



Received: 25.06.2020  
Received in revised form: 25.07.2020  
Accepted: 10.08.2020

Girgin, D. (2020). An investigation of the songs created by student-teachers in music via an interdisciplinary approach based on the RASCH measurement model and MAXQDA analysis program. *International Online Journal of Education and Teaching (IOJET)*, 7(4). 1661-1687.

<http://iojet.org/index.php/IOJET/article/view/967>

## AN INVESTIGATION OF THE SONGS CREATED BY STUDENT-TEACHERS IN MUSIC VIA AN INTERDISCIPLINARY APPROACH BASED ON THE RASCH MEASUREMENT MODEL AND THE MAXQDA ANALYSIS PROGRAM

*Research article*

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## Abstract

The study aimed to investigate the songs created by the student teachers in music in the focus of special education through an interdisciplinary approach based on the Rasch measurement model and the Maxqda analysis program. This case study adopted the mixed research design. The participants consisted of 12 student teachers in music and 10 jury members in 2018-2019 academic year. In the quantitative analysis of the study, 10 expert jury members in the field of Music Education evaluated 12 songs using an evaluation form consisting of 8 items via the Rasch measurement model, and in the qualitative context, the views of the jury members on the songs were examined through the Maxqda analysis program. The jury members were selected in accordance with the maximum diversity sampling model on voluntary basis. All the songs focused on the achievements in the special education course. The results revealed that the most difficult item was the 'musical creativity level', whereas the easiest item was 'the degree of suitability for purpose in the creation of lyrics'. In the study, it was recommended that field courses and didactic courses should be integrated in the field of music education.

*Keywords:* Student teachers in music, special education, interdisciplinary approach, teacher education, Rasch measurement model, Maxqda analysis program

## 1. Introduction

The world has evolved and changed at the center of education and training activities in the 21st century. Achieving knowledge and developing new skills to meet different educational or market needs have become significant. It is emphasized that educational programs should be able to develop high-level thinking skills that can serve the needs of individuals and evaluate and solve the problems faced in real life. In this context, the knowledge and skills of teachers also have an important place in the education process of individuals. Defining teacher skills and knowledge that guide the professional development of teachers seem to be very important in terms of revealing learning activities with clear and understandable goals (Organization for Economic Co-operation and Development [OECD], 2005). In this context, teacher competencies, which determine the professional qualifications and effectiveness of teachers, are defined as the knowledge, skills and attitudes that teachers should have in order to perform their profession effectively and efficiently (The Ministry of National Education [MEB], 2017). The teaching profession, which has been updated by the Ministry of National Education (2017), consists of three main competence areas associated with each other and 11 competencies under them. These are professional knowledge (field knowledge, field education knowledge, legislative knowledge), professional skills (education planning, creating learning environments, managing the teaching and learning process, measuring and evaluating), attitudes and values (national-spiritual and universal values, student approaches, communication and collaboration, personal and professional development), which are included in the general qualification guide for the teaching profession.

The qualifications and competencies that teachers should have are very important in every teaching level as well as in every field or discipline. In this context, the basic structure of teacher education programs is very significant in terms of training qualified teachers. A qualified teacher education will enable student teachers to have the competencies determined in the field of teaching and to organize qualified teaching-learning processes in the education process. Regarding this situation, the Council of Higher Education updated 25 teacher education undergraduate programs and included the Special Education and Inclusion as a didactic course in the Music Education undergraduate program in the undergraduate programs which it deals with as part of the "New Teacher Training Undergraduate Programs". In addition, it includes didactic knowledge elective courses such as Individuals and Adaptation of Learning Disability and Teaching (Council of Higher Education, 2018). Thus, in addition to the field education courses of student teachers in music, the didactic knowledge courses taken by them contribute to the general proficiency of the teaching profession they should have.

Didactic knowledge elective courses, which emphasize the importance of the concept of individualizing teaching in coordination with the achievements of the special education and inclusion course in music teacher undergraduate programs and support the skills of individuals with learning disabilities in educational environments, are important in terms of ensuring student teachers to have different perspectives based on an interdisciplinary approach. This would help teachers carry out their education with an interdisciplinary approach, not based on a single discipline, in the focus of the program philosophy that focuses on the interests and needs of learners.

Today, interdisciplinary teaching approach is of great importance as a consequence of changing needs in the field of education. The interdisciplinary teaching approach is defined in different ways by researchers and, therefore, gains a new meaning. A subject, concept or problem determined through the interdisciplinary approach is evaluated and analyzed from the perspective of different disciplines, and it is integrated into a whole again. According to Jacops (1989), interdisciplinary education is the approach that reconsiders the subject, event, problem, application or experience taken to the center with more than one discipline perspective. According to Yıldırım (1996), interdisciplinary education is the evaluation of a particular concept, problem or subject by using different knowledge and skill areas on the basis of different perspectives. Aydın and Balim (2005), on the other hand, defined this concept as the integration of the problem or issue with relevant fields and skills that could shed light on different aspects of this concept. Perkins (1994) expressed the interdisciplinary approach as a wealth of information from different disciplines, where the correct answer is sought without adhering to a single discipline. In summary, the interdisciplinary approach refers to the relationship between two or more disciplines, to combine at least two disciplines and to integrate and present disciplines as a meaningful whole around certain basic concepts (Apostel, 1970; Kline, 1995). The interdisciplinary approach is not to transfer information from a discipline to another discipline. The essence and main purpose of this approach is to learn the subject as a meaningful whole and to create opportunities to be considered from the perspectives of other disciplines (Yalçın & Yıldırım, 1998). In this context, the teaching process in an interdisciplinary structure makes an important contribution to teaching and combining the meaningful knowledge and skills of certain disciplines since an interdisciplinary teaching approach makes it easier to articulate an event from the focus of different disciplines, to understand the event and to identify solutions to problems. In this context, the association of the knowledge of student teachers in music with special needs in the music field will contribute to their professional development and knowledge.

The developments and changes in the 21st century change the structure of the education and training processes and require a different perspective. A more focused approach to individual

characteristics has become widespread in the field of music education, as in other educational fields. Individuals have some needs because of their developmental characteristics. Individuals with different developmental characteristics and needs according to their peers are called individuals with special needs who need special education. Individuals in need of special education are individuals who differ significantly from their peers in terms of their individual characteristics and educational qualifications (The Ministry of National Education [MEB], Special Education Services Regulation, 2018). It will be possible for teachers to reach their students, who need special education in the classroom, and to contribute to them only by becoming aware of their characteristic structures. Within the scope of the special education and inclusion course included in teacher training programs, it is ensured that student teachers in music learn the basic principles of special education, know the causes of disability, recognize the importance of early diagnosis and treatment, and have information about individuals with various disability types. The fact that student teachers become familiar with the social, emotional and behavioural characteristics of their students with special needs when they start the teaching profession will help them offer a qualified education to those children with mental, auditory, visual, and physical disabilities, with language and communication disorders, with attention deficit and hyperactivity disorder, and with special learning disabilities, autism and giftedness. In this context, the qualifications that a music teacher should possess are the competencies to create awareness in reaching individuals with special needs as well as individual features and competencies required for music and music education, and to make adaptations in the curriculum in teaching with integrated activities for students in the classroom (Akbulut, 2006).

The contribution of music teachers is undeniably important in music education to be given to individuals who need special education (Tufan & Güdek, 2008) since music is the most basic way of communication to reach students with special needs. It is stated in the literature that music has an effect that improves the body, opens the mind and activates the creative spirit (Campbell, 2000; Hallam, 2010). There are examples that show that music can be more successful in a child with a special need than the balance achieved by psychologists and psychiatrists (Campbell, 2002). This effect is not only limited to emotional development; it is also seen that students who are interested in music have made progress towards being more successful mentally.

Music education is the process of helping individuals acquire certain musical behaviors through their lives, creating desired changes in musical behaviors, or developing and creating individuals' musical behaviors for their own purposes (Uçan, 1994). When pedagogically examined, music education has an important role in different developmental areas of individuals including cognitive, affective, psychomotor, social and language development. In this fine line, where the use of music shifts from education to rehabilitation, music can be used as an activity that brings success to the lives of individuals with special needs. Music education has a special importance and place in the developmental periods of individuals with special needs since music education is a field that emotionally and physically stimulates individuals. Music also enables individuals to express themselves. Music education for individuals with special needs contributes greatly to their development by affecting their lives positively, increasing their self-confidence. Emphasis has also been placed on the positive contribution of musical studies to individuals' communication skills in special education, and the effectiveness of music education in terms of helping individuals with special needs gain basic skills, such as developing good behavior, having positive self-perception and establishing eye contact, has been stated (Meadows, 1997). According to Turan (2006), music enables children with special needs to develop spiritually, physically and academically, while ensuring that children trust themselves and enjoy success. In addition, art and music education is effective in providing

attitudes and behavior to individuals with special needs (Güler, 2008). Music is used as an educational tool with musical activities in the field of special education (Güven & Tufan, 2010; Yıldırım & Albuz, 2010) and the importance of music is increasing day by day in the education of children with special needs (Uslu, 2007). Music activities increase attention skills, hand-arm coordination skills, auditory perceptions and language skills of children with special needs. In addition, such activities contribute to the development of verbal and non-verbal communication skills of children with special needs (Havlat, 2006; Stephenson, 2006). When the studies in the literature are examined, there are also important studies which reveal that music has a positive effect on the development of social skills (Akıncı & Alpagut, 2017) and also contributes to children's development in learning (Brown, Benedett, and Armistead, 2010; Brown and Sax, 2013; Bugos and DeMarie, 2017; Moreno Marques, Santos, Santos, Castro & Besson, 2007; Williams, Barrett, Welch, Abad and Broughton, 2015).

More specific studies on the use of music and music education in the field of special education are also reported in the literature. Although it is seen that, among these studies, studies dealing with the relationship between autism spectrum disorder and music are more, there are also studies investigating the effect of music education with children who need different types of special education.

Berrakçay (2008) examined the effect of music in the regulation of social behavior of children with autism spectrum disorders and in reducing negative behaviors. Yılmaz (2010) investigated the non-verbal communication signs that emerged within the framework of the music workshop for students with autism spectrum disorders. While Güven and Çevik (2011) studied music education in children with autism spectrum disorders, Eren, Deniz and Düzkantar (2013) examined the effectiveness of music activities prepared according to the Orff approach in teaching concepts to autistic children. Baker, Wigram and Gold (2005) analyzed the effect of music on the treatment and evaluation of autistic spectrum disorder, whereas Lawes (2012) examined the use of music therapy in autism. Warnock (2012) investigated that multiple learning problems, complex needs, and children with autism could only be trained using melodies without lyrics during music therapy and Boso, D'Angelo and Barale (2013) examined the relationship between music ability and neuropsychological in autism spectrum disorder. Artan (2001) examined that music was an effective technique in the education of children with special needs, whereas Savarimuthu and Bunnell (2002) focused on the effect of music on patients with learning disabilities. Turan (2006) investigated the opinions of teachers about the problems encountered in using music in special education and Öner (2006) examined the sensitivity of children with learning disabilities to music. Çadır (2008) examined whether social skill teaching programs prepared according to the music therapy method were effective in learning the social skills of children with mental disabilities. Cakir-Dogan (2011) analyzed the state of music education for students with intellectual disabilities at primary level in Turkey. Ceylan (2012) focused on the effects of music education on the developmental characteristics of preschool children with a hearing disability, while Eren (2012) examined the inclusion practices in music education and the use of Orff Schulwerk. Malkoç and Ceylan (2013) analysed the effects of music education on the developmental characteristics of preschool children with a hearing disability, whereas Çay and Özbey (2016) examined the effectiveness of teaching with the skill of developing rhythm with guitar to students with mental disabilities.

When the literature is examined, there are many studies focusing on the effects of music on students with disabilities and examining the effects of music on individuals with special needs in the context of different variables. However, there are not any studies which focus on whether music teachers or student teachers in music can integrate their field knowledge achievement with professional knowledge, produce original products and gain experience, or transfer the knowledge acquired in the field to didactic knowledge courses. Within the scope of the special



education and inclusion course in education faculties, no studies or practices are carried out on how student teachers will combine the professional knowledge of the special education field with their own field knowledge. Before starting the teaching profession, student teachers in music cannot gain experience about what they can do in the focus of their basic behavioral and learning features as well as about how to transfer their knowledge of the field to their didactic knowledge, the most important of which is the behavioral and learning features of the student with special needs that might be found in their class.

In short, although there are many studies focusing on the effects of music on students with disabilities, such a research is needed since there is no research for music teachers or student teachers to transfer the knowledge acquired in field courses to the special education didactic course and to produce original songs in this process. The songs, which are discussed in the focus of various achievements in music education, are an important tool of music education (Akıncı, 2019).

The purpose of this research was to examine the songs created by student teachers in music in the focus of special education achievements through an interdisciplinary approach. In this context, via the Rasch Measurement Model and the Maxqda analysis program, it was aimed to reach more general results in a comprehensive manner. Consequently, the study aimed to find out the answer to the research questions;

1. What are the opinions of student teachers regarding the strictness/generosity and item difficulty analysis of the evaluators in the focus of special education achievements?
2. What are the jury opinions about the songs composed by student teachers by focusing on special education achievements with an interdisciplinary teaching approach?
3. What is the conceptual structure of the songs composed by student teachers by focusing on special education achievements with an interdisciplinary teaching approach?

## **2. Methodology**

### **2.1. Research Model**

This case study adopted mixed research design based on both qualitative and quantitative data. In the literature, it is stated that by combining quantitative and qualitative researches, each approach can maximize its power and develop complementary insights (Creswell and Plano Clark, 2011; Hanson, Creswell, Clark, Petska and Creswell, 2005). In this study, it was attempted to perform an in-depth analysis of the research problem by quoting quantitative values in the quantitative context and the subjective interpretations of the participants in the qualitative context.

In the study, the Rasch measurement model was used to analyze the songs created by student teachers in music in the focus of special educational achievements. The Rasch model is defined as a model that explains the correctness of an answer to confirm an item on a linear scale with the relative distance between an item and the participant position (Wright and Linacre, 1994). In other words, answers given by participants to any item is a research process that is evaluated by squaring the scores of the items evaluated on the same plane with the difficulty/convenience level of the items in the assessment (Batdı, 2016; Batdı, 2017). The Rasch measurement model explains how a person's performance based on a particular feature predicts that person's response correctly or incorrectly (Tennant & Conaghan, 2007). The Rasch measurement model contributes significantly to obtaining valuable data for the development, modification and monitoring of a valid measurement (Boone and Scantlebury, 2006; Tennant, & Conaghan, 2007).

In the qualitative part of the research, the perspectives of the jury members towards the songs created by the student teachers in music through an interdisciplinary teaching approach with the focus of special education achievements were analyzed in accordance with the case study design with the Maxqda software. A case study is an approach that relies on solid evidence and requires in-depth research, and deeply examines and analysis the structure among factors that affect the current situation or the development process (Best & Kahn, 2017; Yıldırım & Şimşek, 2013). A case study provides an in-depth investigation of the situation in which a limited system or several situations are depicted and analyzed (Merriam, 2013). In addition, it deals with factors related to a situation with a holistic approach (Stake, 2005; Yin, 2003).

Conducting the research within the scope of the special education course of the student teachers in music, and creating 12 songs from the subject achievements in 14 units within the scope of the special education course are among the limitations of the study.

## 2.2. Participants

The study group consisted of 12 student teachers who took the "Special Education" course in the Department of Music Education of the Faculty of Education in a state university in Tukey in the 2018-2019 academic year. In the study, the songs created by 12 student teachers in music were evaluated via the Rasch analysis method by 10 expert jury members in the field of Music Education selected in accordance with the maximum diversity sampling model. In cases where appropriate samples are selected (Singh, 2007; Linacre, 1993) with a wide range and distinct features related to the subject being researched and where the specific and very different features of these situations are described (Palinkas, Horwitz, Green, Wisdom, Duan, & Hoagwood, 2015), the maximum diversity sampling method is used. In the research, the jury members were determined according to various qualifications as specialists in the field of music in different educational settings with different experiences in private educational institutions.

The jury members scored to evaluate the songs in the focus of the special education course outcomes. In the qualitative dimension of the research, 10 jury members were interviewed to determine the perspectives of the student teachers in music regarding the songs that they created in the focus of special education achievements through an interdisciplinary teaching approach. Information about the jury members is given in Table 1.

Table 1. Information about the Jury Members

Jury Member	Gender	Professional Seniority	Educational Background
J-1	F	0-5 years	Bachelor's Degree
J-2	F	6-10 years	Master's Degree
J-3	M	6-10 years	Master's Degree
J-4	F	16-20 years	Doctoral Degree
J-5	F	11-15 years	Doctoral Degree
J-6	M	11- 15 years	Doctoral Degree
J-7	F	6-10 years	Master's Degree
J-8	M	16-20 years	Doctoral Degree
J-9	M	11-15 years	Doctoral Degree
J-10	F	11-15 years	Doctoral Degree

In Table 1, 6 of the jury members evaluating the songs created in the focus of the special education course outcomes are women, whereas 4 are men. Considering the professional

seniority of the jury members, it is seen that 1 of them has 0-5 years of professional seniority, that 3 of them have 6-10 years of professional seniority, that 4 of them have 11-15 years of professional seniority, and that 2 of them have 16-20 years of professional seniority. In terms of educational status, it is seen that 1 of the jury members has a bachelor's degree, that 3 of them have a master's degree and that 6 of them have a PhD education.

### **2.3. Data Collection and Analysis**

All the data obtained from the research were collected in the spring semester of the 2018-2019 academic year. In the quantitative context, analyses were carried out with the Rasch model. The Rasch model is related to the single-parameter item response theory model and based on similar measurement theories (Bond & Fox, 2015; DeVellis, 2003). Logits or log-probability units are the main units of measurement in the Rasch analysis (Engelhard, 2013). Analyses in this dimension were conducted with the Facets analysis program. At this point, it can be mentioned that the Rasch model has three surfaces. The first is the jury members (10 juries) composed of experts in the field; the second is the items in the form used by the jury members for evaluation purposes (8 items); and the third is the songs (12 songs) created by the student teachers in music in the focus of the achievements of special education courses. The song evaluation form prepared by the researcher was created after the relevant national and international literature was scanned. For the prepared form, the opinions of two experts in the field of educational sciences, two experts in the field of music education and two experts in the field of special education were received. Because it is necessary to determine the suitability of the form to be used and the level of representing the field it contains (Karasar, 2016). With the feedback from the experts, the song evaluation form was reviewed and finalized. In the evaluation form, items, such as the nuances of the song; musical rhythm in the song-degree of interpretation-integrity; the level of use of sound in singing the song (whether syllables are sung clearly; whether diction is smooth); the degree of fitness for purpose in the writing of the lyrics (being related to the special education course; including the achievements of the special education course); suitability in the level of student development in lyrics (whether students can catch the words) (the song is neither too mobile nor too slow); the degree of clarity of the lyrics (the words are clearly understood when the words are audibly interpreted with music); and musical creativity level, were included. The song evaluation form was prepared as a 5-point Likert-form consisting of 12 items. The jury members evaluated the songs in terms of their levels. The items in the song evaluation form were coded by the jury members as "1 = very bad, 2 = bad, 3 = medium, 4 = good and 5 = very good".

In the research, the interview technique was used to analyze the opinions of the jury members regarding the songs. As a qualitative data collection tool, a semi-structured and non-directive interview form developed in line with the opinions of experts through the consideration of different studies was used. For the interviews with the jury members, questions were prepared in terms of the criteria in the song evaluation form. In order to ensure the scope and appearance validity of the questions included in the interview form used as a qualitative data collection tool in the research, the opinions of five academics – including three academics in the field of music education and two academics in the field of Turkish education – were taken. It is also stated that the use of the opinion contributes to the reliability of the research since the use of expert opinions in a qualitative context is considered to be important for confirmation (Batdı, 2019). The experts evaluated the forms in terms of appearance, content and clarity. Final qualitative data collection tools were created by making necessary corrections in line with the expert opinions. In the interview form, there are questions that reveal the views of the jury members on musical rhythm in the song-degree of interpretation-integrity; the level of use of sound in singing the song; the degree of fitness for purpose in the writing of the lyrics;



suitability in the level of student development in lyrics; the degree of clarity of the lyrics; and the degree to which the song reaches its purpose.

In the research, the jury members were met, and the process based on voluntary participation was started. During the interviews with the jury members, a voice recorder was used with their permission. The interviews, which were held when the juries were free, took about 20 minutes. For the analysis of the qualitative data, the records obtained from the interviews were transferred to the computer environment. In the research, the qualitative opinions obtained from the interviews were analyzed in accordance with the content analysis and modelled with the Maxqda Analytics program. It was aimed to combine, organize and interpret common views (codes) that were similar to each other under common themes with the content analysis used to reach the concepts and related links from the qualitative data obtained. In the research, the responses given to each question were analyzed and interpreted with content analysis, and the codes were created.

#### **2.4. Validity and Reliability**

In qualitative research, instead of the expressions of validity and reliability used in quantitative research, the criteria of credibility, reliability, verifiability and transferability are used (Krefting, 1991; Lincoln & Guba, 2000; Merriam, 2013; Whittemore, Chase & Mandle, 2001). The names of the jury members participating in the study were not given within the framework of ethical principles, and the results of the data obtained in order to ensure its verification were expressed systematically and in a clear and understandable language. In order to meet the transferability criteria in the research and to provide the participants' confirmation, direct quotations were used to reveal the opinions of the jury members participating in the research. Such direct quotations in qualitative research reveal the reliability of the research (LeCompte and Goetz, 1982). Codes such as J-1 ..... J-10 were used in the quotations. In order to ensure the reliability of the research, the data of the research were analyzed separately by two different researchers. In order to contribute to the reliability of the research, the reliability calculated with the Miles & Huberman (2015) reliability formula ( $\text{Reliability} = \frac{\text{Consensus}}{\text{Consensus} + \text{Disagreement}} * 100$ ) was found as 93%. Reliability calculations over 70% are considered to be reliable for a research (Miles & Huberman, 2015).

### **3. Results**

#### **3.1. Quantitative Findings of the Research**

3.1.1. Rasch Analysis Findings Regarding Songs Created by Student teachers in music through an Interdisciplinary Teaching Approach within the Focus of Special Educational Achievements

The opinions of the participants about the songs created by the student teachers in music with an interdisciplinary teaching approach in the focus of special education achievements were analyzed with the multi-surface Rasch measurement model. As seen in the data calibration map, the surfaces used in the research were listed as songs (S1... S12), strictness/generosity of the jury members and the suitability of the items used in the measurement tool. General information about the relevant surfaces reached as a result of the analysis is presented in Figure 1. Accordingly, the most qualified song among the songs created was presented at the top (S11 and S7 and S9), whereas the lowest quality song (S12 and S8 and S10) was presented at the bottom. However, the most generous jury members, J10 and J1, were listed from top to bottom in the jury column. Similarly, the most difficult items were presented at the top (M7), and the easiest items were presented at the bottom (M4).

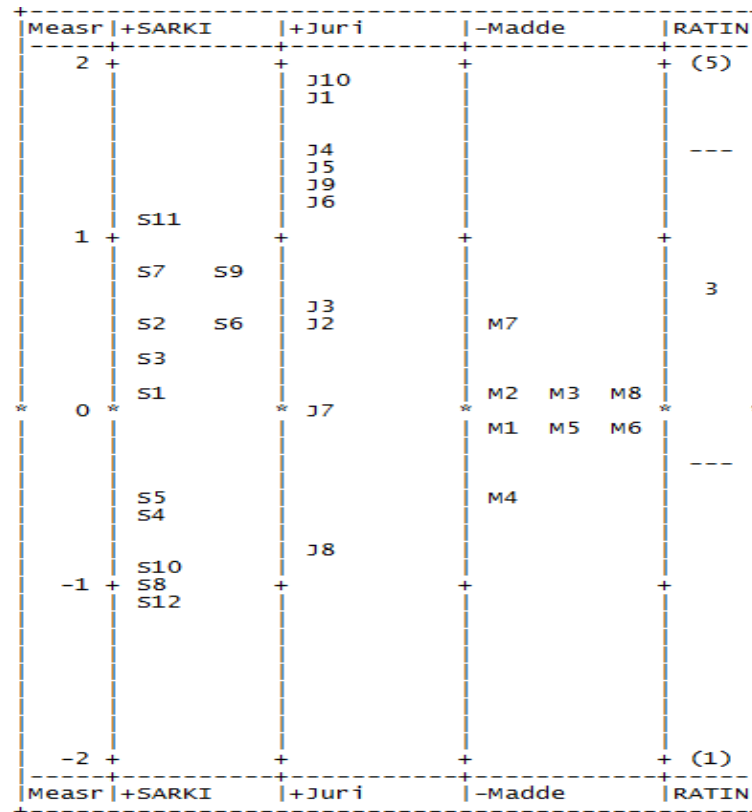


Figure 1. Data calibration map

It is also seen that a general analysis was made in the calibration map presented in Figure 1. According to the evaluations of the participants, it can be said that the songs with the codes S11, S7 and S9 were of high quality, whereas the songs with the codes S12, S8 and S10 were of low quality. When the column where the items are presented is analyzed, it is seen that the item M7 (Musical creativity level) was the most difficult one to perform and that M4 was the easiest one to perform (the degree of fitness for purpose in the writing of the lyrics (being related to the special education course, involving special education course achievements) ). It can also be stated that J10 and J1 were the most generous jury members, whereas J8, J7 and J2 were the strictest jury members. A measurement report for the songs created is given in Table 2 below.

Table 2. Measurement Report for Songs

Total Score	Total Count	Obsvd Average	Fair(M) Average	+ Measure	Model S. E.	Infit MnSq Zstd	Outfit MnSq Zstd	Estim. Discrm	Correlation PtMea PtExp	Nu SARKI
297	80	3.71	3.75	1.11	.17	.61 -2.8	.57 -3.0	1.44	.69 .53	11 S11
287	80	3.59	3.62	.83	.16	1.13 .8	1.14 .8	.83	.58 .54	7 S7
285	80	3.56	3.59	.78	.16	.91 -.5	.91 -.5	1.08	.43 .54	9 S9
275	80	3.44	3.46	.52	.16	1.25 1.5	1.23 1.4	.72	.53 .54	2 S2
273	80	3.41	3.43	.47	.16	.88 -.7	.86 -.8	1.17	.41 .54	6 S6
267	80	3.34	3.35	.32	.16	1.84 4.6	1.89 4.7	.19	.18 .54	3 S3
257	80	3.21	3.21	.07	.16	1.03 .2	1.02 .1	.89	.67 .53	1 S1
233	80	2.91	2.86	-.53	.16	.68 -2.6	.64 -2.6	1.42	.63 .50	5 S5
230	80	2.88	2.82	-.60	.16	.93 -.4	.99 .0	1.08	.46 .50	4 S4
220	80	2.75	2.69	-.86	.16	.88 -.8	.87 -.8	1.05	.52 .47	10 S10
214	80	2.67	2.61	-1.02	.17	.85 -1.0	.79 -1.3	1.15	.58 .46	8 S8
212	80	2.65	2.58	-1.08	.17	.90 -.6	.80 -1.2	1.16	.52 .45	12 S12
254.2	80.0	3.18	3.16	.00	.16	.99 -.2	.98 -.3		.52	Mean (Count: 12)
29.5	.0	.37	.41	.75	.00	.31 1.9	.33 1.9		.13	S.D. (Population)
30.8	.0	.38	.43	.78	.00	.32 2.0	.34 2.0		.14	S.D. (Sample)

Model, Populn: RMSE .16 Adj (True) S.D. .73 Separation 4.49 Strata 6.32 Reliability .95  
 Model, Sample: RMSE .16 Adj (True) S.D. .76 Separation 4.70 Strata 6.60 Reliability .96  
 Model, Fixed (all same) chi-square: 246.8 d.f.: 11 significance (probability): .00  
 Model, Random (normal) chi-square: 10.5 d.f.: 10 significance (probability): .39

When Table 2 is examined, a detailed measurement report on the effectiveness of the songs created by the student teachers in music is presented. In the table, the reliability coefficient was found to be 0.96 in the Rasch analysis. The 0.96 value obtained as the reliability coefficient indicates the reliability of the songs created. In other words, the reliability coefficient indicates that the songs are ranked with a very high level of reliability. In addition, when the other data in the table are evaluated, it is noticed that, when Chi-square test was performed with 4.70 separation index and .96 reliability coefficient, there was a statistically significant difference between the songs created ( $\chi^2 = 246.8$ ,  $sd = 11$ ,  $p = 0.00$ ). When the infit values are examined, it is seen that any song did not have an infit value lower than 0.6, but only the S3-coded song had an infit value higher than the expected upper value of 1.4. When the outfit values are examined, it is revealed that the S6-coded song had a lower outfit value than the expected lower value, while the S3-coded song had a higher outfit value. In this case, it can be said that the songs with infit and outfit values presented are not included in the expected quality control values of the infit and outfit values for the relevant criteria. In Table 3, the strictness/generosity information of the jury members' scores for group presentation competencies are given.

Table 3. Jury Members' Strictness/Generosity Comparison

Total Score	Total Count	Obsvd Average	Fair (M) Average	+ Measure	Model S. E.	Infit MnSq	Zstd	Outfit MnSq	Zstd	Estim. Discrm	Correlation PtMea	PtExp	Nu Jürü
349	96	3.64	3.67	1.88	.15	1.18	1.2	1.18	1.2	.81	.57	.49	10 J10
347	96	3.61	3.65	1.84	.15	.65	-2.8	.68	-2.4	1.24	.35	.49	1 J1
332	96	3.46	3.49	1.52	.14	.62	-3.2	.64	-2.9	1.27	.26	.50	4 J4
327	96	3.41	3.43	1.41	.14	1.18	1.3	1.11	.8	1.07	.76	.51	5 J5
321	96	3.34	3.37	1.29	.14	1.60	3.9	1.64	4.0	.26	.36	.51	9 J9
319	96	3.32	3.34	1.25	.14	.93	-.4	.94	-.4	.99	.42	.51	6 J6
286	96	2.98	2.95	.58	.14	.88	-.9	.83	-1.3	1.63	.85	.51	3 J3
281	96	2.93	2.90	.47	.14	.91	-.7	.90	-.7	.95	.30	.50	2 J2
259	96	2.70	2.64	.00	.15	1.24	1.7	1.26	1.7	.52	.29	.47	7 J7
229	96	2.39	2.33	-.79	.18	.67	-2.3	.57	-2.6	1.29	.58	.40	8 J8
305.0	96.0	3.18	3.18	.94	.15	.99	-.2	.98	-.3		.47		Mean (Count: 10)
37.7	.0	.39	.43	.82	.01	.30	2.2	.31	2.1		.20		S.D. (Population)
39.7	.0	.41	.45	.86	.01	.31	2.3	.33	2.2		.21		S.D. (Sample)

Model, Populn: RMSE .15 Adj (True) S.D. .80 Separation 5.38 Strata 7.51 Reliability .97  
 Model, Sample: RMSE .15 Adj (True) S.D. .85 Separation 5.69 Strata 7.91 Reliability .97  
 Model, Fixed (all same) chi-square: 262.0 d.f.: 9 significance (probability): .00  
 Model, Random (normal) chi-square: 8.7 d.f.: 8 significance (probability): .37

In Table 3, information on the strictness/generosity comparison of the jury members about the qualities of the songs is presented. As a result of the evaluation of the jury members, it can be said that the J10-coded jury member was the most generous one while the J8-coded jury member was the strictest one. Therefore, it can be stated that J10 was the most generous jury member with 349 points and J8 was the strictest jury member with 229 points. In addition, the jury separation index was calculated as 5.69 and the reliability coefficient as 0.97. There was a statistical difference between the scores given by the jury members in terms of strictness/generosity ( $\chi^2 = 262.0$ ,  $sd = 9$ ,  $p = 0.00$ ). When the "infit" and "outfit" statistical values regarding the surfaces are analysed, it is seen that some jury members did not have the expected quality control values (1.4 - 0.6 range). It is seen that the average of the squares of the "infit" values of one jury member (J9) and the average of the squares of the "outfit" values of two jury members (J8, J9) were out of the expected values. Statistics on the items used in the evaluation of the songs created by the student teachers in music with an interdisciplinary approach in the focus of special education course achievements are given in Table 4.

Table 4. Item Statistics Used in the Evaluation of Songs

Total Score	Total Count	Obsvd Average	Fair(M) Average	- Measure	Model S.E.	Infit MnSq	Infit ZStd	Outfit MnSq	Outfit ZStd	Estim. Discrm	Correlation PtMea	Correlation PtExp	N Madde
354	120	2.95	2.89	.48	.13	1.16	1.3	1.11	.8	1.00	.56	.60	7 M7
375	120	3.13	3.10	.11	.13	.81	-1.6	.83	-1.3	1.10	.65	.61	2 M2
376	120	3.13	3.11	.09	.13	1.04	.3	1.01	.1	.91	.56	.61	3 M3
377	120	3.14	3.12	.07	.13	.68	-3.0	.64	-3.2	1.40	.69	.61	8 M8
385	120	3.21	3.21	-.07	.13	1.15	1.2	1.15	1.1	.75	.65	.62	6 M6
387	120	3.22	3.23	-.10	.13	.95	-.3	.92	-.6	1.10	.63	.62	1 M1
388	120	3.23	3.24	-.12	.13	1.10	.8	1.11	.9	.83	.56	.62	5 M5
408	120	3.40	3.43	-.47	.13	1.08	.6	1.04	.3	.99	.63	.62	4 M4
381.2	120.0	3.18	3.17	.00	.13	1.00	-.1	.98	-.2		.62		Mean (Count: 8)
14.3	.0	.12	.14	.25	.00	.16	1.4	.16	1.4		.05		S.D. (Population)
15.3	.0	.13	.15	.27	.00	.17	1.5	.17	1.5		.05		S.D. (Sample)

Model, Populn: RMSE .13 Adj (True) S.D. .21 Separation 1.59 Strata 2.46 Reliability .72  
Model, Sample: RMSE .13 Adj (True) S.D. .23 Separation 1.75 Strata 2.66 Reliability .75  
Model, Fixed (all same) chi-square: 28.0 d.f.: 7 significance (probability): .00  
Model, Random (normal) chi-square: 5.6 d.f.: 6 significance (probability): .47

In Table 4, information regarding the suitability of the relevant items used for the purpose of evaluating the songs created by the student teachers in music is presented. When the statistics regarding the difficulty analysis of the items in the table are analyzed, it can be said that the separation index is 1.75 and the reliability coefficient is .75. The relevant value (.75) reflects that the items are reliable in evaluating the songs. In addition, it can be said that there is a significant difference between the difficulties of the items in the measurement tool ( $\chi^2 = 28.0$ ,  $sd = 7$ ,  $p = 0.00$ ). In this context, the most difficult item in the scale is the M7-coded item "musical creativity level", whereas the easiest material is the M4-coded item "the degree of fitness for purpose in the writing of the lyrics".

However, since it is seen that the standard error (RMSE) related to the analysis of the items presented in the measurement tool is .13, it can be said that this value is low in determining the qualities of the songs created through an interdisciplinary teaching approach in the focus of special education achievements. Considering this error rate obtained as a result of the analysis, it was observed that the corrected standard deviation value (Adj S.D. = .23) was below the critical value of 1.0.

As a result of the analysis, it is seen that there is no data that exceeds the limit values determined for the infit and outfit statistical values regarding the surfaces reached. This finding can be said to be consistent with the items used in the evaluation of the songs composed, while the mean of all the items have acceptable properties; however the mean of the squares of the infit and outfit values are within the expected values. The interaction analysis of the songs evaluated by the jury members is presented in Table 5 below.



Table 5. Interaction Analysis of the Songs Evaluated by the Jury Members

Obsvrd Score	Expctd Score	Obsvrd Count	Obs-Exp Average	Bias+ Size	Model S.E.	t	d.f.	Prob.	Infit MnSq	Outfit MnSq	Sq	SARKI Nu SAR	Jüri Nu Pua	measr+	
16	28.24	8	-1.53	-4.21	1.02	-4.13	7	.0044	.0	.0	99	3 53	.32	9 39	1.29
16	28.08	8	-1.51	-4.17	1.02	-4.09	7	.0046	.0	.0	63	3 53	.32	6 36	1.25
24	30.98	8	-.87	-1.69	.47	-3.62	7	.0085	.2	.2	114	6 56	.47	10 310	1.88
23	30.03	8	-.88	-1.64	.48	-3.44	7	.0108	.7	.7	105	9 59	.78	9 39	1.29
16	24.81	8	-1.10	-3.43	1.02	-3.37	7	.0119	.0	.0	79	7 57	.83	7 37	.00
26	32.01	8	-.75	-1.58	.47	-3.36	7	.0120	.2	.2	7	7 57	.83	1 31	1.84
16	24.72	8	-1.09	-3.42	1.02	-3.35	7	.0122	.0	.0	52	4 54	-.60	5 35	1.41
16	23.96	8	-1.00	-3.25	1.02	-3.19	7	.0153	.0	.0	25	1 51	.07	3 33	.58
16	23.54	8	-.94	-3.16	1.02	-3.10	7	.0174	.0	.0	58	10 510	-.86	5 35	1.41
16	22.82	8	-.85	-2.99	1.02	-2.94	7	.0218	.0	.0	56	8 58	-1.02	5 35	1.41
19	26.06	8	-.88	-1.77	.61	-2.91	7	.0227	.7	.7	83	11 511	1.11	7 37	.00
16	22.57	8	-.82	-2.94	1.02	-2.88	7	.0235	.0	.0	60	12 512	-1.08	5 35	1.41
16	21.41	8	-.68	-2.66	1.02	-2.61	7	.0350	.0	.0	29	5 55	-.53	3 33	.58
34	29.58	8	.55	1.41	.60	2.34	7	.0521	.4	.4	109	1 51	.07	10 310	1.88
29	23.37	8	.70	1.28	.51	2.52	7	.0396	.8	.8	74	2 52	.52	7 37	.00
33	27.72	8	.66	1.52	.59	2.59	7	.0359	1.8	1.9	49	1 51	.07	5 35	1.41
35	30.07	8	.62	1.64	.62	2.65	7	.0328	.7	.7	67	7 57	.83	6 36	1.25
32	25.80	8	.77	1.62	.57	2.84	7	.0250	.0	.0	30	6 56	.47	3 33	.58
36	30.22	8	.72	2.00	.65	3.09	7	.0175	1.5	1.5	103	7 57	.83	9 39	1.29
32	25.11	8	.86	1.77	.57	3.11	7	.0171	.0	.0	27	3 53	.32	3 33	.58
32	25.07	8	.87	1.78	.57	3.12	7	.0168	.0	.0	53	5 55	-.53	5 35	1.41
26	19.84	8	.77	1.48	.47	3.14	7	.0163	.2	.2	22	10 510	-.86	2 32	.47
34	27.19	8	.85	1.99	.60	3.32	7	.0128	.4	.4	97	1 51	.07	9 39	1.29
26	19.18	8	.85	1.69	.47	3.61	7	.0086	.5	.5	76	4 54	-.60	7 37	.00
38	29.52	8	1.06	3.19	.80	3.99	7	.0053	.8	.8	50	2 52	.52	5 35	1.41
28	19.56	8	1.06	2.02	.49	4.13	7	.0044	.4	.4	87	3 53	.32	8 38	-.79
25.4	25.40	8.0	.00	-.15	.61	.04			.5	.5	Mean (Count: 120)				
6.0	4.30	.0	.52	1.38	.19	1.91			.5	.5	S.D. (Population)				
6.0	4.32	.0	.52	1.38	.19	1.92			.5	.5	S.D. (Sample)				

Fixed (all = 0) chi-square: 438.6 d.f.: 120 significance (probability): .00

The interaction analysis of the songs created by the student teachers in music through an interdisciplinary teaching approach in the focus of special education acquisitions is shown in Table 5. When Table 5 is examined, it can be stated that the jury members show strict or generous behaviors in evaluating the songs. In this case, it can be said that, in the interaction analysis of the songs, the J9-coded jury member gave 16 points to the S3-coded song instead of 28 points. Similarly, it can be stated that the J1-coded jury member showed a biased behavior by giving 26 points to the S7-coded song instead of 32 points. On the contrary, it was understood that the J8-coded jury member was generously biased by giving 28 points to the S3-coded song instead of approximately 20 points. Considering these, it can be said that the jury members, who scored similarly, performed biased behaviors in scoring.

### 3.2. Qualitative Findings of the Research

#### 3.2.1. Views of jury members regarding songs created by student teachers in music through an interdisciplinary teaching approach within the focus of special educational achievements

In this part of the study, the qualitative findings obtained from the opinions of the jury members are included. Interviews were conducted with the jury members based on the criteria for evaluating the songs used in the Rasch analysis. The themes and codes obtained from the interviews with the jury were modelled on the figure with the Maxqda Analytics program. In this context, the interview data of the research are given in a complementary and supportive way to the other data of the research. The model of the opinions of the jury members about the musical rhythm in the song-degree of interpretation-integrity is given in Figure 2.



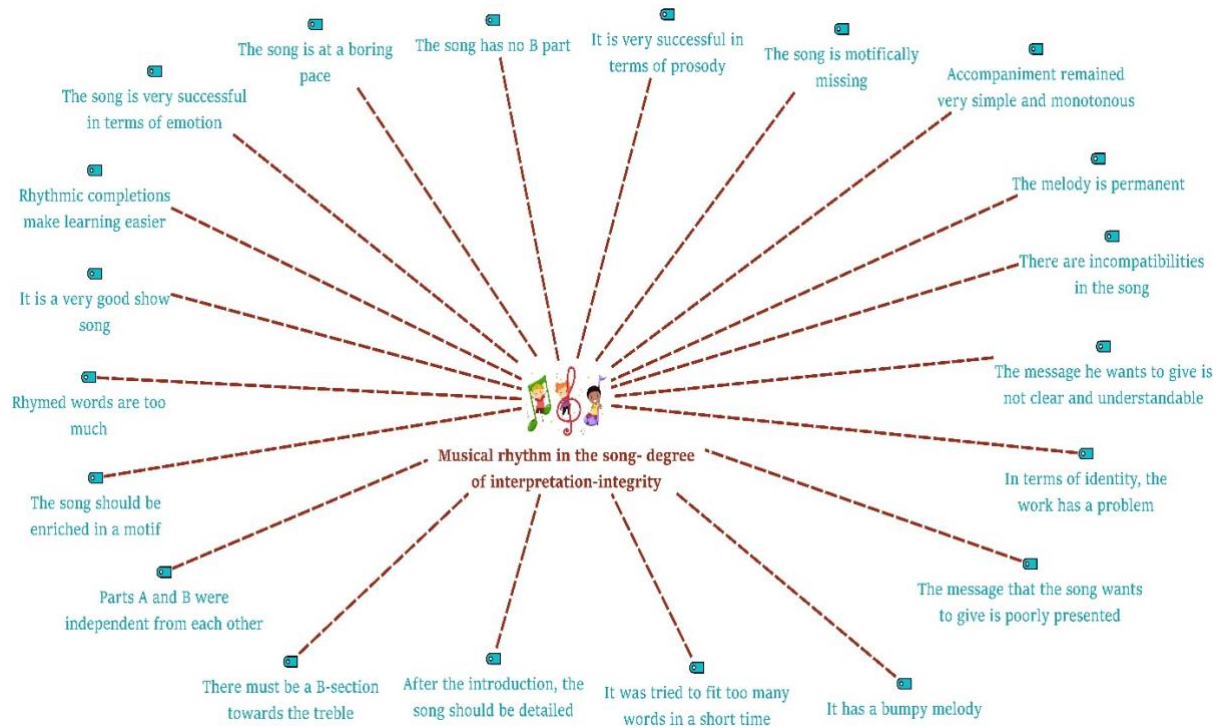


Figure 2. Views regarding musical rhythm in the song-degree of interpretation-integrity

When the views regarding the musical rhythm in the song-degree of interpretation-integrity are considered, it is seen that the jury members considered the songs from different perspectives. Some of these views coded in line with the opinions of the jury members are as follows: “*Accompaniment remained very simple and monotonous*”, “*Rhythmic completions make learning easier*”, “*The song should be enriched in a motif*”, “*The song is at a boring pace*”, “*Rhymed words are too much*”, and “*It is very successful in terms of prosody*”. The examples of direct quotations taken from the views of the jury members regarding the prominent codes are presented below:

“The song is effective in melodic structure and interpretation. The song can really be used in soundtracks.... I think it would be beneficial to enrich the work in terms of motifs; so, I think the effect of the song could be much more. Motifically, the A and B parts of the song were independent from each other.” (J1)

“... I think you should breathe a little in the song. The same rhythm and nuance created a bias effect. How you sing is good, but it is necessary to shape the work with a more architectural approach in a musical sense.” (J4)

The model of the views of the jury members about the level of use of sound in singing the song is given in Figure 3.

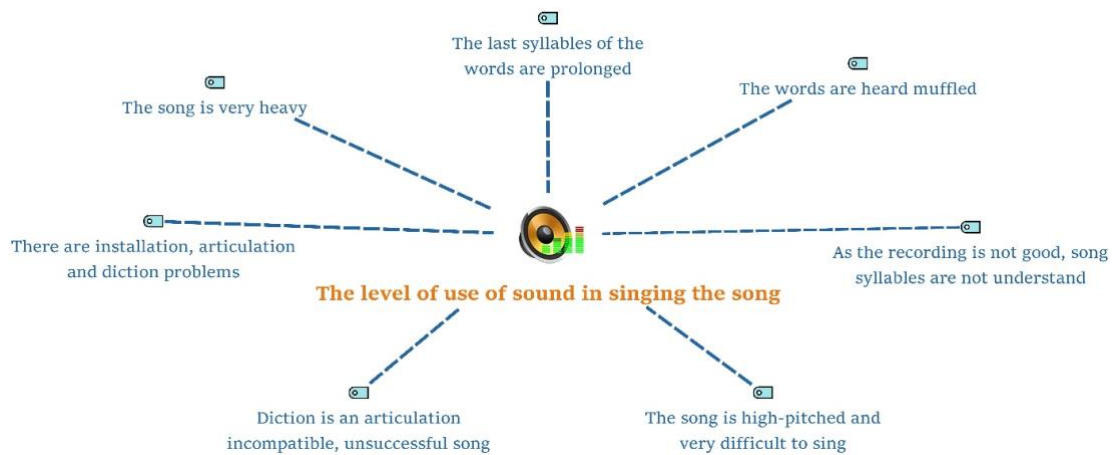


Figure 3. Views about the level of use of sound in singing the song

When the views of the jury members about the level of use sound in singing the song are considered, it is seen that they used such codes as “*There are installation, articulation and diction problems*”, “*The song is high-pitched and very difficult to sing*”, and “*Diction is an articulation incompatible, unsuccessful song*”. It is seen that the jury members emphasized the fact that the songs were high pitched, that the words were muffled, and that it was, therefore, very difficult to record in a proper way. The examples of direct quotations taken from the views of the jury members are presented below:

“The installation structure is felt very dominantly in the song. I can say that there are serious problems with articulations as well as the proper sounding of the words of the song.” (J2)

“The song is very high-pitched for children and very difficult to sing ... The last syllables of the words “we will see” and “we will not do” were prolonged in a muffled way. In the song, it is necessary to express the open sounds with smaller notes and the closed sounds with larger notes.” (J3)

The model of the opinions of the jury members about the degree of fitness for purpose in the writing of the lyrics is given in Figure 4.

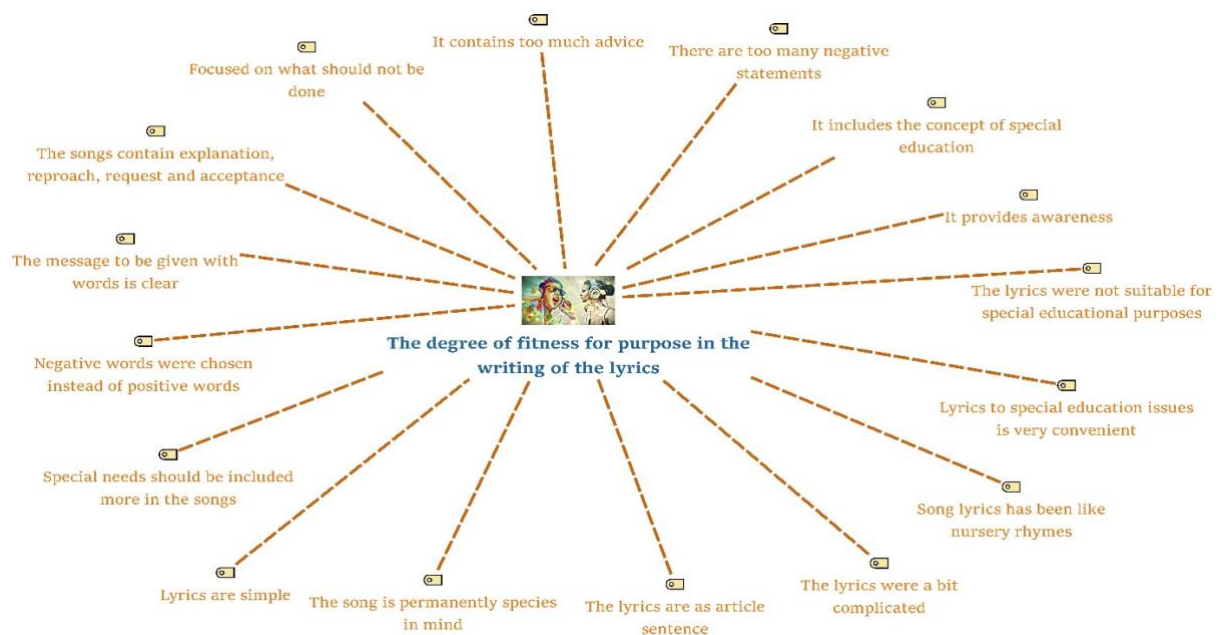


Figure 4. Views about the degree of fitness for purpose in the writing of the lyrics

When the views of the jury members about the degree of fitness for purpose in the writing of the lyrics are considered, it is seen that the jury members used codes which are related to the special education course and include special education achievements. These codes are: “*It provides awareness*”, “*It includes the concept of special education*”, “*Special needs should be included more in the songs*”, “*The lyrics were not suitable for special educational purposes*”, and “*Lyrics to special education issues is very convenient*”. The examples of direct quotations taken from the views of the jury members are presented below:

“The song was really good; I would like to congratulate our student teacher. The lyrics of the song were wholly suitable for special educational purposes.” (J1)

“The song contains explanation, reproach, request and acceptance. I can say that it is a great song that might create awareness. Its first part is too long and there are some problems in the prosody; besides, the feeling of ‘begging’ is felt intensely. The expression ‘please’ should not be used that often.” (J5)

J-7: “I think that the lyrics of the song has reached its purpose. Until the last part of the song, the purpose and message of the song had been clear; however, there is no need for such messages as “we are the ones who are faulty” in the last part of the song. Words like denial and contempt may not be in the vocabulary of children.”

The model of the opinions of the jury members about suitability in the level of student developments in lyrics is presented in Figure 5.

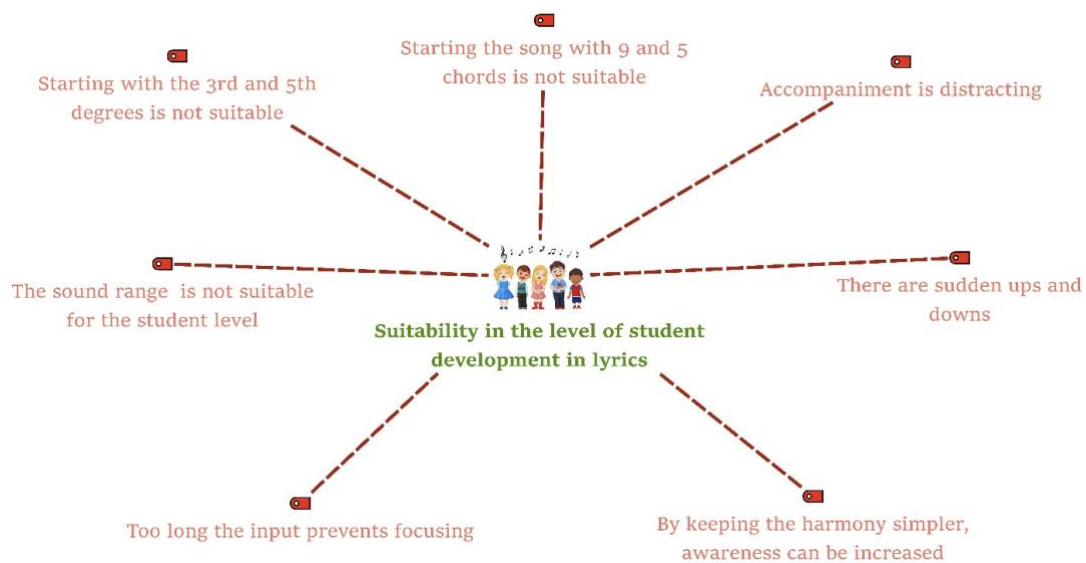


Figure 5. Views about suitability in the level of student developments in lyrics

When the views of the jury members about suitability in the level of student developments in lyrics are considered, it is seen that the jury members used such codes: “*Starting the song with 9 and 5 chords is not suitable*”, “*Starting with the 3rd and 5th degrees is not suitable*”, “*The sound range is not suitable for the student level*”, “*By keeping the harmony simpler, awareness can be increased*”, and “*Accompaniment is distracting*”. The examples of direct quotations taken from the views of the jury members are presented below:

“I think that starting the song with 9 and 5 chords and with 3rd and 5th degrees might make the teaching process more difficult. Starting with 3rd and 5th degrees should not be preferred since the song is not very comprehensive and the tone changes cannot easily be reflected ... There are also not many harmonic songs. It would be better to start from the first degree, I think. Also, as accompaniment is

distracting, it would affect the dimensions of the permanence and effectiveness of the song.” (J2)

“I think that the song is simple and therefore catchy. In this context, it is a beautiful song that can serve its purpose by making students accompany the song.” (J10)

The model of the opinions of the jury members about the degree of clarity of the lyrics is presented in Figure 6.

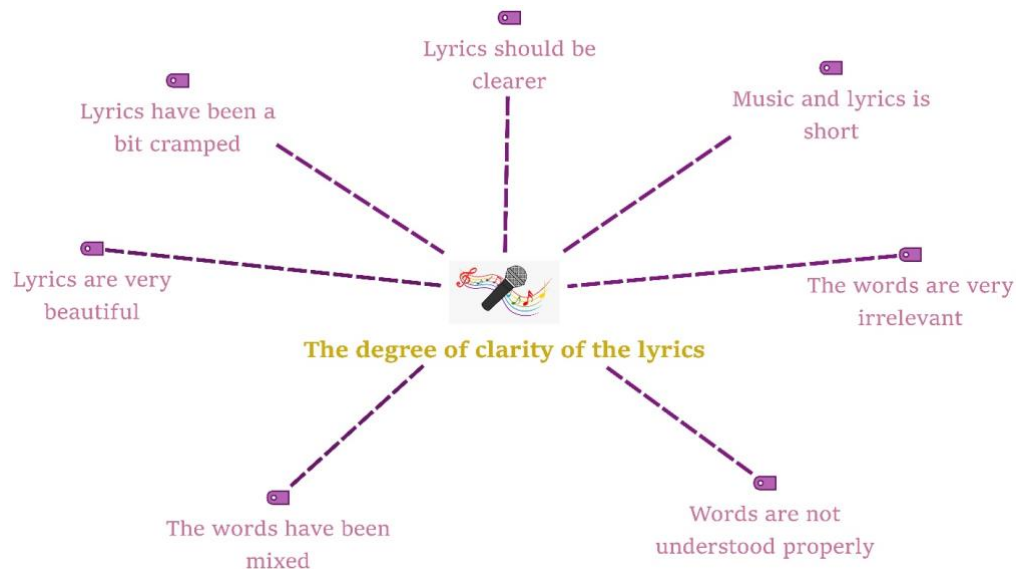


Figure 6. Views about the degree of clarity of the lyrics

When the views of the jury members about the degree of clarity of the lyrics are considered, it is seen that the jury members used such codes: “The words have been mixed”, “The words are very irrelevant”, “Lyrics should be clearer”, “Words are not understood properly”, and “Lyrics have been a bit cramped”. The examples of direct quotations taken from the views of the jury members are presented below:

“The words cannot be understood clearly. While listening to the song, I think the words do not match the music and the words are not consistent with the music.” (J8)

"The words have been a little confusing in the focus of children who need special education ... So, the words are semantically mixed but seemed to be cramped." (J5)

When the jury members are considered as a whole, the model of their views about the degree to which the song reaches its purpose is presented in Figure 7.

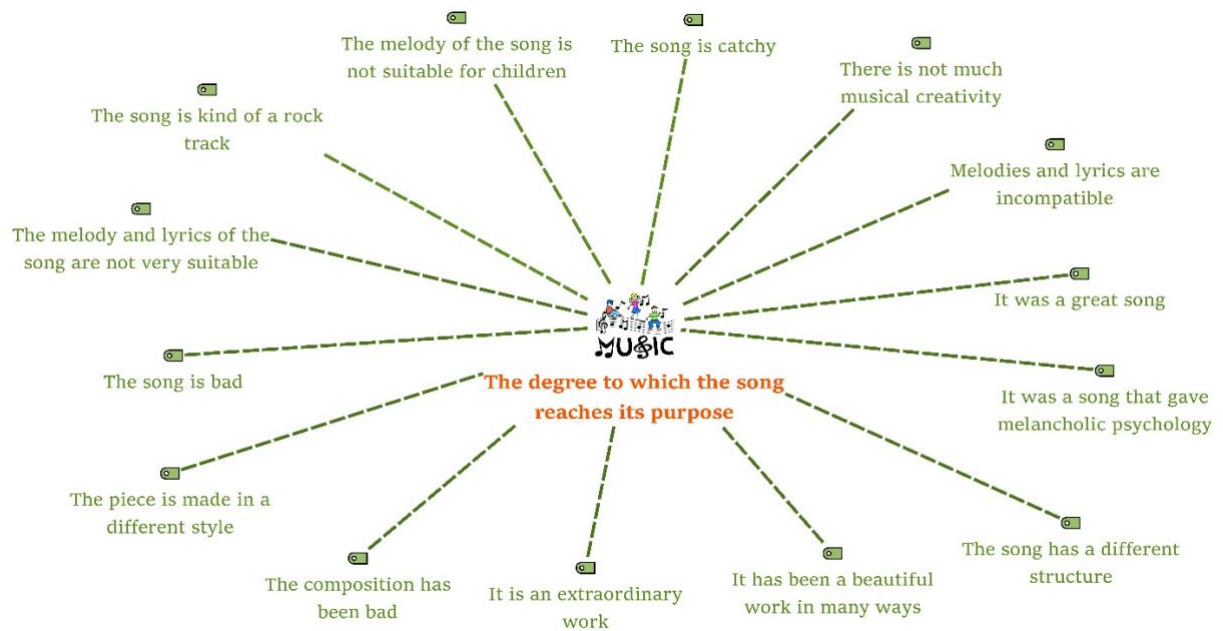


Figure 7. Views about the degree to which the song reaches its purpose

The views of the jury members regarding the degree to which the song reaches purpose include codes, some of which are “*The melody and lyrics of the song are not very suitable*”, “*The song has a different structure*”, “*It is an extraordinary work*”, “*Melodies and lyrics are incompatible*” and “*The piece is made in a different style*”. The examples of direct quotations taken from the views of the jury members are presented below:

“The song was created with a different style and performance. It is an extraordinary experiment, and in many ways, it is a beautiful work; however, it can be difficult for children to listen to and understand it ... It is more effective to transform this song in accordance with the age and level of children.” (J7)

"The song is really beautiful ... It reflects its special educational achievements so in a great way and in integrity ... It can be pointed out that that it is actually a very beautiful piece in terms of musical motifs, nuances, rhythm." (J3)

### 3.2.2. The conceptual structure of the lyrics created by the student teachers in music through an interdisciplinary approach with the focus of special education achievements

In this part of the study, qualitative findings related to the prominent concepts in the song lyrics written by the student teachers in music are included. The word cloud consisting of the conceptual structures of the lyrics written by the student teachers about special education is given in Figure 8.





assessment tips and in the cognitive processes, on which the scoring is based (Wolfe, Kao, & Ranney, 1998), and the scoring ratings observed should be more frequently associated with the characteristics of the evaluators and less associated with the performances (Engelhard, 2013).

In the research, the most difficult item among the song evaluation items was the musical creativity level (M7), while the easy-to-perform item was the degree of fitness for purpose in the writing of the lyrics (M4) (being related to the special education course; containing the achievements of the special education course). The fact that musical creativity, which is one of the basic learning areas in the music course curriculum, cannot be fully concretized due to insufficient application examples can also be emphasized in the literature (Küçük, 2008). In the pre-service period, the absence of the basic area of musical creativity in the songs created by the student teachers can be evaluated as an indication that the gains of this basic area cannot be functionally gained in the teacher education program.

The reliability coefficient of the songs created by the student teachers in music was found to be 0.96 in the Rasch analysis. When the infit values were examined in the study, it was found that only the S3-coded song had an infit value higher than the expected upper value of 1.4 infit value. In terms of outfit values, the S6-coded song had an outfit value lower than the expected lower value, while the S3-coded song had a higher outfit value. In this case, it can be said that the songs with infit and outfit values presented were not included in the expected quality control values of the infit and outfit values for the relevant criteria because the determined values should be in the range of 1.4-0.6 (Wright and Linacre, 1994). In this case, it can also be said that the songs with infit and outfit values presented were not included in the expected quality control values of the infit and outfit values for the relevant criteria. When the "infit" and "outfit" statistical values regarding the surfaces are analyzed, it is seen that some jury members were not among the expected quality control values (1.4 - 0.6 range). It is seen that the average of the squares of the "infit" values of one jury member (J9) and the average of the squares of the "outfit" values of two jury members (J8, J9) were out of the expected values. When the statistics related to the difficulty analysis of the items are examined, it can be stated that the reliability coefficient is .75 and that they are reliable in terms of evaluating the songs created.

In the research conducted by Akın and Baştürk (2012) in the field of music education, it was determined that there was no performance with infit and outfit statistics in the Rasch analysis used in the evaluation of basic skills in violin education and that the evaluators did not show any differences in terms of strictness/generosity. In addition, the questions in the evaluation form of violin playing skills were found to serve the purpose. In this context, the results of the research differ from the results of the research conducted by Akın and Baştürk (2012), where a performance-based assessment, which is one of the basic areas of music education, took place.

In order to contribute to the results of the Rasch analysis, interviews with the jury members in a qualitative context for the songs created through an interdisciplinary teaching approach in the focus of special education achievements were presented with the models created with the Maxqda program. When the qualitative data results of Maxqda are analyzed, detailed and complementary results were revealed with this study in which the student teachers in music wrote and composed their lyrics in the light of their special educational achievements. In the other qualitative findings of the study, the lyrics created by the student teachers in music through an interdisciplinary teaching approach in the focus of special education achievements were examined and the concepts of empathy, interaction, individual difference and interdisciplinary approach were seen to become prominent in the lyrics.

Using the data together in quantitative and qualitative dimensions contributes to the reliability and data enrichment of the study (Bamberger, 2012). Conducting the research in two

different dimensions, therefore, brought more detailed details to the study. This study is thought to provide a basis for researchers to carry out future studies using different methods. With this study, it is thought that student teachers in music can combine their knowledge of the field of special education with their own professional studies through an interdisciplinary approach and contribute to their experience in the arrangements, practices and adaptations that can be made for their students. In the light of the results of the research, it is recommended to perform different multi-level studies based on performance in which an interdisciplinary teaching approach in the field of music education, and field courses along with didactic knowledge courses are integrated in order to increase the quality of teacher education before starting the teaching profession.

### **5. Conflict of Interest**

The author declares that there is no conflict of interest.

### **6. Ethics Committee Approval**

The author confirms that the study does not need ethics committee approval according to the research integrity rules in their country.

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