E-PORTFOLIOS: LESSONS FROM AN INTERDISCIPLINARY COLLABORATION. THE SCHOOL OF NURSING AND MIDWIFERY EXPERIENCE

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Abstract
Three schools within the Faculty of Health Science at the University of Tasmania, Australia took part in an interdisciplinary academic collaboration with the aim to develop, implement and evaluate the e-portfolio experience of undergraduate nursing, medicine and pharmacy students. The Centre for the Advancement of Learning and Teaching, the University’s teaching and learning facilitator, was a key player in the andragogical integration of the e-portfolio into a demonstration unit within the Bachelor of Nursing program. PebblePad was the e-portfolio application that was used to support learning and teaching (L&T) activities associated with the project.

A cohort of over 500 students and 8 staff on four campuses in two states of Australia piloted use of the tool whilst undertaking work integrated learning during 2010. Both staff and students were new to the use of e-portfolios so simplicity was paramount. Multiple L&T approaches were employed to ensure students and staff were well supported in their use of the new technology.

The development of reflective practice is part of each discipline’s expected student learning outcomes. Reflective practice linked to professional competencies has historically underpinned assessment and the PebblePad application offered a new way to encourage and assess this competency. Reflection is one of the strengths of the design of the PebblePad e-portfolio that is embedded into its design, making it a valuable tool for use with students. The tool also facilitated the integration of knowledge and skills, and provided opportunities for interaction peer-to-peer and between staff and students. The use of PebblePad was an innovation for achieving these L&T outcomes. Additionally, the collaborators recognised there was a need for access to comprehensive resources and support for students and staff with an aim of developing a community of practice beyond the project leaders.

E-portfolios have a further benefit as students may use them to showcase evidence of their capabilities to teachers, prospective employers and other interested parties. The use of an e-portfolio may enhance the development and evidence of life-long learning for the future and assist with meeting the newly introduced national requirements for annual professional registration for nursing, medical and pharmacy practitioners in Australia.

The key findings of the evaluation provided valuable lessons for others planning to embed the use of digital technology into their curricula. Positive findings included students enjoying using the blog tool for reflection; feeling more connected to their peers; and enhancing their integration of knowledge and skills. The most significant weakness of the implementation methodology was timing. The time frame for introducing the new technology was considered too short; staff and students needed to feel comfortable using the technology before using it for assessment purposes; and sufficient training for staff and students was required. In addition to discussing the findings, this paper will reflect on the other advantages of collaborative cross-discipline effort in each of the Schools of Nursing, Medicine and Pharmacy at a regional university when integrating new technology into the learning and teaching setting.

Keywords: e-portfolio, interdisciplinary, nursing, learning and teaching, undergraduate students.

1 INTRODUCTION
The learning and teaching (L&T) project known as An interdisciplinary evaluation of the integration of an e-portfolio (PebblePad) as a learning and teaching tool during professional experience placement (PEP) evaluated the implementation of a digital e-portfolio (PebblePad or PP) used by students during the work integrated learning (WIL) component of the first year of their undergraduate Bachelor of Nursing (BN) program within the School of Nursing and Midwifery (SNM) at the University of Tasmania, Australia. This paper reflects the journey of the implementation of the e-portfolio into a
foundation undergraduate nursing unit. This unit is comprised of lectures, laboratory sessions (11 weeks) and 80 hours of WIL known as professional experience placement (PEP).

The implementation of an e-portfolio into a demonstration unit was part of an interdisciplinary project undertaken in 2010 by three academics from the Schools of Nursing (SNM), Medicine (SoM) and Pharmacy (SoP) within the Faculty of Health Science (FHS) at a regional university in Australia. The duration of the project was one year. Minimum risk ethics approval was sought and granted. This enabled the evaluation study to commence.

2 BACKGROUND

2.1 Work integrated learning within the health science curriculum

In Australia, clinical education of nursing, medical and pharmacy students is a vital component of the undergraduate curriculum. The SNM, SoM and SoP have developed partnerships with various facilities around the nation, to ensure that undergraduate students are exposed to industry conditions (Elliott, 2002) [1]. Students now undertake PEP rotations in various health care agencies that provide students with learning opportunities for developing the knowledge, skills and attitudes requisite for achieving beginning level competence as a registered nurse (RN), medical officer (MO) or registered pharmacist. Such experiences may also facilitate employment of students on conferment of their degree (Castledine, 2001 [2], Robinson et al, 2004) [3]. RNs, MOs and registered pharmacists that are currently employed by host facilities are required to assess and document student progress and competency, or capability and development. At present many preceptors report they are often not prepared for this role (Dalton & Walker, 2002) [4].

2.2 The use of portfolios within the health science curriculum

Portfolios are defined as: ‘a collection of evidence that demonstrates skills, achievements, learning or competencies’ (Cooper, 1999) [5]. It is felt that utilising portfolios to assess student learning will lead to self-reflection and self-assessment of students, increased motivation, integration of skills and enhanced student performance (Robinson, 2000) [6]. Another advantage of the portfolio system for the students is that there is potential to use their portfolios to build a ‘curriculum vitae’, which may assist them in gaining employment in coming years.

One of the problematic areas of traditional paper-based portfolios often cited by assessors is the actual collection, storage and organisation of the materials. A solution is to convert the portfolios to a digital media or ‘e-portfolios’ such as PP on the World Wide Web. Because the information held in the portfolios can be accessed using an Internet browser, accessibility is increased for teachers and students. Moreover, maintaining e-portfolios for a large number of students is easier than handling traditional portfolios. Additionally, e-portfolios can be continually updated and reviewed. The students can revisit their work and think critically and reflect about their evidence.

2.3 Evidence for integrating an e-portfolio into the health science curriculum

Woodward and Nanlohy (2004) [7], showed that e-portfolios can be a positive learning experience for students, but must be developed within a carefully designed framework which is a similar method to the development of paper-based portfolios (Woodward and Nanlohy, 2004) [7]. For the successful introduction of e-portfolios, students must first acquire the necessary information, communication and technology program skills, and the focus must remain on the student ‘meeting the needs of both their intended audience and the exploration of their own learning’. One of the inherent dangers of e-portfolios is that the technological novelty of the product could overshadow the purpose of the portfolio, resulting in the learning opportunities being subsumed by the technology itself (Woodward and Nanlohy, 2004) [7]. For this reason the individual Schools designed the e-portfolio after developing a defined framework portfolio first.

E-portfolios provide a facility for students to record personal memos and evidence of achievements. This professional portfolio development provides a valuable record of student clinical experience and evidence of WIL. It also provides an easily accessible mechanism for academic staff, preceptors and students to adjust their L&T practices according to students learning needs and expected scope of practice. Furthermore, by having access to negotiated student data the e-portfolio will enable clinical teachers and preceptors to explore and increase their understanding of both their students and their role within each teaching program. The link between faculty, preceptors and students is an important
triad that forms the community of practice responsible for supporting student academic progression and professional development. Through using PP the community of practice can develop and strengthen, as information about respective roles, functions and capabilities of students and staff is more easily understood.

Evidence consistently shows that the success of clinical education of students relies on effective communication between preceptors, facilities and faculty (Woolley, Sen Gupta, and Thistlethwaite, 2006) [8]. Through the use of PP these relationships can become more aligned. At the University of Tasmania, curriculums are constantly changing and the recent growth in numbers of students attending WIL meant there was a need to further enhance L&T opportunities. The development and implementation of innovative L&T tools is necessary to ensure quality provision of academic support and clinical guidance during PEP rotations. The experiential component is a significant and vital aspect of all health faculty undergraduate degrees and the e-portfolio is a useful mechanism to improve support for academic teachers, preceptors and students in clinical practice.

2.4 Rationale for implementation of an e-portfolio into the School of Nursing and Midwifery curriculum

During their undergraduate degree, nursing students are required to undertake experiential practicums in a variety of health care environments. The choice of facility that students can attend for PEP has expanded and during their degree may include the acute care tertiary facilities within two of the States of Australia. Within a predominantly rural State like Tasmania, students may also be placed within district hospitals, multipurpose health centres, clinics or general practice surgeries. Additionally students may be placed in an aged care facility, community mental health agency or facility, or occupational health environment in the private or public health care sector.

Each of these agencies or services has their own specific model of clinical supervision. They each induct or orientate students to meet their needs and ensure that students receive a safe and high quality experience. The introduction of the use of an e-portfolio into a first year undergraduate unit was to support and augment student learning while on placement and enable them to capture evidence of their practice that could be linked to the Australian Nursing and Midwifery Council (ANMC) competency standards (ANMC, 2006) [9] and used as part of the evidentiary requirements at registration (AHPRA, 2010) [10].

The recent growth in undergraduate student numbers (approximately 50%) and the need for WIL placements has required the SNM to remain responsive to the needs of organisations, clinical facilitators, preceptors and mentors who provide clinical supervision, workplace learning opportunities and guidance with learning and teaching endeavours to students of nursing. Recent literature discusses the need to ensure clinical educators are provided with the resources and guidance to ensure that their novice students are afforded a quality PEP experience that facilitates opportunities to ‘learn nursing reasoning’ within a safe learning and teaching environment (Elliott, 2002) [1].

It was considered that the introduction of an e-portfolio at the beginning of the BN program could promote life-long learning opportunities at the beginning of a student’s career, facilitate reflection and provide a repository for collection and storage of evidence of competency that could be used across their degree and beyond.

2.5 Embedding the e-portfolio into the School of Nursing and Midwifery curriculum

Consultation with the University’s Centre for Advancement of Learning and Teaching (CALT) staff was undertaken in the development and implementation process of PP within the three schools. They were pivotal for aspects of resource development and implementation, especially within the SNM where over 500 students on four campuses in two states, with eight staff facilitating the process were needed to implement the use of the software application.

There was recognition by the investigators that there were constraints in developing and implementing the e-portfolio successfully to the student cohort. These potential issues included geography and spatial limitations of the investigators and student cohorts. Other challenges were identified and included variable time lines for development and implementation; differences in missions and goals of the curriculum and courses within the disciplines; and differences in the learning outcomes for students using PP. However, due to the focus on contextual learning within the workplace and the
The desire to develop authentic L&T tools the investigators pursued their objectives with vigorous discourse!

The embedding of an e-portfolio within the BN curriculum was to meet the objectives of evaluating an innovative L&T tool; provide a scaffold for developing skills in lifelong learning; and enable students to develop evidence of competency. The strategies used to implement the e-portfolio within the SNM attempted to present information about PP that would appeal to the different learning styles of the student cohort.

3 METHODOLOGY

3.1 The process of resource development and support to staff

Resource development for students in the demonstration unit included access to the Vista Blackboard learning management system used by the University. Support resources for staff and students were placed in a designated PP resource folder available within this system. These included a detailed manual and access via web links to the PP homepage that had tutorial video clips and downloadable tip sheets. There was also a tailored pre-recorded narrated Microsoft PowerPoint presentation that provided students with information about how to log in and set up their PP accounts and an explanation for the rationale behind the use of e-portfolios and their assessment task to be undertaken in PP while on PEP. Students were also provided with support by tutors in the three weeks preceding going on their WIL placement.

Students had access to an assessment rubric to facilitate an understanding of the requirements of the assessment task to be undertaken in PP. In addition to the student resources, academic tutors were provided with access to two general PP training sessions and one session specifically tailored to potential tutorial discussion and the PP assessment task. The week before PP was released to students the eight academic tutors from four campuses participated in an Elluminate video-link session facilitated by CALT staff to familiarise them with the process of the assessment task and their administrative role of their students groups. This forum also enabled discussion about the use of the application as a group. Academic tutors were also provided with an electronic resource of suggested comments that provided a bank of feedback items for use in assessing the reflection assessment task after PEP concluded.

Academic tutors and students within the SNM who used PP were provided with access to the UTAS information technology support services (ITS) to facilitate orientation to the software; set up of their username and password; personalisation of their own e-portfolio accounts; and troubleshooting prior to the application’s implementation and while students were undertaking WIL.

3.2 Development of the assessment task

The assessment task designed for use within the unit was required to meet the University handbook entry. This document is the ‘blue-print’ for the tenet of the unit and stated ‘online discussion’ was part of assessment for this unit. After much discussion between the academic from the SNM and CALT staff, the blog tool was chosen as the most appropriate vehicle to host the assessment task. Students were required to blog at least twice per week while they were on placement. They were expected to reflect on their own experiences while undertaking their WIL and respond to their peers appropriately. This task could be undertaken using one of the other tools within the e-portfolio and then posted to the blog via a gateway. This process enabled other students within the tutorial group, the clinical facilitator and academic liaison to view the student reflections and gain an understanding of individual’s perspectives and learning during PEP.

3.3 WIL and the assessment task using the pre-formed architecture of the e-portfolio

Using reflection within PP can be undertaken using a number of pre-formed templates. The thought tool has three levels of prompts for facilitating reflective processes. The students choose which template they prefer to use. The templates increase in complexity to prompt students to develop their skills in reflection while undertaking WIL. The templates can be used to encourage and extend reflective processes for students. When students completed their reflections they posted them to their blog, and these were then accessible for viewing and comment in the gateway. The gateway is the PP term used to describe the interface for enabling viewing. Only material that is released by the student
is available for access by others. The content within the e-portfolio is stored and maintained through a secure system. Similarly the gateways were unlocked only to the members of each tutorial group of ten students. Therefore the content and release of information within the e-portfolio is the responsibility of the student.

3.4 Evaluation processes

The project was primarily evaluated using pre- and post-implementation survey questionnaires that both students and staff involved in the demonstration unit were encouraged to complete. The surveys comprised both closed and open-ended questions regarding the process and content of using an e-portfolio and satisfaction and perception about current and future use. The pre-evaluation survey focused on gaining baseline information about student perceptions, expectations and prior use of using an e-portfolio. The post-evaluation instrument provided information about the strengths and weaknesses of the implementation process; it captured student and staff perceptions as well as enabling the investigators to identify improvements that could be made in future iterations. Additionally, quantitative data about the nature and scope of PP enquiries during the semester were collected from ITS. The investigators kept reflective journals within PP that could be used to inform the community of practice element of the project.

The WIL component of the course was undertaken in the last two weeks of the semester and the assessment task was conducted in parallel with this learning opportunity. Once students were off-campus the ability to capture their responses was reduced. As a result the response rate for the post-test evaluation questionnaire was less than desirable with a response rate of 15.2% of potential respondents providing feedback (n=75). As the response rate to this questionnaire was not representative of the cohort the findings need to be interpreted with caution. While the findings are valid for these respondents it may not be the view of those who were not prompted to complete the evaluation.

4 KEY FINDINGS

The key findings from the post-evaluation questionnaire were identified. These were critical for planning and embedding the use of an e-portfolio within the BN program in 2011. The key findings within the evaluation for the SNM students had both positive and negative aspects. They positive findings included:

• Blogs enabled the students to feel connected with peers;
• They liked using the blog tool for reflection; and
• Students found e-portfolios supported integration of knowledge and skills.

The negative findings included:

• The timeframe for the introduction of new the technology was too short;
• Staff and students needed to feel comfortable with using the technology before using it for assessment purposes; and
• Appropriate training for staff and students was required.

5 DISCUSSION

On reflection, the investigators acknowledged that students undertaking their first WIL component of their degree were already grappling with gaining an understanding of the workplace and culture; their role, expectations and performance while undertaking PEP. For some students the use of another software application in the form of an e-portfolio added unnecessary anxiety to this experience. For example, one student suggested 'having access at the beginning of semesters to work our way around it so we are familiar with it'. These findings have already been heeded by academics embedding PP within the BN program.

In 2011 first year BN students are being orientated to PP during semester 1. These students will use the e-portfolio reflection tools for assessment and they will become familiar with the without the additional burden of WIL. It is envisaged that students will gain a level of understanding about using the application prior to undertaking the WIL component of the course in semester 2. It is anticipated
this approach will reduce the negativity reported in this evaluation project and provide sufficient lead-time before they are required to use PP in their WIL component of their course.

The feedback about lack of support and instructions is more problematic to resolve. Due to the spatial and cohort size limitations already mentioned, computer laboratory sessions were not feasible. To compensate for this lack of opportunity, students were provided with face-to-face-tutorial information; and written, visual and audio instructions. The findings were useful for establishing that students have indicated they required more instruction and support. One student reported: ‘We weren’t given enough demonstration how to set up’. Conversely another student reported: ‘Instructions were easy to follow… although I don’t believe many students read them properly’.

Additionally, the post-evaluation survey provided an indication about the resources that students found useful. Students who responded indicated they found the marking rubric and face-to-face tutorials the most helpful. The survey responses indicated that students did not frequently access ITS or the PP online help. To reduce the negative response about lack of support and instructions could be ensuring the display of web links, contact numbers or resources available are more effective.

Students indicated the connection to peers was important. Respondents indicated that viewing and commenting on other student’s blogs assisted with feeling connected to their peers and assisted in supporting their integration of knowledge and skills. One student commented they liked ‘hearing how other students were going and reading some of their experiences’ and ‘the fact that I could communicate with friends and share our experiences and comment on each other’s experiences was the best one’. Additionally, some students indicated writing in a blog in the e-portfolio helped them to reflect upon and understand the role of the nurse. One student reported: ‘I was able to place my thoughts down in a central place’ and ‘I liked the idea that we all have the freedom as students to share our experiences throughout our clinical placements’.

Findings of both the process and content of the project indicated that communication was the key to effective uptake and success of the implementation of PP into the andragogy of the unit. The level of communication impacted on the success of the knowledge exchange and interdependency of the community of practice within and between groups that had a cascade or multiplier effect on process outcomes. For example positive student comments included that ‘the knowledge that I could share my experiences and share others and all learn from them’ and ‘more communication between tutor/unit coordinator and students as to expectations and the actual way this works… would have been nice’.

Positive outcomes for the three academic investigators included gaining a better understanding of academic colleagues about the programs they teach, and raising awareness of similarities and differences between disciplines, curricula, courses, units and WIL experiences. Furthermore, the investigators found that their levels of input varied according to their needs and development of the process of building the community of practice was organic. The overall outcome was there was the development of repository of shared knowledge and skills that can be utilised again within the respective schools in the future.

6 CONCLUSION

The evaluation of the implementation of an e-portfolio into the WIL component of the BN program was considered successful because the overall findings provided indicators of the level of usefulness of e-portfolios to support academic staff and students during professional experience placement. The project facilitated the use of the PP software and it has already become embedded into the BN early in the course. Additionally, the second year students will be using the e-portfolio reflection tools within PP to link their experiences with the domains of the ANMC competency standards as an adjunct to support their WIL this year.

Academic staff became familiar with the e-portfolio software and its use that has assisted with facilitating its acceptance across the discipline. The integration of PP into the SNM BN program has begun in earnest and over time will become ubiquitous in the WIL environment component of the undergraduate nursing student degree. Finally, the community of practice and repository of knowledge and skills that was established within and between the Schools participating in the project was a bonus that will be utilised into the future.
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