

**THE USE OF SCIENCE PROCESS SKILLS BY GRADE 11 PHYSICAL SCIENCE  
LEARNERS: A CASE STUDY OF TWO HIGH SCHOOLS IN GAUTENG PROVINCE,  
SOUTH AFRICA**

**BY**

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## **DECLARATION**

I, Brian Chigumbura, declare that this research on “**The use of science process skills by Grade 11 Physical Science Learners: A case study of two High Schools in Gauteng Province, South Africa**” for the degree of Master of Science Education hereby submitted, has not been previously submitted by me for any degree at this or any other University, that it is my own work in design and execution and that all materials taken from other sources contained herein have been duly acknowledged.

.....

**Signature**



**Date**

**3 November 2015**

## **ACKNOWLEDGEMENTS**

The compilation of this study has been demanding in terms of time, energy, material resources and academic insight. Without the support, patience and guidance of the following people, this study would not have been materialised. It is to them that I owe my deepest gratitude:

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- My family and friends for the constant words of support and encouragement on my studies.
- Managers, teachers and learners of the two schools that participated in this study

## **DEDICATION**

This research is dedicated to:

- My late Mother Praxedeces Zinyama who passed away after giving me the valuable advice to consider education as a source of strength.
- My family and their undying love for the family is greatly appreciated and admired.

## **Abstract**

In South Africa, the new Curriculum Statement and Policy Statement (CAPS) Grades 10-12 for Physical Sciences emphasizes learners' use of science process skills. The aim of this study was to evaluate the extent of the use of science process skills by Grade 11 Physical Science learners. It also sought to explore some of the factors associated with poor utilization of SPS by Grade 11 Physical Science learners. The participants were Grade 11 Physical Science learners (n=50) and teachers (n=4) from two schools in the Johannesburg area of the Gauteng Province, South Africa. Quantitative and qualitative data used to evaluate Grade 11 Physical Science learners' use of science process skills was obtained through use of: a learner Likert questionnaire; teacher and learners' interviews; and analysis of classroom lesson observations. Quantitative data was analyzed using both descriptive and inferential statistics. Qualitative data was analyzed using a combination of content and interpretive analysis. It was found that for both schools basic science process skills were relatively more frequently utilized compared to integrated skills; with the lower fee paying school showing a poorer utilization of both types of skills. The most utilized basic science process skills were found to be communication, observation, identification, classification, comparison, description and calculation. It was found that the following integrated process skills are poorly utilized by the Grade 11 Physical Science learners- prediction, constructing hypothesis, relationship between variables, constructing diagrams, and experimentation. Some of the factors found to hamper utilization of science process skills were identified as teacher incompetency, lack of learner interest, poor availability of curriculum resources, and poor teaching practices and learning strategies. It was recommended that the South African CAPS curriculum needs to be revised to put greater emphasis on teaching and assessment of science process skill utilization. Furthermore, it was suggested that teachers need to be professionally developed to enhance their capabilities of teaching science process skill utilization. Implications for further studies were fleshed out and discussed.

### **Key words**

South Africa, science process skills, utilization, basic, integrated

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