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Pre-service teachers' perceptions and beliefs of technological pedagogical content knowledge on algebra.

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Summary: The purpose of this study was to investigate pre-service elementary teachers' content knowledge in algebra (linear equation, quadratic equation, functions, system of equations and polynomials) as well as their technological pedagogical content knowledge (TPACK) in teaching algebra. Participants were 79 undergraduate pre-service teachers who were enrolled in the general education program and the teacher education program where the former offered a content course and the latter the methods course. Data were collected from students' paper-based survey responses. Quantitative analysis was utilized to analyze the collected data. Results indicated that there were no significant differences in content knowledge for algebra between the pre-service teachers from two programs. Pre-service teachers in the teacher education program had better pedagogical knowledge than those in the general education program. The five sub-scales of the algebra content were significantly correlated with each other. Content knowledge and pedagogical knowledge significantly predicted TPACK. Levels of technology skills among the pre-service teachers had a significant impact on their technology knowledge, technological content knowledge and TPACK.

Classification: C29 C39 D39 H39 C49

Keywords: technological pedagogical content knowledge; teachers' perceptions; teachers' beliefs; algebra; pre-service teachers