The Relationship Between Seventh Grade Students' Intelligence Areas And Their Academic Success In Science And Mathematics

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SYNOPSIS

INTRODUCTION

Gardner (1983) defines intelligence as a competency that allows individuals to solve problems. Psychologists such as Simon and Binet (1905), and Terman (1925) claim that people’s intelligence can be measured with a measurement tool called (Başaran, 2004) Intelligent Quotient (IQ) and similar intelligence test tools targeting cognitive abilities to measure intelligence cannot completely measure human intelligence (Visser, Ashton & Vernon, 2006). Insufficiency of current ideas and approaches on human intelligence encouraged researchers to look at intelligence from different perspectives. In his book, Frames of Mind, Gardner (1983) claims that individuals have seven intelligence dimensions which are independent from each other. These intelligence dimensions are verbal-linguistic, logical-mathematical, visual-spatial, interpersonal, intrapersonal, musical-rhythmic and bodily-kinesthetic. In the education area, several researches were conducted to investigate individual’s intelligence dimensions and to explore what these intelligence dimensions affected from (Furnham & Budhani, 2002; Furnham & Bunclark, 2006; Gürçay & Eryılmaz, 2002; Hamurcu, Günay & Özyılmaz, 2002; Köroğlu & Yeşildere, 2004; Uysal, 2004). These studies indicate that intelligence dimensions shows some differences according to individuals’ gender and parents’ education levels. Further, there was a meaningful relationship between students’ success in school subject and intelligence dimensions emerged out of these studies.

The main aim of education is helping students to acquire necessary abilities to reach the knowledge instead of transferring knowledge to them. Further, education aims to provide individuals’ with cultural, social, personal developments, and to develop students’ abilities...
such as asking questions, co-operation, and problem solving (Kaptan 1999). In order to achieve such goals, it is necessary to pay attention to the differences of individuals. Understanding individuals’ learning pathways become one of the important problems for the educators. Başaran (2004) argues that providing a better learning environment to the students can be achieved by paying attention to their developmental features and intelligence dimensions. Stating students’ weak and strong intelligence dimensions at the school environment and analyzing the factors that affect these intelligence dimensions might be vital for an effective teaching and learning. While such investigations have been carried out to find the effects of MI dimensions on education in US and Europe, there has been small number of studies conducted in Turkey.

PURPOSE OF THE STUDY

The purpose of this study was to identify seventh grade students’ multiple intelligence dimensions, explore how these intelligence dimensions change depending on their parents’ education levels, and investigate the relationship among students’ intelligence dimensions, their gender, and science, mathematics achievement.

METHODOLOGY

Target population of this study was all of the seventh grade students in public middle schools during the fall semester of 2005–2006 academic year in a large Eastern city in Turkey. Sample population consisted of 1255 male and 1159 female students. Multiple Intelligence Inventory (MII) that was translated into Turkish by Uysal (2004) was administrated to participating students. Data were analyzed with SPSS using t test, ANOVA, Pearson correlation statistical analysis. Some necessary changes were made and it was used this study with her permission. In her study, Uysal used 10 items for each intelligence dimensions. The value of Cronbach Alpha was found to be .86 for MII (Uysal 2004). In our study reliability coefficient Cronbach Alpha was .78.

FINDINGS

The analysis of data showed that students had different combination of seven intelligence dimensions. In our research, the strongest intelligence dimension that girls had was intrapersonal with 15.88 average score; the weakest intelligence dimension for girls was bodily-kinesthetic with 13.11 average score. The strongest intelligence dimension that boys had was logical-mathematical with 15.77 average score and the weakest intelligence dimension was visual-spatial with 12.55 average score. The intelligence dimension that all participating students scored highest was logical-mathematical with 15.82 average score and the weakest one was visual-spatial with 12.94 average score.

Further, the results showed a positive correlation between parents’ education levels and scores for all intelligence dimensions. Independent groups’ t-test was conducted to investigate whether there was an effect of gender on intelligence dimensions. Results indicated that there were meaningful differences among visual-spatial, intrapersonal, musical-rhythmic and verbal-linguistic according to gender. Moreover, there has been positive correlations among verbal-linguistic, logical-mathematical, visual-spatial, interpersonal, intrapersonal, and bodily-kinesthetic and science-math achievement, yet, a negative correlation between musical-rhythmic intelligence and science achievement.
RESULT and DISCUSSION

When we compare our findings with results of the studies conducted in different settings such as Furnham and Budhani (2002), Rammsayer and Rammstedt (2000) and Uysal (2004), it appears that students participated in our study scored lower than students participated in other studies on interpersonal intelligence and verbal-linguistic areas. One possible explanation for this difference could be the geographical, social-economical and cultural difference between the areas that our research and other studies conducted. Our study was conducted at the eastern part of the country. Socially the area is known as very conservative and culturally is very different in compassion to other areas. One would argue that structure of the society and the culture can create significant change on interpersonal and verbal-linguistic intelligence dimensions.

The results of the analyses indicated that students had different combinations of seven intelligence dimensions. However, the education programs mostly pay attention to verbal-linguistic and logical-mathematical intelligence dimensions because of their significant role in exams in Turkish education system. In our education setting, most of the instructions were organized around verbal and logical mathematical intelligence dimension; however, paying attention to other dimensions may increase the academic achievement in all areas (Köroğlu & Yesildere, 2004).

REFERENCES