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Maja S. Zobenica[1], Ljubica M. Oparnica
University of Novi Sad, Faculty of Education in Sombor, Serbia

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Some Components of Self-Regulation in Learning Mathematics among Students of the Faculty of Education in Sombor

Extended summary

Self-regulation is one of the key competences for the lifelong learning. Motivation and resource management strategies are the non-cognitive components of self-regulation. Self-regulation was introduced by Zimmerman and Schunk who defined self-regulated learning in terms of self-regulation which appears in education theories and refers to self-thoughts, feelings, and actions. Though research has shown that self-regulation influences academic achievement, a person has to be motivated to use self-regulation strategies (Boekaerts, 1996, Lončarić, 2014). The aim of the research presented in this paper was to examine the relationship between motivation and resource management strategies used by students in mathematics lessons at the Faculty of Education in Sombor. The question of whether students with higher motivation are better in using resource management strategies to learn mathematics set an additional research goal: to test the differences in the scores of the resource management components in mathematics learning for students with high and low motivation. The research sample consisted of 118 students of the following academic programmes taught at the Faculty of Education in Sombor: primary school teachers, preschool teachers, librarians, and media design in education. For the purpose of this research, the motivation scale and the scale of the resource management strategies were adapted from the MSLQ questionnaire (Pintrich, Smith, Garcia and McKeachie, 1993).

The results of the statistical analysis showed the level of the components of motivation and resource management strategies, correlation between these components, dependence of these components on studying different courses, as well as dependence of the components of the resource management strategies on students` motivation. Descriptive analysis showed that

1 maja.zobenica@gmail.com

students have low intrinsic and extrinsic motivation, which implies that the majority of the students are not motivated to learn mathematics. Students also expressed relatively strong beliefs about their control of learning, peer-learning, and test anxiety. A statistically significant correlation was found between most of the components. The highest correlation between non-cognitive components of self-regulation was found between intrinsic motivation and the subject value ($r = .582$, $p <. 01$), and between intrinsic motivation and self-efficacy ($r = .561$, $p < .01$), which is in agreement with the previous research (Pintrich & De Groot, 1990; Brković et al., 1998; Sorić, Vulić-Prtorić, 2006; Kuzmanović & Vučetić, 2015). Anxiety is in a negative correlation with the motivation components, and in a positive correlation with resource management strategies ($r = .429$, $p < .01$). The research results show that there is a moderate correlation between motivation and resource management strategies in learning mathematics and that there is a significant difference in students' motivation relative to the academic study programmes. Future preschool teachers are less motivated to learn mathematics than students enrolled at other academic programmes. They exhibit the lowest level of intrinsic motivation, value the subject of mathematics less than others, have the lowest beliefs about having control over their learning, and the lowest self-efficacy. The results also showed that students with higher motivation are better in time management and organising work environment than students with lower motivation.

It is necessary to examine whether the implementation of the preschool mathematical problems in mathematics classes at the faculty would contribute to the increased motivation among the students. Integration of self-regulation training strategies in teaching gives positive results, especially in mathematics education. Students with a well-developed self-regulation are likely to invest more in the quality of teaching and professional development. Pedagogic implications of this research include the need for developing pre-service teachers' self-regulation competences because they contribute to a better understanding, as well as solving and interpreting mathematical tasks.

Keywords: motivation, resource managemet strategies, self-regulated learning, mathematics.

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