

CDIO SUBMISSION

To CDIO Council

From Associate Professor Duncan Campbell, Queensland University of Technology, Australia and New Zealand Regional Group

Date 28 April 2009

Item title **Proposed new CDIO Standard (13), CDIO Program Globalization and Mobility**

RECOMMENDATION

It is recommended that the CDIO Council Board resolve to approve the adoption of the new CDIO Standard – CDIO Program Globalization and Mobility

RATIONALE

Brief Synopsis

Graduate engineers of the future will increasingly need to be international in their outlook and experience, and be prepared to operate globally. Businesses have to compete and collaborate on a global scale, and operate across national and international borders with organizational environments being increasingly complex, dynamic and with more interdependencies. Our challenge as educational institutions is to aid our students to prepare for this global environment.

CDIO has adopted 12 Standards as guiding principles for program reform and evaluation. The 12 CDIO Standards address program philosophy, curriculum development, design-build experiences and workspaces, new methods of teaching and learning, faculty/academic development, and assessment and evaluation. However, at present, the Standards do not explicitly address international qualifications nor student mobility. This proposal recommends the introduction of the 13th CDIO Standard, Program Globalization and Mobility.

Background

The benefits and growing need for international transparency in engineering qualifications, simple cross-credit processes, international dual awards and mechanisms to encourage student mobility are receiving much attention around the world at present. In response, there are a number of global initiatives now examining how these issues may be addressed, particularly in Europe, North America and Australia.

The challenge for educational institutions is to aid students to prepare for this interdependent global environment. The Stratégé Study (Buisson and Jensen, 2009) found that worldwide, there is a requirement to increase the globalization of engineering programs, content and context, as well as support the mobility of engineering students and scholars. Indeed, employers have expressed the need for undergraduates to have global competence to enable them to function in the corporate environment (Dolby, 2008, Grandin and Hirleman, 2009). Not only will engineers need technical competence, but will have an understanding of global conditions, and be aware of and sensitive to differences in cultural environment and work ethic (Abanteriba, 2006). Mobility and international experience gives students the opportunity to be immersed in other cultures, with exposure to different and unfamiliar situations and different approaches to problem solving (DEEWR, n.d.). Other benefits include “the promise of returning with an enhanced understanding of the world and its intricate web of political, economic, social and cultural relationships” (Dolby, 2008). Global experience for students, as part of their degree, is supported by (but not limited to) governments of Australia, the EU, the USA, the engineering profession and employers.

The *International Student Mobility Study* undertaken by the Universities of Sussex and Dundee (UK), states that around 1.8 million students were studying outside their country of origin in 2000, a figure that is expected to rise to 7.2 million by 2025 (DEEWR, n.d.). An estimated 200,000 American students studied abroad in 2006 (Rexeisen, Anderson, Lawton and Hubbard, 2008); or 8.5% pa in 2007¹, and 2.2% of Canadian college and university students also studied abroad (DEEWR, n.d.). Mobility of students is not limited to outwards mobility; inward mobility students studying in Australia in 2008 numbered more than 543,000, injecting \$14.2 billion into the Australian economy (DEEWR, n.d.).

While the trend for student mobility increases annually, study abroad demands the mutual understanding and recognition of others' educational systems (Buisson and Jensen, 2009). Problematic is the process of cross-credit, where knowledge of the worth of degrees is questionable or unknown. Recognition, curricula rigidity and credit are identified by several studies as obstacles to student mobility, along with the potential of prolonged study and the lack of recognition by the home university (Buisson and Jensen, 2008; Grandin and Hirleman, 2009). Resolving these issues contributes to realizing the potential of trans-national cross-accreditation and the prospect of students owning their own eportfolio of transferable attributes and credentials.

REFERENCES

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6. École normale Supérieure de Lyon. (Online). Accessed 25 May 2009. Available: <http://www.ens-lyon.eu/web/nav/article.php?id=292&rub=5&rub2=83>
7. Grandin, J.M. and Hirleman, E.D. "Educating Engineers as Global Citizens: A Call for Action", Report of the National Summit Meeting on the Globalization of , March 2009. Accessed at http://digitalcommons.uri.edu/ojgee/vol14/iss_1 or <http://globalhub.org/resources/799>.
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ATTACHMENTS

• Attachment 1: Standard 13 -- CDIO Program Globalization and Mobility

RESPONSIBLE OFFICER

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¹ Conversely, The Institute for International Education reports that fewer than 3% of all engineering students are actually going abroad for educational experiences during their undergraduate years (Grandin and Hirleman, 2009).

Standard 13 -- CDIO Program Globalization and Mobility

Programs and organizational commitment which promote and enable transportability of curriculum, portability of qualifications, joint awards, transparent recognition and international mobility of students.

Description: *CDIO Program Globalization and Mobility* encourages and recognizes organizational commitment which prepares engineers for a global environment and to expose them to a rich set of international experiences and contexts during their studies. It represents the promotion, facilitation, opportunity and scholarship of an internationalized curriculum, qualifications and international mobility of students.

Rationale: Graduate engineers of the future will increasingly need to be international in their outlook and experience, and be prepared to operate globally. Businesses have to compete and collaborate on a global scale, and operate across national and international borders with organizational environments being increasingly complex, dynamic and with more interdependencies. Our challenge as educational institutions is to aid our students to prepare for this global environment.

Evidence:

- Establishment of a mobility window within programs and curriculum
- An ePortfolio facility which links student learning outcomes with artifacts, and graduate attributes and competencies which are recognized through international accords
- A demonstrable and tangible institutional commitment to internationalization and student mobility
- The embedding of internationalization learning outcomes and strategies within engineering programs
- Opportunities be made available for students to learn second languages
- Complimentary partnerships between international universities
- Transparent expectations of student learning outcomes from the international experience
- International benchmarking of programs
- Active involvement in international engineering education scholarly activities
- Program accreditation with international cross-accreditations (eg. Washington accord, ...)
- Transparency in institutional cross-credit for study abroad
- Partnerships with international corporations/industry with offices co-located with partnering institutions
- Programs which encourage and recognize study abroad, and other international experiences (including internships, exchanges) for credit
- Professional development programs (including sabbatical leave) on internationalization and mobility for faculty
- Dual award programs involving two or more countries
- Participation in international global mobility networks