

Abstract

This study explored the relationship between the physical science pre-service teachers' nature of topic specific pedagogical content knowledge (tsPCK) acquired in planning and that enacted in the classroom teaching of stoichiometry. The research study was based on the construct of tsPCK developed by Mavhunga (2012) as it focused on the knowledge required for transforming the content knowledge of a specific science topic. The study was performed on three groups of fourth year pre-service teachers doing a physical science methodology course at a university in South Africa. There were 12 participants in total. Collected data included the lesson plans, video-recordings of microteaching, and reflection reports; all done by the participant pre-service teachers in the stoichiometry. The research used an in-depth qualitative method to analyse the results by looking for possible moments of integration of tsPCK components represented by tsPCK maps. The validated tsPCK rubric was used to quantify the observed tsPCK episodes and describe the quality of tsPCK. An analysis of the collected data revealed that even though there was a relationship in terms of components in the lesson plans and enacted lesson, the enacted lessons had a better quality than the lesson plans. It was also observed that most of the enacted lessons were interwoven and had more knowledge components of tsPCK than the lesson plans. The implications of the study were discussed.

Key words

tsPCK – Topic Specific Pedagogical Content Knowledge

cPCK – Collective Pedagogical Content Knowledge

pPCK – Personal Pedagogical Content Knowledge

ePCK – Enacted Pedagogical Content Knowledge

DoBE – Department of Basic Education