Students' experience toward ePortfolios as an assessment tool in a dual mode Indigenous business course

Author Details:

Kerry A. Bodle
Department: Accounting, Finance & Economics
University/Institution: Griffith University
Town/City: Southport
State: Queensland
Country: Australia

Mirela Malin
Department: Accounting, Finance & Economics
University/Institution: Griffith University
Town/City: Southport
State: Queensland
Country: Australia

Andrew Wynhoven
Department: Accounting, Finance & Economics
University/Institution: Griffith University
Town/City: Southport
State: Queensland
Country: Australia

Corresponding author: Dr. Kerry A. Bodle

k.bodle@griffith.edu.au

1. Introduction

The concept of 'portfolio' has been around for centuries and broadly defined, a portfolio is a collection of evidence that demonstrate a person's abilities and lifelong learning. As opposed to an artist's portfolio that showcases a person's best work only, or a financial portfolio which contains a record of transactions and investment holdings, an educational portfolio contains work that a learner has accumulated, reflected, selected and presented to show growth and change over time (Barrett and Carney, 2005). Thus, the significant element of an educational portfolio is the reflection on the individual work presented as well as an overall reflection on the narrative that the portfolio conveys. Kimball (2005) argues that reflection is what supports the entire pedagogy of portfolios. The other two significant aspects of portfolios is that they measure learning and development over time (Barrett, 2000; Challis, 2005) and that the learning takes place in the process of constructing a portfolio, not in the end product (Smith and Tillema, 2003).

1.1 The Electronic Portfolio

Recent advances in Web-based technologies as well as the availability of higher capacity memory storage at lower costs has led to opportunities for electronic portfolios (ePortfolios) to support student learning in a variety of contexts (Tosh et al, 2006). The area of educational technology has been strengthened by the evolving digital tools for distributive communication and exchange of Web 2.0 in which the use of ePortfolios has heralded the emerging emphasis on user-generated content (Bass and Eynon, 2009). In the current climate of multimedia self-authoring, ePortfolios have become a dynamic and accessible educational medium that appear to be ideal for meeting the educational needs of the social networking generation (Clark and Eynon, 2009). In addition, the interest in ePortfolios has progressed in the last two decades as a result of pedagogical changes in higher education which have focused on the use of technology in teaching, learning and assessment. In fact, Yancey (2009) argues that ePortfolios are re-shaping the landscape of higher education through changes in how students learn and how faculty teach (Clark and Eynon, 2009).

An ePortfolio is an electronic version of a paper-based portfolio or a digital collection of text, video, images and sound, which can be used to support a variety of pedagogical and evaluation purposes (Abrami and Barrett, 2005). The advantages of ePortfolios over the print based portfolios include the ability to store, organise and reorder contents quickly and easily; can integrate student course work and can be used for collaboration, self-organisation, planning and presentation skills (Bhattacharya and Hartnett, 2007). Whether print based or digital, the portfolio process is identified by five stages: 1) collection stage where students and teachers work together to identify artefacts that represent growth and success; 2) selection stage, where the best artefacts that demonstrate achievement of learning goals are chosen; 3) reflection stage allows students to think about each section in the portfolio; 4) evaluation stage, crucial in the process, as students assess their pre-set goals and other achievements, growth and progress, at the same time identifying gaps in their development; and 5) celebration stage, where portfolios are shared with peers and others (Abrami and Barrett, 2005; QESN-RECIT, 2004). Furthermore, Abrami and Barrett (2005) suggest that ePortfolios can be designed as 'process' portfolios meant to encourage improvement, growth and commitment to life-long learning, 'showcase' portfolios which illustrate and demonstrate competencies and achievements, and 'assessment' portfolios that focus on formative or summative evaluation of learning.

Smith and Tillema (2003) propose four types of portfolios: a 'dossier portfolio' used for job selection and promotion, a 'training portfolio' used for learning and development, a 'reflective portfolio' where the author is in charge of its content, and a 'personal development portfolio' aimed at self-directed education and growth. Hallam *et al's* (2012) research findings support this view, particularly in terms of the potential to help students become reflective learners who are conscious of their personal and professional strengths and weaknesses, as well as to make their existing and developing skills more explicit. Similarly, Butler (2010, p. 113) identifies "three mains uses for ePortfolios: for students while studying, for graduates while moving into or through the workforce,

and for institutions for programme assessment or accreditation purposes" (Lorenzo and Ittleson, 2005a). Bhattacharya and Hartnett (2007) inform that portfolios types depend on the purpose for which they were developed and list assessment, employment, learning and teaching portfolios as examples.

1.2   Pedagogical Frameworks

ePortfolio is not only seen as a new technology but also as pedagogy (Gerbic, Lewis and Northover, 2009) via shifting the way instructions happens, from teacher-directed towards student-directed methods. The underlying pedagogical characteristic of ePortfolios is the constructivism method which emphasises learning by experience and self-discovery, and encourages inquiry, problem solving and collaborative methods of learning (Meeus, Questier and Derks, 2007; Abrami and Barrett, 2005). Student engagement with learning literature shows that when faced with choices on how to learn course matter, students prefer gaining knowledge through deeper understanding of the subject, rather than just information acquisition (Ramsden, 2003; Marton and Saljo, 1984; Kuh et al., 2005; Entwistle, 1998). ePortfolios enable the creation of connections between learning experiences that happen in various contexts and environments, thus supporting deep learning (Tosh et al., 2006).

In their learning landscape framework, Tosh et al. (2006) show how ePortfolios have the ability to link the overlapping domains of academic, workplace and community through the three key elements of framework: Reflection, Communication and Sharing. Fig. 1 illustrates the learning landscape framework and the role played by ePortfolios in the transfer and re-use of skills, knowledge and experiences through reflective thinking and self-assessment (Tosh et al., 2006).

[INSERT FIGURE 1 APPROXIMATELY HERE]

In this framework, ePortfolios are a technological tool designed to enhance a learner-focused approach, promoting a holistic rather than fragmented view of learning, and are not meant to define the learning landscape. An overarching pedagogical framework that incorporates both technology and education is the Community of Inquiry (CoI) framework of Garrison, Anderson and Archer (2010) which shows how the use of technology can create and sustain deep meaningful learning and reflection. Similar to the Learning Landscape framework of Tosh et al. (2006), the CoI framework presented in Figure 2 also has three elements: Cognitive, Teaching and Social presence. However the central focus of the CoI is on the educational experience of the learner which is being transformed by how technology interacts with the three components of the framework.

Within the context of our paper, the ePortfolio as a technological instrument has the potential to affect all three elements of CoI, and ultimately influence the learning experience. Starting with the teaching presence, ePortfolio represents a new, challenging, collaborative learning activity and environment reflected in the *design* area; a different way of communicating between and among students and teachers manifested in the *facilitation* area; and an innovative approach to share and introduce information from different sources in a variety of forms, expressed in the *direct* instruction area (Garrison and Aykol, 2009). Within the cognitive presence, the ePortfolio is the ideal mechanism for *critical reflection*, being one of its key characteristics; allows the thoughts of reflection to be recorded as an on-line *discourse*; and through the process of collecting artefacts, ePortfolio develops a process of *systematic inquiry*. Similarly, in the social presence, ePortfolio encourages students to identify with the course *community* through a shared social identity; develops interpersonal *relationships* through formal and informal interaction with peers; and by sharing its artefacts, resources and reflections, the ePortfolio allows students to *communicate* the journey of their learning experience with others.

[INSERT FIGURE 2 APPROXIMATELY HERE]

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1.3   Assessment using ePortfolios

In this paper we focus on ePortfolio as an assessment tool, an alternative to the traditional examination practices of written tests, essays, case studies and multiple-choice questions. In particular we investigate the students' view whether digital assessment in the form of an ePortfolio was considered an innovative and appropriate technological tool for the course and for the students to submit their assessment using technology in assessment. ePortfolios have been successfully used as assessment in a number of disciplines including Arts, Humanities and Medicine. The Hallam report (Hallam *et al.*, 2010) finds the two principal uses of ePortfolios to be in the areas of collecting examples of evidence of learning and summative assessment.

Wade et al. (2005) confirm that ePortfolios involve students in the evaluation and assessment process as they continually revisit and revise their portfolios. Through the construction of an ePortfolio, Wall et al. (2006) show that students can understand better the assessment they are supposed to produce. Cambridge (2001) states that ePortfolios also help contextualise failure, they can show the actions to correct failure and what the students have learned from the experience.

Mason et al., (2004) provide evidence from student feedback and course evaluations that ePortfolios can be an effective method of assessment in a postgraduate education course. Students perceived the process of creating an ePortfolio to be hard, however they could see how all individual learning objectives linked together the whole course, and the pedagogical benefits of this assessment method. Analysing the undergraduate students' perceptions, attitudes and behaviour when using ePortfolios in learning and assessment, Lopez-Fernandez and Rodriguez-Illera, (2009) find that students valued knowing the assessment criteria and the self-management of their learning, however they failed to recognise ePortfolios as a better and more transparent learning system. In the medicine discipline, Del Duca and Duque (2006) show that ePortfolios are a useful tool to motivate and stimulate students' self-reflection, and encourage a positive change in attitudes toward aging and geriatric medicine.

Harper et al. (2007) investigates the adoption of ePortfolios across multiple faculties with a diverse range of applications. They find that ePortfolio as a compulsory but not graded assessment in Law and Accounting discipline help students understand the most effective learning practices, and is a useful tool in the employment application process. Similarly, Woodley and Sims (2011) explore students' perception on the use of ePortfolio as an assessment task in a second year business course. They find that although students see the advantages of having an ePortfolio to showcase their employability, most perceive the task a technically difficult process. Nevertheless, Hallam et al. (2010) and Hind et al. (2011) report that the use of ePortfolio influence on students by raising awareness of eLearning technology, reflective learning and professional/industry skills.

This review of literature has highlighted the lack of research on the use of ePortfolios in the Social Sciences, in particular the area of commerce and business. Currently, a joint Innovation and Development project for the Office for Learning and Teaching (OLT) is investigating the use of ePortfolios as assessment in accounting subjects at various universities in Australia (Salzman and Holt, 2015; Oliver, 2011). Ranging from Financial Accounting, Auditing and Corporate Accounting at Deakin Business School to Accounting Capstone course at Macquarie University, the project details case studies where ePortfolios have been used to assess critical thinking and problem solving graduate outcomes. The preliminary project report (Salzman and Holt, 2015) presents the challenges faced by academics and institutions in adopting ePortfolios in a business context, citing lack of institutional strategy and knowledge of ePortfolios among others.

To be considered a meaningful mechanism for the development of knowledge, ePortfolios must focus on reflection and the assessment of that reflection (Zubizarreta, 2004; Bhattacharya and

Hartnett, 2007). Thus, the research questions investigated in this paper concentrate on students' perceptions and attitudes on ePortfolios as a technological tool, and whether this form of assessment has contributed to enhance their level of knowledge and understanding. Specifically, the research questions are stated as follows:

RQ1:   What are students' pre-existing attitudes toward ePortfolios at the start of the semester?
This research question seeks to determine whether students were exposed to ePortfolios prior to the course, their knowledge of ePortfolios, and was their attitude towards such learning tools.

RQ2:   What were the determinants of students' existing attitudes?
This research question investigates whether age, gender, different nationality, knowledge and experience of web-based reflective tools, and type of degree had any influence on students' existing attitudes towards ePortfolios.

RQ3: Having used ePortfolios as part of the course assessment requirements, has the experience changed their existing attitudes?
One of the main purposes of the paper is addressed through this research question, which seeks to answer the students' experiences and attitudes on the use of technology in assessment and whether ePortfolios aid their learning of the Indigenous business content after having used in the course.

RQ4:   Was ePortfolios a useful vehicle for facilitating critical reflection on one's learning and for compiling and demonstrating evidence of learning and skill development?
The benefit of ePortfolio as an assessment tool that improves learning and student engagement with the course material is investigated through this research question.

2.   Context

The study is focused on the application of ePortfolios in a dual mode course within the Business School at an Australian University. As this is the first time ePortfolios are considered in learning and teaching in the department, the study is considered an experimental research. The ePortfolio platform used is the Blackboard Electronic Portfolio System within the university's wide Learning Management System (LMS). The students act as curator of the design and management of the Portfolio, they can add digital artefacts and share the Portfolio within the LMS. The Portfolio can be exported and used outside of the LMS and it can be linked to the Grade Centre. Schroeder, Minocha and Schneider (2010) show that LMS provides the main platform for the integration of learning activities and resources in higher education. A LMS such as Blackboard can provide notice rooms, document repositories, discussion forums and blogs in a secure institution based format (Klobas and McGill, 2010; Schroeder et al., 2010). Research conducted on the various LMS platforms used in higher education shows that in 2004 twenty Australian Universities were using Web CT™ as their primary LMS, and fifteen were using Blackboard™ (Byrnes and Ellis, 2004), while more recently most universities in Australia use either Moodle™ or Blackboard™ (Smithers, 2009).

The students serve as portfolio owners with control over the material, design, and membership of their portfolio. The system supports a variety of file types and allows for multiple artefacts to be stored in the Content Collection, a folder based file store for search, reuse and archive. The portfolio can be exported as HTML pages and thus, viewed outside of Blackboard. Since Blackboard is widely used as an electronic learning environment by many institutions, the similarity and excellent integration between the Portfolio solution and the course environment promotes rapid adoption and means less work for faculty and staff. The restriction on commenting (viewers can only comment on the portfolio as a whole) and the unavailability of reports of learning activities during portfolio development highlight one of the disadvantages of this solution.

3.   Methodology

The study uses a mixed method approach (Creswell, 2003) involving surveys with participating students undertaking a dual "intensive" mode course 3200GBS Engaging with Aboriginal and Torres Strait Islander Business Communities. Lime Survey is used as the basis for developing the survey to gather feedback from students at the beginning of the semester and again at end of the semester. The survey, adapted from Collis and Moonen's 4 E model and the CICTO framework, is used to gather students' feedback at the beginning and completion of the semester (see Gosper *et al.*, 2007). The online Lime Survey link was sent to all participating students enrolled in 3200GBS. The survey contained two phases. During the semester, both cohorts had access to the same material through a Blackboard course website. Students were given information in a course profile which outlined their assessments for the semester. For one piece of assessment, they were asked to prepare an ePortfolio containing critical reflective writing based on questions raised in seminars and supplementary readings. Although no formal training sessions on how to construct an ePortfolio was offered, students had access to user manuals, instructional videos, and other useful information shown on the Blackboard course website.

Phase 1: Pre-survey (RQ1 and RQ2)

Phase 1 involved a pre-survey conducted at the beginning of semester where students attending classes on-campus and those enrolled on-line were asked demographics questions and background information in terms of their pre-existing experience, knowledge, and attitude toward ePortfolios prior to undertaking the course. Demographic questions included categorically measured personal attributes of age, gender and nationality/cultural background as well as enrolment information of degree undertaken and enrolment mode (online or on-campus). Students were asked to provide additional comments regarding their pre-existing knowledge, experience and attitudes towards using an ePortfolio as an assessment tool for facilitating critical reflection on their learning.

RQ1 and RQ2 seek to investigate student's pre-existing knowledge, experience and attitudes of students towards ePortfolios and the determinants of these pre-existing attributes, respectively. Both research questions were measured using six-point Likert scale questions from *"1" extremely low* to *"6" extremely high*, such as "To what extent is your knowledge of ePortfolios" and "What is your existing attitude towards using ePortfolios as an aid to learning and skill development".

Phase 2: Post-survey (RQ3 & RQ4)

Phase 2, involved obtaining feedback from students at the end of semester using a post-survey relating to their actual experience using ePortfolios, the support provided by university staff or other ways, and the effectiveness of the tool to learn and engage in the course. The post-survey included questions relating to students' experience on the accessibility and usability of ePortfolios, the technical support provided and, its technological effectiveness in their learning. Student were asked to provide additional comments regarding their experience in using an ePortfolio tool for facilitating critical reflection on their learning.

RQ3 seeks to investigate whether students' attitude toward ePortfolios changed after using the new digital technology. Technology was measured using agreement to a number of statements on a six-point Likert scale ranging from *"1" strongly disagree* to *"6" strongly agree*. These included statements such as "ePortfolios were easy to access" and "ePortfolios was easy to use". Support was posed as one question with 6 sub choices with students having the option to tick different

types of support they used, such as "online instructions", "videos", "university staff", blended learning advisors", "no support, I just worked it out myself", or "other". Students were then asked to provide comments on your past experiences using web-based reflective tools (e.g., course code, ePortfolio software, accessibility, helpfulness, usability and support)" and "comment on your overall experiences using ePortfolios and whether it was what you expected, and whether or not ePortfolios enhanced your ability to learning the content in the course".

RQ4 investigates whether ePortfolios were useful vehicles for facilitating critical reflection on students' learning and for compiling and demonstrating evidence of learning and skill development. Helpfulness, was measured using agreement to a number of statements on a six-point Likert scale ranging from *"1" strongly disagree* to *"6" strongly agree*. These included statements such as "ePortfolios helped me integrate and make connections between things I have learned"; "ePortfolios helped me to reflect and make comparisons between my own culture and Indigenous culture"; and "ePortfolio tool was helpful in compiling the reflective journals "Technical issues Influenced my learning and skills development".

4. Results

4.1 Phase 1: Pre-existing experience, knowledge and attitudes [RQ1]

In terms of demographics (Table 1), the sample represented a relatively young age demographic with a quarter of the participants aged under 21 years and almost two-thirds were under 30 years of age. Chi-square analysis showed that there were significantly more females than males ($\chi^2 = 3.69; p < .001$). Interestingly, there was no significant difference in the proportion of males and females on-campus compared to the on-line cohort.

[INSERT TABLE 1 APPROXIMATELY HERE]

In terms of prior knowledge and experience using ePortfolios, 89.1% of the participants reporting low knowledge with 43.5% reporting extremely low knowledge (see Table 2). Of the 10.9% reporting high knowledge, only one reported extremely high knowledge. Similarly, 80.4% of the participants reported low experience with web-based reflective tools for assessment, with almost half of the participants reporting extremely low experience. Despite having low knowledge and experience, attitudes and expectations towards ePortfolios as an aid to learning were relatively high. Three quarters of the participants reported high expectations. Of the 23.9% reporting low attitude, only two participants reported extremely low attitude.

[INSERT AMENDED TABLE 2 APPROXIMATELY HERE]

4.2 Phase 1: Determinants of Students' pre-existing attitudes (RQ2)

Parametric tests such as t-tests, ANOVA, correlations were run to compare independent variables of demographic (Table 1) and background data on students' attitudes toward the use of ePortfolios (Table 2) as an assessment tool. Examination of demographic differences (Table 1) in experience and knowledge (Table 2) were also undertaken and were found to be significant.

Analysis of Variance (ANOVA) found significant age group (Table 1) differences in both experience with web-based reflective tools for assessment and in knowledge of ePortfolios (Table 2). Post-hoc analysis found that the 22-30 year old age group were significantly more likely than either the under 21 or the 31 and over age groups to have experienced web based reflective tools and to have had more knowledge of ePortfolios. No significant difference between age groups was found for attitude towards using ePortfolios as an aid to learning indicating that despite the age difference in experience and knowledge all three age groups had similar attitudes.

Comparison was undertaken between males and females on the background questions. As there were only 10 males, caution should be used in interpretation of the results. Comparisons of males and females using independent groups t-tests, found significant gender differences in experience of web-based reflective tools for assessment ($t = 2.93; p = .005$). Males were significantly more likely than females to have experienced web based reflective tools. Non-Australian students had higher attitudes towards using ePortfolios than Australian students. Over 60% of non-Australian students had higher attitude scores of five or six out of six, compared to only 28% of Australian students. Independent group t-tests found marginally non-significant differences between commerce and business students in attitude towards using ePortfolios. Interestingly, commerce students had significantly more positive attitudes than business students did. Gender and enrolment status were not found to be determinants of student attitudes towards using ePortfolios.

Correlational analysis was undertaken to look at the relationship between Experience, Knowledge and Attitudes (Table 3). Experience and Knowledge were moderately to strongly positively correlated with Experience being associated with more Knowledge ($r = .65; p <.001$). However, both Experience and Knowledge were not significantly related to Attitudes. The results indicated that neither previous Experience nor Knowledge were determinants of existing Attitudes towards ePortfolios as an aid to learning.

[INSERT NEW TABLE 3 APPROXIMATELY HERE]

Interestingly, student provided mixed comments with almost half of the respondents revealing that they had "no knowledge of ePortfolios" and "were looking forward to learning about this to further enhance my development". Whilst others commented that, they "had some previous experience" whilst two of these students claiming that this was only in a job seeking capacity.

4.3   Phase 2: Post survey Change in existing attitudes (RQ3)

Twenty-seven participants provided usable responses to the follow up survey, which represented 58.7% of the 46 participants that provided useable responses to the pre-survey. Although existing attitudes were already relatively high in the pre-survey data, results (shown in Table 4) show that attitudes were higher in the post-survey. Pre-survey results showed 23.9% of participants with low attitudes and 76.1% having high attitudes. Post-survey results showed only 11.1% with low attitudes and 88.9% having high attitudes. Compared to the 6.5% of pre-survey participants that had extremely high attitudes, almost twice as many had extremely high attitudes. Comparison of mean scores using t-test analysis showed that mean attitudes for the post-survey were not significantly higher than the pre-survey. However, the failure to find a significant mean difference appeared to be due to changing levels of the degree of attitudes, specifically the higher proportion of "high" ratings compared to "somewhat high" ratings for the post-survey group.

[INSERT AMENDED TABLE 4 APPROXIMATELY HERE]

The next step was to assess whether students' experience using the new digital technology influenced their attitude toward ePortfolios to engage in their learning and academic skills (Table 5). Technology was measured using three statements where students were asked to rate their agreement on how successful they were in accessing ePortfolios, how easy it was to use and how much support they received. Success in accessing the ePortfolio tool was measured by a single item variable (see Table 5). Almost two-thirds of the students agreed that they were successful in accessing ePortfolios, with 14.8% very successful. A significant proportion (37.0%) disagreed, and reported being were unsuccessful in accessing ePortfolios, although less than 8% reported being very or somewhat unsuccessful.

Usability of the ePortfolio tool was measured by the following statements: "ePortfolio was generally easy to use was not as strong, with 55.6% of students agreeing and 44.4% disagreeing.

[INSERT NEW TABLE 5 APPROXIMATELY HERE]

Participants were asked to rate their agreement to the statement 'they received sufficient support/guidance on how to use the ePortfolio tool'. Four of the participants disagreed strongly and reported not using any support. In order of frequency, support was provided for online instructions, such as a user manual (74.1%); 'how-to' videos (70.4%); and individual guidance by the Convenor (44.4%).

4.4   Phase 2: ePortfolios for facilitating critical reflection on students' learning (RQ4)

Table 6 provides the descriptive statistics of students overall ratings of ePortfolios, as measured by students' ratings of Helpfulness, as a facilitator of critical reflection on one's learning and for compiling and demonstrating evidence of learning and skill development.

[INSERT NEW TABLE 6 APPROXIMATELY HERE]

Helpfulness of the ePortfolio tool was measured using six statements (Table 6) measured using a 6-point Likert scale where "1" is strongly disagree and "6" is strongly agree. The statements are: to what extent do you agree or disagree that 'experience using ePortfolios helped students' learning, attitude, collate their work, integrate and make connections between things they had learnt, facilitate critical reflection of it impeded their learning and skill development for the assessment. Almost all agreed that the tool helped them learn the course content (81%), enhanced their attitude (85%), collate their work for submission as course assessment (93%), and to integrated and made connections between things learned during the course critically reflect on what they learned during the course (92.6%). With regards to students' experience using ePortfolios, two-thirds of the students agreed that the new technology impedes their learning and academic skills (67%).

Some student found the experience problematic as reflected in their comments such as:

"*The Web-based reflective tools were not at all effective in aiding with my studies. I found that I was restricted in my researching phase, as I had to constantly update my ePortfolio*".

"*The Griffith ePortfolio was hard to use. I liked the idea of the google sites version of the ePortfolio but unless you have a paid version of Gmail, you cannot access it*".

Other students had a more positive experience as reflected in the following comments:

"*ePortfolios were not what I expected but I still really enjoyed it. I definitely think they should be used more widely within university and they were a refreshing change from other simple assessment modes. I think if I knew how to use them better I would have done a better job, but now i have the skills for next time*".

"*From completing the reflective journal, I enjoyed using the ePortfolio as it illustrated how I understood the content, my cultural experience and made the reflection journal interesting and attractive to read and watch videos. As a result of having limited history towards using an ePortfolio, I did not know what will be expected*".

"*I found the ePortfolio useful when collecting resources during my studies. As a result of how easy the ePortfolio was to collate information I will continue to use the programme throughout my studies and after I completing my degree*".

"*The ePortfolio and online learning was a great way to engage your own learning and do your own research, particularly as an online student*".

"*I really enjoyed the reflective journals and the ePortfolio method. It engaged me to learn in a fun and personal way. I enjoyed that it way technology based as I learned a lot about new programs myself as well*". "*I had no idea what to expect from the ePortfolio but now that I've used it I will use it after graduation*".

4.5   Predictors of overall influence of ePortfolio technology on learning and skill development

In order to further investigate the influence of ePortfolios as a vehicle for learning and skill development, hierarchical multiple regression was run to determine the best predictors of the dependent variable. 'Overall influence of the technology' was the variable of the items assessing overall influence of ePortfolios on learning and the overall usefulness of learning how to use the tool. The independent variables of previous experience, knowledge, <u>attitudes towards using portfolios</u> as well as accessibility were entered at Step 1. The independent variables of helpfulness,

usability and support (as measured by those that received individual guidance or not) were entered at Step 2 in order to determine whether those variables predicted overall influence after controlling for background variables and initial accessibility issues. Although the sample size met the minimum criteria to allow regression analysis, the analysis should be considered to be exploratory and caution should be used in interpretation of results. Table 6 shows the descriptive statistics, including correlation coefficients, means and standard deviations. Correlations ranging between .08 and .91 were found between the predictors and the dependent variable of overall influence. A number of significant correlations between the predictors were also found, ranging from .38 to .86.

[INSERT AMENDED TABLE 7 (previously Table 8) HERE]

After Step 2, when all the variables were in the regression equation, a significant amount of variance in overall influence was accounted for. On the first step of the hierarchical multiple regression analysis, experience, knowledge, attitudes and accessibility accounted for 51.9% of the variance in overall influence, which was significant. Inspection of regression coefficients showed that only attitudes contributed significant unique variance in predicting overall influence. Higher expectations and attitudes were related to higher overall ratings of the ePortfolio tool. After controlling for the effects of background data and accessibility, helpfulness, usability and guidance accounted for an additional 41.0% of the variance in overall influence. Inspection of regression coefficients at step 2 showed that both helpfulness and usability contributed significant unique variance in predicting overall influence. Thus, higher scores on usability and helpfulness were related to higher overall ratings of the ePortfolio tool provision of individual support did not predict significant unique variance in overall influence on students' learning, indicating that higher overall ratings of the ePortfolio technology were found irrespective of the level of support provided.

5.   Limitations and future research

The findings of this study should be viewed in light of the short horizon. The survey instrument concerning students' attitudes toward ePortfolios in assessing written communication was constructed in one semester that enables the authors to make preliminary observations. The study should (and will) be constructed over several semesters to address: any immediate statistical validity issues; to ensure the study's objectives are met and the results are empirically valid, robust and generalizable. Further research may entail various dimensions of written communication criteria previously documented in the literature, but which can be applied to the ePortfolio assessment model.

6.   Conclusion

The preliminary study advances our understanding of the implementation and influence of an online model to assess the level of knowledge and understanding of business concepts in a pioneering Indigenous dual mode business course. This study was motivated by the lack of research on the use of ePortfolios in the Social Sciences, in particular the area of commerce and business. The introduction of a survey adapted from the Collis and Moonen 4 E Model and the CICTO framework facilitated the collection of necessary data on the use of ePortfolios as an assessment tool from the students' attitudes point of view.

The post survey results suggest that students liken the use of ePortfolios in the course even after controlling for possible confounding variables such as previous experience, attitudes and accessibility. Students understand the benefits of ePortfolios and reflective journals in developing their technical knowledge on cultural diversity in a business context. This experimental study points to the need to understand the introduction and evaluation of such pedagogical approaches developmentally over time, for both students and teachers concerned. We note in this case that

students do not yet understand the connection between critical reflective writing, and generic skills development or how ePortfolios assessment tool supports written communication activities. As such, the findings of this study present a number of challenges. It would appear that students require additional written and communication activities and ePortfolio training during the course. In particular, students could benefit from workshops developing written communication skills in the workplace or "real world" as well as "hands-on" workshops on how ePortfolios could facilitate this. Similarly, in subsequent semesters, course convenors will be advantaged by improved expectations of students concerning assessment of written communication skills, as well as having the opportunity to build in more critical reflective writing activities that are possible when students come into a dual mode course with a more mature expectation of written communication work. Nevertheless, the current study provides a foundation for improving the design and assessment of written communication work activities to achieve generic skills outcomes commensurate with university accreditation criteria.

The findings of this study could benefit those working in Higher Education, particularly accounting academics in Australian universities. Accounting academics could design the curriculum of the courses within the Commerce program that address program learning objectives that align with graduate employability outcomes (Oliver, 2011). There appears to be very limited evidence of Australian universities, and in particular, the Accounting and Commerce courses, that use reflective journals and ePortfolios as part of their assessments. This study is timely due to the call by Australian professional accounting bodies requiring accounting graduates to have the skills such as the non-technical or soft skills such as communication, interpersonal and critical thinking. Moreover, this study could lead to the development of a sustainable community of practice by collaborating with the professional accounting bodies and universities in areas of employability skills of our graduates for the future.

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6.1.1 Table 1 Demographic Data of the Sample

Demographic Characteristic		Total Sample (n=46)	Percent %
Age group:	17-21	12	26.1
	22-30	16	34.8
	31-35	7	15.2
	36-45	10	21.7
	46-55	0	0.0
	56 and above	1	2.2
Gender	Female	36	78.3
	Male	10	21.7
Enrolment status	On-campus	25	54.3
	On-line	19	41.3
	Both	2	4.3
Degree type	Commerce	12	26.1
	Business	22	47.8
	Social Sciences	6	13.0
	Education	2	4.3
	Other	4	8.7
Nationality: Country of birth or culture you identify with	Australian	22	47.8
	Aboriginal	1	2.2
	Pacific Islands	2	4.3
	Chinese	5	10.9
	Indian	1	2.2
	Middle Eastern	1	2.2
	U.K.	1	2.2
	Europe	7	15.2
	Other	6	13.0

Table 2: Existing experience, knowledge and attitudes toward ePortfolios for the pre-survey

	1	2	3	4	5	6	Mean (SD)
To what extent have you already *experienced* ePortfolio as a reflective assessment tool?	47.8	8.7	23.9	6.5	8.7	4.3	2.33 (1.55)
To what extent is your existing *knowledge* of ePortfolios?	43.5	15.2	30.4	4.3	4.3	2.2	2.17 (1.29)
What is your existing *attitude* towards using ePortfolios as an aid to learning and skill development	4.3	8.7	10.9	32.6	37.0	6.5	4.09 (1.23)
Likert scale: *"1" extremely low to "6" extremely high.*							

Table 3 Summary of Intercorrelations, Means, and Standard Deviations for the relationship between demographics and experience, knowledge and attitudes toward ePortfolios

	Variables	1	2	3	Mean (SD)
1	Experience	—			2.33 (1.55)
2	Knowledge	65***	—		2.17 (1.29)
3	Attitude	.06	.11	—	4.09 (1.23)
Notes: *Significance at *p<.05, **p<.01, ***p<.001; n = 46*					

Table 4: Descriptive statistics - pre and post attitudes toward ePortfolios (RQ3)

	1	2	3	4	5	6	Mean (SD)
Pre-survey (n=46)	4.3	8.7	10.9	32.6	37.0	6.5	4.09 (1.23)
Post-survey (n=27)	3.7	0.0	7.4	55.6	22.2	11.1	4.26 (1.02)
Likert Scale: *"1" extremely low to "6" extremely high.*							

Table 5: Agreement to statements on the influence of technology on students' learning

	1	2	3	4	5	6	Mean (SD)
Accessibility	3.7	3.7	29.6	33.3	14.8	14.8	3.96 (1.26)
Usability	11.1	11.1	22.2	14.8	29.6	11.1	3.74 (1.56)
Support	3.7	11.1	0.0	44.4	25.9	14.8	4.22 (1.28)
Likert scale: *"1" strongly disagree to "6" strongly agree.*							

*Table 6 Agreement to statements on **Helpfulness** of ePortfolios as a facilitator of critical learning and skill development*

	1	2	3	4	5	6	Mean (SD)
The experience of using ePortfolios helped my learning.	3.7	3.7	11.1	22.2	44.4	14.8	4.44 (1.22)
The experience of using ePortfolios helped my attitude.	3.7	0.0	11.1	18.5	48.1	18.5	4.63 (1.15)
The experience of using ePortfolios helped me collate my work for submission of my assessment.	0.0	3.7	3.7	40.7	37.0	14.8	4.56 (0.93)
The experience of using ePortfolios helped integrate and make connections between things I have learned.	3.7	0.0	7.4	25.9	48.1	14.8	4.59 (1.08)
The experience of using ePortfolios helped me facilitate critical reflection on my learning.	0.0	3.7	3.7	25.9	48.1	18.5	4.74 (0.94)
The experience of using ePortfolios impeded my learning and skill development.	14.8	11.1	7.4	29.6	25.9	11.1	3.74 (1.61)
*Likert Scale: "**1**" strongly disagree to "**6**" strongly agree.*							

Table 7 Summary of Intercorrelations, Means, and Standard Deviations for the predictors of the overall influence of ePortfolio technology for facilitating critical reflection on students' learning

	Variables	1	2	3	4	5	6	7	8	M	SD
1.	Overall influence	—								9.23	2.20
2.	Experience	.08	—							3.06	1.70
3.	Knowledge	.25	.86***	—						3.04	1.56
4.	Attitudes	.67***	.20	.42*	—					4.31	1.01
5.	Accessibility	.50**	.05	.08	.38*	—				3.96	1.28
6.	Helpfulness	.91***	.07	.14	.57**	.64***	—			13.88	2.86
7.	Usability	.76***	.12	.13	.36*	.48**	.75***	—	.	11.12	3.42
8.	Support	.26	.14	.18	.10	.40*	.26	.14	—	0.46	0.51

Notes: *Significance at *p<.05, **p<.01, ***p<.001; n = 27*