香港城市大學
City University of Hong Kong

Applying a Concept Inventory to assess students' conceptual learning on a first year degree programme in the Department of Electronic Engineering

Project Number: 6000110

Principal Investigator: Dr Robin Sarah BRADBEER

Grant Type: TDG

Abstract:

Concept Inventories (CIs) are instruments used to assess students' conceptual understanding of a topic. They are usually constructed in a multi-choice format, with the distracters identifying common areas of student conceptual misunderstanding. The most widely used of these assessments is the Force Concept Inventory (FCI), designed to assess students' conceptual framework of Newtonian and non-Newtonian mechanics.

The FCI has demonstrated that simple instruments can be developed to help faculty identify how well instruction has changed how students think about the concepts of the courses. Using the appropriate CI for the course subject, and in a "continuous improvement mode," instructors can then refine their pedagogy and classroom management techniques and gauge their effectiveness by comparing gains on the CI from semester to semester. They can also gauge the effectiveness of their teaching by comparing the scores to a normed central register of scores from other universities around the world.

The aim of this project is to adapt or modify existing CIs, or develop new ones, so that all students taking first year courses on EE department programmes can be assessed on their improvement in conceptual understanding of the topic. This will be used as an additional measure for assessing the outcome of the learning process within the OBTL framework. The instrument could then be applied to other departments within CityU after this pilot study in electronics.