

**‘Specialization in ICTs and Special Education: Psychopedagogy
of Integration’ Postgraduate Program**
**DEMOCRITUS UNIVERSITY OF THRACE Department of Greek
Philology in collaboration with**
**NCSR DEMOKRITOS Informatics and Telecommunications
Institute**

**«STEM EDUCATION- METACOGNITION- SPECIFIC LEARNING
DISABILITIES»**

LYTRA NIKI

POSTGRADUATE THESIS

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ABSTRACT

Students with Specific Learning Disabilities, tend to have low academic performance because of the cognitive disorders and divergences of their working memory, as well as executing tasks like these of processing - organizing and recalling information.

Development of the meta-cognitive skills, like those of Monitoring, Self-Control, and Self-Regulation, helping these students recognize their weaknesses and introduce strategies and tactics will assist them to compensate their cognitive deficits, by becoming more flexible and adapt better to any changes coming up.

STEAM (Science, Technology, Engineering, Art, and Mathematics) education involves students in the education process, via a multifaceted and multi-sensory approach of problems, aiming to most efficient resolvent of them. This way, students being assisted to develop Meta-cognitive Skills, to control the way, they learn, building up the necessary knowledge so that they can secure equal academic and career opportunities. As a result, their independence and self-esteem are being boosted.

The present research consists a literature review with purpose to explore whether the development of Meta-Cognitive Skills is achievable, through interdisciplinary STEAM learning. The second based on the research and experimentation, aiming to resolve realistic problems and determine whether students can be assisted by the STEAM method. This is achieved by compensating the difficulties and cognitive deficits which characterizing them, at the same time equipping them with the necessary for the 21st century skills.

The choice of the subject is an effort to emphasize the importance of problem-solving ability through STEAM learning, as an alternative approach to teaching science and the cognitive skills of students with special learning disabilities.

The conclusion of the study is that STEAM learning programs should be integrated, in teaching natural sciences, actively involving students in the learning process, so they can develop basic metacognitive skills. Some of the skills include the self-observation, self-control, self-regulation and adaptation, which will make them capable to solve complex daily problems, thus gaining the self-esteem and confidence that will prepare them to come up against 21st century challenges.

Key Words: STEM education, problem- based learning, science education, specific learning disabilities, metacognition, problem solving, inquiry- based learning, memory, attention.

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ΑΙΩΝΑ ΜΕΣΑ ΑΠΟ ΤΟΥΣ ΔΙΑΓΩΝΙΣΜΟΥΣ, ΤΑ ΦΕΣΤΙΒΑΛ ΚΑΙ ΤΙΣ ΕΚΘΕΣΕΙΣ ΡΟΜΠΟΤΙΚΗΣ.

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ΤΕΧΝΩΝ, ΤΜΗΜΑ ΕΚΠΑΙΔΕΥΤΙΚΗΣ ΚΑΙ ΚΟΙΝΩΝΙΚΗΣ ΠΟΛΙΤΙΚΗΣ, ΠΡΟΓΡΑΜΜΑ

ΜΕΤΑΠΤΥΧΙΑΚΩΝ ΣΠΟΥΔΩΝ ΕΠΙΣΤΗΜΕΣ ΤΗΣ ΕΚΠΑΙΔΕΥΣΗΣ ΚΑΙ ΤΗΣ ΔΙΑ ΒΙΟΥ ΜΑΘΗΣΗΣ.

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