Proposal

Title *Exploring Student Attitudes to Professional Responsibility*

Authors and Affiliations

Author With Whom to Communicate: *David Brandon*

Type of Presentation:
X round-table session (60 min)

Short Description
Student participation in active discussions is essential for the development of communication skills that ensure professional competence. By presenting students with case-histories that involve responsible, professional decisions, despite conflicts of interest or principle, students can also be persuaded to explore their own individual opinions and the rationale behind them.

Relevance to Conference Theme, Strands, and/or CDIO Initiative
Indicate by a tick which strand the presentation most closely relates to.

X Application of CDIO to a wide range of disciplines	X Curriculum and programme design
The involvement of industry	Technology-enhanced learning
X Development of professional competencies	Assessment of professional competencies
Design-implement experiences	X Facilitating change in engineering education
Supporting sciences and CDIO	Evaluating the impact of CDIO Programs
X Student involvement	X Active and experiential learning

Abstract (maximum one page)

Nearly all academic staff are amateur teachers, whatever their level of specialist competence. They therefore tend to rely on frontal lectures and presentations, where there is minimal time for discussion or questions. These are mostly relegated to tutorials that are commonly the responsibility of teaching assistants. Under such circumstances, it is hardly surprising that only when the exams are graded can the lecturer assess, with any degree of certainty, the abilities of his students and his success in teaching the material covered by the course.

On the other hand, sound professional knowledge is only a necessary, but by no means a sufficient condition for a student's successful career after graduation. The student also needs to develop additional skills if he or she is to advance in a chosen career. These other requirements include cultural awareness, communication and linguistic fluency, managerial ability and the personal creative confidence needed to embrace innovation.

Students are very often reluctant to talk freely in the academic context of a lecture, even if only a small group of students is present. In consequence, initiating student discussions on issues that go beyond the factual framework of formal courses in science or engineering is not easy. One possibility for overcoming this barrier is to present the students with engineering case histories that involve human error or conflicts of interest. These 'stories' demonstrate to the students a side of professional practice that is almost entirely missing from formal courses in engineering and science. This approach requires that the students be presented with opportunities to explore and discuss examples involving their ability to assess social and legal conflicts in a professional context. Within these case-histories a competent professional has to communicate within the framework of contractual negotiations and ethical responsibilities. More often than not, in these situations there are no 'right' answers and decisions are always a compromise that combines professional, legal, political and social issues.

Within a classroom of 20 to 50 students it should be possible to find a sufficiently wide range of outlooks and viewpoints and achieve several educational goals in parallel:
1. Student awareness of alternative, but quite legitimate, viewpoints.
2. Respect for the discipline needed to ensure a logical discussion.
3. Recognition of the importance of listening carefully and speaking clearly.
4. Tolerance for human fallibility and the need to compromise on issues of principal.
5. An awareness of the legal framework within which any society operates.
6. The integration of social and legal factors into a professional framework.
7. Recognition of the role of uncertainty and the limitations of current knowledge.

The author has implemented the above principles over a ten year period in three separate elective courses entitled:
1. *'Uncertainty'* – An exploration of what we don't know about ourselves, society and science.
2. *'Pseudo-science'* – Discussions on attempts to 'jump-start' our competence in science, engineering and medicine by the acceptance of 'faith-based' belief systems.
3. *'Engineering Disaster & Human Error'* – An ethics-based analysis of high-profile engineering disasters that explores the factual evidence and the response of the professionals involved.

In these three courses, short, introductory lectures were followed by discussion sessions based on specific questions presented to the students. Each student was required to research and write 1000 word essays on selected topics chosen from a given list. Each essay was evaluated and graded by two other students, before being graded by the lecturer. The two essays counted for 60% of the final grade, while the four evaluations counted for 40% of the grade.

Active presentation techniques

Active presentation techniques to be used:

1. Participants will be asked to identify themselves and say why they chose to attend the round-table session on this topic.
2. They will then be presented with an overhead summarizing sources of ethical conflict in a professional context.
3. Next, they will be asked to discuss one or two case histories that involve conflict of interests.
4. Finally, they will be asked to summarize their attitudes to teaching professional responsibility.

Facilities/equipment required (tick all those needed)
   X Computer projector (provided in all locations)
   Overhead projector
   X Flip charts and pens
   Clickers (personal response system)
   Coloured flash cards
   Post-it notes
   Other (please detail)

Send all proposals electronically as MS Word or pdf files to **jgaywood@liv.ac.uk** **on or before**
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