| Investigating Middle School Math and Primary Teachers' Judgments of the Characteristics of Mathematically Gifted Students | Ortaokul Matematik Öğretmenleri ve Sınıf Öğretmenlerinin Matematikte Üstün Zekâlı Öğrenci Özelliklerine Yönelik Yargılarının İncelenmesi |

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Abstract

The purpose of this study was to investigate teachers' judgments of mathematically gifted students' characteristics with respect to various variables. Data were collected from primary school teachers and middle school math teachers (N=161) by using a survey instrument. According to research findings most of the teachers tended to think that mathematical giftedness is being observed more frequently within boys than girls. There was a statistically significant relationship between teachers' responses about whether mathematical giftedness could be developed or not who have mathematically gifted students and those who have not. But there was no statistically significant relationship among teachers' branch, teaching experience and their answers about the development of mathematical giftedness. Results showed that there was a statistically significant relationship between teachers' self-perception of being mathematically gifted and their experience with mathematically gifted students. Total scores of more popular and most popular characteristics that were determined by teachers had a positive correlation with teachers' experience.

Key Words: mathematical giftedness, mathematical talent, mathematically gifted students, math and primary school teachers

Öz

Bu çalışmada ortaokul matematik ve sınıf öğretmenlerinin matematikte üstün zekâlı öğrenci özelliklerine yönelik yargıları çeşitli değişkenler açısından incelenmiştir. Tarama modeli şeklinde gerçekleştirilen araştırmaya 161 öğretmen katılmıştır. Araştırma bulgularına göre öğretmenlerin çoğu kızlardan çok erkeklerin matematikte üstün zekâlı olabileceğini düşünmektedir. Matematikte üstün zekâlı öğrencisi olan ve olmayan öğretmenlerin matematikte üstün zekânın doğuştan olup olmamasına verdikleri cevapların istatistiksel olarak anlamlı ilişkili olduğu bulunmuştur. Branş ve deneyim değişkenleri ile matematikte üstün zekânın geliştirilebilir olup olmadığı arasında anlamlı bir ilişki bulunmamıştır. Öğretmenlerden kendini matematikte üstün zekâlı gören ve görmeyenler ile matematikte üstün zekâlı öğrencisi olan ve olmayanların, matematikte üstün zekânın geliştirilebilir olup olmadığına yönelik cevapları arasında istatistiksel olarak anlamlı ilişkiler vardır. Öğretmenlerin popüler, daha popüler ve en popüler bulduğu özelliklerin toplam puanları ile mesleki deneyim arasındaki ilişkilerin korelasyon analiziyle incelenmesi sonucunda deneyim ile daha popüler ve en popüler özelliklerin toplam puanları arasında pozitif yönlü ilişkiler bulunmuştur.

Anahtar Sözcükler: matematikte üstün zekâ, matematikte üstün yetenek, matematikte üstün zekâlı öğrenciler, matematik ve sınıf öğretmenleri

Summary

The Purpose and Significance: The purpose of the study was to investigate teachers' judgments of mathematically gifted students. Following research questions were examined: (1) What are the opinions of teachers about the frequency of mathematical giftedness in boys and girls? (2) Is there any relationship among the demographic variables, heredity and development of mathematical giftedness? (3) How do the teachers rate the characteristics attributed to the mathematically gifted students according to the popularity? (4) Is there any relationship between experience and the popularity of the characteristics attributed to the mathematically gifted students? Determining teachers' judgments of gifted student characteristics, gender of gifted person, heredity and development of giftedness could help to prevent wrong nomination and bias in the identification process.

Method: Survey method was used to identify teachers' judgments of mathematically gifted students. To support voluntarily participation convenience sampling method was adopted. 161 primary school and middle school math teachers were participated to the study. Of the total sample 101 (62.7%) were female, 60 (37.3%) were male; 61 (37.9%) were middle school math teachers and 98 (60.9%) were primary school teachers. Teachers' Judgments of Gifted Mathematics Student Characteristics (Ficici, 2003) Survey was administered to the participants. In this study Cronbach-Alpha coefficient was .94 (p<.05) for the total scale.

Results: 58 (36%) of the participants stated that mathematically gifted students were observed more frequently within females, while 73 (45%) of the participants stated that mathematically gifted students were observed more frequently within males. Eight stated that it was observed evenly within females and males, 4 had no opinions about gender relation with mathematical giftedness, 1 stated that it might change, 1 remarked that the question was incorrect (N=151).

There was a statistically significant relation between teachers' teaching experience with mathematically gifted students and heredity of mathematical giftedness (χ2= 7,651; p<.05). Also, a statistically significant relationship was found between the development of mathematical giftedness and teachers' teaching experience with mathematically gifted students (χ2= 10,644; p<.05). Furthermore, there was a statistically significant relation between teachers' self-perception of being mathematically gifted and their experience with mathematically gifted students (χ2=5,954; p<.05).

In the popular group the characteristics with the lowest percentage was to use technology when solving a problem. Following characteristics were included in the more popular characteristics rated by the teachers: to insist on solving mathematical problems, to display ability to do calculations accurately, to demonstrate interest to math related areas, to look at the world from a mathematical perspective, to enjoy challenging math activities, powerful number intuition, incubating for problems, understanding how to use math in real life. Some of the most popular characteristics were to be good at memorizing, thinking creatively, producing new

methods for problem solving, finding new ideas, explanations etc; remembering formulas and operations; understanding mathematical concepts, principles and strategies.

Conclusions: Most of the teachers believed that mathematical giftedness is frequently observed within males when compared to females. Also, most of the teachers stated that mathematical giftedness is innate and that it could be developed. Furthermore, the results showed that teachers' experience influence their perceptions about popular and more popular gifted students' characteristics.

Most of teachers thought that the characteristics mentioned in the survey are indicators of mathematical giftedness. It can be concluded that characteristics related affective and creative properties were seemed to be more important and valuable for mathematical giftedness. Considering the most popular characteristics rated by teachers, it is assumed that the memory, understanding mathematical concepts, and creativity properties are the most important indicators of mathematically gifted students.