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Student Perceptions to the Use of Paperless Technology in Assessments- A Case Study using Clickers

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Abstract

Modern classrooms see many innovative practices in facilitation. Most facilitators prefer using presentations animated videos and multimedia to better explain their content. Campuses are Wi-Fi enabled and students use tablets, laptops and smartphones to capture the essence of a lecture. However the one area where technological innovation is still lagging behind, in an academic setup, is in assessment. This paper looks at the perception of students to the use of clicker technology as a form of paperless assessment. Clicker technology was introduced as a tool for conducting formative and summative assessments to a first year electrical engineering subject, Digital Systems 1. The paper first elaborates on the significance, types and the methods of academic assessments. It then discusses the pros and cons of assessments using clicker technology. Thirdly it sheds light on the research methodology used in acquiring data for this research. Finally the results are analyzed which among others show that that 71% students enjoyed using clickers in class for formative assessments while only 52% appreciated its use in summative assessments. One of the reasons touted for this decrease is student anxiety. The key recommendation from this research is to increase the use of these assessment techniques within a formative assessment environment so as to familiarize students to eventually use it with confidence in summative assessments.

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1. Introduction

“Assessment is the most powerful lever teachers have to influence the way students respond to courses and behave as learners”(Graham, 1999). This is the view of Gibbs on assessment. His view is reinforced by those of Smith and Wood who go on to state that “...appropriate assessment methods are of major importance in encouraging students to adopt successful approaches to their learning. Changing teaching without due attention to assessment is not sufficient”(Smith & Wood, 2000). These are just some of the views of active researchers in the field of education on assessment.

Some of the questions this paper poses and aims to find answers to are; what is the perception of students on paperless assessment?; Can the clicker be used to bridge the gap between facilitators and students?; Using paper-less assessments are we encouraging more students to actively participate in our classrooms?; Is this going to be the way forward in assessments?

There has been similar research done in mathematics education(Engelbrecht & Harding, 2005), but very little in engineering and almost none noting the perception of electrical engineering students in South Africa to the use of innovations in assessment.

The Central University of Technology (CUT)(“Central University of Technology, 2015”) is home to approximately 13000 students. CUT offers National Diplomas and Bachelor of Technology degrees in various faculties, including the Faculty of Engineering and Information Technology. It is the Electrical Engineering department of CUT that forms the base of this research. First year students from the Digital Systems 1 course willingly participated in the research.

To facilitate the research, formative and summative assessments were done utilizing Clickers (paperless assessment technique), a responder device developed by Turning point Technologies™. The paper starts off by elaborating on academic assessments and its significance. Focus then shifts to assessments using clickers and a comparison between clicker assessments and traditional assessments is done. Next, it sheds light on the research methodology used in acquiring data for this research. Finally the results are analyzed with the help of tables and figures.

2. Significance of assessments

A good definition of assessment of student learning is provided by Barbara E. Walvoord (Walvoord, 2010). She defines assessment as “the systematic collection of information about student learning, using the time, knowledge, expertise, and resources available, in order to inform decision about how to improve learning.” The author goes on to state that a good assessment is a process that involves three steps. They are as follows;

- Establishing goals for student learning
- Gathering qualitative and quantitative evidence for how well students meet those goals
- Using the information to improve learning.

As a lecturer one of the key mistakes one can make is to consider assessment as an add-on to a course (Shepard, 2000) or even neglect its significance altogether (Surgenor, 2010). Students view assessment in a different light. The primary objective of most students is to pass the course, hence only study what is assessed (Engelbrecht & Harding, 2005).

The above stated view of students to assessment should highlight the significance of assessments and that it should not be seen merely as a tool that can be used allocate grades or degrees to students. It should play an important role in focusing student attention (Surgenor, 2010) and drive their learning (Sainsbury & Walker, 2008). Good assessment technique (Gibbs, Simpson, & Macdonald, 2003) has six main functions. They are;

- Capturing student time and attention
- Generating appropriate student learning activity
- Providing timely feedback which students pay attention to
- Helping students to internalize the discipline’s standards and notions of equality
- Generating marks or grades which distinguish between students or enable pass/fail decisions to be made

Providing evidence for other outside the course to enable them to judge the appropriateness of standards on the course

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