

Abstract

Content knowledge and pedagogic content knowledge for teaching of stoichiometry is seen as essential knowledge for teachers to possess to ensure high standards of learner achievement in stoichiometry. In recent years, the results produced by matriculants show that questions involving stoichiometry is the most poorly answered in the Grade 12 National Senior Certificate examinations. Vygotsky (1978) social cultural theory on learning is used to explain how teachers can work in collaboration through a professional learning community to help learners gain deeper knowledge on the topic stoichiometry. This study considers teacher discussions on stoichiometry and its role in developing teacher knowledge for the teaching of stoichiometry. The role of teacher discussions in professional learning communities is explored. This research uses a qualitative methodology in which the researcher analyses transcriptions of meeting discussions to find pedagogical reasoning of teachers through reflective practices. Pedagogical reasoning by Shulman (1986), and reflective practices by Schon (1983) are shown to work together to assist teachers gaining pedagogical content knowledge. It was revealed that teacher discussion stimulates reflections in action and on action (Park & Olivier, 2008). Through these reflections, teachers became aware of gaps in their subject matter and pedagogic content knowledge. Teachers became aware of the importance of change in orientation to teach associated with change in instructional strategies moving from a didactic teacher-centred approach toward an activity-driven or academic rigor approach (Magnusson, Krajcik & Boroko, 1999). The findings of this research show and concurs with other academic studies (Newman & Wehlage, 1993; Seashore & Helen, 1996) that professional learning communities can create space for thinking of authentic activities and authentic pedagogies through teacher interaction by discussions. However, it remains unknown in this study how the participants enact their change in thinking of practice in the classroom situations. Further studies are recommended to see how teachers move from PCK gains in PLC discussions to enacting PCK in the classroom context. The impact of PLC discussion on the improvement of learners understanding of the topic stoichiometry needs to be established through further research.