

7th International Academic Conference
on **Teaching, Learning and Education**

Reform-based Mathematics Teaching Practices for Teacher Candidates' Professional Development

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Abstract

K-6 teacher candidates in the USA are required to meet three criteria, conceptual understanding, procedure fluency and mathematics reasonings and problems solving (edTPA, 2022) as doing reform-based mathematics teaching their future. The purpose of this study was to examine how K-6 teacher candidates' professional development in teaching mathematics transfer to reform-based mathematics teaching examined by the three criteria. The mixed methods of this study were implemented on 15 teacher candidates as participants, majoring in elementary/K-6 education. The data were collected from participants' final assessment portfolios to evaluate candidates' teaching effectiveness, as quantitative approaches. The verbal interviews on the candidates' mathematics lessons, as qualitative approaches, were used to compare individual's ability of transferring from traditional teaching to reform-based mathematics teaching. Results showed that candidates face multiple challenges to transfer from skills-repeated (traditional) math teaching to reasonings-developed (reform-based) math teaching. Candidates agree the change from traditional teaching to reform-based mathematics teaching can benefits teaching effectiveness. How to facilitate candidates' professional development for reform-based mathematics teaching is discussed.

Keywords: reform-based mathematics teaching; K-6 teacher candidates; elementary mathematics education