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**Pre-service mathematics teachers' learning and teaching of activity-based lessons supported with spreadsheets.**

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Summary: In this study, 12 pre-service mathematics teachers worked in teams to develop their knowledge and skills in using teacher-led spreadsheet demonstrations to help students explore mathematics concepts, stimulate discussions and perform authentic tasks through activity-based lessons. Pre-service teachers' lesson plans, their instruction of the lessons designed, experiences and lesson enactment outcomes were examined. The pre-service teachers in the study were able to develop and demonstrate their knowledge and skill adequately in designing and enacting activity-based mathematical lessons supported with spreadsheets. The results also showed that the pre-service teachers' use of the spreadsheet as an instructional tool promoted student in-depth mathematical concept formation and an activity-based learning approach to make lessons less teacher centred and more interactive.

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*Keywords:* technology integration; activity-based learning; technological pedagogical content knowledge; student learning outcomes; teacher education; spreadsheets

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