



DEPARTMENT OF ASTRONOMY

UNIVERSITY OF CAPE TOWN
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD

Contribution ID: 138

Type: Oral Presentation

Teaching problem-solving by means of shoestring experiments

Friday, 8 July 2016 11:10 (20 minutes)

Abstract content **Formatting** **Special chars**

Traditional “recipe-based” practical exercises may have a high degree of outcome predictability, but, because they absolve the student of a great deal of thinking, such exercises have a low degree of value as learning experiences. Practical exercises could instead become problem solving activities, where the student must devise a method as well as generate an answer to a question. The student is given prior warning only of the broad outcome of the task. A common objection to this sort of exercises is that realistically, it can only be performed by students after the relevant ‘theory’ has been covered. This can present a difficulty for service courses where prohibitively large groups of students would have to perform the same practical exercise simultaneously. In addition, economic and logistic obstacles such as the cost of purchasing large quantities of laboratory equipment, and problems of storage can be seen as prohibitive. In this paper, two exercises are presented that are potentially good learning experiences and can easily be performed by first year Physics students without detailed procedural instructions as problem solving activities compared to traditional ‘cook-book’ practical exercises. Furthermore, the apparatus for these exercises is cheap to acquire and relatively easy to store, hence the objection mentioned above becomes invalid.

Apply to be considered for a student award (Yes / No)?

No

Level for award (Hons, MSc, PhD, N/A)?

N/A

Main supervisor (name and email) and his / her institution

N/A

Would you like to submit a short paper for the Conference Proceedings (Yes / No)?

Yes

Please indicate whether this abstract may be published online (Yes / No)

Yes

Primary author: Mr CLERK, Douglas (School of Physics, University of the Witwatersrand)

Co-authors: Dr ALBERS, Claudia (WITS university); Prof. NAIDOO, Deena (School of Physics, University of the Witwatersrand)

Presenter: Prof. NAIDOO, Deena (School of Physics, University of the Witwatersrand)

Session Classification: Physics Education

Track Classification: Track E - Physics Education