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**ANALYSIS OF THE RELATIONSHIP BETWEEN MATHEMATICS  
ACHIEVEMENT OF THE VOCATIONAL SCHOOL STUDENTS AND THEIR  
ATTITUDES TOWARDS THE COURSE, THEIR CRITICAL THINKING  
DISPOSITIONS AND THEIR LOGICAL THINKING SKILLS**

**ABSTRACT**

This study aimed to define direct and circuitous connections of vocational school students' mathematics achievement with their attitudes towards the course, critical thinking dispositions and logical thinking skills; and to determine distinctness of the variables observed within the scope of research according to the socio-demographic characteristics of variables. The research was carried out with 479 first-grade students studying in various departments of Aydin Vocational School at Adnan Menderes University. In this research, 'California Critical Thinking Disposition Inventory' was used to identify students' critical thinking dispositions. In addition, 'Logical Thinking Skills Inventory' was used to measure logical thinking skills; 'Mathematics Attitude Scale' to identify the attitude levels towards Mathematics; and weighed average of mid-term and final examinations to determine the Mathematics success rate. The packaged soft ware SPSS 19.0 and AMOS were used in the analysis process of gathered data in the research. t-test for independent variables was used in binary clustering comparison; Analysis of Variance between groups (ANOVA) was used in group comparisons above two; and Path Analysis Technique was used to identify the relationships among the variables. When 'F' Test Statistics obtained from variance analysis were found significant at the end of the analysis of variance, Tukey HSD Multiple Comparison Test was applied to determine the group from which the difference arises.

The findings obtained at the end of the research can be summarized as follows:

1. Although there is no statistically difference between Mathematics success grades and classroom in which the students study, gender, the type of spare time activities, there is an indeed statistically difference according to the type of curriculum which the students study and the type of school they graduated from.
2. According to their total scores for critical thinking, there is no statistical difference with classroom, gender and the type of curriculum which the students study;

whereas there is a statistical difference with the type of school they graduated from and the type of spare time activities.

3. According to their total scores for logical thinking skills, there is no statistical significance with classroom, gender, and the type of spare time activities, on the other hand there is a statistical significance with the type of curriculum which the students study and the type of school they graduated from.

4. According to their total scores for attitude towards Mathematics, there is no statistical significance with classroom and gender; whereas there is a statistical difference with the type of curriculum which the students study, the type of school they graduated from and the type of spare time activities.

5. When the correlation between the observed variables within the context of the research was investigated, a low level of positive and statistically significant correlation between students' critical thinking dispositions and their Mathematics achievement; a moderate, positive and significant relationship between their attitudes towards Mathematics and mathematics achievement; a moderate, positive and a significant relationship between the students' attitudes towards Mathematics and their critical thinking dispositions; a high level of positive and significant relationship between their logical thinking skills and their Mathematics achievement; a low-level positive and significant relationship between logical thinking and critical thinking; a moderate positive and significant relationship between logical thinking and their attitudes towards Mathematics were found.

6. Although the direct effect of critical thinking on achievement is not statistically significant, the circuitous, indirect effect occurring from attitudes towards the course is statistically significant. This situation shows that attitude towards the course has a complete mediation effect between critical thinking and Mathematics achievement.

7. The direct impact of logical thinking on achievement is statistically significant. In addition, indirect effect on attitudes is statistically significant as well. But the intensity of this indirect impact decreases in accordance with the initial state. This situation shows that attitude has an impact of partial mediation between logical thinking and achievement.

**Key Words:** Mathematics Achievement, Attitude, Critical Thinking, Logical Thinking.