DEVELOPING SPECIFICATIONS FOR A DATABASE OF CDIO TEACHING AND LEARNING ACTIVITIES

Daniel Spooner, Johan Malmqvist, and Ronald Hugo

ABSTRACT

The implementation of non-traditional teaching and learning methods like active, experiential, and x-based learning (with x denoting problem, project, inquiry, or challenge) often requires a significant amount of time and effort on the part of instructors to develop these activities. Due to the additional time requirements and the risks in offering something new to students, some instructors choose to avoid these techniques and instead continue to teach in more traditional modes involving lecture-based instruction. A survey conducted in January 2008 to CDIO member institutions and presented during the 5th International CDIO Conference [Gray, 2009] revealed Standard 8, Active Learning, and Standard 10, Enhancement of Faculty Teaching Competence, as the ninth and eleventh lowest-ranking standards that CDIO collaborators had advanced in. A study involving one-to-one interviews with faculty from around the world in 2012 [Graham, 2012] concluded "there is a broad consensus that traditional undergraduate programs are not equipping graduates with the skills needed for the complex challenges of the twenty-first century" and continued with "change is slow and piecemeal, and examples of innovative and successful reform remain the exception rather than the rule."

Literature from the educational sciences has clearly demonstrated the benefits of active, experiential, and x-based learning over traditional lecture-based instruction [Biggs and Tang, 2011; Ambrose et al., 2010; Hattie 2008]. Despite the advantage, adoption of these techniques is slow, as noted by both Gray [Gray, 2009] and Graham [Graham, 2012]. In an effort to assist CDIO collaborators with the adoption of these types of teaching and learning activities, a project to develop a web-based, curated, constantly refined through testing, file-sharing system of non-traditional activities seems necessary. From this framework, a directory of learning experiences could include, but not be limited to, the following information: time required to prepare and execute; resources required; cost of resources and materials; robustness of activity; number of students; assessment methods and instruments; syllabus topics activated and at what level; student evaluation of activity; etc.

Based on this information, a faculty member inexperienced with non-traditional teaching and learning activities would be better positioned for success in a first attempt. In turn, students themselves will be better involved in the challenge of the

teaching and learning activity rather than confused by organizational problems and hesitations in the teaching process.

The proposed workshop will use co-design with all present stakeholder groups in order to define and review needs for an efficient teaching and learning activity database. A visual paper prototype will be constructed during the workshop for later presentation to the CDIO community. The feedback generated during the workshop and through a subsequent on-line survey will help the database model to evolve rapidly, with the long-term goal being development of a system that will be adopted by the CDIO community.

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Corresponding author