the characteristics of the notes to form some images. "Musical maps arise from the desire to make music meaningful by concretizing abstract concepts. In this direction, music map emerges as a method/concept where feelings and thoughts can be expressed with different symbols and elements beyond traditional musical notation. A musical map; It may include theory matching, graphical drawings, pictures and figures, geometric figures, diagrams, ciphers, melodic passages" (Şen, 2021, p. 458). As in the schema-strategy collaboration, Jonassen (1988) mentions key concept summaries, maps, and the link between maps and strategies in his classification of strategies used by students. "Maps are used to organize information. The maps included in the organizational productive strategies can be represented by a flow chart or graphic (Cited in: Knowlton, 2007, p. 5). When we look at the studies on music maps, it is seen that the possible contents on the maps may consist of colored figures, linear symbols, drawings of height differences, vertical and horizontal lines, words, terms and concepts, diagrams, letters, numbers, notes and texts (Sen, 2021). According to Özeke (2010, cited in Yiğit, 2017, p. 17), who defines music maps as the depiction of musical elements, a map contains information about elements such as melody, rhythm, theme, form and nuance.

The aim of the research is to determine the learning strategies used by the students during solfege study and their mental maps of solfeging in the context of the study group. In this context, the questions sought to be answered in the research are as follows:

- How are the learning strategies used by the study group in solfeging according to gender and class type?
- How are the music maps of the study group regarding solfeging?
- How do the mind maps of the study group differ according to the grade and the graduated school?

Method

The research was designed with a case study, one of the qualitative research designs. “This design, in which a single phenomenon or situation is examined in detail, enables the environment, individual and process to be examined with holistic aspects. Case studies are based on how and why questions, and in-depth description and understanding are aimed” (Sığrı, 2018, p. 162). Within the framework of the main problem in the research, the learning strategies used by the students in solfege studies and the mind maps of solfeging are tried to be determined. Case studies are divided into “explanatory-causal, descriptive and investigative case studies” (Sığrı, 2018, p. 163). In the research, explanatory case study was preferred, holistic single analysis unit and multiple event design were chosen as the type. In this design, “each event is handled holistically on its own and then compared”. Descriptive case studies are “use one or two situations to give information about a situation” (Aytaçlı 2012, p. 3). For this reason, this design was used in the research to try to determine the mental maps of the students and the learning strategies they use and then try to associate them with each other.

Participants

The study group of the research consists of first and second year undergraduate students studying at a university located in the western Black Sea region and providing music education within the scope of fine arts. In the study, the sample was determined by convenience sampling, one of the purposive sampling types. In this method, participants are chosen from among those who are both easily accessible and willing to participate. It is the sample that is available according to the criteria of money, time and resource and from which data can be collected immediately” (Sığrı, 2018, p. 131). There are a total of 32 students in the study group, 16 of which are in the 1st grade and 16 are in the second grade. While the distribution of 16 students in the first grade by gender is 8 males and 8 females, there are 10 male and 6 female students among the second grade students.

Data collection tools

The data in the research were obtained by interview method. A structured interview form was used to determine the learning strategies used by the students during solfege exercises and the maps they developed for the studies. During the development of the form prepared by the researcher, the relevant literature was viewed and questions were prepared and presented to the field and language experts. After finished the necessary corrections, the form consists of 2 parts, in the first part there are questions to determine learning strategies. The expressions in the first part of the form include 6 attention strategies, 3 affective strategies, 5 repetition strategies, 1 cognition management strategy and 2 interpretation strategies. In the second part of the form, there are questions regarding the determination of mind maps related to solfeging.

The Validity and Reliability Process Of The Research

“It is not possible to determine the exact validity and reliability in qualitative studies” (Guba & Lincoln, 1984; Shenton, 2004. Cited in: Baltacı, 2019, p.380). In this context, in this study conducted by the researcher as a single person, student answers were confirmed with repeated expressions during data collection and consent was obtained from the students on a regular basis. In addition, in order to ensure the internal validity of the research, the code and category patterns extracted from the answers given to the open-ended statements in the applied interview form were examined by 1 field expert, and it was examined whether the comments reflect the subject and whether the research findings are self-consistent.

In order to ensure reliability in the research, the data obtained were presented descriptively directly in the research report and the way of presentation of both numerical and verbal data was

examined by 1 field expert in terms of purpose, method and consistency of findings. In qualitative research, “external auditing enables an external consultant auditor to examine both the process and the data obtained at the end of the study and evaluate their accuracy. The supervisor should have no ties to the study and examine whether the findings and conclusions are supported by the data” (Miles and Huberman, 1994, Cited in: Creswell, 2013, p. 254). In this context, the data collection tool was examined both at the end and at the beginning of the process and used in the research by making the necessary arrangements.

Data Analysis

The data obtained in the research were analyzed depending on the structure of the interview form. In this direction, a table was created for the number of people who gave positive and negative answers in the analysis of the answers given to the multiple-choice questions in the question set, and the category-code process was created for the answers to the open-ended questions that were drawn. In qualitative research, category and code creation processes are included in the scope of content analysis as an analysis technique. Content analysis is an inductive approach that aims to reveal the concepts underlying the data and the relationships between the concepts through coding (Sığrı, 2018.p. 280).

Ethic Procedures

During the current research, “Higher Education Institutions Scientific Research and Publication Ethics Directive” has been acted upon. The relevant form which was mentioned above was applied to all of the students at the same time, after the necessary ethical procedures were fulfilled. The research was approved by the decision of the Social and Human Sciences Research and Publication Ethics Committee of the “xxx University”, dated 7.12.2021 and numbered 1. In the research, Higher Education Institutions Ethical Behavior Principles, Higher Education Institutions Scientific Research and Publication Ethics Directive were complied with and the participants were informed about the research and signed the consent form.

Findings

Among the data obtained in the research, the sections related to the statements about the strategy use of the students were tabulated according to the gender variable by calculating the number of people for the students who chose "I agree" and "I do not agree" to the statement of using a strategy.

Findings Related to The First Sub-Problem

The situation of the learning strategies used by the students during solfeging by class and gender variables is shown in Table 1.

According to Table 1, it is seen that the most used learning strategy by the students is “determining the range” under the attention strategy. There are 7 first year students (M:3, F:4) and 7 second year students (M:3, F:4) who do rhythmical articulation before each solfege. It is seen that there are 9 first year students and 11 second year students who do not use this strategy. Considering the use of other attention strategies among a total of 32 students; determining thema and sentences 2 students in first grade, 3 students in second grade, 4 students in first grade, 3 students in second grade in detecting active-stable tones, 5 students in first grade and 4 students in second grade in taking cautionary notes, while reading the note, they play the other note.

Table 1

Status of Learning Strategies Used by Students While Studying Solfege According to Gender And Class variables

Expressions	Class	Female	Male	Female	Male	Total
		Dont agree		Agree		
Attention strategy: Doing interval detection	1	4	4	4	4	16
	2	1	3	5	7	16
Total		5	7	9	11	32
Attention strategy: rhythmical articulation before	1	1	3	7	4	16
every solfege	2	4	3	2	7	16
Total		5	6	9	11	32
Attention strategy: Identifying themas and phrases	1	0	2	8	6	16
	2	1	2	5	8	16
Total		1	4	13	14	32
Attention strategy: Detection of active-stable tones	1	2	2	6	6	16
	2	0	3	6	7	16
Total		2	5	12	13	32
Attention strategy: Writing attention-grabbing notes	1	3	2	5	6	16
	2	1	3	5	7	16
Total		4	5	10	13	32
Attention strategy: Looking at the next note while	1	2	3	6	7	16
reading a sound	2	2	5	4	5	16
Total		4	8	10	12	32
Affective strategy: Reward yourself for error-free	1	1	1	7	7	16
reading	2	1	2	5	8	16
Total		2	3	12	15	32
Affective strategy: Not feeling of failure	1	3	2	5	6	16
	2	4	3	2	6	16
Total		7	5	7	12	32
Affective strategy: Continue attention and positive	1	0	0	8	8	16
self-motivation	2	1	2	5	8	16
Total		1	2	13	16	32
Repetition strategies: Reading with change of speed	1	2	3	6	5	16
	2	4	3	2	7	16
Total		6	6	8	12	32
Repetition strategies: Write reminders	1	0	2	8	6	16
on chord-forming sounds	2	3	2	3	8	16
Total		3	4	11	14	32
Repetition strategies: Reading a chromatic sequence	1	2	1	6	7	16
consisting of double and triple intervals	2	3	3	3	7	16
Total		5	4	9	14	32
Repetition strategies: Studying slowly	1	1	1	7	7	16
	2	2	2	4	8	16
Total		3	3	11	15	32
Repetition strategies: Reading with alternating note	1	7	6	1	2	16
durations - reading each note by counting one beat	2	4	6	2	4	16
Total		11	12	3	6	32
Managing cognition strategies: Marking the difficult	1	2	1	6	7	16
places and thinking of solutions	2	3	4	3	6	16
Total		5	5	9	13	32
Meaning strategies: Making use of theoretical	1	2	3	6	5	16
knowledge	2	4	5	2	5	16
Total		6	8	8	10	32
Meaning strategies: Thinking about the functions of	1	3	2	5	6	16
tonal active-stable tones	2	2	6	4	4	16
Total		5	8	9	10	32

On the other hand, it is seen that 5 students in the first grade and 7 students in the seconda grade expressed positive opinions for looking. Regarding "interval detection" in attention strategies; It is seen that first grade students prefer to use this strategy at a higher rate. It is seen that the need for “making rhythmical articulation” before solfege studies is more common in second grade students, and female students prefer this strategy more in both grades. Regarding determining themas and sentences, it is seen that students do not use this strategic step in both grades and genders. It is seen that the first

grade students have a higher tendency to prefer the second grade students in the step of making “active-stable tones detection”. In addition to the fact that this strategic step is preferred more by the first year students among the whole student group, it is seen that this number is insufficiently preferred for both grades and gender types. It was stated that 5 (M:3, F:2) students in the first grade and 7 (M:5, F:2) students in the second grade applied in the step of "look at the other measure while reading", which is the last statement among the attention strategies.

The strategies most used by the students in the research group are under the title of attention strategies; it is seen that it is to determine the interval, to make a rhythmical articulation, to start looking at the other note. When examined in terms of class and gender, it is understood that 8 students who determine the range consist of only first grade students, 4 boys and 4 girls. There are 7 students who mainly make rhythmical articulation from solfege, and all of these students, 4 girls and 3 boys, are in the second grade. All 5 male students who start to look at the other note while reading a note and use this strategy the most are in the second grade.

Considering the answers to the use of affective strategy; It is seen that the most preferred step is "not feeling of failure" and this step is mostly preferred by 4 female and 3 male students among the 2nd year students. Considering the preference of repetition strategies; It is seen that the students made the highest rate of "speed change" and "beat change in note duration". It is seen that the predominant preferences for the reading step by changing the speed in the whole solfege are the 2nd grade students and there are 4 girls and 3 boys who practice this step. Regarding the reading of each note in solfege with a heavier beat (all notes are read in a 1-beat or 2-beat period), students in both classes use this step and 7 girls and 6 boys in the first grade, 4 girls and 6 boys in the second grade, change the beat in the note appears to have done. When we look at the situations of using the interpretation strategy, it is seen that only "utilizing the theoretical information" and reading steps are applied by considering the functions of the sounds. It is noteworthy that all of the students who use these strategy steps are second graders.

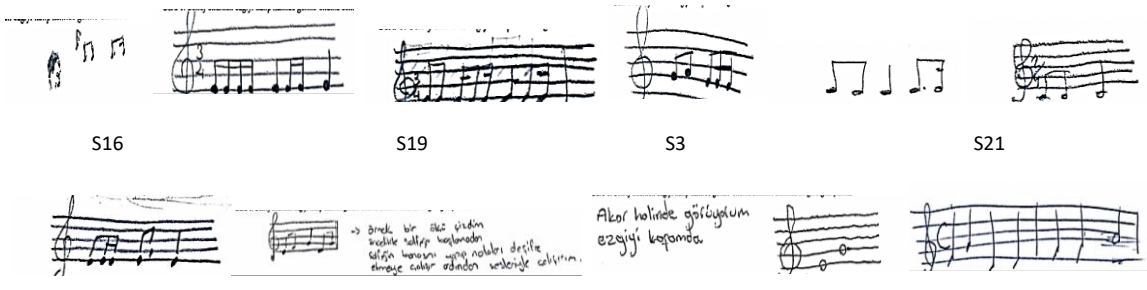
Findings of The Second Sub-Problem

In some of the questions that the students participating in the research had to draw, the students left the question unanswered. The questions that students draw; It is seen that there are questions numbered 1, 3, 4, and 5. common expressions found in student drawings are presented in a schematized form on the axis of the relevant question.

Drawings for The First Question

Question number three in the interview form is about seeing the tune as a pattern during solfeging. The drawings of the students and the related schema are shown below. Participants are coded wıth “S” and number.

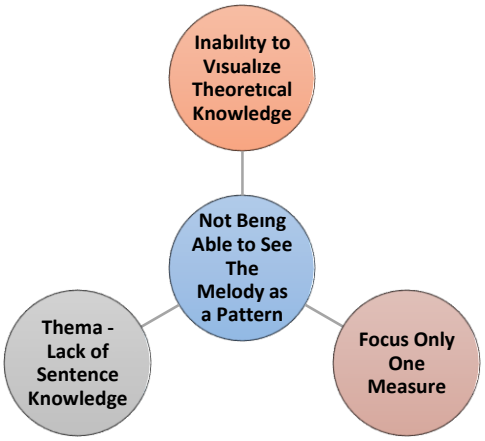
S32 S31 S14 S24 S25 211



S16 S19 S3 S21

Figure 1.

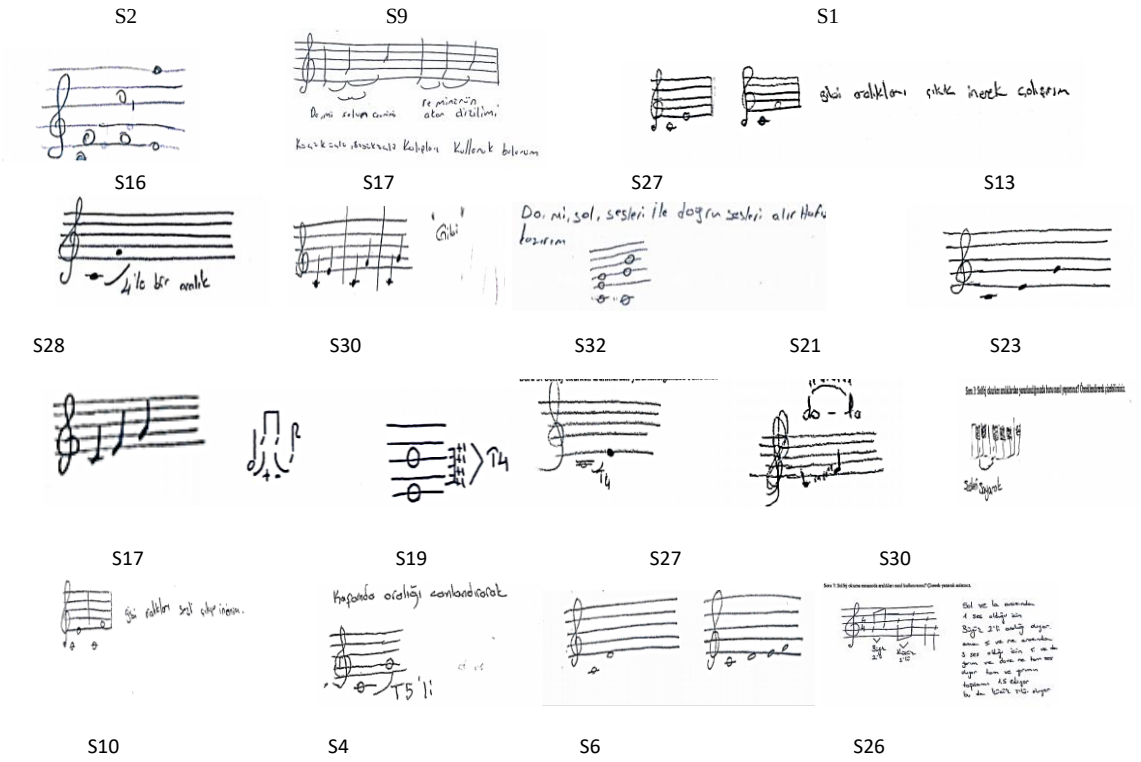
The Model of The Music Maps of The Students to See the Melody as a Pattern According to Student' Drawings



As can be seen in figure 1, in the drawings of students' use of tone, theme and phrase information during solfeging, it is seen that they cannot imagine phrase and theme information, theoretical information, melodic structure, and it is seen that they only focus on one measure.

Drawings for The Third Question

In the third question in the interview form, the students were asked to make drawings of how they used intervals in their solfege studies. The drawings of the students and the related schema are shown below.



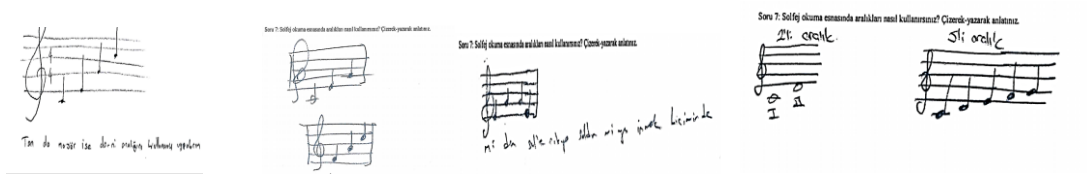
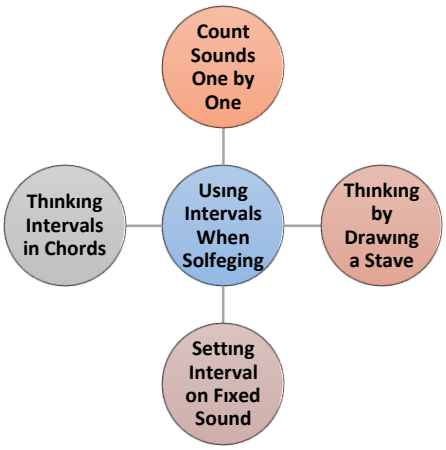


Figure 2.

Model of Students' Music Maps Of Using İntervals While Solfeging

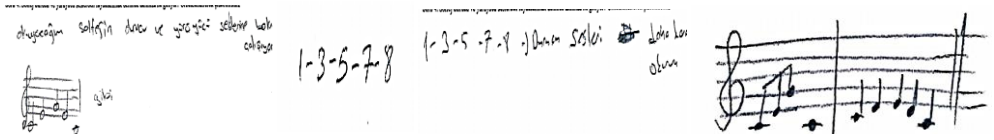


When the drawings for students using the intervals while practicing solfege and the schema attached to these drawings; It is seen that they imagine intervals through chord, count the sounds one by one while calculating intervals, try to think of interval over a fixed sound, and cannot imagine intervals without drawing a stave.

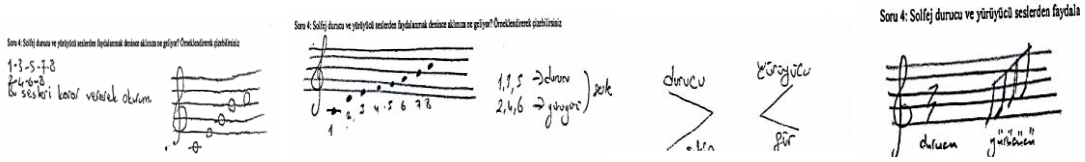
Student Drawings of The Fourth Question

The fourth question in the interview form is aimed to determining the musical maps about active-stable tones. Students were asked to draw how they benefited from active-stable tones during solfeging.

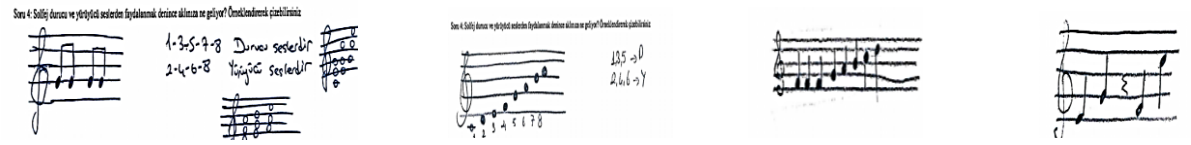
S15 S29 S11 S17



S19 S16 S25



S30 S31 S24 S28



S26

Figure 3.

Model of Students' Music Maps of Avtice-Stable Tones

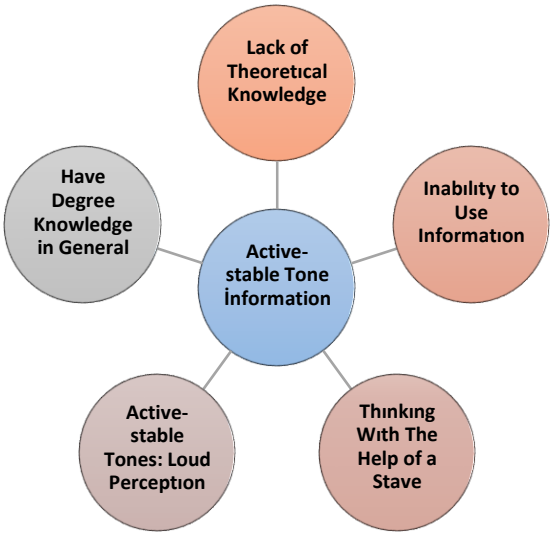
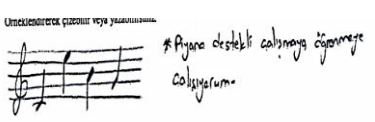


Figure 3 shows the common points seen in student drawings. In the music maps of the students' active-stable tone phonetic knowledge, it is seen that there is a general knowledge of degree, there is a lack of theoretical knowledge, there is an inadequacy in using the knowledge and mental operations are made by drawing a stave.

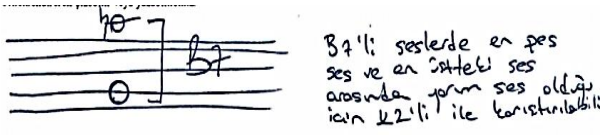
Student Drawings of The Fifth Question

In the fifth question, the students were asked to draw about the intervals they had the most difficulty with while reading solfege and the solutions for them. Students drawings and schema about this are shown below.

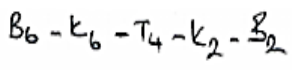
S28



S30



S26



S11

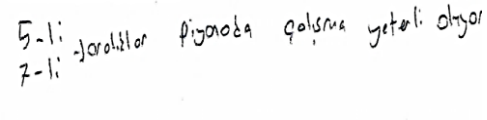
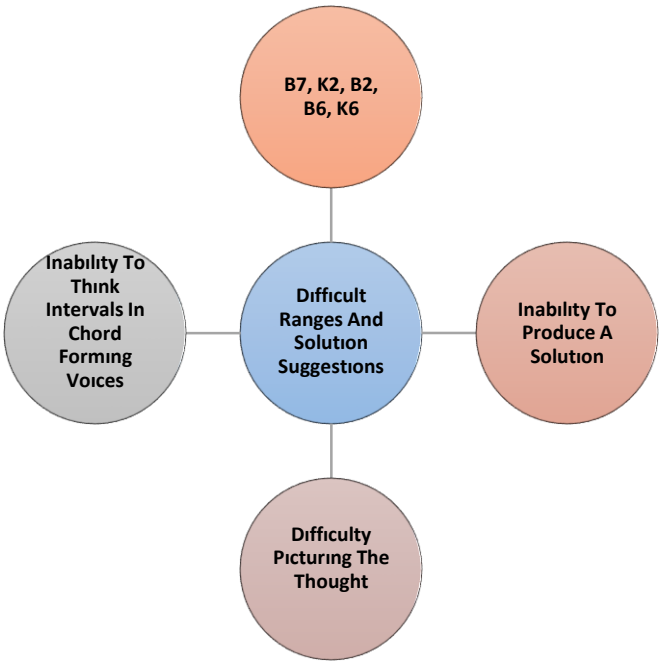


Figure 4.

Model of the Musical Maps of the İntervals and Solutions That Students Have Difficulty with While Studying Solfege



As can be seen in drawings and Figure 4, in the maps related to the problems and problem solutions experienced by the students during solfeging; It is seen that they cannot think of interval connections in chord-forming. The intervals in which the students have the most problems are the M7, 2nd and 6th intervals. In addition, students have difficulties in expressing their thoughts in pictures and cannot find solutions to existing problems.

Findings for the third sub-problem

The third sub-problem of the research is about student drawings and expressions according to graduated high school class variable. the students' drawings and expressions according to graduated high school class variable are shown in the table 2.

Table 2 shows the common categories and codes in the written and visual expressions of the students. Students who did not take any action on the related question, that is, did not answer the question, were coded in the "have no idea" section.

During the solfege exercises, the first category in the student expressions is "general work", and in the behavioral codes belonging to it, section detection, reading M6, M/m7, 4th and 5th intervals, octave hearing and vocalization, reading tone and beat at the same time statements are included. 15 students in the study group do not apply the general study. It is seen that 17 students applied the expressions under the general study title, and 9 of these students were in the first grade and 8 of them were in the second grade. Among the first year students, those who apply this step are mostly fine arts graduates. Among the students in the second year, 6 students who apply this step are straight high school graduates. Before solfege, it can be said that the first year students who graduated from fine arts high school did the general work.

Table 2.

Status of categories and themes determined according to student drawings and expressions according to graduated high school variable

Category: General work			Graduated school		Total
			F.A	Normal	
No İdea	Class	1	6	1	7
		2	1	7	8
	Total		7	8	15
Code: Section Detection (6's - 7's - 4's and 5's ıntervals octave hearing and vocalization reading voice and beat simultaneously)	Class	1	6	3	9
		2	2	6	8
	Total		8	9	17
Category: Effective use of intervals					
No İdea	Class	1	6	1	7
		2	1	6	7
	Total		7	7	14
Code: Using intervals (Using Studying intervals by establishing Maj-min. degrees, establishing intervals on fixed tones, counting interval, finding whole step-half step connections between interval, internal thinking, visualizing interval in mind)	Class	1	6	3	9
		2	1	7	8
	Total		7	10	17
Category: Problems					
No İdea	Class	1	12	4	16
		2	3	12	15
	Total		15	16	31
Code: Recognizing Problems (Can't use your voice thin-bold voice transitions difficulty in ınterval calculation can't think of voice simultaneously with beating)	Class	1	0	1	1
		2	0	0	0
	Total			1	1
Category: Using theoretical knowledge					
No İdea	Class	1	4	2	6
		2	1	3	4
	Total		5	5	10
Code: Theoretical information (Note-interval-duration information, rhythm patterns recognition, beat information, equipment, equipment-cadence-tonality information inner hearing-thinking	Class	1	8	2	10
		2	2	9	11
	Total		10	11	21

Category: Solution			Graduated school		Total
			F.A	Normal	
No İdea	Class	1	12	4	16
		2	3	11	14
	Total		15	15	30
Code: Producer Solutions (Using theoretical knowledge, thinking intervals, creating cadence reading speed differences, separating sound and rhythm elements)	Class	1	0	0	0
		2	0	2	2
	Total		0	2	2
Category: Taking the easy way					
Code: studying without Sound	Class	1	9	3	12
		2	2	11	13
	Total		11	14	25
Code: Getting Sound from an Instrument	Class	1	3	1	4
		2	1	2	3
	Total		4	3	7
Category: Preparation					
Doesn't Do Any Work	Class	1	4	1	5
		2	0	4	4
	Total		4	5	9
Code: Preparatory Studies (Internal reading, rhythmical articulation, change of speed, counting interval, working on entering tone/cadence reading reading notes one by one, reading by time difference, detecting equipment, voice opening-aperture work)	Class	1	8	3	11
		2	3	9	12
	Total		11	12	23
Category: Thema-Phrase Awareness					
Focused only one notes	Class	1	8	2	10
		2	2	11	13
	Total		10	13	23
Code: Attention to thema-Phrase(Seeing the melody as a patternnoticing the motif, thinking about the direction of the sounds, starting to look at the other note)	Class	1	4	2	6
		2	1	2	3
	Total		5	4	9

Behavior codes included in the statements regarding “effective use of intervals” include: using intervals, studying intervals by establishing a major-minor degree, establishing intervals on a fixed sound, counting interval, finding whole step-half step connections between interval, internal thinking, visualizing interval in mind. No information about these codes was found in the statements of 14 students in the study group. These codes are found in the statements of 9 students in the first grade and 8 students in the second grade. It can be said that mostly fine arts graduate students (n:6) in the first year and students who graduated from plain high school (n:7) in the second year benefited from the intervals.

In the codes of behavior in the "problem" category; There is 1 student who stated that he could not use his voice under problem recognition, high pitched-low pitched sound transitions, difficulty in counting intervals, and not being able to think of the beat and sound simultaneously. In this step, students were expected to think about, define and express the problems they experienced while studying solfege. Almost all of the students in the research group (n:31) did not answer this question.

When the behavioral codes in the "solution" category are examined, expressions such as creating productive solutions, benefiting from theoretical knowledge, thinking of intervals, reading cadence, creating speed differences, separating sound and rhythm elements have been identified. It is seen that almost all of the students did not write a statement about producing solutions. There are only two student statements in which the relevant codes are identified. The solution category and the problem category are interrelated. The determinations of the students' answers confirm this situation. It is seen that almost all of the students could not answer the question in the solution category. It can be said that only 2 students in the study group thought of applying the expressions under the generative solution.

In the category of “applying the easy way”, there are statements that most of the students (n:25) report to solfege without sounding from any instrument. Among the 12 first-year students who practice solfege without making a sound from the instrument, the students who practice in this way are fine arts high school graduates. It is seen that the students who study in the second grade without making a sound from the instrument are regular high school graduates. This may be due to the fact that there are more high school graduates in the second year. There are 7 students who state that they work by listening to a sound from an instrument, and the number of students in two classes is close among the students who study by sounding.

Among the behavioral codes in the "preparation" category; thinking internal, rhythmical articulation, tempo change, counting intervals, cadence reading, reading notes one by one, reading by making time differences, detecting equipment, performing voice and breathing exercises. Among the 23 students who made statements about the relevant codes, 8 students who mainly wrote information about the code were in their first year and graduated from fine arts high school. The second year students who wrote weighted statements about the code were 9 people. There are 9 students who did not comment on this category. It is thought that students who do not write information about the code do not do any preparatory work before solfeging.

Behavioral codes belonging to the category of “using theoretical knowledge”; note-interval-duration information, recognizing rhythm patterns, beat information, accidentals-cadence-tonality information, inner hearing-thinking expressions are included. There are 10 students who did not include the relevant codes in their statements. It is thought that the fact that the students did not use these expressions may be a lack of theoretical knowledge and a lack of vocabulary about the meaning of the word theoretical. Of the 21 students who made statements regarding the relevant code, 8 were first-year fine arts graduates and 9 were second-year high school graduates. It is seen that the students in the study group mainly think about the correct expressions related to the use of theoretical knowledge.

The codes in the category of "theme-phrase awareness"; seeing the melody as a pattern noticing the theme, thinking about the direction of the sounds, starting to look at the other note are included. While studying solfege, there are 23 students who focus only on the note they read. 9 students in the study group made statements in line with the codes belongs to the relevant category. It is thought that the students in the research group mostly focus on the note they read while studying solfege and are far from phrase-theme awareness.

Conclusion and Discussion

In this study, it was aimed to determine the learning strategies used by students in ear training and solfege teaching and musical maps related to solfeging. In line with the information obtained in the research;

The strategies that the students stated that they used the most were attention strategies and repetition strategies. The students who use attention strategies the most are male students (n:29). Considering the use of these strategies by female students, it was determined that they used repetition strategies more than attention strategies. The third strategy dimension that students frequently prefer is affective strategies. The number of preferences for cognition management strategies was equal between male and female students. Students prefer interpretation strategies more closely than other strategies, but the preference for cognition management strategies is less than other strategies in the whole student group. Attention strategies are mostly preferred by male students. Second-year male and female students equally favor the repetition strategy. Affective strategies are predominantly preferred among second-year students, and the use of this strategy by male and female students is close to each other. Although it was observed that the first and second year students preferred the strategy most frequently, it was determined that the second year male students preferred the strategy the most. In addition; when the use cases of other strategies in the whole group are examined, it is seen that affective strategies are less preferred than other strategies. This result is similar to the results of different studies. In the study by Nacaroğlu (2019) in which he determined the strategies used by music teacher candidates, according to the results obtained through the scale over 536 people; It was determined that the strategies most frequently used by pre-service teachers were monitoring, making sense and organizing strategies, but repetition and affective strategies were used less. While the low use of repetition strategies determined as a result of the research differs from our research, it is similar to the determination of the low use of affective strategies. In the study of Güdek and Kayhan Bircan (2012), in which they examined the music learning strategies of music teacher candidates in terms of different variables, 360 candidates were studied and data were collected with the music learning strategies scale. It was determined that the general high school graduate students participating in the study used the realization and reflection dimensions of the scale more than the fine arts graduate students. While the dimension of perception does not change in terms of differences between classes, the dimension of realization differs in favor of fourth grade students. In addition, it was determined that female students used the reflection dimension more. In the study, it was determined that the use cases of general music learning strategies were insufficient and the reason for this situation was that the students did not develop the need and habit of using any strategy, which is similar to the results of our research. In a similar study (Akın, 2013), the results obtained by using the learning strategies scale on 131 students also found that female students use strategies more than male students. Due to the small number of participants in our study, it is thought that there are close results in terms of gender in the use of strategy. According to the results of Deniz (2015)'s research on the use of metacognitive strategy by collecting data from 139 music teacher candidates, the use of metacognitive strategies is frequently used by students. In the study, it was determined that female students used strategies more than male students, but this difference was only in the planning strategy. In the research of Vujovic and Bogunovic (2012) on the types and levels of strategies used by music students in their cognitive processes during sight-singing, it was found that students exhibit different strategic

approaches during sight-reading, during the preparation, practice, problem identification and solving stages, and that the strategies were common and mostly functional thinking, tonal thinking and it has been determined that they refer to harmonic knowledge. The expressions of "thinking about tonal functioning" in the statements of the group participating in our research show similarities with the results of the relevant research in this respect. According to the determinations made on the students' mental-musical maps of some special situations in solfeging; it has been determined that students have a lack of knowledge of patterns and phrase, inability to see the melody as a pattern, inability to visualize theoretical knowledge in their minds, and students focus only on the note or measure they read while studying solfege. In the drawings of the use of intervals in solfeging; It is seen that the students calculate the interval by counting the sounds one by one, they mostly tend to think on the stave, and the intervals are tried to be interpreted within the chord. In the drawings of the active-stable sound information; in the musical maps, the correct expressions of the active-stable phonetic information were determined. In addition; it is thought that students have deficiencies in their other theoretical knowledge and (or) they cannot express the existing knowledge in the drawing. In the drawings related to the intervals where the most problems are experienced during solfeging and the solution proposals; It was determined that students had problems in B7, 2nd and 6th intervals, but they could not produce creative solutions. Among the whole student group (N:32), it is seen that 17 students made a general study before reading, but their studies on making use of intervals were insufficient. It is seen that there are deficiencies in the theoretical knowledge of the students. Among the reasons for this situation; It is thought that it may be not taking notes during the lesson, not doing regular repetitions, not being aware of strategic work and not developing a working strategy accordingly. In addition to the fact that the students do not work regularly, cannot use the information actively, there are some deficiencies in their mental imagery or they cannot transfer the points they imagine to the paper, may be their perceptual differences. Studies on individuals with and without musical education support this idea. Talamin et al. (2022), in a study examining audio-visual and mental images on 66 people, 33 of whom were musicians and 33 of whom were non-musicians, but whose auditory abilities were measured, concluded that musicians (those who received music education) have auditory imagery but not visual imagery. In the same study, regardless of the type of education, musical experiences of musician participants were associated with auditory-mental images, and musical activities were associated with mental imagery for auditory stimuli rather than visual stimuli. At this stage, it is thought that students are insufficient in imaging as they read and study the note visually and this situation is reflected in their drawings. During a solfeging, what is essential is the ability to hear - the connections between sounds - the use of theoretical knowledge and the feeling of the place of the sounds in the tonal-modal tone to which they are connected. It is also thought that students' studying solfege only audibly will reduce some skills and lead the student away from thinking and to memorizing. Hallam (2001) states that for auditory schema development, strategy development in practice is more closely related to expertise development than chronological age, and thinks that unless appropriate auditory schemas are developed to track errors, knowledge of appropriate strategies and their implementation is not helpful in increasing the effectiveness of practice and strategies are inadequate. From this point of view, whether listening to the solfege to be studied audibly will create a better mental image and music map in the student and its effects on the skill development in solfeging can be investigated. It is seen that the students are not aware of the problems they are experiencing, and even if they are aware of it, they cannot express it by establishing a musical behavior connection. “For the expected success in education, it is one of the important steps to be taken to ensure that individuals develop their own learning strategies, become aware of the learning strategies they use, and become responsible for their own learning” (Şahin & Uyar, 2013, p. 168). In this context, it is necessary to regularly ask students for feedback on their work, and in particular, the teacher should be a role-player in problem determination. Based on the fact that students who are not aware of the problem cannot think of solutions, creating opportunities to talk about solfeging problems and solution suggestions during the lesson can encourage students. During

solfeging training, students can be informed about strategic thinking, identifying problems and finding individual (self-appropriate) solutions to problems.

Credit Author Statement Author 1

Conceptualization and Methodology, Writing- Original draft preparation, Visualization, Investigation, Data Curation, Formal Analysis, Writing – Review & Editing, Validation. Conceptualization and Methodology, Writing- Original draft preparation, Visualization, Investigation, Data Curation, Formal Analysis, Writing – Review & Editing.

Ethical Statement

This research was ethically reviewed by "Kastamonu University Publication Ethics Committee" and was approved ethically with the;

Date of Ethics Evaluation Document: 7.12.2021

Issue Number of Ethics Evaluation Document: 1

Conflict of Interest

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References

Akın, Ö. (2013). The status of music teacher candidates' use of learning strategies (Pamukkale University sample). *Van Yüzüncü Yıl University Journal of the Faculty of Education*, *10*(1), 1-10. http://www.efdergi.yyu.edu.tr/makaleler/citl10/2013%20T%C3%BCm%20Makaleler.pdf

Aytaçlı, B. (2012). Durum çalışmasına ayrıntılı bir bakış [A detailed look at the case study]. *Adnan Menderes University Faculty of Education Journal of Educational Sciences*, *3*(1), 1-9. https://dergipark.org.tr/en/pub/aduefebder/issue/33889/375231

Baltacı, A. (2019). Nitel araştırma süreci: nitel bir araştırma nasıl yapılır? *Ahi Evran Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, *5(*2), 368-388. https://dergipark.org.tr/en/pub/aeusbed/article/598299

Brodsky, W., Henik, A., Rubinstein, B. S. & Zorman, M. (2003). Auditory imagery from musical notation in expert musicians. *Perception & Psychophysics*, *65*(4), 602-612. https://link.springer.com/article/10.3758/bf03194586

Creswell, J. W. (2016). Qualitative Inquiry & Research Design, choosing among five approaches. Sage. *Nitel araştırma yöntemleri, beş yaklaşıma göre nitel araştırma ve araştırma desenleri* (M. Bütün & S. B. Demir, Çev.). Siyasal Kitabevi (Orjinal eserin basım tarihi, 2013).

Çakıcı, D. (2011). The role of schema theory in reading comprehension. *Dumlupınar University Journal of Social Sciences,* (30), 77-86. https://dergipark.org.tr/en/pub/dpusbe/issue/4772/286219

Deniz, J. (2015). Levels of music teacher candidates' use of metacognitive learning strategies. *Journal of Academic Social Research*, *3*(14), 1-14. https://www.researchgate.net/profile/jale-deniz/publication/281722471_muzik_ogretmeni_adaylarinin_bilisotesi_ogrenme_stratejilerini_k

ullanma_duzeyleri/links/598dc59b458515507f03c314/muezik-oegretmeni-adaylarinin-bilisoetesi-oegrenme-stratejilerini-kullanma-duezeyleri.pdf

Endestad, T., Godøy, R. I., Sneve, M. H., Hagen, T., Bochynska, A., & Laeng, B. (2020). Mental effort when playing, listening, and imagining music in one Pianist's Eyes and Brain. *Frontiers in Cognitive Neuroscience*. *20* (14), 1-23. https://doi.org/10.3389/fnhum.2020.576888

Evrekli, E., İnel, D. & Balım, A. G. (2012). The effects of using concept and mind maps on students' understanding of concepts and their attitudes towards science and technology. *Abant İzzet Baysal University Journal of the Faculty of Education, 12*(1), 229-250. https://www.ilkogretim-online.org/fulltext/218-1596634275.pdf

Güdek, B. & Kayhan Bircan, E. (2021). Examination of music learning strategies of music teacher candidates in terms of different variables. *Pamukkale University Journal of Social Sciences Institute,* (43), 93-105. http://193.140.28.15/xmlui/handle/20.500.12712/33234

Güven, M. (2011). The teaching-learning process. B. Duman (Ed.), *In teaching principles and methods* (ss. 151-264) içinde. Anı Publishing.

Hallam, S. (2001). The development of expertise in young musicians: Strategy use, knowledge acquisition and individual diversity. *Music Education Research*, *3*(1), 7-23. https://www.tandfonline.com/doi/abs/10.1080/14613800020029914

Hurtienne, J. (2017). How cognitive linguistics inspires HCI: image schemas and image- schematic metaphors. *International Journal of Human–Computer Interaction*, *33*(1), 1-20. https://www.tandfonline.com/doi/abs/10.1080/10447318.2016.1232227

Knowlton, D. S. (2007). An andragogical approach for reducing cognitive load within aural theory tasks. *Visions of Research in Music Education*, *9*(1), 6. https://opencommons.uconn.edu/vrme/vol9/iss1/6/

Kohl, J.E. (2021). *Improvıng sight-reading through beginning band instruction* [Unpublished Master's Thesis]. Liberty University.

Krumhansl, C. L. & Castellano, M. A. (1983). Dynamic processes in music perception. *Memory & Cognition*, *11*(4), 325-334. https://link.springer.com/article/10.3758/bf03202445

Kurtuldu, M. K. (2012). The usability of warning signs for attention strategies in piano education. *Ondokuz Mayis University Journal of Education Faculty*, *31*(2). https://dergipark.org.tr/en/pub/omuefd/issue/20247/214817

Martin, S., Mikutta, C., Leonard, M. K., Hungate, D., Koelsch, S., Shamma, S., ... & Pasley, B. N. (2018). Neural encoding of auditory features during music perception and imagery. *Cerebral Cortex*, *28*(12), 4222-4233. https://academic.oup.com/cercor/article/28/12/4222/4566611?login=false

Nacaroğlu, D. (2019). Müzik öğretmeni adaylarının kullandıkları öğrenme stratejilerinin çeşitli değişkenler açısından incelenmesi (Tez No. 554278) [Yüksek lisans tezi, Pamukkale Üniversitesi]. YÖK Ulusal Tez Merkezi.

Özer, B. (2002). Learning strategies in education programs of primary and secondary schools. *Journal of Educational Sciences and Practice,* (1), 17-23. http://i-

rep.emu.edu.tr:8080/xmlui/bitstream/handle/11129/2424/%282002%29.%20ogretim%20ve%20orta%c3%b6gretim%20.pdf?sequence=1

Schunk, D. H. (2014). Learning theories an educational perspective. (M. Şahin. Trans. Ed.). Nobel.

Senemoğlu, N. (2009). *Development, learning and teaching. From theory to practice*. (Expanded 14th edition). Pegem Academy.

Sığrı, Ü. (2018). *Qualitative research methods*. Beta.

Somuncuoğlu, Y., & Yıldırım, A. (1998). Learning strategies: Theoretical dimensions, research findings and implications for practice. *Education and Science*, *22*(110). http://213.14.10.181/index.php/EB/article/view/5354

Şahin, H., & Uyar, M. (2013). Reflections of the use of learning strategies on academic achievement. *Abant İzzet Baysal University Journal of the Faculty of Education*, *13*(1). 164-177. https://eric.ed.gov/?id=EJ1246019

Şen, E. (2021). An analysis on music maps with their symbolic and graphical representations. *Education and Science, 46*(207), 439-463. https://www.researchgate.net/profile/Ebru-Sen-2/publication/348346573_An_Analysis_on_Music_Maps_with_Their_Symbolic_and_Graphic_Representations/links/60ffc1c91e95fe241a8ed8ef/An-Analysis-on-Music-Maps-with-Their-Symbolic-and-Graphic-Representations.pdf

Ünlü, S. E., & Ece, A. S. (2019). Reading notation with Gestalt perception principles. *Journal of Human Sciences*, *16*(4), 1104-1120. https://doi.org/10.14687/jhs.v16i4.5822

Talamini, F., Vigl, J., Doerr, E., Grassi, M., & Carretti, B. (2022). Auditory and visual mental imagery in musicians and non-musicians. *Musicae Scientiae*, 1-14. https://doi.org/10.1177/10298649211062724

Tsabary, E. (2013). *The aural skills acquisition process of undergraduate electroacoustic (ea) music majors in the context of a new aural learning method* [Unpublished doctorate thesis]. Boston University.

Vujović, I., & Bogunović, B. (2012, July). Cognitive strategies in sight-singing. In *Proceedings Book of 13th ICMPC/ESCOM Conference* (pp. 1106-1111)

Yazıcı, Z. F., Dişiaçık, N. D. & Mungan, E. (2015). Perceptual grouping in music–I. *Academic Review Journal,* 51. 488-507. https://www.researchgate.net/profile/Zeynep-Yazici/publication/284354885_MUZIKTE_ALGISAL_GRUPLAMA__I/links/5652030208aefe619b1894cf/MUeZIKTE-ALGISAL-GRUPLAMA-I.pdf

Yiğit, Ç. (2017). *The effect of oriental maps created using graphics, symbols and pictures on success in teaching school songs* [Unpublished doctorate thesis]. Uludağ University.

Yiğit, Ç., & Özeke, S. (2020). The effect of song maps created by using graphs, symbols and images on the success of teaching. *Education & Science/Egitim ve Bilim*, *45*(202), 345-363. doi:10.15390/EB.2020.8387

Yüksel, S. (2014). Learning strategies and classifications. S. Fer (Ed.), In learning and teaching theories and approaches (ss. 151-164). Anı Publishing.