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DEMOCRITUS UNIVERSITY OF THRACE Department of Greek  
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**THE COGNITIVE AND METACOGNITIVE ABILITIES OF  
STUDENTS WITH SPECIFIC LEARNING DISORDER IN  
MATHEMATICS**

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POSTGRADUATE THESIS

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## **ABSTRACT**

The «Specific Learning Disorder in Mathematics», also known as Dyscalculia, is a Learning Disorder that affects the mathematical abilities of about 5-8 % of students worldwide. The learning difficulty has nothing to do with student's intelligence or their poor family environment and occurs only in the domain of mathematical knowledge. Students with this disorder struggle with mathematical concepts and quantities. They also lack of sufficient cognitive and metacognitive abilities, and this holds back their mathematical performance in domains like problem solving. Research has shown that the development of the cognitive and metacognitive abilities of these students can conduce to their better performance. Furthermore, it has been found that the development of the metacognitive abilities of reflection and regulation can help these students in the psychological domain, as far as they often are characterized by lack of confidence and high levels of anxiety. The present study investigates the cognitive and metacognitive abilities of the students with Dyscalculia and the positive effect of their development on their mathematical performance. At last, we present several assessment tools that have been designed for measuring the cognitive abilities and the level of metacognition of these students.

**Key words:** *Cognitive and metacognitive abilities, self-regulated knowledge, Specific Learning Disorder in Mathematics, mathematics anxiety, constructivism*

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