

Appendix document

1. ABSTRACT

Dr Mulemwa Akombelwa

University of KwaZulu-Natal

HOW TO KILL A KILLER COURSE: Overcoming Challenges of an Introductory Programming Course

The research was aimed at exploring the challenges faced by Land Surveying students in computer programming and its applications in the Discipline of Surveying in the School of Engineering at the University of KwaZulu-Natal. It sought to explore and identify the factors affecting learning and to design an intervention that will assist Land Surveying and potentially other students overcome this challenge using the Design Based Research (DBR) approach. This research aimed to develop an intervention model to address the challenges identified by students who had already done the course and later test the effectiveness of the model on another cohort of students.

2. FIGURES:

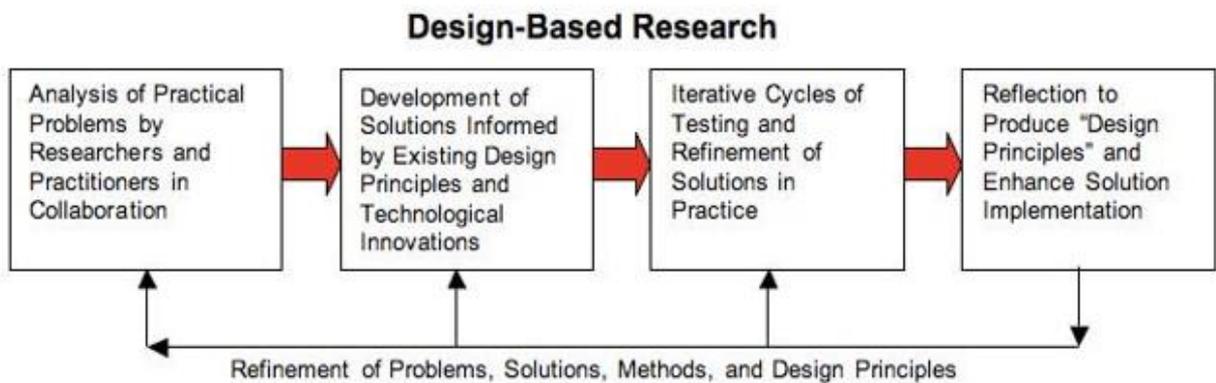


Figure 1: Design-based research approaches in educational technology research (Source: Herrington, et. al ,2007)

3. TABLES:

Table 1: Proposed intervention and design principles

Draft design principles	Features of the intervention	Reference(s)
<i>Draft Principle 1: Learning is a social phenomenon.</i>	Students will work in groups of four to five students per group to promote peer learning, sharing of ideas and experiences, and collaboration among students,	Schunk (2012); Bandura (1971, 1986); Macht and Ball (2016)
<i>Draft Principle 2: Promote student-centred, active learning.</i>	Students will practically learn how to apply computational thinking to solve various problems.	Schunk (2012); Bandura (1986); Macht and Ball (2016)
<i>Draft Principle 4: Periodically evaluate students' progress and provide positive feedback.</i>	Regular feedback sessions will provide the opportunity to hear about the challenges encountered by students and how these challenges impact their confidence in their ability to succeed in programming. The sessions will also enable students to present their own solutions on how they think they would deal with the challenges.	Bandura (1971, 1977, 1986)
<i>Draft Principle 5: Align assessment to learning activities and outcomes.</i>	Assessment that will be discussed with students beforehand will take place in line with group tasks. It will include reflection reports, flip charts and business plans.	Biggs and Tang (2011); Macht and Ball (2016); Schunk (2012)
<i>Draft Principle 6: Encourage freedom in the construction of knowledge and consider diversity and developmental influences on learning.</i>	Grouping of students would consider their electives and prior knowledge and experience with entrepreneurial activities. Students will be encouraged to draw from their own prior experiences/knowledge.	Schunk (2012); Macht and Ball (2016)

