A web-based academic records tracking system for outcome-based education

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Recently, a lot of attention is paid to evaluate the outcomes of education, i.e. whether the students learn what is expected of the programme and subject and be evaluated against measurable metrics. The Accreditation Board for Engineering and Technology (ABET) has been continuing to strengthen the outcome-based accreditation process and many institutes have begun to adopt Outcome-based Education (OBE), a method of curriculum design and teaching that focuses on what students can actually do after they are taught. The desired outcomes are confirmed first and then the curriculum and instructional materials; and assessments are created to support the intended outcomes. While we see OBE could shed light on improving education quality, some teachers may find that this approach adds layers of complexity to their duties. This paper proposes a web-based academic records tracking system for OBE, which aims to relieve teachers’ burdens and provides immediate and detailed feedback to students and reflection to teachers. As well as the conventional e-Learning functionalities, the system provides criteria-referenced assessment (CRA) tools that assist teachers to assess the performance of students according to pre-defined criteria, weighting and rubrics.

OBE is a philosophy of education that contrasts with the traditional education, which mainly focuses on the resources provided to students. Instead, OBE is more student-oriented in such a way that a student’s performances of various criteria are continuously measured empirically. As Spady, a pioneer of OBE, suggested over a decade ago, OBE means clearly focusing and organizing everything in an education system around what is essential for all students to be able to do successfully at the end of their learning experiences (Spady, 1994). This implies that OBE starts with a clear picture of what is necessary for students to be able to do before organizing the required materials such as curriculum and assessments. Harden (2007) further explained that OBE plays an important role in monitoring students’ progress through the different phases of the curriculum and the planning for a more seamless continuum between undergraduate education, postgraduate education, and specialist training.

There has been limited study of information and communication technologies (ICT) for supporting OBE. Although there were frameworks introduced to help us to understand the wide variety of educational technology applications (Huang, 2001), little or no actual OBE application was developed. The major objective of the proposed academic records tracking system (ARTS) is to assist institutes to implement OBE curriculums through ICT, so that the major users of it (both teachers and students) enjoy the fruitfulness of OBE with minimum input efforts. The system matches with the requirements of OBE (Harden, 2002):
1. Development of clearly defined and published learning outcomes that must be achieved before further progression;
2. Designing a curriculum to ensure the achievement of the learning outcomes;
3. Designing an assessment process that matches the learning outcomes for individual students to ensure that they achieve the outcomes;
4. Provision of remediation and enrichment for students as appropriate.

The key features of ARTS include rubrics management, assessment, and reporting, which are helpful to curriculum designers, teachers and students. The system provides interfaces for integrating with other existing platforms such as e-learning and administrative systems. ARTS has been evaluated by several educators and positive comments were received and it has been used by an academic department seamlessly for over a semester period and its reliability is satisfactory.

References