

Project objective/s

The objective of this project is to enhance the critical thinking and problem solving skills of the undergraduate BRE students through introducing a case-based learning (CBL) approach in a blended mode. The skill set will enable students to augment and apply their theoretical knowledge gained in class under a contextual setting resembling reality. Accordingly, major outcomes and deliverables include the production of a LEARN@PolyU(理學網) supported case bank related to Construction and Real Estate (CRE) issues in the context of BRE263 (and BRE363 which has an extended syllabus).

With the intention of achieving the main objective, (after the pilot case study that has been successfully carried out in 2013/14 academic year). Two sets of case studies for the subject BRE 263 (1 set for the first half of the semester, and another set for the second half of the semester) were developed and administered, as courseworks, among students in two academic years (semester 1 in 2014/15, and semester 1 in 2015/16). Case studies were mounted for online access using the Blackboard system. This was then followed by another set of case studies developed (for another related but more advanced subject BRE 363) and administered using the Blackboard system in the same academic years. Since the subject BRE363 Construction Economics has parts of its syllabus being an extension of BRE263, the case study materials were developed also for a suitable part of BRE363.

An assessment rubric was developed to assess students' performance in handling case studies on the subject. Students were assessed through their group presentations as well as group project reports. A questionnaire survey then was conducted at the end of each semester to assess the students' perception on the case studies. Since the survey questionnaire was administered face-to-face, the research team could explain to the

students about the main aim of the survey as well as the benefits that this study may bring on the effectiveness of learning and teaching outcomes. Assessment rubrics were also distributed to them in advance for their information. Students were then assessed with their individual presentations and group project reports accordingly.

Questions in the questionnaire represent a variety of attributes of case studies that help to enhance students' critical thinking and problem solving skills. Students were asked to rate the relative importance (through a choice of different levels of agreement) of these questions using a five-point Likert scale (5: strongly agree; 1: strongly disagree). The questionnaire survey was a face-to-face one, which was administered by the course tutors. As the survey was face-to-face, the research team had an opportunity to clearly explain the contents and the goal of the questionnaire to the respondents. The total student populations (for all the 4 programmes) registered for BRE263 were 260 and 278 in two academic years, respectively. We collected 190 and 208 completed questionnaires (in 2 academic years, respectively), which is more than 73% (in both academic years) of the total student population. The questionnaire survey was then followed by face-to-face focus group discussions with several groups, which was handled by a research assistant (student helper) who had experienced the same subjects before (hence adding to the validity of the feedback collected).

Preliminary analysis/findings

Currently the research team is in the process of evaluating the responses received from students. The preliminary findings are reported as follows.

The findings of the CBL Questionnaire survey are in line with the findings from the focus group discussions. Generally, students perceived CBL to be highly effective in stimulating their learning and enhancing various professional competencies within the subject scope. They perceive CBL to be effective in enhancing problem-solving skills, improvement of motivation and promotion of effective group collaboration and fostering self-directed learning. For example, students consider that CBL enhances their problem solving skills as case studies enable them to consider alternative solutions, making reasonable inferences, in addressing a particular problem. As case studies given to them are real world issues related to the construction and real estate industry, they are able to look at issues from multiple perspectives in addressing a practical issue. This not only enhances the critical thinking skills of students, but also helps stimulate their professional knowledge in handling a particular issue in a logical and rational way, using the knowledge gained in class.

They perceive that in handling cases in groups, they are able to analyze issues critically and frame issues in different ways. Students realize that cases / issues can be tackled more effectively in groups as they can gain in-depth knowledge about issues relating to the case through brainstorming, which allow comparison among different perspectives, and then apply the knowledge to real situations/cases. This basically enables them to synthesize a vast quantity of information and knowledge and the application in real situations.

Despite students' overall positive perception on the effectiveness of CBL, some of them expressed some reservations towards the use of CBL in the curriculum. The increased workload and time spent in tackling case studies are some of the issues raised in the focus group discussion. As information in case studies are deliberately made vague (to engender a drive for searching further information and making reasonable assumptions) at suitable points, unlike in conventional type of coursework, students feel a lack of confidence, very much resembling reality when they eventually graduate. The preliminary findings of the study however encourage an active pedagogical approach of CBL to be implemented in the construction and real estate curriculum, so as to enhance professional competencies and skills required for the meeting the challenges in their future career.