Advanced workshop on Standard 9 and 10

Faculty development for CDIO implementation [Sensitive viewers are warned]

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In reforming engineering education, the two fundamental questions are:

- WHAT knowledge, skills and attitudes should students possess as they graduate from university?
- HOW can we do better at ensuring that students learn these skills?

In the CDIO Initiative, two Standards relate to aspects of faculty competence, mapping exactly to these fundamental questions. They concern enhancement of faculty competence in two aspects of teaching skills, namely **WHAT** to teach and **HOW** to improve the educational processes:

- **Standard 9. Enhancement of Faculty Competence**
  Actions that enhance faculty competence in personal and interpersonal skills, and product, process, and system building skills
- **Standard 10. Enhancement of Faculty Teaching Competence**
  Actions that enhance faculty competence in providing integrated learning experiences, in using active experiential learning methods, and in assessing student learning

During the history of the CDIO Initiative, these two standards are arguably the least discussed, developed, and reported. Only very few conference contributions concern implementation of faculty competence enhancement actions. Further, in the CDIO self-evaluations, notably low ratings are often assigned to Standard 9 and 10.

In this workshop the issue of faculty competence, and its enhancement, will be explored from several angles. The underlying question is: *What conditions are necessary to enable and drive CDIO implementation, and to make it sustainable?* The discussion should be applicable not only to the CDIO community, but also to others with an interest in educational development.

- The issue of faculty competence will be framed more widely by recognizing competing priorities in the (research) university environment, and the resulting conditions for education and educational development. The analysis draws on the four scholarships of Boyer (1990) and Roberts' (1982) curriculum emphases.
- Some observations on the organizational influence on engineering programs will be presented, proposing a model for understanding the sustainability (or unsustainability) of educational development. The roles of faculty, program leaders, university management and educational developers will be briefly discussed. The painful implications will be thoroughly investigated; sensitive participants be warned.

- Some specific observations related to Standard 10 will be discussed. What is particular for teaching & learning *in engineering education*? What approaches for enhancement of faculty competence will actually work for engineering faculty?
- Finally, if we believe that it is necessary to create better incentive structures around education, how can it be done? What is the state-of-the-art in documenting, evaluating and rewarding teaching skills?

References

Boyer, E. (1990) *Scholarship Reconsidered: Priorities of the Professoriate*
(available at
http://teachingphilosophyworkgroup.bgsu.wikispaces.net/file/view/BoyerScholarshipReconsidered.pdf)

Roberts, D.A. (1982) 'Developing the Concept of "Curriculum Emphases" in Science Education'
(available at www.kcvs.ca/martin/EdCI/literature/literacy/roberts.pdf)