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## Determine The Relationship Between The Disposition of Critical Thinking and The Perception About Problem Solving Skills

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### Abstract

The aim of this study is to determine the relationship between the disposition of critical thinking and the perception about problem solving skills of the students. In descriptive studies correlational model was used. Disposition of critical thinking points data was collected in this study by using the “The California Critical Thinking Disposition Inventory” developed by Facione, Facione and Giancarlo(1988) and the perceptions about Problem Solving Skills data was collected by using the problem solving skills inventory adapted into Turkish by Sahin, Sahin and Heppner (1993). Based on the findings of the study, it was revealed that there was a moderate, positive and significant relationship between pre-service music teachers' disposition of critical thinking and perceptions about problem solving.

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### 1. Introduction

The information age requires individuals not to memorize the necessary information, but rather to mentally

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choose, organize and use the information as they need. The role of critical thinking in individuals' using their knowledge cannot be ignored. Processes such as ratiocination, analysing and evaluation are used in critical thinking. Facione (1988) stated that critical thinking consisted of elements such as analysing, organizing oneself, making inferences and evaluating. Critical thinking had many definitions by different researchers. The word 'critical' was derived from the Greek word 'kritikos' which means evaluating, judging and distinguishing, transferred to Latin as 'criticus' and spread to other languages (Kaya, 1997). According to Beyer (1985), critical thinking is the skill of gathering, evaluating and effectively using information. Richard Paul (1988:49) defines the concept as reaching conclusions based on observation and information. Norris (1985:40-45) describes critical thinking as students' implementing everything they already know, and evaluating and changing their own opinions (Demirel, 2012:215). Cuceloglu (1994, 216-217) defines it as "an active and organized mental process aiming to understand ourselves and the events around us by being aware of our thinking processes, considering others' thinking processes, and implementing what we have learnt. Examining the definitions, critical thinking is briefly a mental process for perceiving the world using our existing knowledge. Another concept that is as important as critical thinking is problem solving. Individuals face problems in certain processes during their lives. In order for individuals to overcome the problems they encounter, they need to organize their background and use mental processes. Problem solving includes a set of efforts towards removing the difficulties to achieve an aim (Korkmaz ve Kaptan, 2001). For life, individuals are expected to provide rationalistic suggestions for solving the problems they face. However, they may not be succeed in solving a problem they encounter for the first time. Consequently, it is inevitable to train individuals for problem solving. The solution reached through mastering the problem solving process and using appropriate methods would not only solve that problem, but also make the solutions of future problems more effective (Mayer, 1992 cited in Koray & Azar, 2008). Examining related studies, it can be seen that problem solving training increases problem solving skills. For this reason, it is inevitable that individuals with a high level of critical thinking are more successful in defining and solving problems. In their study titled as "The Effect of Thinking Skills Training on Critical Thinking and Problem Solving Skills", Tok and Sevinç (2010) investigated the effect of thinking skills training on preschool teacher candidates' critical thinking and problem solving skills. As a result of the study, it was seen that thinking skills training program positively affected teacher candidates' perceptions regarding their problem solving skills.

Azcan and Celenk (2007) examined the effect of problem solving on critical thinking. They found that problem solving method increased critical thinking skills. In their study "An Investigation of University Students' Critical Thinking Disposition and Perceived Problem Solving Skills", Tumkaya, Albek and Aldag (2009) aimed to determine whether there was a significant relationship between disposition of critical thinking and problem solving skills, and whether university students' disposition of critical thinking and problem solving skills differ based on gender, year of study and major. The study revealed that there was a significant relationship between the students' disposition of critical thinking and problem solving skills. In their study, Altındag, Goksel, Koray and Koray (2012) examined the effect of critical and creative thinking based learning in science and technology laboratories on teacher candidates' creativity and problem solving skills. It was found that science and technology laboratory practices based on critical and creative thinking improved teacher candidates' creativity and problem solving skills. In the current study, the relationships between music teacher candidates' are critical thinking skills and problem solving skills. In this scope, the following research question guided the study: 1. Is there a relationship between music teacher candidates' total scores in disposition of critical thinking along with sub-scale scores in analyticalness, open-mindedness, curiousness, self-confidence, seeking the truth, systematicity, and their perception of problem solving skills.

## 2. Method

In this study, explanatory correlational model which is one of the correlational research methods was employed. (Buyukozturk, Kılıc, Cakmak, Akgun, Karadeniz and Demirel, 2012).

### 2.1. Participants

Convenience sampling that is one of the nonprobability sampling methods was used. In this sampling method, the sample being convenient is important (Buyukozturk, Kılıc, Cakmak, Akgun, Karadeniz and Demirel, 2012; Ekiz, 2009). The study was conducted with 97 participants (female=58, male=39) studying music education departments

at Pamukkale and Adnan Menderes Universities. 43 of these students were at Pamukkale University, and 54 at Adnan Menderes University.

## 2.2. Data gathering tools

In the study, "California Disposition of Critical Thinking" and "Problem Solving Skills" scales were used. California Disposition of Critical Thinking Scale (CCTDI) was developed by Facione, Facione and Giancarlo in 1998. Its adaptation to Turkish was done by Kokdemir (2003). The Cronbach alpha internal reliability coefficient of the scale consisting of 6 sub-scales was calculated as ,83. Problem Solving Skills Scale was developed by Heppner and Peterson (1982) and adapted to Turkish by Sahin, Sahin and Heppner in 1993 (Savasir and Sahin, 1997). For this study, Cronbach alpha internal reliability coefficient of the scale consisting of 6 sub-scales was ,82.

## 3. Findings and Interpretation

Addressing the research question of the study, correlation analysis was applied to the candidates' total scores in disposition of critical thinking along with sub-scale scores in analyticalness, open-mindedness, curiousness, self-confidence, seeking the truth, systematicity, and total perception scores regarding their problem solving skills. The findings are presented in Table 1.

Table 1 The Relationship between Music Teacher Candidates' Scores in Disposition of Critical Thinking Scale and Sub-Scales, and Problem Solving Skills Scale

CCTDI Total Score and Sub-Scale Scores	Analyticalness	Open-mindedness	Curiousness	Self-confidence	Seeking the Truth	Systematicity	Disposition of Critical Thinking	Perceptions Regarding Problem Solving Skills
Analyticalness	-	,377**	,421**	,411**	,552**	,430**	,743**	,480**
Open-mindedness	-	-	,433**	,423**	,585**	,347**	,733**	,398**
Curiousness	-	-	-	,446**	,333**	,294**	,674**	,309**
Self-confidence	-	-	-	-	,500**	,480**	,752**	,404**
Seeking the truth	-	-	-	-	-	,683**	,783**	,392**
Systematicity	-	-	-	-	-	-	,683**	,350**
Disposition of Critical Thinking	-	-	-	-	-	-	-	,538**
Perceptions Regarding Problem Solving Skills	-	-	-	-	-	-	-	-

\*\*p<0,01

As seen in Table 1, there was a moderate, positive and significant correlation ( $r=.58$ ;  $p<.01$ ) between the music teacher candidates' disposition of critical thinking and problem solving skills. In light with these findings, it can be said that as disposition of critical thinking increases, perceptions regarding problem solving skills increases as well. Based on the determination coefficient ( $r^2=0,33$ ), 51% of the total variance in disposition of critical thinking can be explained by the candidates' perceptions of problem solving skills. As a result of their experimental study with teacher candidates, Yıldırım and Yalcın (2008) found that critical thinking-based science education was more effective in increasing teacher candidates' level of problem solving skills. There was a positive relationship between music teacher candidates' critical perspectives of life and their perceptions of coping with problems. Music teacher candidates trying to analyse individual and social problems they face through critical thinking can be important in terms of being qualified teachers. There was a moderate, positive and significant relationship between music teacher candidates' disposition of critical thinking sub-scale scores and problem solving skills scores ( $p<.01$ ).

#### 4. Results and Discussion

The results of the study revealed that there was a moderate, positive and significant relationship between pre-service music teachers' disposition of critical thinking and perceptions about problem solving. Similarly, there was a moderate, positive and significant relationship between their disposition of critical thinking sub-scale scores and problem solving skills scores. In a study conducted by Gurleyk (2008) with elementary teacher candidates ( $n=332$ ), it was found that there was a positive significant relationship between academic achievement levels of teacher candidates and their problem solving skills. In their study with 353 teacher candidates in different departments of an education faculty, Tumkaya, Aybek and Aldag (2009) determined a significant relationship between the candidates' disposition of critical thinking and problem solving skills. The findings of the current study are consistent with previous studies (Yıldırım and Yalcın, 2008; Gunes, 2012). Critical thinking and problem solving are the skills that should be developed starting from the first steps of education. Individuals who have not developed these skills during their education cannot have a critical perspective on social, individual and cultural events, or avoid solving problems. However, music teachers encounter many types of problems during their career. Particularly in our country, they may need to make an extra effort in order to add a modern dimension to people's inadequate level of taste and interest for arts. At this point, having a critical perspective towards events and being assertive in solving problems can be effective for finding solutions. Conducting studies on teacher candidates' low level of critical thinking and problem solving skills may reveal their reasons. Through practices in teacher training instead of theoretically-based courses, candidates' critical thinking and problem solving skills can be developed by confronting teachers with current problems.

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