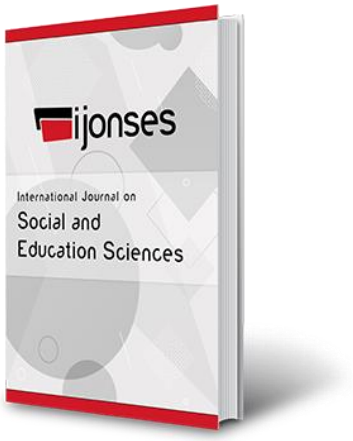

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Abstract

Self-regulatory skill is one of the important factors affecting academic orientation and performance of learners at all levels in learning-teaching processes. The aim of this study is to compare the self-regulatory skills of pre-service teachers studying in music education departments based on the variables of gender, class, overall achievement and performance in individual instruments lessons. The study was conducted with 198 Pre-service Music Teachers studying at Necmettin Erbakan University and Gazi University. Data were collected by using Academic Self-regulatory Skills Scale. Research findings showed that pre-service music teachers' self-regulatory skills differed based on the variables of year of study, achievement levels in individual instrument lessons and overall academic achievement. It was found that students with high academic achievement levels had effective self-regulatory skills. However, no significant difference was found between the self-regulatory skills of male and female pre-service music teachers.

Introduction

Art teacher education in Turkey is carried out in the fine arts departments of the education faculties in universities. Employing student-centered strategies in artistic learning-teaching processes (Kara, 2020a; Doğru, 2020) and the need to increase the quality of music education and the desire to train students who can learn independently are reflected in music teaching undergraduate programs, and the lessons in music teaching departments are designed and taught with more and more detailed content. Therefore, individual differences of pre-service music teachers directly affect their performance in learning strategies and skills. The most crucial issue in the context of individual learning differences in training music teachers is the organization of appropriate educational activities by taking their learning characteristics into account, not through a single type of education (Küçük & Durak, 2021; Yağışan & Sünbül, 2009). For this reason, contemporary undergraduate music education programs accept the cognitive differences of students such as self-efficacy and self-regulatory skills and encourage effective processes and activities. There are many variables that make a difference in the learning process in music teacher education. Factors such as student's knowledge, skills, abilities, learning competencies, learning strategies and styles, teaching-learning environment, tools, materials and motivation can be listed (Ak, 2018; Boon, 2020; Bulut, 2021; Al-Husban, 2020; Gonzales et al., 2017; Atilgan & Tukel, 2021; Grohs et al., 2018; Hazar, Akkutay, & Keser, 2021; Hewit, 2001; Kaleli, 2020, 2021; Kara, 2020b; Kasimoglu, 2021; Koyuncuoğlu, 2021; Kurnaz, 2007; McPherson, 2005; Matthews & Kitsantas, 2012; Mentiş Köksoy & Aydıner Uygun, 2018; Syafii, Kusnawan, & Syukroni, 2020). One of these variables is self-regulatory skills and

strategies.

The development of pre-service music teachers' professional competencies and making them effective is largely related to their competencies in their field and their self-regulatory skills. The ability to improve the self-efficacy and self-regulatory skills of the pre-service music teachers is closely related to the understanding and application levels of the teaching principles of the course and the acquisition of the course content by the students. Pre-service teachers must put their self-regulatory skills and cognitive competencies into practice in the classroom environment (Boon, 2020; Cremaschi, 2012; Matthews & Kitsantas, 2012; Mentiş Köksoy A. & Aydıner Uygun, 2018).

One of the focal points of education is to develop self-regulated learners. Self-regulated learners are active agents who adapt their learning according to the situation and use them efficiently, and use their knowledge repertoire and strategies effectively in every situation (Pilotti, et al., 2021; Senemoğlu, 2004; Schraw & Moshman, 1995; Zimmerman, 2002). Self-regulated learners are aware of their strengths and weaknesses in academic tasks to set appropriate goals, implement strategies, adapt to changing environments and overcome obstacles (Winne & Hadwin, 1998; Zimmerman, 2002). Self-regulated learning is expressed as the individual's regulation of his own learning by watching and comparing it with his own values, reinforcing and punishing (Bandura, 1986; Boekaerts & Corno, 2005; Cheng, 2011; Wan, Compeau, & Haggerty, 2012). Efklides, Niemivirta, and Yamauchi (2002) define self-regulated learning as an effective and self-directed process in which students control, organize and monitor their cognitive abilities.

Self-regulated learning is a process that helps students manage their thoughts, behaviors, and emotions to navigate their learning experience successfully. This process takes place when a student's purposeful actions and processes are aimed at the acquisition of knowledge or skills (Senovska & Pryshliak, 2020; Tee, Leong & Abdul Rahim, 2019). In general, self-regulated learning consists of three phases: forethought and planning, performance monitoring, and reflections on performance (Pintrich & Zusho, 2002; Zimmerman, 2006). During the forethought and planning phase, students analyze the task and set specific goals to complete this task. However, when students learn about unfamiliar topics, they may not know the best ways to approach the task or which goals are most appropriate. Teachers and/or more experienced peers can often instruct students on effective approaches in such situations. Then, in performance monitoring phase, students use strategies to make progress in learning task and monitor the effectiveness of these strategies and their motivation to continue progressing towards the goals of the task (Bembenutty, White, DiBenedetto, 2016; Smolej & Peklaj, 2011). Unfortunately, when strategies are new, students sometimes revert to using more familiar and perhaps ineffective strategies. For example, students can switch to using the familiar flashcard strategy to study new vocabulary words, as it may seem easier than a new and effective strategy offered by the teacher. While taking the time to practice and learn the new strategy can lead to meaningful learning, students' use of fall-back will likely leave a significantly less effective means for their learning. Close teacher monitoring and specific feedback can help students learn to use new strategies fluently, especially if students face frustration. In reflection of the performance phase, students evaluate their performance on the learning task with regard to the effectiveness of the strategies they chose. At this stage, students should also manage their feelings about the

outcomes of the learning experience. These self-reflections then affect students' future planning and goals and start the cycle (McPherson & McCormic, 1999; Pintrich & De Groot, 1990).

Self-regulated learning can be thought of as the opposite of traditional teaching methods in which the teacher presents the information and the students try to obtain the information presented passively (Meyers & Jones, 1993). Thus, active participation in learning is essential in self-regulated learning. However, in fact, self-regulated learning is a concept that goes beyond "active participation in learning". Self-regulated learning is a learning process in which (Zimmerman, 2006):

- the learner is given opportunities to make decisions about various aspects of the learning process,
- the student organizes and uses his/her mental abilities in many ways during learning.

This definition highlights two points. The first one is that "the student makes informed decisions about the learning process". In self-regulated learning, the learner makes decisions such as how the learning will be carried out, how much has been learned and what learning deficiencies are. The teacher helps the student in making these decisions, but the student is responsible. The second point is "activation of thought". In self-regulated learning, learning situations force the student to read, speak, listen, reflect, and write.

According to Pintrich et al. (1991), Pntrich and Garcia (1995), Senemoğlu (2004), self-regulatory strategies consist of 3 stages:

1. Cognitive learning provides a usage metric for Rehearsal (e.g., memorizing keyword lists), Elaboration (e.g., explanation, summarizing), Organization (e.g., outlining), and Critical Thinking, which relates to students' use of strategies to apply prior knowledge.
2. Metacognitive strategy consists of Metacognitive Self-Regulation, a large subscale that evaluates the use of strategies that help students control and regulate their own cognition, such as planning, monitoring, and regulatory strategies.
3. Resource management includes, Time and Work Environment (for example, using time well, having a suitable place to work), Effort Regulation (for example, insisting on a difficult or boring task), Peer Learning (for example, a workgroup or learning friends to help) and Seeking Help (eg. asking friends or teachers for help when needed) (Pintrich et al. 1991; Pintrich & Garcia 1995).

To improve self-regulated learning, teachers should teach students self-regulatory processes that facilitate learning. These processes usually include: goal setting (Winne & Hadwin, 1998; Wolters, 1998; Zumbrunn, Tadlock & Roberts, 2015), planning (Zimmerman, 2006), self-motivation (Wolters, 2003, 2011; Zimmerman, 2004), attention control (Harnishferger, 1995; Winne, 2009), flexible use of learning strategies (van de Broek, Lorch, Linderholm, & Gustafson, 2001), self-monitoring (Butler & Winne, 1995), seeking appropriate help (Ryan, Pintrich, & Midgley, 2001) and self-assessment (Schraw & Moshman, 1995; Zumbrunn, Tadlock & Roberts, 2015).

In addition to the broad theoretical support that self-regulated learning strategies are associated with increased learning outcomes (Zimmerman, 1990), findings from empirical studies reveal that effective self-regulated

learning is associated with academic achievement (Dent & Koenka, 2016; Schmitz & Wiese, 2006). Recent systematic reviews and meta-analytical studies are as follows; online learning: Broadbent & Poon, 2015; long-term effects of metacognitive strategy training: de Boer et al., 2018; learning strategies: Donker et al, 2014; Fernandez-Rio et al, 2017). They examined different aspects of self-regulated learning with experimental methods. In particular, in the last decade, Dignath et al. conducted two comprehensive meta-analyzes and examined the effectiveness of self-regulated learning practices for primary and secondary school students (Dignath & Büttner, 2008; Dignath et al., 2008).

Although there are many studies on how self-regulatory skills are beneficial for primary and secondary school children (Nielsen, 2001; Nielsen, 2004; Leon-Guerrero, 2008; Ritchie & Williamon, 2013), the number of studies with pre-service music teachers is quite limited. However, self-regulatory skills can be used to increase the quality of education and student learning performance. First-year students with high self-efficacy and self-regulatory skills in tend to adapt to their first year at university better than those with low self-efficacy and self-regulatory skills (Chemers, Hu, & Garcia, 2001). The benefits of self-regulatory skills continue beyond the school years. Students with strong self-efficacy towards performing well in school and explore a wider range of career options (Schunk & Ertmer, 2000).

In addition, it was found that people with stronger self-efficacy beliefs and self-regulatory skills towards their routine professional work tend to have more successful careers (Stajkovic & Luthans, 1998). In this study, pre-service music teachers' self-regulatory skills were investigated in a number of ways. Thus, answers to the following questions were sought:

- What are the levels of self-regulatory skills of pre-service music teachers in general?
- Do pre-service music teachers' self-regulatory skills differ based on the variable of gender?
- Do pre-service music teachers' self-regulatory skills differ based on the variable of year of study?
- To what extent do pre-service music teachers' self-regulatory skills predict their academic achievement in individual instrument lessons?
- To what extent do pre-service music teachers' self-regulatory skills predict their overall academic achievement?

Method

This study was conducted in 2020-2021 academic year, using correlational survey model. The reason for choosing the application date of the study is to give first-year pre-service music teachers (first-year students) the opportunity to adapt to the new learning environment and to obtain end-of-term course achievement results. After analyzing the data, feedback was provided to the participants. Informed consent was obtained from the research ethics committee and the participants. The names of the teacher candidates were kept confidential throughout the study. Quantitative data are based on participants' responses to the Self-Regulatory Skills Scale within the scope of this methodology.

The participants consisted of 198 students studying in music teaching departments at Necmettin Erbakan and

Gazi University. 68.7% (n=136) of the students were female and 31.3% (n=62) were male. The distribution of students by the year of study was as follows: 26.3% (n=52) year 1, 27.2% (n=54) year 2, 23.7% (n=47) year 3 and 22.7 (n=45) year 4. While 81% (n=161) of the students stated that they studied a Western musical instrument within the scope of the instrument lessons, 23.7% (n=47) stated that they studied a Turkish musical instrument. The mean age of the participants is 21.2.

Data Collection Tools

Self-Regulatory Skills Scale

The scale developed by Arslan and Gelişli (2015) was used to measure pre-service teachers' Perceived Self-Regulatory Skills in line with the purpose of the study. The validity and reliability analyses of the scale was carried out with 604 students. Confirmatory factor analysis results showed two factors, which make up 54.3% of the total variance. Confirmatory factor analysis showed that the two-factor model fits the data and consists of 16 items in total. The internal consistency coefficient for the whole scale is .88. These findings show that Perceived Self-Regulatory Scale can be accepted as a valid and reliable tool that can be used for pre-service music teachers.

Data Analysis

The quantitative data obtained were analyzed with the SPSS package program. The scores of the music teacher candidates' self-regulatory skills met the normal distribution assumptions (Yurt & Sünbül, 2012). Thus, the data were analyzed using descriptive statistics, independent samples t-test and one-way analysis of variance.

Findings

Table 1 below shows the minimum, maximum, mean and standard deviation values of the scores that the pre-service teachers obtained from the self-regulatory scale.

Table 1. Descriptive Analyzes on Pre-Service Music Teachers' Self-Regulatory Skills

	N	Minimum	Maximum	$\bar{X}$	Sd
Being open	198	1.00	5.00	3.65	0.87
Help seeking	198	1.00	5.00	3.72	0.85
Overall self-regulatory skills	198	1.00	5.00	3.68	0.85

According to the table, the scores of pre-service music teachers' self-regulatory skills ranged from 1.00 to 5.00. Mean scores show that the participants' self-regulatory skills are at a high level in all sub-dimensions and in total. Table 2 below shows the analysis of the participants' scores obtained from the self-regulatory scale based on gender.

Table 2. Comparison of Pre-service Music Teachers' Self-Regulatory Skills Based on Gender

Gender F1M2		N	$\bar{X}$	Sd	t	p
Being open	1.0	136	3.61	0.93	-0.98	0.33
	2.0	62	3.74	0.74		
Help seeking	1.0	136	3.69	0.90	-0.56	0.58
	2.0	62	3.77	0.74		
Overall self-regulatory skills	1.0	136	3.64	0.90	-0.82	0.41
	2.0	62	3.75	0.72		

The table shows that there was no significant difference in the self-regulatory skills of pre-service music teachers based on the variable of gender, both in sub-dimensions and total scores ($p>0.05$). No significant difference was found between the self-regulatory skills of male and female participants. Table 3 indicates the results of the One-way ANOVA Test performed on the participants scores obtained from the self-regulatory skills scale based on the year of study.

Table 3. Comparison of Pre-service Music Teachers' Self-Regulatory Skills Based on the Year of Study

Self-regulatory skills	Year of study	N	$\bar{X}$	Sd	F	P
Being open	1.0	52	3.50	0.93	1.80	0.15
	2.0	54	3.56	0.85		
	3.0	47	3.72	0.83		
	4.0	45	3.87	0.85		
Help seeking	1.0	52	3.47	0.96	3.31	0.02
	2.0	54	3.65	0.77		
	3.0	47	3.81	0.78		
	4.0	45	3.98	0.80		
Overall self-regulatory skills	1.0	52	3.49	0.93	2.42	0.07
	2.0	54	3.60	0.80		
	3.0	47	3.76	0.80		
	4.0	45	3.92	0.81		

According to the table, no significant difference was found in the scores of being openness and total self-regulatory skills ($p<0.05$) based on year of study. However, there was a significant difference in help seeking scores. 4th and 3rd year students' mean scores of the self-regulatory skills in help seeking dimension are significantly higher than the scores of 1st and 2nd year participants according to Tukey test analysis.

The results of the One-Way ANOVA Test performed on the scores of the pre-service music teachers obtained from the self-regulatory skills scale based on their achievement levels are shown in Table 4.

Table 4. Comparison of Pre-Service Music Teachers' Self-Regulatory Skills Based on Achievement Levels

Self-regulatory Skills	Achievement Level	N	$\bar{X}$	Sd	F	P
Being open	High	58	3.98	0.87	18.43	.000
	Moderate	106	3.70	0.71		
	Low	34	2.94	0.96		
Help seeking	High	58	4.02	0.86	17.76	.000
	Moderate	106	3.77	0.68		
	Low	34	3.03	0.96		
Overall self-regulatory skills	High	58	4.00	0.85	18.89	.000
	Moderate	106	3.73	0.68		
	Low	34	2.98	0.94		

According to the table, no significant difference was found in all dimensions and total of the self-regulatory skills scale based on academic achievement ($p<0.05$). According to the Tukey test analysis, self-regulatory skills of the participants with high achievement levels were significantly higher than the participants with moderate and low achievement levels.

Table 5 shows the results of the One-Way ANOVA Test performed on the scores of the pre-service music teachers obtained from self-regulatory skills scale based on the achievement in individual instrument lessons.

Table 5. Comparison of Pre-Service Music Teachers' Self-Regulatory Skills Based on the Achievement Levels in Individual Instrument Lesson

	Achievement Level	N	$\bar{X}$	Sd	F	P
Being open	High	66	3.90	0.84	10.99	.000
	Moderate	91	3.70	0.71		
	Low	41	3.14	1.03		
Help seeking	High	66	3.94	0.82	10.91	.000
	Moderate	91	3.78	0.69		
	Low	41	3.21	1.01		
Overall self-regulatory skills	High	66	3.91	0.82	11.37	.000
	Moderate	91	3.74	0.69		
	Low	41	3.17	1.01		

The table shows the results of the analysis performed on the self-regulatory skills of the pre-service music teachers based on their mean grades obtained in individual instrument lessons. The results show that there was a significant difference in all dimensions and total of the self-regulatory skills scale based on achievement in

individual instrument lessons ($p<0.05$). According to Tukey test analysis, it was found that participants with high levels of achievement in individual instrument lessons had higher self-regulatory skills than their peers with moderate or low levels of achievement.

Discussion

In this study, which investigated the self-regulatory skills of pre-service music teachers in terms of some variables, the scores of the participants regarding the relevant variables were high. In this aspect, it points out that music teacher candidates have proactive skills in terms of gaining academic skills such as setting goals, choosing and developing strategies, and self-monitoring of one's activity (Zimmerman, 2008). Another finding of the study is about the differentiation of pre-service music teachers' self-regulatory skills based on gender. Although female students got higher scores than their peers, the difference between the scores of the groups was not significant. These findings are similar to the findings of the studies conducted by Sağırlı and Azapağası (2009), Wolters and Pintrich (1998) Yamaç (2011). However, there are studies that show the differences in self-regulatory skills of male and female participants (Bembenutty, 2007; Chuy & Nitulescu, 2013; Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002). According to Zimmerman (2006), while female students at primary and secondary school levels exhibit higher self-regulatory skills, the gender differences in upper grades decrease.

However, students' self-regulatory skills differ significantly based on the year of study. In general, in help seeking sub-dimension, the 3rd and 4th year teacher candidates exhibited high self-regulatory skills. In this respect, it is found that as the year of study increases, self-regulatory skills increase significantly. Research has shown that self-regulated learning strategies are related to experience. Pokay and Blumenfeld (1990) state that older students use metacognitive strategies more often to plan and monitor their work, while younger students who are less competent in using learning strategies may depend more on persistence. In this regard, it was found that pre-service music teachers developed their self-regulatory skills while acquiring field-specific skills in the academic process.

The last finding of this study is about the relationship between pre-service music teachers' academic achievement in their departments and individual instrument lessons and their self-regulatory skills. In general, it was found that participants with very high achievement levels have higher self-regulatory skills than their low- and moderate-achieving peers. As the achievement levels of the participants increase, their self-regulatory skills increase. These findings are similar to the research findings of Sönmez Ektem (2007), Sünbül et al. (2003), Pintrich et al. (1991), Zimmerman (2002). According to Zimmerman (2002), active participation in the learning process with self-regulatory skills leads an increase in academic performance. Therefore, self-regulated learning is an emerging area of research on student performance and achievement. Research show that there are differences in academic self-regulation and motivation between low and high achieving students (Ruban & Reis, 2006). Ruban and Reis (2006) report a different use of self-regulatory strategies between low achieving and high achieving students. High achievers are deep processors of the material, while low achievers tend to use low level strategies. Pokay and Blumenfeld (1990) show that when students are exposed to new content for the first time, students with effective self-regulatory strategies exhibit higher learning performance and achievement. On the

other hand, Pintrich et al. (1991) revealed that self-regulation and self-efficacy are the best predictors of academic performance.

In addition, it was found that low achieving students displayed uncertainty and indecision in self-regulatory skills. According to Krouse and Krouse (1981), the main reason for inadequate achievement is student's own willpower, strategies and self-control, inability to use his or her emotions, desires, or actions effectively. This, with the increasing emphasis on independence and autonomy, explains why some very bright middle school students who are unable to adapt to the new and more challenging post-secondary environment, may have low achievement at university. Increasing use of self-regulatory skills in many branches and fields has been consistently associated with positive learning outcomes (Kramarski & Michalsky, 2009; OECD, 2002; Prat-Sala & Redford, 2012).

Conclusions and Recommendations

As a result, self-regulatory skills appear as a significant and high-level variable in music teacher candidates. According to the findings of the research, the self-regulatory skills of pre-service music teachers differed according to year of study, achievement in individual instrument lessons and overall academic achievement variables. It was found that especially students with high self-regulatory skills exhibited high levels of achievement in field-specific individual instrument lessons and academic lessons in general.

In the present study, attention has been drawn to self-regulatory skills, which have been ignored until today in the development of the teaching process in music teaching departments, but are of great importance for students. Based on the results of the study, the following suggestions could be made: it should be taken into account that learners studying in music teaching departments may have different self-regulatory skills, and therefore, students should be supported in the teaching processes. On the basis of the assumption that each individual has their own learning strategies and pace, those who prepare music teaching curricula, educators or experts should design processes that improve students' self-regulatory skills. From this point of view, it could be suggested that researchers plan research that test the effect of teaching practices that take into account the individual differences of students studying in music teaching departments with regard to their self-regulatory skills. To Zimmerman (2008), through the use of strategies and self-regulation, performance can be greatly improved. In this respect, the theoretical and practical contents such as learning strategies, methods and techniques in the programs that train music teachers enable pre-service teachers to be competent in their self-regulatory skills.

The present study revealed that there were significant differences in pre-service music teachers' self-regulatory skills based on their academic achievement levels in individual instrument lessons and their overall academic achievement. However, the data of the study were collected through a self-assessment scale. Thus, the results obtained in the present study have limitations in estimating the reasons for the differences that occur according to the self-regulatory skills of pre-service teachers when compared to the results of studies that can be carried out based on concrete observational data. Studies to be carried out using qualitative research methods such as observation and interview will support the results of the present study.

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