ePortfolios to Build, Demonstrate and Maintain Professional Competence

Donald Presant
Learning Agents Inc.
don@learningagents.ca

Abstract – This presentation provides an international "tour d'horizon" about eportfolios for engineering education and professional development. It focuses on examples of accepted and emerging learning practice, and explores some of the pedagogical, technological and business issues that engineering educators must face when building a strategy for ePortfolios in their institutions.

Keywords: eportfolio, CEAB, graduate attributes, reflection, learning journal, multimedia, LinkedIn, professional identity, CPD, change management

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The current sea change in engineering education from providing learning inputs to tracking learning outcomes, led by players such as the Canadian Engineering Accreditation Board (CEAB), provides a perfect burning platform to drive changes in teaching and assessment practices for developing new engineers. It also represents an opportunity to re-evaluate the feasibility of the eportfolio as a learning tool, in both formative (eportfolios “for” learning) and summative (eportfolios “of” learning) modes.

Increasingly, engineering faculties in North America and beyond are using eportfolios to guide students in integrating their learning. Examples include the University of Guelph, Virginia Tech, RMIT in Australia and the University of Surrey in the UK. These educators encourage students to synthesize the meaning of their learning from disparate sources such as lectures, readings, individual work, group projects, work experiences, and extracurricular learning, such as in personal hobbies, family life and volunteer organizations. Educational literature indicates that this intellectual and ethical integration evolves in stages over time, and helps students develop their professional identities as engineers. The eportfolio provides a central hub for developing coherent career narratives that will help them mindfully manage their professional development.

If properly introduced and managed in an undergraduate context, an eportfolio can help a student develop and demonstrate CEAB graduate attributes such as teamwork, communication skills, professionalism, awareness of the impact of engineering on society & the environment, ethics and equity and lifelong learning. An eportfolio can also showcase demonstrations of more concrete knowledge and skills required by professional engineers, such as problem analysis, design and use of engineering tools.

The eportfolio is in one sense a collection of artefacts, which can be documents, images and multimedia files such as audio and video clips. However, its true value arises from reflection by the learner on the meaning of those artefacts in relation to desired outcomes and professional identity. This curation of the collection expresses itself as annotations of artefacts and links to outcomes. In addition, reflective tools such as learning journals and structured questionnaires help learners develop the underlying meaning of their learning activities in their developing sense of competence and professional identity. The content and quality of those reflections will change over time, providing a way to benchmark and track the impact of learning activities through the duration of a program. Personal reflection is the “glue” that makes the eportfolio coherent.

For an engineering faculty seeking re-accreditation, an “organizational eportfolio” of individual student portfolios aligned to graduate attributes can provide a comprehensive collection of powerful examples of authentic learning that has taken place in a student population over the course of an undergraduate program.

Individual faculty seeking tenure or engaged in Continuing Professional Development can also use eportfolios to support and demonstrate their lifelong learning and teaching. Indeed, having faculty model effective eportfolio behaviour for students has been identified as a significant success factor in getting students engaged with their own eportfolios.
The introduction of eportfolio into undergraduate studies should not be undertaken lightly, as an afterthought. Careful consideration needs to be given to how it will be embedded to support outcomes-based learning and how it will meet the needs of students, faculty and the institution. Principles of organizational change management apply such as high level support, respectful dialogue, adjustment according to identified needs, piloting, and systemic implementation through the setting and tracking of phased objectives. A growing body of research informs this systems thinking and professional communities have sprung up to support the learning journey through conferences and personal networking. These include the Association for Authentic, Experiential and Evidence-Based Learning (AAEEBL) in North America, the ePortfolio and Identity Conference (ePIC) in Europe and Eportfolios Australia.

Looking beyond undergraduate study, engaged students will want to continue using their portfolios as Personal Learning Environments in their post-graduate and professional lives, and to integrate them with Web 2.0 applications such as LinkedIn. Professional bodies are becoming more interested in finding better ways of delivering and tracking the Continuing Professional Development of their members. A systemic approach to meeting these lifelong and lifewide needs will benefit the professional community as a whole. Solutions to issues such as ownership, interoperability and sustainability need to be addressed. These solutions can be developed by reflecting on the experiences of early adopters, recognizing similarities in other fields and working collaboratively in the global eportfolio community.


It will include his presentation from this session.