Teaching evolution in a new curriculum: *Life Sciences* teachers' concerns and needs

Nonyameko Ngxola

A research report submitted to the Faculty of Science in partial fulfilment of the requirements for the degree of Master of Science

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DECLARATION

I declare that this research report is my own unaided work, except as indicated in the acknowledgements, the text and the references. It is being submitted in partial fulfilment of the requirements for the degree of Master of Science at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at any other institute.

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Nonyameko Ngxola

ABSTRACT

This research was motivated by introduction of the topic of evolution in the Grade 12 curriculum in South African schools in 2008. Overseas research shows that evolution is a very controversial topic to teach, raising serious concerns for teachers. The need for appropriate professional development was urgent, but many *Life Sciences* had been dissatisfied with government workshops they had attended in preparation for the new curriculum. Furthermore, the teachers were sceptical about their ability to explain the theory of evolution because they did not have adequate content knowledge to teach the subject. Curriculum change theory dealing with 'stages of concern' suggests that teachers implementing a new curriculum move through a series types of concern, and that if their initial concerns are not addressed teachers will be slow to move on to more task-related matters.

This study aimed to identify the early concerns and needs of teachers who had to teach evolution for the first time in a new *Life Sciences* school curriculum, in order to provide crucial information for service providers who have to design appropriate support workshops.

Data were gathered using seven activity-based questionnaires, from a convenience sample of two groups of teachers (n = 45 and n = 74) from various districts in Gauteng, attending 2007 and 2008 in-service training workshops on the teaching of evolution. The data were analyzed using open coding and frequency counts. The data revealed that teachers had concerns on different levels, the majority of concerns identified being 'self-concerns' dealing with personal worries and need for information. Late concerns were less prevalent. A further analysis of self-assessed knowledge levels of teachers as well as actual levels (based on definitions of biological evolution provided by the teachers and results of an evolution quiz designed to diagnose possible misconceptions) was done. The data showed that the knowledge of most teachers was poor, and that many teachers over-estimated the adequacy of their own knowledge. This information is useful for the teachers themselves, curriculum developers and those involved in professional development.

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DEDICATION

I dedicate this research report to my parents, Mnyamezeli Ndoda Ngxola and Shona Ngxola whose continual encouragement and belief in my potential sustained me.

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