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Fostering Play-Based Mathematics through Community Engagement and Sustainable Early Childhood Education

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Abstract

This study examines how community engagement within pre-service early childhood education enables the creation of play-based mathematics learning environments that foster children's agency, participation, democratic engagement and sustainability. Current literature pays limited attention to how initial teacher education can contribute to quality early childhood mathematics education that integrates community engagement and indigenous knowledge to foster children's participation and agency in mathematics. This study is informed by the Engagement of Hope Framework, Constructivist Learning Theory, and Vygotskian social learning perspectives. These frameworks conceptualise sustainability as relational and participatory. This qualitative study is situated within a constructivist paradigm and employs Participatory Action Research. Data are generated through observations and pre-service teachers' reflections. Data will be analysed through inductive thematic analysis. All invited participants were informed of the rationale of the study, the use of data and the right to withdraw from the study. Ethical clearance was obtained from the relevant University as well as the South African Department of Basic Education. As a study in progress, community engagement is anticipated to function as a catalyst to enable play-based mathematics learning that is relevant, sustainable, and grounded in familiar resources. The study offers insights for higher education institutions involved in initial teacher education programmes dedicated to designing sustainable and equitable mathematics learning environments across diverse early childhood contexts.

Keywords: Children's Agency and Participation; Community Engagement; Initial Teacher Education in Early Childhood Education; Play-Based Mathematics Learning; Sustainable Education