

THE PEDAGOGICAL CONTENT KNOWLEDGE OF SOUTH AFRICAN LIFE SCIENCES TEACHERS TEACHING EVOLUTION FOR THE FIRST TIME

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ABSTRACT

This study was motivated by the introduction of the topic of evolution in the Grade 12 *Life Sciences* curriculum in South African high schools in 2008. Many Life sciences teachers were concerned about their preparedness to teach evolution as this topic was new to them as well. They were worried about their ability to teach evolution as many felt that their content knowledge was inadequate to effectively teach evolution. The aim of this study was to investigate the nature and the extent of the pedagogical content knowledge of *Life Sciences* teachers who were going to teach evolution for the first time in South African high schools in 2008. This study used a five-category model of pedagogical content knowledge adapted from Shulman.

Data were collected from two different samples from teachers who were attending workshops which were aimed at alleviating the teachers' concerns and fears about evolution and to help them prepare to teach the topic of evolution. The first workshop was held at the end of the second school term in 2008, just a few weeks before many teachers were meant to start teaching evolution. The second workshop was held during the period when all teachers were supposed to have started teaching evolution, and that was in August 2008. The first group of teachers comprised 39 teachers who attended the evolution workshop during the SAASTE conference and the second group comprised 40 teachers attending the evolution workshop organised for NAPTOSA.

The questionnaires were designed to address the five categories in the pedagogical content knowledge model used in this study. Seven activity-based questionnaires were used to gather data from two convenience samples consisting of two groups of teachers. The questionnaires investigated the nature and extent of the teachers' knowledge of the evolution content they were supposed to teach; their knowledge of the teaching and learning difficulties regarding evolution; knowledge of the preconceptions and misconceptions associated with evolution; knowledge of appropriate methods and strategies to teach evolution and their curricular knowledge. Open-coding and frequency counting were used to analyse the data. The data revealed that the some teachers over-estimated their knowledge of the evolution subject matter, many harboured misconceptions about evolution. Further analysis of data revealed that many did not know of different approaches and strategies they could use when teaching evolution and that they did not know of the different additional resources they could use when teaching evolution. In general the teachers' knowledge levels for teaching evolution, in all the five categories of pedagogical content knowledge was low, an indication that the teachers were ill-prepared for teaching evolution.