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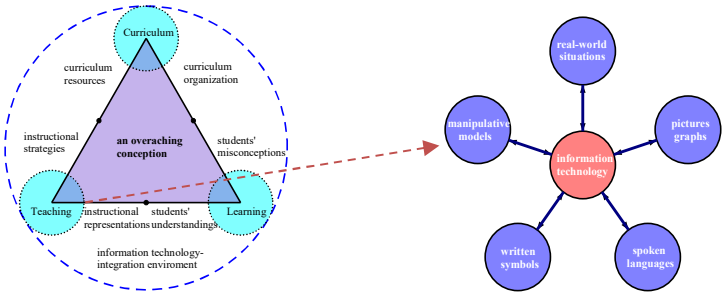
A STUDY ON IMPROVING PRESERVICE MATHEMATICS TEACHERS' KNOWLEDGE OF TECHNOLOGY-INTEGRATED INSTRUCTIONAL REPRESENTATION THROUGH GEOGEBRA SUMMER CAMP

Zhiqiang Yuan, Xiangping Deng, Hao Mei
Hunan Normal University, Changsha, Hunan, China

In order to improve teachers' subject-oriented information technology teaching competencies, we may develop their Technological Pedagogical Content Knowledge (TPACK). Knowledge of technology-integrated instructional representation is one of the most important dimensions of TPACK, which influences visualization teaching competencies of teachers. Twenty-four preservice mathematics teachers participated in a five-day GeoGebra summer camp. Quantitative and qualitative data showed their growth of knowledge of technology-integrated instructional representation.

Developing STEAM (Science, Technology, Engineering, Arts and Mathematics) teachers' Technological Pedagogical Content Knowledge (TPACK) in the process of teacher preparation is very important. Preservice teachers should have ample opportunities to experience educational technologies both as students and as future teachers (Milner-Bolotin, 2015). Techers' TPACK consists of four central components (Figure 1a) and knowledge of technology-integrated instructional representation (Figure 1b) is one of the most important dimensions which influences visualization teaching competencies of teachers (Yuan & Li, 2012).



(a) (b)

Figure 1. TPACK central components model

Twenty-four preservice mathematics teachers participated in a five-day GeoGebra summer camp, which consisted of pre- and post-ten-minute simulation teaching for each one at the beginning and the end of the camp, and GeoGebra training. Self-reflection reports, observed behaviors, and teaching artifacts were collected by classroom observation and videotaping and document collection. Computer assisted qualitative data analysis software, NVivo, was used to analyze the data. Quantitative and qualitative data showed preservice mathematics growth of knowledge of technology-integrated instructional representation.

References

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