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Initial problem solving competencies of the first year students, prospective elementary school teachers, at the Pedagogical faculty in Skopje (2006/07-2009/10).

IMO, Istraz. Mat. Obraz. 3, No. 5, 5-12 (2011).

Summary: The development of problem-solving competencies of students is one of the focal points of contemporary education. Mathematics education at all levels if designed and conducted appropriately could provide multiple, opportunities for building and continuous development of students' problem-solving competencies. Initial and periodic assessment of these competencies plays crucial role in optimal planning of mathematics instruction for their development. At the beginning of the first semester during four consecutive academic years (2006/07-2009/10) diagnostic tests on a range of mathematics competencies of the first year students, prospective elementary school teachers, in Macedonian and in Turkish language of instruction at the Pedagogical faculty "St. Kliment Ohridski" in Skopje were administered. The diagnostic tests consisted of fifteen math problems covering areas from the first of two compulsory one-semester mathematics courses. We analyze the results of the students on two problems: a context problem which can be solved by logical reasoning or by using a proportion and a context problem which can be solved by logical reasoning or by modeling it as one linear equation with one unknown or as a system of two linear equations with two unknowns. The results showed that problem-solving competencies of the majority of students are of very low levels. Each year more than half of students didn't even attempt to solve the problems, and only a small percent of those who tried did it correctly. These results together with the results from other studies lead us to conclude that the role of problem-solving has to be incorporated more prominently in the mathematics curriculum at all levels of education. As means for achieving this goal we point at contemporary mathematics education approaches like realistic mathematics education whose foundations are based primarily on problem-solving activities and context problems.

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