APPLICATION OF PROJECTS OF CONSTRUCTING DEVICES IN PHYSICS TEACHING AND LEARNING FOR TANZANIAN SECONDARY SCHOOLS

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ABSTRACT

This study investigated the extent of application of projects of constructing devices (CDs) in ordinary level secondary school physics teaching and learning in Tanzania. The study design was a survey using both qualitative and quantitative methods of data collection and analysis. The study was conducted in Dar es Salaam and Morogoro regions, where six secondary schools were involved namely Azania, Biafra, Kambangwa, Kigurunyembe, Kilakala and Morogoro. A total of 146 respondents were involved, including six secondary schools, 25 physics teachers and 115 Form IV students in 2008. The data were collected through questionnaires, focus group discussion and documentary review.

The findings revealed that there are reasonable numbers of proposed projects of CDs in the 1996 and 2007 physics syllabi through which students can learn physics by constructing devices and developing a variety of competences. It has also been revealed in the findings that, the extent of application of projects of CDs in secondary school physics teaching and learning to be low, due to a number of constraints including low competence of teachers, lack of working tools, inadequate materials for constructing devices, and lack of physics laboratory equipment and materials. The findings disclosed many benefits of applying projects of CDs in physics teaching and learning such as making physics popular to many students; constructing devices that can be used as physics teaching aids for own school use; enhance students' achievement in physics tests and examinations; improve students' confidence in studying physics; localize physics to the surroundings of the students; develop creativity and innovative mind among students to construct other devices; develop problem solving skills among students; and promote application of the knowledge of physics in daily life.

Based on the findings, it can be concluded that, the low application of projects of CDs in physics teaching and learning is caused by many constraints which must be addressed by collaboration among education stakeholders.

The study recommends that, the application of projects of CDs in physics teaching and learning should be promoted by conducting in-service training for physics teachers and by providing to schools all the basic requirements needed for effective implementation of the strategy.