



Designing, adapting and integrating e-portfolio technology as an assessment tool into the curriculum of an internship program

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This paper presents a critically reflective evaluation of the pilot implementation of the Mahara e-portfolio system into the curriculum of an Internship Program at a Macquarie University in Sydney. Currently, at the half-way point of the pilot, the e-portfolio pilot project team is presented with the opportunity to evaluate their progress and make improvements in response to issues that have been identified for the following semester. Feedback was gathered from each of Brookfield's four lenses using tools including a reflective journal, online student feedback survey, consultation with colleagues and a review of the literature to provide a comprehensive evaluation of the Mahara e-portfolio in semester one, 2010. This investigation will form the first cycle of an action research process, where results from critical reflections in semester one will inform the next action research cycle to be undertaken during semester two, 2010. Implications for the Mahara e-portfolio trial in semester two include improvements to student feedback methods and usability, increased level of training and support and an enhanced blog and forum. These results suggest that in evaluating the effectiveness of the e-portfolio, as with any new curriculum innovation, it is important to focus on how the tool can support and enhance learning.

Keywords: e-portfolio, technology, internship, critical reflection, assessment

Introduction

Macquarie International Internship Program

The Internship Program run by the international office at Macquarie University offers internship placements to undergraduate and postgraduate international students in a variety of fields. Internships are completed for academic credit and involve a work placement, professional development skills workshops and academic assessments. The assessment component includes a final report and a collection of online activities designed to facilitate reflection and develop students' professional skills throughout semester. The Internships Department received an Emerging Technologies Grant to trial and evaluate the effectiveness of the Mahara e-portfolio system in the Internship Program during semester one and two, 2010. The Mahara e-portfolio has been used to replace the Blackboard learning management system to support these online activities.

e-portfolios

A variety of different e-portfolio definitions exist depending on the context, level and purpose of the learning environment and the technology used to support the e-portfolio. For the purpose of the Internships Mahara e-portfolio project, an e-portfolio will be defined as:

A purposeful aggregation of digital items - ideas, evidence, reflections, feedback etc. which 'presents' a selected audience with evidence of a person's learning and/or ability (JISC, 2007, p7).

E-portfolios can serve a number of different purposes, and several authors have classified these purposes into categories (Abrami & Barrett, 2005; AeP, 2008; IMS, 2005; JISC, 2007). JISC (2007) outline four principle purposes of e-portfolios as supporting application for jobs or further study; transition to a new environment; learning, teaching and assessment, and personal development planning and continuing professional development. These purposes will often overlap within a single e-portfolio, as is the case for the Internships Program (AeP, 2008). The Internships e-portfolio is primarily a learning and assessment tool with the final goal of producing a 'showcase' or 'application' tool to support students' future job applications and career development. The Mahara e-portfolio system was selected as the tool for the pilot, along with managed hosting and technical support provider, Netspot. The reason for selecting the Mahara tool was primarily due to cost. Mahara is open source software, and a high level of training and support was available through Netspot at a price within budget.

The Internships e-portfolio in semester one consisted of four modules of work known as 'views' that students needed to complete throughout the semester. Each view required students to contribute to the forum with a guided question on a set topic, make an entry in their blog to reflect on their internship progress and complete a variety of activities related to job applications and developing professional skills. Students also set up their personal profile page, similar to Facebook and uploaded a photograph or image to represent them. Only Internship Program Group members are able to access these pages through a personalised login.

Project rationale

Whilst there is growing recognition internationally of e-portfolios as an innovative tool to support learning, they are not yet a mainstream technology in higher education (Lorenzo & Ittelson, 2005). There is currently very limited use of e-portfolios for learning and teaching at the university, and there is a lack of common understanding of what they are and how they can be used (Macquarie University, 2008a). Due to the emerging nature of e-portfolio use in higher education, there are few practical resources to guide and support the implementation of tools such as Mahara. Therefore, this pilot project has involved a considerable level of self-directed training on how to use the tool, along with trial and error in designing learning and teaching activities and feedback mechanisms for the Mahara e-portfolio. The Internship Program runs every semester, allowing the Mahara e-portfolio to be trialled with students in both semesters one and two, 2010. Currently, at the half-way point of the pilot, the project team is presented with the valuable opportunity to evaluate their progress and make any improvements in response to issues that have been identified in semester one for the following semester.

Methodology of action research and critical reflection

A critically reflective approach has been adopted in order to evaluate the effectiveness of the Mahara e-portfolio trial as this approach involves identifying and scrutinising the assumptions that underpin our teaching practice (Brookfield, 1995; p. xii) Without the conscious will to critically examine the way we work and strive for improvement, errors of judgement and dissatisfaction will continue to recur (Cox, 2005). Action research is an effective research methodology that can support the critically reflective practitioner to link theory and practice (Bloomfield, Taylor & Maxwell, 2004). Action research can be defined as:

A form of self-reflective enquiry undertaken by participants in social situations in order to improve the rationality and justice of their own practices, their understanding of these practices and the situations in which the practices are carried out (Carr & Kemmis, 1985, p. 162).

This investigation will form the first cycle of an action research process, where results from critical reflections in semester one will inform the next action research cycle to be undertaken during semester two, 2010. The lack of practical resources available on e-portfolio programs and the self-directed nature of this project make action research a suitable methodology due to its ability to have a direct

impact and bring about immediate change when making improvements to the Mahara e-portfolio (Burchell, 2000; Norton, 2001). Using the plan, act, observe, reflect cycle of action research, the e-portfolio project aimed to trial and evaluate various design strategies of this new educational technology that will maximise student learning.

Brookfield (1995) provides us with a strategy to discover and examine our underlying assumptions of teaching practice through four different lenses: our autobiographies, the students, our colleagues and the theoretical literature. In order to achieve a comprehensive overview of our progress at the mid-way point of the project, I have sought to collect data from each of these four perspectives to guide my critical reflections. Each perspective provided a different set of data to inform the project.

In order to capture my own critical reflections on progress with the e-portfolio, I maintained a reflective journal by following the Shepherd (2004) model. This model was developed by volunteer management advisor, Mark Shepherd who used a journal to gather data for a research project, reflect on his practice and better understand his role. This structure involves answering a set of questions to reflect on a particular 'critical' or 'learning event': How do I feel about the event? What do I think about the event? What have I learnt? What action will I take? My experiences in leading the e-portfolio pilot project will be documented in this paper.

Data from the reflections of my colleagues was collected through notes taken from discussions about Mahara at meetings, interviews and their reflective journals which I encouraged them to keep during this project. The Internships Department consists of three staff members who engage regularly with each other in discussions about our progress and potential improvements with the e-portfolio

An anonymous online survey of students about their experiences with using the e-portfolio was conducted using Survey Monkey. Students were sent an email in the final week of semester inviting them to participate in the survey by following a direct link. Students were informed at the beginning of semester about the Mahara e-portfolio trial and that we would be asking for feedback about their first hand experiences with Mahara. The survey consisted of a series of questions relating to the e-portfolio usability, workload, technical support and to what extent it facilitated reflection and was helpful for learning. Questions were asked on a Likert scale (strongly agree, agree, neutral, disagree, strongly agree) as well as space to write additional comments if desired. The online survey link was sent by email to all 82 students in the Internship Program.

Finally, a review of the literature on e-portfolios will examine where existing research supports or conflicts with findings from critical reflections gathered through my reflective journal, colleagues and student feedback.

Results

Autobiographical data using a reflective journal

Using the Shepherd (2004) model as a guide, an analysis of my reflective journal showed that overall I felt that the e-portfolio pilot was successful. However there were a number of challenges faced and areas identified for improvement throughout the journal. Reviewing entries from the first half of the semester revealed the most common theme as the issue of providing timely and informative feedback to students, and there is a noticeable change in my attitude towards the importance of feedback. Initially, I did not expect that students would require individual feedback on the seemingly straightforward first activity, and I had planned to begin providing formal feedback from activity two. However, I failed to recognise that whilst I had become so familiar with the technology, it was completely new to the students. I learnt that the students needed feedback on whether or not they had submitted the task correctly to give them the confidence to move onto the following, more complex activities. However, a number of 'critical events' in my journal relate to the challenges faced in being able to achieve this, such as the illness of a colleague and a heavily increased workload. Additionally, time constraints, staff workload and functional limitations of the Mahara e-portfolio system were also commonly occurring themes referred to in the journal that presented a challenge to staff during the e-portfolio trial.

Data collection through the lens of the colleagues

The reflections of my colleagues in the Internships Department closely mirrored the findings from my reflective journal, probably as a result of working so closely together and the ability to share and discuss our immediate thoughts and ideas about the e-portfolio.

Data collection through the lens of the students

Of the 82 students invited, 62 participated in the survey. This section presents selected results of the survey. An examination of feedback provided by students revealed some common themes, with the most interesting and potentially valuable feedback was the unanticipated opinions and advice from students. The common themes from student feedback included attitudes to social networking; workload; usability; communication and interaction; reflection and scaffolding, and authentic assessment.

Of the respondents, 38.6% strongly agreed or agreed that the e-portfolio was generally easy to use and 35.7% of respondents strongly agreed or agreed that technical issues limited their use of the e-portfolio tool. Comments from students explained their reasons for these difficulties such as:

The e-portfolio does take some time to get used to and that is one of its setbacks.

The links were not clear as to where I needed to go – I had to keep flicking through to figure out where I needed to go.

Can't there just be all the links and tabs on the entry page without having to sift through a bunch of tabs and links to find the information I need?! I wish there could have been more clarity.

However, whilst usability was identified as a key area for concern, 88.8% of students still felt they were eventually 'very successful' or 'quite successful' in accessing the Mahara e-portfolio tool and completing the tasks.

Approximately half (50.7%) of students strongly agreed or agreed that the e-portfolio was helpful in collating work for submission as part of the unit's assessment. Comments from this question showed that students liked how the e-portfolio contained everything they needed for the unit as well as a place to submit assignment in one place. Many identified the potential for Mahara to effectively support learning in the Internship Unit if changes were made to simplify the interface and improve usability.

I liked having the e-portfolio because it meant all the information I needed for this course could be found in a very simple fashion online.

Comments from students showed that many students agreed the workload fair and they had kept up to date with each view during semester.

I think the workload was perfect.

I think the work distribution was very fair throughout the semester.

However, other students still felt as though the workload was too high. Student feedback from the Internship Program in previous years has always highlighted the burden of the required academic assessment component, regardless of its form. Students often question the reason for having to complete additional tasks on top of their internship, arguing that completing their workplace hours should be sufficient.

The workload of an internship is much more than the one for a business course. Plus, in the end we have to submit a 3000 word essay. In my opinion that would have done the job.

I think that the tasks we have done on the e-portfolio have been interesting, but they have been too big. Because we have had to be at our internship 10 hours every week I had to stress a lot with the tasks to be able to make them in time. But I have enjoyed my time at my internship and I really think it is an asset in the future.

Feedback from internship students in past semesters has indicated that they would like more opportunities for interaction with their fellow interns. In response to this, an online discussion board using Blackboard was successfully introduced into the unit in 2009, and in 2010 the e-portfolio online forum would further enhance this level of interaction. Student feedback comments again reinforced the value of communication and interaction, as students enjoyed being able to share their internship experience with others from diverse cultural backgrounds.

My favourite part was definitely the forum. I really enjoyed hearing what other people had to say about their experiences.

The e-portfolio forum function really provides students a platform to share work and personal experience. Participants of this program are culturally diverse, it is very important to understand how people live, work and communicate in other cultures, simply because we are living in a globalised world.

Nearly half (48.5%) of students strongly agreed or agreed that the e-portfolio helped them reflect on what they had learned during the internship. Students commented on the benefits of the e-portfolio in supporting reflection on their experience, keeping track of their work and preparing for the final report.

I can see the benefits of e-portfolio in self reflection. I believe that every participant in the internship course is very busy. During the busy time, a lot of people lost ability to self-reflection. To review what I learnt during one day working experience, what I can improve myself in order to perform better, how the organisation could be improved if some actions could be taken, and how to manage my time more efficiently. The blog function really gives me ability to sit down and have a clear and logical self reflection process.

I like that I was able to blog because it helped me keep track of my hours and what I did every day at my internship.

As the Internship Program is a work-based learning program, the e-portfolio places emphasis on developing students' professional and job application skills through authentic assessment tasks. These include identifying competencies developed throughout the internship, developing a project plan for the internship duration and applying skills and knowledge learnt to address selection criteria for relevant jobs in their industry. A large number of students are undergraduate or have never applied for a full-time position in their field of study. Student comments indicated that these authentic assessment tasks were helpful in building their confidence and ability to begin applying for work when they graduate.

e-portfolio provide several interesting job hunting skills and tips for us to use.

Activities are very useful to our career

The e-portfolio was deliberately designed to incorporate the features of a social networking tool similar to Facebook with a personal profile page, a wall, making 'friends' and an online forum. A particularly unexpected result from many students was their resistance to the social networking aspect of the e-portfolio.

In my opinion there are too many social networking sites around and further ones could be a burden for some people. Personally, I use three different social networks already and that is enough for me.

I am of the opinion that nowadays there are too many online social networks and we don't need any more. Facebook, Twitter, YouTube, Myspace etc is enough (I'm not even using them). Just because we are the Facebook generation does not mean that we need a Facebook for every part of our lives.

I feel it may be better replaced with something that encourages people to meet up in real life.

There was a small portion of students that commented they liked the e-portfolio because it was 'a little like Facebook'. However, this opinion was overshadowed by those who were unconvinced they needed another social media outlet. This result demonstrates the importance of actively seeking the views of our students to scrutinise and question our underlying assumptions of teaching practice.

Positioning findings in the context of the literature

Whilst there are very few practical and specific resources to support the implementation of the Mahara e-portfolio system in a work integrated learning unit, there is a considerable amount of literature on the concept of e-portfolios and their potential to support learning in vocational and higher education (Abrami & Barrett, 2005; AeP, 2008; Lorenzo & Ittleson, 2005). Much of this literature supports the findings in this project such as the importance formative feedback, the benefits of reflection, student interaction and authentic assessment. However, in the face of rapid advances in technology and the changing higher education environment, other findings conflicted with the assumptions and generalisations made in past research such as that of the 'net generation'. This section will examine where the literature supports or conflicts with findings from critical reflections gathered through my reflective journal, colleagues and student feedback.

E-portfolios have been found to provide an alternative form of assessment that moves away from summative assessment to a more formative approach to monitor students' learning throughout the unit (Abrami & Barrett, 2005; Butler, 2006). They also provide the opportunity to transition from assessment *of* learning to assessment *for* learning by encouraging students to focus and reflect on the process of how they have learnt rather than the product of what they have learnt (AeP, 2008). Whilst the literature identifies e-portfolios as having the potential to enhance formative feedback in a course, this was not automatically found to be the case by staff and students in the Internships Mahara e-portfolio trial. Reflections from my journal and discussions with my colleagues revealed that findings such as this in the literature had led to a naive false sense that the e-portfolio would simply run itself and the workload effort of providing feedback to students would be significantly reduced compared to Blackboard. Despite challenges provided by staff illness and functional difficulties of Mahara noted in my autobiographical reflections, the issue of providing effective and timely feedback to students was found to be no different to assessment in any other situation. Ironically, the potential for improved feedback to students was a significant factor in the decision to implement the e-portfolio. However, the feedback mechanism in Mahara was identified by staff as the most challenging issue to improve for semester two, 2010.

Recent e-learning literature commonly refers to our students as 'digital natives' and the 'net generation' with the underlying assumption that today's students are all fluent users of technology who embrace social media in every aspect of their lives (Barnes & Tynan, 2007; Oblinger & Oblinger, 2005; Prensky, 2001). However, others have found this is not always the case, with many students lacking these technical skills or who are simply overwhelmed by the saturation of social media penetrating their lives (Bishop et al., 2007; Vanslyke, 2003). The latter was highlighted to be the case by many students in their feedback comments as they had difficulty learning to use the new technology and felt it unnecessary to be burdened with another social networking medium.

Interaction and collaboration among students in a course have been found by a number of authors to lead towards enhanced student learning (Andresen, 2009; Laurillard, 1993; Curtis & Lawson, 2001; Lewis & MacEntee, 2005; Kolb, 1984). Reflections from staff and students about the e-portfolio have strongly supported the benefits of interaction through the Mahara online forum. Online discussion groups allow participants time to reflect, and can be a powerful tool in the development of critical thinking, reflection and collaboration, aligning closely with the Internship Unit's learning outcomes (Wall Williams et al., 2001). In terms of usability, the Mahara forum was easy to use, visually

appealing and feedback from students has been positive. Prior to the e-portfolio, students completed a personal online journal on Blackboard to reflect on their internship experience. However, this journal was kept very isolated from other work and could not be viewed by others. Instead, students now use their e-portfolio to reflect as a group on the forum and to keep an individual reflective blog, with the opportunity to be viewed and shared among fellow students and the public if desired. Functions such as blogs, discussions and other interactive tools in the e-portfolio have been found to encourage students to revise and reflect on experiences in their internship not only individually, but often involving the collective exchange of ideas and feedback (Butler, 2006).

Reflection has been identified through all of Brookfield's lenses as a crucial component of the Internship Program and the e-portfolio. It is commonly accepted throughout the literature that reflection plays a vital role in the ability for students to learn from their experience. Whilst there are many direct benefits from practical experience, this experience alone is insufficient for learning to occur (Kolb, 1984). Reflective practice is a crucial feature in determining the effectiveness of work integrated learning as students must observe and reflect on their experience to make sense of the experience and then apply and test out these concepts through new experiences (Atkinson, Rizzetti & Smith, 2005; Freese, 1999). E-portfolios have been identified as a powerful tool for facilitating reflection in work-integrated learning programs (Lorenzo & Ittelson, 2005; McAllister, Hallam & Harper, 2008). As students progressively gather and reflect on artefacts that demonstrate learning and achievements in their internship, the e-portfolio helps them to recognise their own level of competency development and identify areas for improvement (Cockburn et al., 2007).

Universities are facing increasing pressure to provide 'work-ready' graduates with the skills to remain employable and adapt in a world of great environmental, technological and global change (McAllister, Hallam & Harper, 2008). There is now a heavy focus at the University on embedding graduate capabilities such as critical thinking, problem solving, creativity and lifelong learning into academic programs and increasing the level of authentic assessment in order to achieve the purpose of producing graduates ready for today's workforce. E-portfolios have been valued as an authentic form of assessment, which involves assessment tasks that engage students with real life situations (Abrami & Barrett, 2005; Butler, 2006). The aim of authentic assessment is to provide valid and accurate information about what students really know and are able to do under real-life conditions (Macquarie University, 2008c). From the perspectives of both staff and students this has been achieved as students collect artefacts, evidence and reflections directly from their learning experience in the workplace. This learning is then applied through authentic assessment tasks to develop students' professional skills to assist them with job applications and in their future career.

Discussion

An analysis of my reflective journal and feedback from colleagues revealed that from an autobiographical and my colleagues' perspectives the most salient issues were providing feedback to students, limitations of the Mahara system and staff workload. These results unveiled the importance of providing timely feedback, and reinforced that for students, the curriculum is defined by assessment and what students learn will depend on how they think they will be assessed (Ramsden, 1992). It is critical that students are kept informed of their progress in the e-portfolio. However, despite recognising the need to increase feedback levels to students, many 'critical events' in my journal relate to the challenges faced in being able to deliver this intention. During semester my colleague became very ill and was absent for two months, just after the e-portfolio system was introduced to students. This had major implications for the project as there was not only an increase in regular workload, but the project team lost a significant contributor. There was much less time to provide individual feedback to students and to monitor those who might be having difficulty and were falling behind. Looking back on this time period in the journal I had become very frustrated and negative.

The online student survey provided the most valuable data to inform the research. In the higher education industry today, students are increasingly being viewed as the 'customer' (Norton, 2001). There is an increasing focus on customer service and enhancing the student experience in order to compete in the international education market. Student feedback surveys such as the International Student Barometer Survey, commissioned through independent consultancy firm i-graduate, are influential drivers for strategic planning and marketing in Macquarie International, demonstrating the importance of the student perspective in both an educational and business sense. It is important to place considerable emphasis on gathering and examining the students' perspectives as they can differ

significantly to your own view of the situation and expectations (Hoban, 2000). For example, staff expectations and much of the literature anticipated that students would enjoy the Facebook style of Mahara and be able to relate to building a profile and interacting with each other in an online environment. However, upon reviewing feedback comments from students this was not entirely the case. Surprisingly, these students all aged in their twenties and classified as the supposed 'net generation', were resisting the addition of another medium of online social networking. In contrast, many suggested that opportunities for face to face meetings be offered to enhance interaction among interns.

Of the respondents, 88.8% of students felt they could successfully access Mahara. However, staff felt the level of accessibility of Mahara would be rated much lower. A reason for this conflicting result could be that students who made the effort to complete the survey were the same students who made the effort to familiarise themselves with how Mahara works and learn to become proficient users of the e-portfolio. On the other hand, it could be the fact that staff had faced a number of problems throughout the semester that students were not aware of, and were strongly influenced by these negative points. Staff were also pleasantly surprised by students' positive comments relating to the e-portfolio blog in encouraging reflection and the activities in developing their job application skills.

There was a mixed response from students in terms of workload and whether they believed it was fair and manageable. A reason for the perception of a heavy workload could have been the time it took some students to work out how to use the tool, causing additional unnecessary effort. It appeared that those who understood how to use the tool from the beginning had no problem with completing their views on time, whilst those that struggled with the new technology found the e-portfolio workload level too high. Students should not have to spend a significant amount of time trying to work out how to use the tool in order to complete an activity, and this feedback has highlighted the need to address this issue. The most common feedback theme running across all perspectives related to the poor level of level of usability and overcomplicated interface design. Students complained about having to search through multiple links and tabs to complete each activity and found creating views very difficult and often counter-intuitive. The Mahara e-portfolio system is relatively new and the technology, interface and design could be further improved in order to support assessment and learning in the Internship Program.

Implications for designing, adapting and integrating e-portfolio technology into the curriculum

After completing an analysis of feedback, gathered from all four of Brookfield's lenses on the e-portfolio in semester one, a number of implications have been identified to inform the next cycle of action research including: improve feedback mechanisms; improve training and support; enhance usability, and enhance blog and forum.

Considering reflections from each perspective, it became obvious that improvements to student feedback methods would be the most critical recommendation for semester two, 2010. During semester one, Internships staff trialled a number of different methods to provide useful and timely feedback to students for each of the four views they completed. At the end of semester one, staff created a simple marking rubric for each component of the e-portfolio which could be easily filled out by staff as students complete each of their four views. The marking rubric informs students whether they have successfully completed the task or not and allows for additional comments if required. In semester two, this marking rubric will be contained in a specific feedback view located on students' front profile page where they can conveniently track their progress with e-portfolio activities. Staff will update the feedback rubric for each of the four views students complete, and if done regularly should not produce an excessive workload.

Students were introduced to the Mahara e-portfolio and how to use it during the one hour Internships orientation session. A comprehensive Mahara user-guide was also developed and distributed to students. The training was done in lecture style, by demonstrating each of the e-portfolio functions to students on a projector. Students were expected to sit through this brief demonstration and staff were relying on the skills of these 'digital natives' who would use their initiative and the user guide to work out how to use the program. Staff made it clear that students could ask for any additional help and training during semester if required and a few students who felt lost did make an appointment for a one on one training session. On reflection, this expectation was unrealistic and this style of training was

inadequate. In semester two, student training will be more heavily focussed on at the beginning of semester by implementing the following:

- More comprehensive Mahara training session during the orientation session featuring step by step instructions from logging in, finding information, completing activities and submitting a view for assessment through Mahara.
- Particular focus during the training session on how to upload a view as this has proven to be the most difficult aspect of the e-portfolio for students to grasp.
- Ideally, the training session would be held in a computer lab where students could use the program at the same time as the demonstration, although this may not be possible due to lack of rooms available.
- Make the orientation session compulsory for all students and closely monitor those who do not or cannot attend to ensure they can receive training at another session.
- Develop further training resources such as an instructional video to be available online for students.

The most common theme running through the students' feedback comments related to usability and the need to make Mahara more user-friendly. Whilst we are constrained by the existing Mahara interface and cannot make major changes to the system, a number of small alterations have been identified by students and staff to improve usability for semester two:

- Email reminders or flags on profile page to remind students when a view is due. This was suggested by students as they juggle demands from other university subjects and work commitments.
- Streamline email notifications to students by setting Mahara to send out one email each week summarising the group's e-portfolio activity rather than one email per activity.

Throughout this investigation, it has become apparent that the benefits of interaction, collaboration and critical reflection have been realised through the Mahara blog and online forum. Due to the potential of the online forum and blog to contribute so much to student learning in Internships, recommendations would be to enhance these aspects of the e-portfolio as follows:

- Encourage students to make more regular postings in their blog. Currently students are only required to complete four short blog entries during the semester, but many students used their blog more than this and feedback indicated they found the blog useful to keep track of progress in their internship.
- Provide students with more direction on how to reflect and why reflection is so valuable to learning from experience.
- In order to make the forum more interactive and manageable for students, set a word limit for postings so that students do not feel discouraged to read each others' postings and respond.
- Encourage students to use the forum to arrange outside social meetings with each other as student feedback indicated they would like increased opportunities for face to face meetings.

Conclusion

A critically reflective approach in the evaluation of the Mahara e-portfolio pilot in the Internships Program allowed staff to scrutinise and challenge their assumptions and expectations underpinning their current teaching practice. An examination of the Mahara e-portfolio using Brookfield's four lenses provided an effective strategy to ensure that a variety of perspectives were consulted in order to reach a comprehensive evaluation result. It became clear that relying completely on the autobiographical lens would result in an incomplete picture of the e-portfolio project's effectiveness. Staff had become too familiar with the technology and no longer had the ability to provide the objective view of a first time user. In this investigation, the student view was particularly useful in providing feedback and ideas that staff would not have considered on their own. An examination of the literature on e-portfolios, e-learning and learning and teaching in general was useful in determining the concept and purposes of e-portfolios. However, the lack of practical resources available to guide the implementation e-portfolios led to a very self-directed approach and this project lent itself to the processes of action research. This investigation has identified a number of key issues and implications for adapting the Mahara e-portfolio into the Internships curriculum, related to feedback mechanisms, usability, workload,

interaction, reflection, training and support. These results have formed the first cycle of an action research process which will be addressed in the next phase of action research to be carried out in semester two, 2010. Ultimately these results suggest that, as with any new learning and teaching tool regardless of whether it involves the use of technology, the focus should be on where the tool can support and enhance student learning.

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