

Integrating a PebblePAD ePortfolio into the Vacation Employment Curriculum

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***Abstract:** In this study, a Work Experience Evaluation Template/Profile has been developed using the PebblePAD ePortfolio as a platform for Vacation Employment. It not only enables students to plan, reflect upon and record their work experience online, it also enables them to self-audit their skills and abilities which are considered to be essential graduation attributes. Additionally, PebblePAD allows lecturers/employers to provide effective and timely feedback at the individual level. Finally, this paper suggests how PebblePAD may be used to support student mobility and to enhance student engagement with Engineers Australia's Graduate Attributes.*

Introduction

Vacation Employment is a course that addresses the requirement for accreditation by Engineers Australia that students have practical experiences equivalent in terms of learning outcomes to 12 weeks of full time exposure to professional practice. Students in the School of Civil, Environmental and Chemical Engineering at RMIT University are required to pass Vacation Employment in order to graduate at the end of their program. The course is considered to be a core subject, is worth zero credit points in the program, attracts no fees and is simply graded Pass/Fail. The objective of Vacation Employment is to give students exposure to the professional practice of Civil Engineering and prepare them for the transition into the workforce at the end of the final year. Engineers Australia (EA), the professional engineering body in Australia, requires graduates to possess a number of attributes (competencies) (Engineers Australia, 2004). Vacation Employment is an opportunity for students to strengthen and demonstrate several of these attributes.

Students are required to demonstrate the 12 weeks equivalence by documenting the attributes that they have developed through the various work experiences and their major project work undertaken throughout the program. Their employment may be spread over more than one period, and may be with more than one employer. Accumulated part-time work in an engineering environment equivalent to 12 weeks full-time work is also acceptable. Work experience may be completed at any stage, however most students undertake it between third and fourth year. Unlike other courses in the program which are only run in one semester, students can enrol in Vacation Employment in either first or second semester. Approximately 60 - 110 students enrol in the course each semester.

A review of the course in 2008 revealed a need for curriculum change/innovation to address the following student concerns:

- 1) Students need to maintain a record of their work experience and submit a report with supporting evidence, such as reports and drawings, that describe the activities they undertook during their 12-week professional engineering work experience. This process has been entirely paper-based for many years. However students are finding it increasingly difficult and cumbersome to produce the required paper-based documentation of evidence of learning in the workplace.
- 2) Students are not usually given any feedback before their final report submission, and as a consequence, can discover at the end of the semester that they are in danger of failure unless they provide extra material. This can be problematic for students as they may have already completed their work experience and left the company (in particularly if they undertook their work experience overseas or interstate).

To address these issues and enhance student engagement with EA's Graduate Attributes, the PebblePAD ePortfolio system has been introduced into the Vacation Employment curriculum. This innovation has also facilitated the process of providing timely feedback to the students. This paper describes the ePortfolio and feedback facility.

Implementation

PebblePAD is a web-based ePortfolio system which allows users to create, store, edit and share their evidence and reflections (Sutherland, 2008). Evidence, which may include assessment tasks, can be stored in different file formats including text, images, electronic files, blog entries, video and audio files. The system allows users to share elements of their ePortfolio with others if they wish. The PebblePAD ePortfolio was introduced into this subject early in 2009. A Work Experience Evaluation Profile (see Figures 1 and 2) has been developed using PebblePAD as a platform.

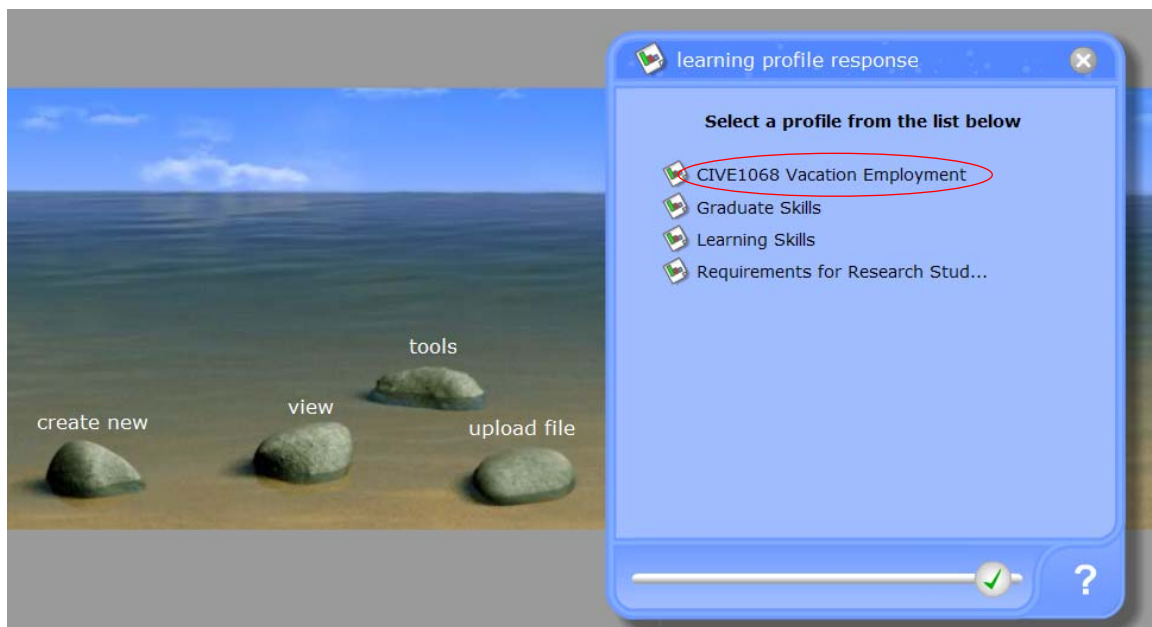


Figure 1: PebblePAD Main Page

Profiler
CIVE1068 Vacation Employment **1 Resources attached.** [link to Engineer Australia and course websites](#)

Start | 1 | 2 | 3 | Finish

[Edit title & description](#)

Engineers Australia (EA), the professional engineering body in Australia, requires graduates to possess a number of attributes (competencies) by graduation. Your engineering work experience is an opportunity to strengthen one or more of these.

This Work Experience Evaluation Profile has been developed to help you rate and evidence those skills and abilities considered to be essential graduation attributes.

if you have any query about the course requirements and on-line submission, please contact the course coordinator, Dr Jie Li (Tel: 99253554 or email: jie.li@rmit.edu.au).

To begin, [click here](#) .

Figure 2: Work Experience Evaluation Profile

The Work Experience Evaluation Profile consists of three parts (represented as tabs in Figure 2). The first part is a summary of student placement information. Students are required to provide a general description of the project(s) undertaken including employer details and their position in the firm etc. For each placement, students need to attach letters (or emails) signed by their supervisor(s), stating the length of time they were employed with the firm and the type of work performed. They also need to attach evidence of their work experience such as details of projects, reports, training log/diary, reflective/learning journal, drawings and photos etc. that describe the activities which they undertook. In Part Two, students are required to describe and provide evidence to support how their work experience has enhanced EA's Stage 1 competencies for Professional Engineers.

- 1) Ability to apply knowledge of basic science and engineering fundamentals.
- 2) In-depth technical competence in at least one engineering discipline.
- 3) Ability to undertake problem identification, formulation and solution.
- 4) Ability to utilise a systems approach to design and operational performance.
- 5) Ability to communicate effectively, not only with engineers, but also with the community at large.
- 6) Ability to function effectively as an individual and in multi-disciplinary and multi-cultural teams, with the capacity to be a leader or manager as well as an effective team member.
- 7) Understanding of the social, cultural, global and environmental responsibilities of the professional engineer, and the need for sustainable development.
- 8) Understanding of the principles of sustainable design and development.
- 9) Understanding of professional and ethical responsibilities and commitment to them.
- 10) Expectation of the need to undertake lifelong learning, and capacity to do so.

In addition they are asked to identify:

- 1) What engineering attribute they most need to enhance?
- 2) How will they enhance this attribute in the near future?

Part Three of the Work Experience Evaluation Profile has been developed to help students self-audit their skills and abilities, and identify areas which may require further development (Figure 3). Here, they can create action plans to help them address areas that may need improvement as well as re-evaluate their weak areas as part of an independent learning cycle.

Profiler

CIVE1068 Vacation Employment 1 Resource attached.

Start — 1 — 2 — 3 — Finish

[Previous](#)
[Finish & Evidence](#)

Self Audit

This profile has been designed to help you self-audit your skills and abilities considered to be essential graduation attributes and identify areas which may require some development. Please read each statement carefully and answer them honestly or as accurately as possible. This is not a test. It is confidential and will only be seen by people you choose to share it with.

How do you rate yourself at the following graduate capabilities ...

		not confident		very confident
1	ability to apply knowledge of basic science and engineering fundamentals;	na	1 2 3 4 5 6	na
		<input type="radio"/>	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="radio"/>
2	in-depth technical competence in at least one engineering discipline;	na	1 2 3 4 5 6	na
		<input type="radio"/>	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="radio"/>

**Figure 3: Work Experience Evaluation Profile – Part Three
(only the first two questions are displayed)**

Students commenced using PebblePAD to write/edit their training log/diary or reflective/learning journal in Semester 1, 2009, in addition to using the Work Experience Evaluation Profile. Students are able to upload evidence into PebblePAD and receive timely feedback from their lecturers even if they are working interstate or overseas. The online template not only allows students to demonstrate how their work experience has enhanced their skills and abilities (considered to be essential graduate attributes), but it also allows prospective employers to obtain access to their online assets (training diary, CV, drawings, photos and reports etc.). Students are encouraged to think of PebblePAD as an evidence-based ePortfolio to record their lifelong learning which will support their career development and improve their employment opportunities.

ePortfolio and Student Mobility

In the past, the great majority of students undertook their work experience in Victoria and in a wide range of local workplaces such as Vic Roads, Maunsell, Ove Arup and Local Councils etc. However since Semester 1, 2008, students are finding it increasingly difficult to get a vacation employment placement due to the global financial crisis. The School has made it clear to students that the University encourages student mobility and supports them to complete their Vacation Employment overseas or interstate. To promote student mobility through Vacation Employment, both Australian students who would like to work overseas and international students who prefer to undertake work experience in Australia, can ask the course coordinator to write a letter of support for them so that they can present it to the potential employers. International students are encouraged to help Australian students to find a vacation employment position in their home countries, or at least provide specific country employment information and advice.

Student mobility has increased significantly since the ePortfolio was implemented into the Vacation Employment curriculum. This year, approximately 20% of students had completed their work

experience overseas in 10 countries including Malaysia, Korea, Singapore, Thailand, Brunei, Afghanistan, Sri Lanka, China, Hong Kong and Indonesia.

Physical Mobility vs Virtual Mobility

RMIT has clearly outlined its intention to build its reputation as a global university that delivers a global passport to its students. Increasing student mobility through vacation employment is an effective way of achieving a real international experience. It helps students to think globally, as well as broaden their knowledge and career horizons. However, many students may not be able to undertake work experience overseas due to barriers such as work and family commitments or financial capacity. As an alternative approach, Civil Engineering Students can now share their work experience and knowledge gained in different locations/cultures online. Such “Virtual Mobility” therefore enables their peers to share in rich and diverse cultural experiences.

Student feedback

Data on the students’ experience using PebblePAD ePortfolio and the Work Experience Evaluation Profile was collected via a combination of interviews and questionnaires. In general, students regard this as a convenient and effective way to complete their work experience evaluation. They enjoy being able to write their thoughts/reflection and receive feedback on their work.

Structure of the Template

In general, students are satisfied with the structure of the Work Experience Evaluation Profile. They found that it was very easy to follow. Students also appreciated the ability to store all their work conveniently in one place in their electronic online repository.

Reflection

Students highly valued the opportunity to reflect on their work and achievement using PebblePAD. For example this student found that reflecting on his working experience enabled him to get a better understanding of the social and environmental responsibilities of a professional engineer (one of Engineers Australia’s Graduate Attributes):

“From working at XXX Water, I was able to witness first hand the negative effect of engineers ignoring their professional duties. The YYY pipeline has been met with resistance from local farmers due to the lack of respect shown to them. XXX Water has shown its environmental responsibility by aligning the pipeline through farmland instead of through the national parkland. However, in doing this they didn’t consult with the farmers early enough and made the mistake of thinking they could ignore their concerns due to a lack of power and the assumption that they’d be happy due to increased water supply. This resistance has resulted in a blow out of the budget component for land compensation as well as diverted human resources away from planning the pipeline works. I’ve learnt first hand the negative consequences of ignoring social responsibilities.”

However some students found self audit and reflection (Part Three) challenging. From 2010, PebblePAD will be introduced to all first year Civil Engineering students and will be used throughout their program. It is anticipated that this will improve student self reflection abilities - a perceived weakness in engineering students.

Employability

Students found that using PebblePAD to evaluate their work experience online enabled them to focus on what skills and capabilities might be required when entering the job market. It allowed them to see what skills they already have and what needs to be improved.

The system allows students to share the selected elements of their ePortfolio with others if they wish. This enables prospective employers to get access to students’ online assets such training diary,

reflection journal, CV, drawings, photos and reports etc. Students believe that this can improve and enhance their employability.

Transition/Training Issues

Transition from traditional teaching/learning into technology based teaching/learning is a big challenge not only for academic staff but also for students. Not all students were able to make progress with PebblePAD from the beginning. Some students even regarded PebblePAD as an additional burden, especially when compared with other e-Learning tool such as Wikis which have been used by Civil Engineering students from their first year courses. This problem can be partially attributed to the fact that no introductory class or training session was run at the beginning of the semester. Instead students were provided with an instruction note on how to use PebblePAD for their work experience evaluation. Student feedback indicated that a training session and additional support resources were needed to help students deal with this new educational technology.

The following student comment represents the view of a significant majority of students' opinion about their ePortfolio:

“It was a bit hard to get to run the portfolios but at the end when you know how to use it, it's become a very helpful way of presenting the information and skills in the professional manner.”

Conclusions

A PebblePAD ePortfolio has been implemented into the Vacation Employment curriculum. The student feedback is generally positive as they regard an ePortfolio as a convenient and effective way to complete their work experience evaluation. They appreciate that they can store all their work in their ePortfolio, have opportunities to reflect on their work/achievement and receive timely feedback from their lecturer as well.

A number of Australian universities are now using / trialing PebblePAD. The work presented in this paper has demonstrated that PebblePAD can be used to support student mobility and to enhance student engagement with Engineers Australia's Graduate Attributes. It hopes that this pilot study interests other universities facing similar requirements.

References

- Engineers Australia (2004). *Australian engineering competency standards - stage 1 competency standards for professional engineers, Engineers*. Engineers Australia, Canberra. Accessed at <http://www.engineersaustralia.org.au> on June 2009.
- Sutherland, S. (2008). About PabblePAD, *Proceedings of the 6th International Conference on Networked learning* (pp. 540-543). Halkidiki, Greece.

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