

# Unearthing student teachers' Physics misconceptions during Work-Integrated Learning

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**Abstract.** This study explored student teachers' Physics misconception during Work-Integrated Learning in high schools in South Africa. The sample in this work comprised eight final-year student teachers pursuing a Bachelor of Education degree and seven Postgraduate Certificate in Education students. An unstructured observation method was utilized to collect data during the lessons that were conducted by the participants. It was observed that a significant number of the participants had some misconceptions about Physics. Some of participants claimed that their misconceptions emanated from the prescribed textbooks and also from their previous studies. A number of suggestions were made to remedy this grave issue of Physics misconceptions amongst the student teachers.

## 1 Introduction

Physics as a school subject is generally viewed as difficult to comprehend and master due to a myriad of reasons [1], [2]. In South Africa, Physics is offered jointly with Chemistry as Physical Science for high school learners between grades 10 and 12. Generally, the pass rate and quality of the grade 12 final matriculation results in Physical Science is very poor [3], [4]. The study in [5] reveals that one of the main reasons for learner poor performance in Physical Science is that a significant number of the teachers may not have specialized in teaching both Physics and Chemistry, and in this particular study, most of the teachers were not competent enough to teach Physics at the required level.

Although much effort has been expended in studying the reasons behind matriculant learners' poor performance in Physical Science, there is presently no literature that explores the role that student teachers' misconceptions in Physics plays in the overall performance of the learners in South Africa.

## 2 The body

This study utilized an unstructured observation method to collect data from eight final-year Bachelor of Education degree and seven Postgraduate Certificate in Education Physical Science student teachers who were on Work-Integrated Learning (WIL). During WIL, I was assigned to assess the students on a variety of issues by using a standardized rubric for assessment. I then concurrently wrote separate notes during the lesson observations that were primarily aimed at revealing Physics misconceptions that arose during the lessons.

The results showed that a significant number of the student teachers held deep misconceptions about key Physics concepts. Most of the ensuing misconceptions were found to be in Mechanics and Electricity and Magnetism. During the discussions after the lessons, some of the students openly stated that the misconceptions that they had arose from the information that they obtained from the prescribed textbooks, and others were adamant that their conceptions emanated from some of the modules that they had previously studied. These results overtly pointed out that some of the high school learners' misconceptions are passed on to them by their teachers who would have some deep-seated flawed conceptions on certain Physics phenomena and concepts.

In a follow-up to this study, I intend to examine a number of the prescribed textbooks to find out if indeed some of the misconceptions that the student teachers held originated from the books as alleged by some of the participants

## 3 Conclusion

A significant number of student teachers held some serious misconceptions on a number of Physics topics that will certainly be passed on to their future learners. Serious intervention strategies need to be put in place to address this menacing challenge that certainly places the advancement of Physics education at risk.

## References

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