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Sinitsky, Ilya; Ilany, Bat-Sheva

Awareness and knowledge of pre-service teachers on mathematical concepts: Arithmetic series case study.

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Summary: Deep comprehension of basic mathematical notions and concepts is a basic condition of a successful teaching. Some elements of algebraic thinking belong to elementary school mathematics. The question “What stays the same and what changes?” link arithmetic problems with the algebraic concept of a variable. We have studied beliefs and comprehensions of future elementary school mathematics teachers on early algebra. Preservice teachers from three academic pedagogical colleges deal with mathematical problems from the pre-algebra point of view, with the emphasis on changes and invariants. The idea is that the intensive use of non-formal algebra may help learners to construct a better understanding of fundamental ideas of arithmetic on the strong basis of algebraic thinking. In this article, the study concerning arithmetic series is described. A considerable number of pre-service teachers moved from formulas to deep comprehension of the subject. Additionally, there are indications of ability to apply the concept of change and invariance in other mathematical and didactical contexts.

Classification: C39 E49 F39 H29

Keywords: research; concept formation; preservice teacher education; pre-algebra; propaedeutics; problem solving; teacher characteristics; teaching methods; elementary algebra; variables; arithmetic; algebraic thinking