Student engagement with an ePortfolio:

A case study of pre-service education students

A Dissertation

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by

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STATEMENT OF ORIGINAL AUTHORSHIP

The work contained in this thesis has not been previously submitted for a degree or a diploma at any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person, except where due reference is made.

Signature: ……………………………………. 
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TABLE OF CONTENTS

List of Tables ........................................................................................................ viii
List of Figures ........................................................................................................ ix
List of Abbreviations ............................................................................................ xi
Keywords ............................................................................................................... xii
Abstract ............................................................................................................... xiii

CHAPTER 1.0 INTRODUCTION .............................................................................. 1

The Emergence of ePortfolios in the University Sector ........................................ 3
ePortfolios - Definition .................................................................................. 4
ePortfolios - Purpose ..................................................................................... 6
ePortfolios – Effective Practice .................................................................. 9

Background to the Implementation of the ePortfolio .......................................... 15

The Research Problem .................................................................................... 17

My Role as a Researching Professional .......................................................... 19

The Study .......................................................................................................... 22

Research Questions ......................................................................................... 25

Significance of this Study ............................................................................... 26

Structure of Thesis .......................................................................................... 27

CHAPTER 2.0 LITERATURE REVIEW ................................................................. 30

Student Engagement and Higher Education .................................................. 31

Understanding Why and When Students Engage and Disengage .................. 33

Student Engagement, Learning and Institutional Improvement .................... 42

Measuring Student Engagement ................................................................ 45

Modeling Student Engagement with Technology .......................................... 46

The Technology Acceptance Model ............................................................... 47

Psychological Attachment Model ................................................................ 53

Introducing a New Model of Student Engagement with Technology ............ 55

Summary .......................................................................................................... 57

CHAPTER 3.0 METHODOLOGY ......................................................................... 59
CHAPTER 4.0 THE ePORTFOLIO: ADOPTION AND ENGAGEMENT

Introduction ........................................................................................................ 94

Data Interrogation ............................................................................................... 94

Student Opinions about the Introduction of the ePortfolio ................................ 97

Opportunity 1: The Introductory Lecture ............................................................ 98

Opportunity 2: The Hands-on Workshop ........................................................... 99

Opportunity 3: Assessment and Critical Reflection ........................................... 107

Student Engagement with the ePortfolio ............................................................ 114

Student Study habits .......................................................................................... 115

Reasons Students gave for Disengaging from the ePortfolio ............................. 117

Data Analysis ...................................................................................................... 84

Ethical Considerations ......................................................................................... 89

Trustworthiness .................................................................................................... 90

Summary ................................................................................................................ 92
Issues Associated with the Usefulness of the ePortfolio ........................................... 118
Issues associated with the Ease of Use of the ePortfolio ........................................ 131
Summary ....................................................................................................................... 141

CHAPTER 5.0 MODELLING STUDENT ENGAGEMENT WITH AN ePORTFOLIO .......... 143

Introduction ................................................................................................................ 143
The Model of Student Engagement with Technology (MSET) Revisited .................... 143
  Decision Point A: Prior Knowledge and Experience ................................................. 147
  Decision Point B: Initial Supported Engagement .................................................... 148
  Decision Point C: Initial Independent Engagement ................................................. 150
  Decision Point D: Ongoing Independent Engagement ............................................ 152
The Explanatory Power of the MSET (Version 2) ..................................................... 153
Summary ....................................................................................................................... 156

CHAPTER 6.0 CONCLUSION .......................................................................................... 157

Introduction ................................................................................................................ 157
The Research Problem Revisited ................................................................................ 157
Postscript - My role as a researching professional ..................................................... 159
Revisiting the Research Questions ............................................................................. 160
  Question 1: What were the Student Opinions of the ePortfolio? ......................... 161
  Question 2: What were the patterns of Student Engagement with the ePortfolio? 166
  Question 3: What factors impacted on Student Engagement with this ePortfolio? 169
Reflections on the Research Process ........................................................................ 172
Critical Reflections on my Facilitator Role in the Implementation Process ............. 176
Reconceptualising the University ePortfolio ............................................................. 177
Recommendations for University Best Practice ......................................................... 181
Suggestions for Further Research ............................................................................. 185
Final Comments .......................................................................................................... 186

REFERENCES ............................................................................................................. 188

APPENDICES ............................................................................................................. 204

Appendix A The University ePortfolio ........................................................................ 205
Appendix B Workshop Plan ................................................................. 210
Appendix C Assessment Task ........................................................... 215
Appendix D Survey ........................................................................... 218
Appendix E Ethical Clearance ............................................................ 226
Appendix F Sample Journal Entry ....................................................... 228
List of Tables

Table 2-1. Legend for PAM .......................................................................................................................... 54
Table 3-1. Data Collection Methods ......................................................................................................... 74
Table 3-2. Survey Question Groupings ...................................................................................................... 79
Table 3-3. Initial Categories for Data Analysis ........................................................................................ 85
Table 3-4. Data Categories based on the MSET (Version 1) ..................................................................... 86
Table 3-5. Final Data Analysis Themes ..................................................................................................... 88
Table 4-1. STARL ....................................................................................................................................... 112
Table 4-2. Survey Answers from Betty ..................................................................................................... 124
List of Figures

Figure 2-1. Examples of Satisficing (Yorke, 2006, p. 4) ................................................................. 41
Figure 2-2. NSSE Benchmarks (Kuh, 2003, p. 26) ................................................................. 43
Figure 2-3 Technology Acceptance Model (TAM) (Davis, 1989) .................................................. 47
Figure 2-4. Psychological Attachment Model (PAM) (Malhotra & Galletta, 2005) ....................... 53
Figure 2-5. Emmett’s Model of Student Engagement with Technology (MSET) (Version 1) ....... 56
Figure 3-1. My roles and timeline of involvement with research context ....................................... 65
Figure 3-2. Participant age distribution .......................................................................................... 73
Figure 3-3. Extract from attitude survey ....................................................................................... 78
Figure 3-4. Extract from survey showing different scoring scale .................................................. 79
Figure 3-5. Example data analysis of survey question .................................................................. 85
Figure 4-1. Emmett’s Model of Student Engagement with Technology (MSET) (Version 1) ...... 94
Figure 4-2. Emmett’s Model of Student Engagement with Technology (MSET) (Version 2) ...... 96
Figure 4-3. Survey Question: Reflecting on experiences .............................................................. 101
Figure 4-4. Survey Question: Importance of self-direction in using the ePortfolio ....................... 102
Figure 4-5. Survey Question: Helping to get a job .......................................................................... 102
Figure 4-6. Using the ePortfolio for assessment ........................................................................... 107
Figure 4-7. Description field in ePortfolio ..................................................................................... 113
Figure 4-8. Survey Question: Impact on employment prospects .................................................... 121
Figure 4-9. Survey Question: Usefulness in preparing for interviews .......................................... 121
Figure 4-10. Survey Question: Usefulness in writing job applications .......................................... 122
Figure 4-11. Survey Question: Using the ePortfolio after the workshop ........................................ 133
Figure 5-1. Emmett’s Model of Student Engagement with Technology (MSET) (Version 1) ....... 144
Figure 5-2. Emmett’s Model of Student Engagement with Technology (MSET) (Version 2) ...... 145
Figure 5-3. MSET (Version 2) Decision Point A ........................................................................... 147
Figure 5-4. MSET (Version 2) Decision Point B ........................................................................... 149
Figure 5-5. MSET (Version 2) Decision Point C ........................................................................... 151
Figure 5-6. MSET (Version 2) Decision Point D ........................................................................... 152
Figure 6-1. Emmett’s Model of Student Engagement with Technology (MSET) (Version 2)........... 168

Figure 6-2. Reconceptualising the ePortfolio Process................................................................. 180
List of Abbreviations

ACCI    Australian Chamber of Commerce and Industry
BCA     Business Council of Australia
BECTA   British Educational Communications & Technology Agency
ICT     Information Communication Technology
IS      Information Systems
JISC    Joint Information Systems Committee (UK)
MSET    Model of Student Engagement with Technology
PAM     Psychological Attachment Model
TAM     Technology Acceptance Model
WWW     World Wide Web
Keywords
higher education, portfolio, electronic portfolio, ePortfolio, student engagement, learning, assessment, information systems, web-folio, psychological attachment model, technology acceptance model, employability, graduate capabilities, graduate attributes, case study, reflective practice, researching professional, university.
Abstract

The emergence of ePortfolios is relatively recent in the university sector as a way to engage students in their learning and assessment, and to produce records of their accomplishments. An ePortfolio is an online tool that students can utilise to record, catalogue, retrieve and present reflections and artefacts that support and demonstrate the development of graduate students’ capabilities and professional standards across university courses. The ePortfolio is therefore considered as both process and product. Although ePortfolios show promise as a useful tool and their uptake has grown, they are not yet a mainstream higher education technology. To date, the emphasis has been on investigating their potential to support the multiple purposes of learning, assessment and employability, but less is known about whether and how students engage with ePortfolios in the university setting.

This thesis investigates student engagement with an ePortfolio in one university. As the educational designer for the ePortfolio project at the University, I was uniquely positioned as a researching professional to undertake an inquiry into whether students were engaging with the ePortfolio. The participants in this study were a cohort (defined by enrolment in a unit of study) of second and third year education students (n=105) enrolled in a four year Bachelor of Education degree. The students were introduced to the ePortfolio in an introductory lecture and a hands-on workshop in a computer laboratory. They were subsequently required to complete a compulsory assessment task – a critical reflection - using the ePortfolio. Following that, engagement with the ePortfolio was voluntary.

A single case study approach arising from an interpretivist paradigm directed the methodological approach and research design for this study. The study
investigated the participants’ own accounts of their experiences with the ePortfolio, including how and when they engaged with the ePortfolio and the factors that impacted on their engagement. Data collection methods consisted of an attitude survey, student interviews, document collection, a researcher reflective journal and researcher observations.

The findings of the study show that, while the students were encouraged to use the ePortfolio as a learning and employability tool, most students ultimately chose to disengage after completing the assessment task. Only six of the forty-five students (13%) who completed the research survey had used the ePortfolio in a sustained manner. The data obtained from the students during this research has provided insight into reasons why they disengaged from the ePortfolio. The findings add to the understandings and descriptions of student engagement with technology, and more broadly, advance the understanding of ePortfolios. These findings also contribute to the interdisciplinary field of technology implementation.

There are three key outcomes from this study, a model of student engagement with technology, a set of criteria for the design of an ePortfolio, and a set of recommendations for effective practice for those implementing ePortfolios.

The first, the Model of Student Engagement with Technology (MSET) (Version 2) explored student engagement with technology by highlighting key engagement decision points for students. The model was initially conceptualised by building on work of previous research (Version 1), however, following data analysis a new model emerged, MSET (Version 2). The engagement decision points were identified as:

- Prior Knowledge and Experience, leading to *imagined usefulness* and *imagined ease of use*;
• Initial Supported Engagement, leading to supported experience of usefulness and supported ease of use;

• Initial Independent Engagement, leading to actual experience of independent usefulness and actual ease of use; and

• Ongoing Independent Engagement, leading to ongoing experience of usefulness and ongoing ease of use.

The Model of Student Engagement with Technology (MSET) goes beyond numerical figures of usage to demonstrate student engagement with an ePortfolio. The explanatory power of the model is based on the identification of the types of decisions that students make and when they make them during the engagement process. This model presents a greater depth of understanding student engagement than was previously available and has implications for the direction and timing of future implementation, and academic and student development activities.

The second key outcome from this study is a set of criteria for the re-conceptualisation of the University ePortfolio. The knowledge gained from this research has resulted in a new set of design criteria that focus on the student actions of writing reflections and adding artefacts. The process of using the ePortfolio is reconceptualised in terms of privileging student learning over administrative compliance. The focus of the ePortfolio is that the writing of critical reflections is the key function, not the selection of capabilities.

The third key outcome from this research consists of five recommendations for university practice that have arisen from this study. They are that, sustainable implementation is more often achieved through small steps building on one another; that a clear definition of the purpose of an ePortfolio is crucial for students and staff;
that ePortfolio pedagogy should be the driving force not the technology; that the
merit of the ePortfolio is fostered in students and staff; and finally, that supporting
delayed task performance is crucial.

Students do not adopt an ePortfolio just because it is provided. While
students must accept responsibility for their own engagement with the ePortfolio, the
institution has to accept responsibility for providing the environment, and technical
and pedagogical support to foster engagement. Ultimately, an ePortfolio should be
considered as a joint venture between student and institution where strong returns on
investment can be realised by both. It is acknowledged that the current
implementation strategies for the ePortfolio are just the beginning of a much longer
process. The real rewards for students, academics and the university lie in the future.
CHAPTER 1.0 INTRODUCTION

Some commentators suggest ePortfolios are “higher education’s new ‘got to have it’ tool” – “the show-and-tell platform of the millennium” (Cohn & Hibbitts, 2004, p. 7). Others suggest that ePortfolios “may have the most significant effect on education since the introduction of formal schooling” (Love, McLean & Gathercoal, 2004, p. 24). As Love et al. (2004) add:

when fully matured and implemented by capable professional educators throughout every discipline in an educational institution, webfolios [ePortfolios] promise a viable alternative to current, high-stakes testing, which focuses education on test-taking rather than teaching and learning. (p. 24)

However, Cohn and Hibbitts (2004) urge caution, questioning the lack of rigorous, research based evidence that supports the ePortfolio as both a pedagogical and self-marketing tool.

This study examined the engagement with an ePortfolio of a cohort of second and third year education students enrolled in a single unit (course) within a four year Bachelor of Education degree. The University ePortfolio is a web-based electronic portfolio designed for students to record and present artefacts, documents, videos and photos as evidence of their development of graduate capabilities. The intended audience for the ePortfolio are potential employers. The University is one of Australia's largest metropolitan universities, enrolling approximately 40,000 students. The students were provided with several formal and informal opportunities to learn about the University ePortfolio. Following an initial compulsory assessment task using the ePortfolio, the students’ ongoing engagement was voluntary. This study reveals students’ opinions of the ePortfolio and whether they engaged with it following the assessment task.
The ePortfolio project aimed to provide students with greater evidence of their achievements than could be displayed by their academic transcripts alone. The working party’s expectation was that the ePortfolio would address the concern that existing graduates did not always recognise their full complement of skills that they had developed throughout their university experience. To this end, students were encouraged to add entries that showcased and provided examples of graduate attributes, and skills and knowledge learned as part of their university experiences.

The identification and documentation of graduate attributes (also known as graduate capabilities / key competences / transferrable skills / key skills / employment skills) has become a key goal of higher education for over a decade (Barrie, 2006). The attributes that graduates should exhibit as an outcome of their university studies has been and continues to be an agenda supported by governments, professions, and employers (Withers, 2008). It was anticipated by the working party that the ePortfolio would help students identify and document their attributes and assist with the transition from university to graduate employment.

Most undergraduate students are introduced to the ePortfolio as an element of their first year orientation program. Following the first year orientation, the ePortfolio is a voluntary component of the university experience. Only a minority of students are required to use the ePortfolio in professional development subjects, while others are encouraged to use the ePortfolio by individual academics.

This chapter now examines my role as a researching professional and then discusses the emergence of ePortfolios in the university sector. The chapter next considers the background to the implementation of the University ePortfolio, the
ensuing research problem and the research study. This chapter concludes by considering the significance of this study and details the structure of the thesis.

The Emergence of ePortfolios in the University Sector

ePortfolios are a new technology attracting significant interest from educators, career counsellors and university administrators (Barrett, 2001; Gerbic, Lewis & Northover, 2009; Truer & Jensen, 2003). Ravel argues that ePortfolios are “effecting a quiet revolution in the world of learning” (2006, p. xxix). Stefani, Mason & Pegler (2007) suggest that there now exists enough early adopters of the technology to indicate that it is indeed transformational. For example, a scan of Google Scholar indicates that in 2000 only 30 articles related to ePortfolios, by 2005 that number had risen to 400 articles and by 2009, 704 articles. As Gerbic, Lewis and Northover (2009) add, “ePortfolios are becoming part of national policy frameworks international developments and their proliferation in universities means that they are increasingly a part of blended learning environments” (p. 327). The newness of ePortfolios means that research on their implementation and effectiveness is only just starting to appear in the literature, see ‘Electronic Portfolios 2.0: Emergent Research on Implementation and Impact’ (Cambridge, Cambridge & Yancey, 2009) and ‘Handbook of Research on ePortfolios’ (Jafari & Kaufman, 2006).

For some educators, this is a case of technology catching up with existing teaching pedagogy. For others who were already using print-based portfolios in their teaching, they were now able to make use of technology through electronic portfolios. For many educators, the ePortfolio is a new electronic tool that offers the possibility of incorporating electronic artefacts, the World Wide Web (WWW) and databases for storing, sorting and viewing artefacts and experiences (Barrett, 2001;
Truer & Jensen, 2003). Lorenzo and Ittelson (2005) argued that, although ePortfolios have numerous advocates, they are not yet mainstream higher education technology. However, as the growing number of journal articles related to ePortfolio indicates, in 2009, they are becoming “central to curricular development, academic advising, career preparation, job searching, and credentialing in the professions” (Reese, 2009). Research related to ePortfolios and their potential to support the multiple purposes of learning, assessment and employability is slowing emerging, although definitions of ePortfolios can still be confusing and misleading. The following sections explore the definition of an ePortfolio, its purpose and factors for effective practice.

**ePortfolios - Definition**

Various definitions of ePortfolios exist. In order to define an ePortfolio an answer is required for the ontological question of: What is an ePortfolio? For some, an ePortfolio is simply a file management system, a place to store electronic artefacts. Others see it as web display tool for student artefacts, or as an official document of student achievement, or as an assessment tool (Lewis & Fournier, 2009). In technical terms an ePortfolio is, “a digitised collection of artefacts including demonstrations, resources, and accomplishments that represent an individual, group, or institution” (Lorenzo & Ittelson, 2005). Johnson and DiBiase (2004) add that an ePortfolio consists of “evidence of, and reflections upon, their curricular and cocurricular achievements” (p. 18). Barrett (2000) suggests: an electronic portfolio uses electronic technologies, allowing the portfolio developer to collect and organize portfolio artifacts in many media types (audio, video, graphics, text). A standards-based portfolio uses a database or hypertext links to clearly show the relationship between the standards or goals, artifacts and reflections. The learners reflections are the rationale that
specific artifacts are evidence of achieving the stated standards or goals. An electronic portfolio is not a haphazard collection of artifacts (i.e., a digital scrapbook or a multimedia presentation) but rather a reflective tool that demonstrates growth over time. (p. 14)

A university student’s ePortfolio, for example, might contain a collection of work that includes assessment items and reflections on professional experiences. The contents of the ePortfolio would have been collected, reflected upon, selected and presented to show professional growth and the attainment of graduate skills and changing capabilities over time. In creating their ePortfolio view, students might add reflections and artefacts into a database-driven ePortfolio. The student then selects which items to add and release for viewing as part of their ePortfolio view. Students can often create more than one view of their ePortfolio.

The use of an ePortfolio to record and reflect can encourage students to examine and write about their values and the attitudes that underpin their professional practice (Laird, 1997). The intended audience potentially includes peers, academics and prospective employers (Barrett & Carney, 2005). The ePortfolio offers an opportunity for students to reflect on their professional practice and to gather selected examples of teaching practice. Academics, who use the ePortfolio in their class, have the opportunity to gain deeper insight into their students learning and assessment, to assist their students with the transition to professional employment and to become more involved with their students learning (Acker, 2005; Barrett & Carney, 2005). As Miller and Morgaine (2009) suggest:

the practices associated with e-portfolio—e.g., designing “authentic” assignments, using engaging and active pedagogy, periodic self-, peer- and teacher-formative assessments, and requiring students to reflect on their learning—help to move both professors and students into a teacher/learner relationship where “guiding” really works. Emphasis shifts from delivering content toward coaching and motivating students as they try to solve
This thesis draws on an emerging consensus from the Joint Information Systems Committee, that the ePortfolio is both product and process (JISC, 2008) and that an ePortfolio can be commonly defined as:

a personal digital collection of information describing and illustrating a person's learning, career, experience and achievements. ePortfolios are privately owned and the owner has complete control over who has access to what and when. (European Institute for E-Learning, 2007, p. 1)

**ePortfolios - Purpose**

The use of ePortfolios tends to fall within one or more of three purposes: assessment, learning and employability (Acker, 2004; Barrett & Carney, 2005; Danielson & Abrutyn, 1997; Wolf, 1999). The three purposes do not necessarily co-exist across all ePortfolios; some ePortfolios are designed specifically for a single purpose and others for multiple purposes. Van Sickle, Bogan, Kamen, Baird and Butcher (2005) contend that the abundance of ePortfolio purposes creates confusion for the implementing institution, academics, students and support providers.

The first purpose, the use of ePortfolio as an assessment tool, is a means to address the need for performance-based assessment of students (Williams, Davis, Metcalf & Covington, 2003). An ePortfolio, for example, can provide a showcase for authentic assessment, where students are asked to perform real-world tasks that demonstrate meaningful application of essential knowledge and skills (Mueller, 2008). Acker (2005) has cautioned, however, that assessment-driven ePortfolios may lose the valuable insight that students make into their own unique learning and working experiences. Breault (2004) warns that portfolios are in danger of becoming simply another test unless viewed as “a more formative type of evaluation and serve
more as a snapshot of a given moment in the preservice teacher’s progress towards becoming a professional” (p. 858). Additionally, Kimball (2005) argues that, “ironically by attempting to gain a more valid vision of student learning, portfolios are potentially more intrusive than large-scale testing” (p. 438). That is, the potential increase in workload for students and staff may outweigh the benefits of ePortfolio assessment, as neither group is able to fully commit to the ePortfolio. Where ePortfolios are used for assessment, careful integration into the curriculum is required, with consideration for student and academic workloads, the use of assessment rubrics and the provision of support so that less technically skilled students are not disadvantaged.

The second purpose relates to the development and use of ePortfolios as beneficial to student learning (Boud, 2001; Danielson & Abrutyn, 1997; DiBiase, 2002). As Yancey (2001) states:

students are responsible for telling their own stories of learning: for explaining what they did and did not learn, for assessing their own strengths and weaknesses as learners, for evaluating their products and performances, for showing how that learning connects with other kinds of learning (in the classroom and without), and for using the review of the past to think about paths for future learning. (p. 19)

DiBiase (2002) further argues that ePortfolios have the potential to foster the deep involvement of learners and to encourage more responsibility for the achievement of educational goals. These goals are achieved through sharing developing ideas and experiences, receiving feedback from peers and teachers and planning future learning goals and experiences. Darling (2001), however, concluded that although ePortfolios can benefit students’ learning, there is no or little benefit for those students who are unwilling to engage in ePortfolio activities, such as critical reflection and the gathering and sorting of artefacts.
The third purpose, creating an ePortfolio to aid employability, is concerned with addressing a set of generic capabilities or employment selection criteria. The use of ePortfolios for employment purposes have been driven by employers of university graduates becoming progressively less concerned with academic transcripts and more concerned with evidence of achievement and competence in a range of generic and specialised abilities. These capabilities can be evidenced through requirements for written demonstrations of skills, understandings and personal attributes (Yorke & Knight, 2004). The development of an ePortfolio is designed to counteract the views of employers across a range of professions who report that graduates lack basic skills in writing, mathematics, science, information technology and a lack of knowledge of professional application and analysis (Jongbloed, 2002; Smith, MacGregor, Matthews & Gabelnick, 2004). An ePortfolio can assist with the requirements of addressing selection criteria, with the interview process and by facilitating the showcasing of experiences and learning to potential employers. Used in this way the ePortfolio is designed to enhance a graduates employment prospects and success in their chosen profession.

The challenge for ePortfolio developers, then, is to design a resource that showcases a students skill set. For students, the challenge is to recognise the alignment between their ePortfolio, graduate capabilities and their experiences and employability, and to tailor their ePortfolio accordingly. Misalignment between a student’s ePortfolio and employer requirements has the potential to cause resentment and disengagement by students due to a lack of perceived usefulness and the failure to meet expectations (Kimball, 2005).
As discussed in this section ePortfolios can have one or more of three purposes, assessment, learning and employability. The potential for confusion in multi-purpose ePortfolios by staff and students is high. Clear guidelines for curriculum integration, technical use and support of ePortfolios are necessary to foster engagement. Students also need mechanisms that enable the sharing and developing of ideas through feedback from staff, peers and employers. With a considered implementation and ongoing support ePortfolios suggest possibilities for engaging students in critical reflection and conceptualisation of their learning and their profession.

*ePortfolios – Effective Practice*

It is only more recently that the implementation of ePortfolios has been viewed as an organisational developmental process where stakeholders are involved in the process. Innovations such as an ePortfolio in higher education settings often have the problem of achieving only superficial adoption. One reason is that innovations can be imposed on students and academics rather than designed as a process involving alignment with their values, needs and expectations. In other words, innovations may not be built on the personal understanding and meaning of the users (Postle, Richardson & Sturman, 2003) and little attention is given to how to work with the users of the innovation to ensure effective implementation and uptake.

In 2008, the Joint Information Systems Committee (JISC) explored how ePortfolios can add value to personalised and reflective models of learning. The JISC (2008) suggests six key steps for institutions to actualise for the effective practice of ePortfolios:

Step 1: Defining the Purposes of the ePortfolio
Step 2: Understanding the Impact of the ePortfolio

Step 3: Preparing for Adoption

Step 4: Engaging Users

Step 5: Implementing the ePortfolio

Step 6: Reviewing the Implementation and Outcomes

Each step is now considered in turn.

**Step 1: Defining the Purposes of the ePortfolio**

The first step requires the establishment of clear guidelines concerning the purpose and use of the ePortfolio. Without this step, an ePortfolio can mean different things in different contexts and to different users. As Barton and Collins (1993) comment, “the first and most significant act of portfolio preparation is the decision of the purpose for the portfolio” (p. 203). Kimball (2005) suggests that a lack of clarity in the message about the purpose of an ePortfolio can lead to student dissatisfaction and disengagement. Such a lack of purpose may result in high levels of disengagement through not meeting individual student needs and goals and by not addressing the pedagogical requirements of the academics that guide the student use (Kimball, 2005). This process involves guiding students to understand the requirements of curriculum and pedagogy, and guiding the institutions organisational marketing and support mechanisms. Whether the ePortfolio has a single or multiple purposes, marketing these purposes to students and academics is a crucial step.
Step 2: Understanding the Impact of the ePortfolio

The second step requires that the institution acknowledge that the introduction of an ePortfolio has an impact on pedagogy and institutional practices. As Ehrmann (2004b) states:

using an ePortfolio does not, by itself, create any magical kind of improvement in education. The software may cost money and using it consumes valuable time. However, if faculty and students can use the portfolio to alter teaching/learning activities – that’s where the potential payoffs can be found. (p. 1)

Ehrmann (2004) links the success of ePortfolio implementation to the extent to which it is used to improve curriculum and pedagogical approaches to learning. Kimball (2005) adds that implementing an ePortfolio “requires rethinking entire curricula, not just installing an enterprise database content management system” (p. 452). Understanding ePortfolios as a way of informing and improving teaching and learning experiences is a crucial step to successful practice. Without changes to curricula and the active collaboration of academic staff and administrators, the ePortfolio could be reduced to an electronic student record keeper, with little reflection and acknowledgement of purpose.

Step 3: Preparing for Adoption

The third step requires preparing students, academic staff and the institution for the implementation of the ePortfolio. The preparation for adoption raises issues associated with investment in encouraging adoption by students and staff and legal issues concerning the ownership of material.

Encouraging technological adoption and use by staff has been a concern for institutions for many years. The balance between promoting technology tools and encouraging teaching and learning with technology was a theme of the 2008
EDUCAUSE Annual Conference. The conference raised a series of concerns that highlighted the difficulties in managing the widening gulf between early technology adopters and those who take longer to adopt. As Barron Koralesky, the keynote speaker, stated “what woke him at night was encouraging faculty adoption and innovation in teaching and learning using information technology” (Little et al., 2009, p. 1). As a result of these concerns, the conference delegates developed their top five challenges for teaching and learning in 2009:

1. Creating learning environments that promote active learning, critical thinking, collaborative learning, and knowledge creation;

2. Developing 21st century literacies (information, digital and visual) among students and faculty;

3. Reaching and engaging today’s learners;

4. Encouraging faculty adoption and innovation in teaching and learning with IT; and

5. Advancing innovation in teaching and learning with technology in an era of budget cuts. (Little, et al., 2009, p. 2)

Encouraging adoption is about making the technology evident as being useful to users (staff and students), as well as ensuring that the technology is easy to use and is essential to the user in teaching and learning (Haymes, 2008). Effective implementation involves demonstrating to staff and students how the new technology will enhance their efficiency, productivity, and their ability to teach and learn.
Preparing for the adoption of an ePortfolio also requires the resolution of matters relating to privacy, and identity and access management. As Kift, Harper, Creagh, Hauville, McCowan & Emmett (2007) suggest:

for ePortfolios to flourish and to develop and for students to remain engaged in current reflective processes, holistic guidelines and sensible boundaries are required to help safeguard personal details and journaling without overly restricting students’ emotional, collaborative and creative engagement with the ePortfolio experience. (p. 1)

However, Kift et al. (2007) warn that the current “literature, thinking and practice in this key area is considerably under-developed and pay insufficient attention to either of the institutional or individual risk” (p. 4). Ward, Bridges & Chitty (2005) acknowledge that while the Internet generation is more willing and less apprehensive about providing access to personal information online, the same may not apply to the broader student population or to the institution requirements for privacy legislative policies. Students need to feel safe in a secure environment in order to express themselves, and to know that inappropriate activity will be dealt with within specified guidelines.

**Step 4: Engaging Users**

The fourth step suggests that effective ePortfolio use involves academics, administrators and technology and learning support advisors. Edwyn et al. (1997) suggest that educators must “be seen as critically important within any innovation. They must, however, have grounds for confidence in the changes being sought, which implies some sense of shared ownership” (p. 482). The sense of ownership over the implementation and purpose for the ePortfolio is crucial if engagement is to be fostered. Similarly, the Joint Information Systems Committee (2008) advises that the key is to develop strategies that engage the learner, academic and support staff in
using the ePortfolio. This advice suggests that the level of student engagement can be related directly to the level of engagement by teaching and support staff.

**Step 5: Implementing the ePortfolio**

The fifth step highlights the need for strong leadership for any university-wide implementation of an ePortfolio. As Bates (2000) suggests:

> the effective planning and management of technology-based teaching and learning is likely to challenge many deeply held beliefs, to require changes in long-established practices and to require the encouragement of new ways of thinking in an institution….Without leadership and a strong sense of support for change in an organization, the barriers of inertia will be too great. (p. 42)

In regard to ePortfolios, Gathercoal, Love, Bryde and McKean (2002) emphasise the need for leadership that fosters cultural change. From their experience,

> a critical success factor for electronic portfolio implementation is a culture where faculty understand their central role in the portfolio process as resource providers, mentors, conveyors of standards, and definers of quality. The major obstacle to successful implementation of web-based electronic portfolios is not student readiness, it is full faculty participation. (p. 30)

Such changes to organisational culture are difficult and require a concentrated effort from all levels of the organisation. The challenge then is for the leadership of the organisation to promote the use of educational technology and to provide support and pedagogical frameworks for faculty. The staff that begin to use the software as early adopters and the early majority need to feel part of the ePortfolio implementation and to be empowered to make pedagogical changes and suggestions about the ePortfolio use (Moser, 2007). Negative experiences at this point will mean that early adopter and the early majority will abandon the ePortfolio, while the late majority and laggards will not even consider it.
**Step 6: Reviewing the Implementation and Outcomes**

Once an ePortfolio is introduced, the final step is to review the implementation processes and outcomes in order to understand how it is being used and to assess its effectiveness. A range of methodologies can be used to investigate the perspectives and practices of the key stakeholders: students, academics, administrators and potential employers of students. As Kuh (2003) suggests:

> to assess the quality of the undergraduate education at an institution, we need good information about student engagement: the time and energy students devote to educationally sound activities inside and outside of the classroom, and the policies and practices that institutions use to induce students to take part in these activities. (p. 25)

Understanding student engagement is a crucial methodology, as understanding student opinions and practices can further refine the ePortfolio in terms of both technology and pedagogy.

**Background to the Implementation of the ePortfolio**

The ePortfolio was introduced by a University that is an Australian leader in the area of ePortfolio development since entering the field in 2003. The University’s ePortfolio was designed and developed by a multi-skilled team drawn from across the university. The design and development phase of the ePortfolio project commenced in February 2003 with pilot programs involving small groups of students occurring in late 2003 and 2004. As part of the marketing and awareness plan, the ePortfolio was released to all staff in January 2005 and to all students (approximately 40,000) in October 2005. While implementation support was available initially, this was on a needs basis as the project team was small and members were spread across a number of other design and implementation tasks.
The main purpose of the ePortfolio was for enhancing employability through the documentation of skills and achievements attained throughout the course (see Appendices A & B for more information about the design of the ePortfolio). The ePortfolio was developed initially to aid students to capture their professional skill development towards assisting them with gaining employment. It was designed to be open to all students as a voluntary component of their university experience. When used in a compulsory context, the ePortfolio was introduced in courses (such as Education) that emphasised professional studies.

In developing the ePortfolio, the graduate capabilities were identified as those in demand by the professions and industry. The graduate capabilities were defined as the qualities, skills and understandings a student is expected to develop throughout their course, both generic and discipline specific. Academics formed part of the initial reference group and provided feedback on, and ratification of, the ePortfolio strategy.

Usage figures gathered in 2006 and 2007 by the University suggest that the implementation of the ePortfolio was widespread. These figures indicate that there were 23,000 ‘ePortfolio views’ in February 2007. Reviews of ePortfolios suggest that many ePortfolios were empty shells where students have followed the process of creating and releasing an ePortfolio, but have not added any reflections. Hence, the success of an innovation such as the ePortfolio cannot be measured by figures alone. Such counts do not show whether students are engaging with the ePortfolio or the actual level of student engagement.
The Research Problem

The final step for effective ePortfolio practice is a review process that evaluates the implementation process and outcomes of the ePortfolio (JISC, 2008). This step, however, often has been given the least attention. A 2006 study by the British Educational Communications & Technology Agency (BECTA) into the impact of ePortfolios on learning found that “most institutions did not analyse usage statistics to identify trends, and their responses were generally in terms of perceived usage” (Smallwood & Hartnell-Young, 2007, p. 2). My study does, however, address this concern by reviewing the perspectives of students as they engaged with the ePortfolio, and the factors that impacted on their engagement.

As the educational designer for the ePortfolio project, my role was to provide information and guidance about the ePortfolio. While conducting workshops across the university to introduce the ePortfolio, I considered how the students would use the ePortfolio and whether they would engage with it following the introduction. I was interested to know whether they had continued to engage after the initial sessions, and if there had been a “deep approach to change” (Postle et al., 2003, p. 161). That is, has using the ePortfolio become part of the normal student university experience, or does it still remain a fringe tool only used when necessary. As Kuh (2003) reminds us, the time and energy that students devote to educationally purposeful activities is the single best indicator of their learning and personal development. Where an ePortfolio is a voluntary component of their course, students are responsible for their engagement. Engagement is characterised by the quality and amount of effort expended by the student to make the most of the learning experience (Tam, 2002). Engagement however, is not simply a responsibility of the
student. It also requires action from the institution. As Tam (2002) states, “the institution should be held responsible for providing the most favourable conditions to promote active participation of students through programmes and policies that encourage responsible student behaviour” (p. 216). While students must accept responsibility for their own engagement with the ePortfolio, the institution is also responsible for providing the environment, and technical and pedagogical support to foster engagement. Students do not adopt an ePortfolio just because it is provided. Ultimately, an ePortfolio is a joint venture between student and institution where strong returns on investment can be realised by both.

Students interact with educational software in qualitatively different ways (Bangert-Drowns & Pyke, 2002), with some students working independently, strategically, creatively and persistently. Others engage only when required and disengage from the volitional components of the process. An example from the field of medicine is provided by Eysenbach (2005), who examined volitional Internet-based medical trials and found disturbing user dropout rates. He described this common problem as the “Law of Attrition” (Eysenbach, 2005, p. 1). This is the phenomenon of participants ceasing to continue with the program, and being lost to any follow-up, as a fundamental characteristic and methodological challenge. We know too, that some major changes in student demographics have occurred over the last decade (Baxter-Magolda & Terenzini, 1999) and that students’ skill with software applications varies widely and is influenced by their major area of study (Kvavik & Caruso, 2005).
A growing international trend considers the measurement of student engagement to be the most salient indicator of the effectiveness of university education (Coates, 2005). As Coates (2005) says:

the idea [student engagement] concentrates on a student's active contribution to their learning as well as on an institution's provision of educational opportunities empirically linked with high-quality learning. While institutions and teachers need to provide students with the appropriate resources and opportunities to make possible and promote specific kinds of interactions, it is students who hold ultimate responsibility for their learning. (p. xxx, prefacer)

Student engagement, particularly for this ePortfolio, is difficult to evaluate. For example, the numbers of ePortfolios created does not indicate student engagement, whether students are habitually adding to their ePortfolio, or whether what has been added is of quality. This study goes beyond figures of usage to show and present understandings of how a cohort of students engaged with the ePortfolio, and suggests ways to improve the implementation and support practices of the ePortfolio.

**My Role as a Researching Professional**

My role in this study is of a researching professional (Costley & Stephenson, 2009; Lester, 2004). I was employed full-time as the educational designer on the project implementing an ePortfolio within the University. At the same time I was looking for “another space in which to operate professionally” (Brennan, Kenway, Thomson & Zipin, 2002, p. 70). The space I found was in the Professional Doctorate in Education. The Australian Council of Deans defines the professional doctorate as:

a program of research and advanced study, which enables the candidate to make a significant contribution to knowledge and practice in their professional context [and in which]...the candidate may also contribute more generally to scholarship with a discipline of field of study (McWilliam, 2002).
My role was therefore as a part-time professional research student and a full-time employee. The Doctor of Education course provided me an ideal platform to contribute to understanding the practice of the University ePortfolio, to contribute to knowledge about ePortfolios, to provide legitimacy and guidance for research activities and to offer recommendations for the effective practice of ePortfolios within the university sector.

The role of the “researching professional” was first proposed by Lester (2004) describing his transition from being a PhD student to being a student in the Doctorate in Professional Studies (DProf). As a PhD student he was viewed as a part-time student; as a DProf student, he was viewed as a full-time professional. He describes the researching professional role as:

for the candidate [DProf], it is the ability to be effective as a practitioner – which at this level means developing practice, producing ideas and leading change – that looms large; research is present, but as a contributing element rather than the primary focus. A more accurate way of conceptualising the practitioner doctorate from the practitioner standpoint would therefore be as a vehicle for self-managed development as a leading professional taking forward an area of practice. (p. 761)

My position at the University was as a member of the ePortfolio project. I was the educational designer seconded to the project from a department focusing on university teaching and learning support. Other members included a systems designer and computer programmers. My role was to design the ePortfolio interfaces and functionality in collaboration with programmers and clients, and to provide support documentation. In addition, my role included undertaking a literature review into ePortfolios in order to provide a solid foundation of scholarship for the design process. Following the release of the ePortfolio in 2005, my role also incorporated the conduct of the implementation program workshops for students and academics.
from several faculties (Business, Law, Creative Industries and Education). Initially, these workshops focussed on introducing the ePortfolio as a tool to assist students to improve their employability prospects. However, following approaches from academic staff wanting to make use of the ePortfolio in their curriculum, these workshops were adapted to also include the benefits of ePortfolios for student learning.

The initial conception and data gathering for this study took place during 2004-2005 while I was engaged in the ePortfolio project. In 2006, I returned to teaching and learning support and have had only peripheral involvement with the project since that time. The ePortfolio is still used sporadically across the University and development and research continue.

As a researching professional, I was uniquely positioned to undertake a practical inquiry into whether students were actually engaging with the ePortfolio in order to improve practice (Richardson, 1994). In my role as educational designer, I had ‘insider’ access to academics and student participants, and to University documents related to the ePortfolio. The ‘insider status’ facilitated access to the research site and the establishment of rapport with participants (Platzer & James, 1997).

As a researching professional, I assumed multiple roles (Brook, 1991). I became researcher – participant observer – teacher – learning designer. However, it was apparent from early in this study that I also had a “personal stake and substantial emotional investment” (Anderson & Herr, 1999, p.13) in the ePortfolio project. Conducting the ePortfolio introductory activities and assuming the multiple roles simultaneously was arduous, exhilarating, tiring, frustrating and enlightening. At the
same time, a significant tension arose between my research and my practice. For example, I found it difficult to create boundaries in terms of work, time and responsibilities, particularly where my research described my practices. Brennan (1998) suggests “that this tension is not resolvable in favour of one or the other, but both must necessarily remain active” (p. 79). This tension raised the issue of researcher subjectivity, which had to be managed in order to not compromise my interpretations (Brook, 1991). This involved bringing to the project a ‘scholarly distance’. As Eppley (2006) argues:

a researcher, by nature has to have some level of “outside-ness” in order to conduct research. This does not mean that the inside perspective is surrendered; both exist simultaneously. There is othering in the very act of studying, a necessary stepping back or distancing in varying degrees. There can be no interpreting without some degree of othering. Researchers, then, can be neither Insider nor Outsider; they are instead temporarily and precariously positioned within a continuum. (para. 11)

As an insider, and in order to find scholarly distance, I needed to critically examine my own work practices and to comment dispassionately. When I left the project in 2006, I still maintained my emotional connection to the ePortfolio. As the designer on the ePortfolio project I felt a strong sense of ownership and pride in the work we had achieved.

The Study

This study sought to understand student engagement as students participated in the ePortfolio project. The participants in the study were a group of second and third year students (n= 105) enrolled in a four-year Bachelor of Education degree. An introduction to the ePortfolio was provided during a lecture by the unit coordinator in semester 1 2005 (March–June). As the educational designer, I became involved with the student group during a subsequent series of one-hour hands-on
workshops in a computer laboratory. Following these workshops, students were required to complete an assessment task that required a critical reflection of:

a. what they learned about group learning, using technology for learning and about learning the unit’s specific content; and

b. the implications of the group project for their teaching. Topics for discussion included: integrated curriculum, productive pedagogies, community-based learning, and variety in assessment tasks for children.

The introduction aimed to encourage the students to continue to use the ePortfolio to improve their reflection skills and learning, and to begin to use the ePortfolio to assist with profiling their skills and learning for employers. Continued use of the ePortfolio after the assessment task was a voluntary decision by the student.

An interpretivist paradigm was chosen for this study with the intention of understanding student engagement with the ePortfolio. This understanding was achieved by investigating the point of view of those who experienced it, the students. An evaluative case study approach was adopted to reveal the students’ perspectives of the ePortfolio and their reasons for engaging, or not, with the ePortfolio. The features that mark this research as an evaluative case study are:

- The case is bounded by a focus on student engagement;
- The case investigates a single cohort of undergraduate students undertaking a unit of study;
• Analysis draws on multiple sources of data collection, including a survey, interviews and observations;

• The context and setting for the case are important for understanding student engagement; and

• The findings of the study are presented and an audit trail of the research process is available. (Bassey, 1999; Creswell, 1998)

The data collection methods used to address these questions included reviewing relevant University documents and observing students using the ePortfolio during workshops. Additionally, students were invited to respond to an attitude survey and individual interviews. The survey and individual interviews (for students who had not yet graduated) took place during August to October 2006, 18 months after the original workshop. This time frame was as a result of the commencement of the doctoral process in March 2004, the ethics approval process, and the need to give students time to build their ePortfolios. Throughout the study, I also added to a self-reflective journal. As a researching professional, I was well positioned to undertake this study as I had ‘insider’ access to academic and student participants, as well as access to University documents about the ePortfolio.

This study initially developed a model of student engagement with technology to provide a context for understanding student engagement and disengagement. This model drew on Davis’ (1989) Technology Acceptance Model (TAM) and Malhotra and Galletta’s (2005) Psychological Acceptance Model (PAM) from the disciplines of Information Systems (IS) and Educational Technology. However, while the TAM and PAM explore acceptance and adoption (Venkatesh,
Morris, Davis & Davis, 2003), they did not adequately capture the challenge of understanding long-term student engagement with an ePortfolio. This realisation led to the development of a second model, the Model of Student Engagement with Technology (MSET) (Version 1). Following analysis of the data, a third model MSET (Version 2) was developed to take into account the student decision points in relation to whether to engage or disengage, and their preconceptions about the ePortfolio and issues associated with long-term engagement.

**Research Questions**

An understanding of student engagement with the University ePortfolio was sought by asking the following questions:

1. **What were the student opinions of the ePortfolio?**

   It is expected that student opinions of the ePortfolio will have a significant impact on student engagement intentions. By understanding what these opinions are and where they originated from will aid in developing recommendations concerning the ePortfolio design and implementation.

2. **What were the patterns of student engagement with the ePortfolio?**

   The pattern of student engagement with the ePortfolio will provide useful knowledge about when students engage and disengage. Patterns that emerge will then provide feedback to the implementation process.

3. **What factors impacted on student engagement with the ePortfolio?**
Understanding what factors impacted on student engagement will provide feedback about the ePortfolio, the implementation process and the factors that influenced the engage/disengage decisions. It is anticipated that from this understanding recommendations will evolve concerning the ePortfolio, the implementation and support mechanisms.

**Significance of this Study**

This study contributes to an international body of knowledge concerning the design and implementation of ePortfolios in higher education. Three key aspects are suggested in relation to the significance of this study.

First, this study provides a basis for understanding the need for changes to curricula and the active collaboration of academic and support staff, and administrators. Without this an ePortfolio could be reduced to an electronic student record keeper, with little reflection and acknowledgement of purpose. As discussed previously, the challenge is to promote the use of educational technology and to provide support and pedagogical frameworks for faculty. Staff need to feel part of the ePortfolio implementation and to be empowered to make pedagogical changes and suggestions about the ePortfolio use (Moser, 2007). This study, by examining student engagement and support mechanisms adds to the knowledge concerning the implementation process and the role of academic staff.

Second, this study offers insights into student engagement with an ePortfolio. As Coates (2005) argues, the incorporation of student engagement measures into determinations about the quality of higher education is essential. Student engagement draws together insights about activities that tend to promote high quality learning. This study argues that an understanding and description of student
engagement advances the understanding of ePortfolios, and contributes more broadly to the interdisciplinary field of technology implementation in organisations.

Finally, this study provides a student perspective on the ePortfolio. Using these perspectives, the University can assess the ePortfolio and its capacity to make a difference to the lives and learning of their students. The findings can provide a lens through which more focussed interventions can be developed in order to increase the level of engagement. This study, by highlighting the engagement data and the reasons why students choose to engage or disengage, is of interest to researchers and higher education institutions interested in examining reasons for non-engagement with an ePortfolio.

**Structure of Thesis**

This chapter introduced the focus for this study, an investigation of student engagement with an ePortfolio in a university setting. The ePortfolio was described as a tool that students could utilise to record, catalogue, retrieve and present reflections and artefacts that support the development of graduate capabilities and professional standards. However, there is little understanding of student engagement with the ePortfolio. This study provides insights into reasons for student engagement and disengagement.

Chapter Two reviews the issues associated with student engagement in higher education. First, this chapter discusses the higher education sector’s commitment to student engagement through an examination of the importance of students being engaged and the factors that impede engagement. Second, this chapter explores efforts to understand student engagement through models of technology adoption. This chapter examines key models of technology adoption to show that these models
begin from an assumption that students will engage, based on how useful and easy to use the technology appears. Following an overview of these models, I propose a model that takes account of student engagement and ease of use issues.

Chapter Three outlines the interpretivist research paradigm and the evaluative case study approach adopted for this study. It describes the research context and participants, and the considerations and issues of being a researching professional. As well, the chapter describes the methods of data collection, including document collection, observation, the attitude survey, student interviews and a reflective journal. Finally, data analysis is discussed and the data categories that led to a revision of the model of student engagement with technology.

Chapter Four presents the findings and interpretations of the case study. These findings explore three themes: student opinions about the opportunities provided to them to adopt the ePortfolio; the patterns of student engagement; and the reported experiences of usefulness and ease of use factors that challenged students’ engagement intentions. Each draws on data from observation notes, interview transcripts, documents and survey data compiled during the fieldwork. This chapter also raises and discusses issues that led to the development of Version 2 of the Model of Student Engagement with Technology.

Chapter Five presents Version 2 of the Model of Student Engagement with Technology that emerged during the data analysis phase of this study. This model builds on Version 1 and provides a context within which to better understand and anticipate student decisions concerning engagement and disengagement. Four student decision points inform version two of the model: prior knowledge and
experience, initial supported engagement, initial independent engagement and ongoing independent engagement.

Chapter Six is the concluding chapter. This chapter draws together the findings of the study to consider the case study of the ePortfolio and student engagement. First, this chapter revisits the research problem and the findings of the study. Next, reflections on the research process are presented. The chapter concludes with a set of criteria for re-conceptualising the University ePortfolio, a set of recommendations for university practice, possible areas for future research in relation to ePortfolios in higher education and final comments.
CHAPTER 2.0 LITERATURE REVIEW

The previous chapter discussed the emergence of ePortfolios in the university sector. As an emerging technology ePortfolios are attracting significant interest from educators, career counsellors and university administrators (Barrett, 2001; Gerbic et al., 2009; Truer & Jensen, 2003). Ravel argues that ePortfolios are “effecting a quiet revolution in the world of learning” (2006, p. xxix). Gerbic et al. (2009) add, “ePortfolios are becoming part of national policy frameworks, international developments and their proliferation in universities means that they are increasingly a part of blended learning environments” (p. 327).

Although ePortfolios are not yet mainstream higher education technology (Lorenzo & Ittelson, 2005) their potential to support the multiple purposes of learning, assessment and employability is currently being explored (Reese, 2009). Additionally, how, when and why students engage with an ePortfolio is not yet understood and as Smallwood and Hartnell-Young (2007) report, most institutions do not analyse usage statistics to identify trends, and that engagement is often only reported in terms of perceived usage. This study addresses this concern by reviewing the perspectives of students as they engaged with the ePortfolio, and the factors that impacted on their engagement.

Concerns about student engagement have become a catch-cry for universities in demonstrating their commitment to the student body. This chapter takes up the argument about student engagement more broadly and explores efforts to understand student engagement through models of technology adoption.

First, this chapter discusses the higher education sector’s commitment to student engagement through an examination of the importance of students being
engaged and the factors that impede engagement. The concept of student engagement, as well as considering the active involvement of the student, also emphasises the necessity for higher education institutions to provide opportunities and resources to stimulate, measure and nurture student engagement (Coates, 2006). Student engagement is particularly relevant to ePortfolios that are often a voluntary component of the university experience.

Second, this chapter explores efforts to understand student engagement through models of technology adoption. Student engagement increasingly has been facilitated and measured by technology adoption; ePortfolios are an example of this move. However, while the ePortfolio relies upon technology uptake for long-term student engagement, it has not been examined within models of technology adoption. Key models of technology adoption begin from an assumption that students will engage with the new technology, based on how useful and easy to use the technology appears. Based on analysis of this literature on models of technology adoption, a new model to take account of student engagement and issues of actual ease of use and usefulness is proposed. This model is used later in this thesis as a way of investigating student uptake and engagement with ePortfolios.

**Student Engagement and Higher Education**

While student engagement is an important measure of the quality of education it is a complex matter. The definition of an engaged student is one who is involved with their university community, with their learning and professional experiences, and with university technology (Krause, 2005). Student engagement describes a multitude of student attitudes and behaviours deemed necessary for a quality higher education experience. The definition captures the range of
educationally significant interactions that students may have with their study, peers, teachers and the learning community (Coates, 2006), and encompasses a holistic view of how students interact with the university. This view embraces the active contribution of a student and the time, energy and resources that students devote to enhance their learning (Krause, 2005).

The alternative of student engagement, ‘disengagement’, suggests an active decision not to participate in lectures, tutorials and the university community. Engagement is not a simple on/off state of mind (Hockings, Cooke, Yamashita, McGinty & Bowl, 2008). As Bryson and Hand (2007) suggest, the same student may exhibit different signs and levels of engagement or disengagement over short or long periods, within a single task or session, or over a period of learning or course. Krause (2005) favours the term ‘inertia’ over disengagement. Inertia, she argues, is more suggestive of doing nothing, the state of students not “actively pursuing opportunities to engage” (p. 7). In this study, disengagement is used to describe the situation where, for a variety of reasons, students actively decide not to engage with the ePortfolio and where students adopt a state of inertia in their attitude and commitment towards the ePortfolio.

Understanding why and when students engage and disengage with learning is of profound importance to educators (Silverman, Aliabadi & Stiles, 2009). As Kuh (2003) argues, the time and energy that students devote to educationally purposeful activities is the single best indicator of their learning and personal development. Equally, in order to develop the required knowledge, skills and practice required by society, students need to invest a certain “quality of effort” (Pace, 1984, p. 6). Research in the United States suggests that what students do during their university
time is more important to their goals than who they are or the university they attended (Kuh, 2003). Understanding what students are actually doing, and why they engage or disengage, aids the development of interventions targeted towards students in danger of disengaging and of re-engaging others. Student engagement represents two critical features:

the first is the amount of time and effort students put into their studies and other educationally purposeful activities… The second component of student engagement is how the institution deploys its resources and organizes the curriculum, other learning opportunities, and support services to induce students to participate in activities that lead to the experiences and desired outcomes such as persistence, satisfaction, learning, and graduation. (Kuh, Kinzie, Buckley, Bridges & Hayek, 2007, p. 44)

These two critical features of student and institutional responsibility to engagement are discussed in the following sections.

**Understanding Why and When Students Engage and Disengage**

To understand why students make active decisions to engage and disengage, or adopt a state of inertia, requires an investigation of who the students are and what issues they face in making these decisions. As the 2008 Bradley Report into Higher Education in Australia (Bradley, Noonan, Nugent & Scales, 2008) states in relation to course completion and, by association, student engagement:

factors affecting an individual’s completion are complex and can include the level of support from teachers and the institution, course content, course satisfaction, and the student’s own expectations and personal circumstances. Institutions can influence some, but not all, of these factors to produce a more favourable outcome. (p. 19)

Student engagement is complex and individual; there is not a simple on/off switch, or a magical formula to engaging students. Ultimately it is the students’ responsibility to engage within an environment provided by the institution that provides the most favourable conditions for engagement. Student engagement also
varies over time, within individual tasks and during a course or program of study. The next sub-section discusses three factors that support and impede student uptake and engagement: changing student demographics, the uptake of information communication technologies and student engagement as negotiated engagement.

**Changing Student Demographics**

Universities are characterised by diversity, including diversity of ability, age groups, education background, ethnicity and financial status. For example, international students enrolling in Australian universities have learning experiences in secondary school that are often very different from Australian students (MacKinnon & Manathunga, 2003). Universities also are confronted with increases in students with diverse needs such as disabilities, and students appear to be more overwhelmed with university than in previous years (Baxter-Magolda & Terenzini, 1999). The challenge for universities is to identify from among these groups, those students who are at risk of disengaging and providing them with support interventions.

Research in the United States based on the results of the National Survey of Student Engagement (NSSE) (285,000 1st and 4th year students at 600 four year colleges and universities) has developed categories of students that are, on average, more engaged than others (Kuh, 2003). They are:

- Women
- Full-time students
- Students living on campus
- Native students (those who start and finish at the same institution)
- International students
• Students with experiences of diversity

However, as is the problem with any generic list, the specifics of individual students’ lives are not captured. Additionally, the reverse of these categories suggests large groups of students who are not as engaged as others.

Some major changes have emerged over the past decade that, based on Kuh’s (2003) categories, may have a positive influence on engagement: first-year students are significantly older and more experienced than in previous decades; there has been a dramatic rise in the number of international undergraduates; female students now outnumber male students; and, part-time student enrolment is increasing (DEST, 2003). For instance, the total enrolment of international students in Australian universities has increased from 132,233 in 2000, to 210,956 in 2007 (DEST, 2000, 2006b). International students represent approximately 17.3% of the total population of Australian university students (DEST, 2006b). Similarly, approximately 40% of students enrolled in Australian Universities are over the age of 25 years (DEST, 2003). West (1998) suggests that the 30-64 year old cohort will grow by 34% between 1997 and 2017, and forecasts that adult learners will bring with them a change in priorities, as many are working, bringing up families and have other commitments.

Today’s diverse student body presents a university with a formidable array of challenges that may encourage or discourage student engagement. Following the acknowledgement of diversity in the student population, the task for institutions is to identify students who are disengaged or are in danger of disengaging and try to involve them in educationally purposefully activities.
The Uptake of Information and Communication Technologies

Information and communication technologies (ICTs) have played a significant role in institutional options for engaging students. The emergence of the ePortfolio is an example of attempts to realise the benefits of technology to engage students in their own learning and to benefit employment prospects.

In general, the quality and level of student engagement with educational software significantly influences learning outcomes (Kearsley & Shneiderman, 1998). Students engaged with educational software are thought to be more intensively and extensively involved in behavioural, intellectual and emotional domains (Bangert-Drowns & Pyke, 2002). However, students interact with educational software in qualitatively different ways (Bangert-Drowns & Pyke, 2002). Some students work independently, strategically, creatively and persistently. Others engage only when required and disengage from the volitional components of the process. Fully engaged students make use of cognitive processes of creativity, problem-solving, reasoning, decision-making, evaluating and reflecting (Kearsley & Shneiderman, 1998).

Much has been written in the last few years about the characteristics of the latest generation of higher education students and the implications for teaching and learning (Oblinger, 2003; Prensky, 2001). This generation of students is variously referred to as ‘Digital Natives’, the ‘Net Generation’, ‘Millenials’ and as ‘Generation Y’ (Oblinger, 2003; Prensky, 2001). Prensky (2001) claims that “today’s students are no longer the people our educational system was designed to teach” (p. 1). He adds that the difference between those who have grown up with digital technology and those who have yet to adopt digital technology presents the “biggest single problem
facing education today” (p.2). Research also suggests that today’s students are different in that they:

• prefer to receive information quickly;
• are adept at processing information rapidly;
• prefer multi-tasking and non-linear access to information; and
• have a low tolerance for lectures preferring active than passive learning and relying on communication technologies to access information and to carry out social and professional interactions. (Kennedy, Krause, Judd, Churchward & Gray, 2006)

Jonas-Dwyer and Pospisil (2004) predicted that, by 2006, approximately 60 percent of today’s higher education students in Australia will be digital natives. Nevertheless, this leaves a significant number of students, 40 percent, who are not. A 2007 survey of first year students in three large Australian Universities indicated that “there is a greater diversity in frequency of use of technology than many commentators suggest” (Kennedy et al., 2007). The findings of this survey suggest that:

    to accept the claims of some of the commentators on the changes needed in universities to cater for this generation of students without undertaking further research is likely to be a substantial mistake. (p. 517)

Kvavik and Caruso (2005) add that students’ skill with software applications varies widely and is influenced by their major area of study. The same research indicates that students report difficulty with problem solving, dealing with new kinds of applications and troubleshooting, and that the transfer of skills between uses of technology for entertainment and academic purposes is questionable (Kvavik & Caruso, 2005). Generalised assumptions, such as those by Oblinger (2003) and Prensky (2001), ignore the possibility that contemporary students and teachers might have a far more complex mixture of skills and understandings of new technologies than they are given credit for.
Despite all the commentary and hype about the characteristics of the net generation, little empirical evidence exists to support the claims made about their technology adoption and skills (Kennedy et al., 2007). Kennedy et al. (2007) found that while many students are strong users of email, web and mobile phones, they are not such strong users of new technologies. Relatively few students use collaboration, web publishing, and graphic and video production programs. These findings have significant implications for the use of ePortfolios as the computer skills required to create an ePortfolio and artefacts may include web programming, and complex web and graphic skills.

The technical skills required to create an ePortfolio and the diversity in student computer skills also has implications for the level of support required from academics and student support services. Lane (2007), in her research at the University of Washington, reported that in general, “students who already had advanced technology skills found learning on their own to be effective, but students with less developed skills would have preferred to learn these skills within the context of a course” (p. 3). For example, where students are required to scan images or documents or to create video files, the level of technical support should be high and often individualised. Providing this level of support is justified by other researchers noting that pre-service teaching students who work with ePortfolios are more likely to use technology in their own classroom and are better able to create meaningful experiences using technology (Gatlin & Jacob, 2002; Goldsby & Fazal, 2000). Likewise, Lind (2007) argues that the creation of an ePortfolio allows pre-service teachers to learn about the value of technology as a teaching and learning tool through engaging in activities that supported their own learning.
Despite the realisation that the student group is not homogenous, few universities have sought to qualitatively understand the student engagement experience. As an example, Coates (2006), points out that:

while online learning systems have been woven deeply into Australian university education, in the excitement of adoption and deployment few if any institutions have sought to determine whether students are actually using the systems in ways likely to engage them in productive learning. (p. 1)

Coates (2006) adds that the numbers of students accessing software or hits per page on a website are comfortable measures and are reassuring for universities. However, they do not indicate what students are actually doing when engaged in these practices. A more qualitative understanding of student engagement will have direct implications for teaching staff and university administrators in the design of curriculum and learning activities, and in the provision of support and learning opportunities. These measures are particularly important for new technologies, such as the ePortfolio, in understanding what students are actually doing.

**Student Engagement as Negotiated Engagement**

Student demographics and the use of information and communication technologies have brought about some profound changes in the ways that students interact with a university. For example, students often seek a ‘negotiated engagement’ approach (McInnes, 2001) where the university is expected to fit into students’ lives rather than vice-versa. If student engagement is to be examined then the full range of student activities and responsibilities needs to be understood. As Devlin, James & Grigg (2007) state:

what students do outside of university is of considerable importance, for this directly impinges upon the time, energy and motivation students have for their learning. And understanding the context for students’ study habits takes
the analysis well beyond research that looks at the university an‘in class’ experiences. (p. 2)

In Australia, a large number of full-time students work part-time (72.3 percent in 2006) and 16.5 percent worked at least 20 hours per week during semester (Devlin et al., 2007). McInnes and Hartley (2002) illustrate the tension of students undertaking work through the example of a student email:

I have a full-time job. Could you possibly let me know of any resources that I should consult before the class next week? I may not be able to attend lectures…except when things are not busy at work. Will all the information I need be in the lecture notes and in the prescribed textbook? Do the lectures describe anything that I cannot read up on in either of these resources? (email to a lecturer from a full-time student enrolled in a laboratory-based course). (p. 71)

The quantity of paid work in which students participate must be viewed as a distracting influence on a students’ ability to study. As Devlin, James & Grigg (2007) found, 43.1 percent of undergraduate students reported that work got in the way of their study. McInnes (2001) in previous research found that 34 percent of undergraduate students were distracted from their study and, disturbingly, 66 percent were often overwhelmed by all they had to do. Devlin, James & Grigg (2007) go on to suggest that:

Australian students may not be actively choosing to ‘disengage’ but do so due to financial circumstances beyond their control as they focus on covering the costs of basic necessities. Students appear compelled to trade-off the time available for study to meet their living costs — many find this to be an insidious equation in which long-term benefit is sacrificed to short-term necessity. (p. 7)

Students cope with their busy lives and competing tensions of work and study by ‘satisficing’. Satisficing is described as a decision making process wherein students make ‘trade-offs’ in terms of how they allocate resources during their time
in higher education (Yorke, 2006). Students place different levels of importance on these competing activities, as shown in Figure 2-1

![Diagram showing examples of satisficing](image)

*Figure 2-1. Examples of Satisficing (Yorke, 2006, p. 4)*

In these examples, the entrant direct from school is shown to consider learning, earning and socialising as equally important, while the mature student is shown to be more motivated by learning and caring and less by socialising.

In the higher education context, students are confronted on a regular basis with decisions about how to achieve their goals, with the resources they have available and the obligations they must fulfil. The goals that students set for themselves are not static; they mature and fade as lives and experiences change. It is not surprising, then, that students make decisions based on their own individual situations, to place their finite resources where they feel that they will get the required result. For instance, in order to graduate, many students make decisions that provide them with a ‘good enough’, rather than an ideal, result (Yorke, 2006). In this way, a student’s engagement pattern with a university often is based on their resourcing decisions.
When students make decisions concerning their engagement, their choices are based on multiple considerations. The student decision-making process is applied across a range of activities and experiences. For some students, negotiated engagement may mean not attending lectures. For others, it may mean not being part of the university community. James (2007) advocates “revisiting the flexibility of the curriculum and looking for new ways to foster student engagement via curriculum design and work placements” (p. 7). Successful student engagement strategies require tools and pedagogies that address the needs of students, curriculum and institution to provide positive learning experiences.

**Student Engagement, Learning and Institutional Improvement**

Creating environments in which all students feel connected and engaged in the university community and learning is difficult, but remains an important criterion for successful education. Krause (2005) points out that “researchers, practitioners, administrators and policy makers have come to recognize the imperative to devise ways of better understanding, monitoring and promoting student engagement in their institutions” (p. 4). As such, the quality assurance programs within most universities acknowledge the role of the institution to demonstrate added value and enhanced quality of the student experience (Krause, 2005). Harper and Quaye (2009) put it simply when they suggest that “weak institutions are those that expect students to engage themselves” (p. 6), and that, “administrators and educators must foster the conditions that enable diverse populations of students to be engaged” (p. 6). Tam (2002) states, “the institution should be held responsible for providing the most favourable conditions to promote active participation of students through programmes and policies that encourage responsible student behaviour” (p. 216).
In the United States, the National Survey of Student Engagement (NSSE) (survey of more than 1200 different colleges and universities) sought to determine the extent to which college students were engaged in educationally effective practices (Kuh, 2003). The survey sought to facilitate conversations amongst academics and administrators concerning student engagement, learning and institutional improvement. The conversations were based on five benchmarks of effective educational practices, as shown in Figure 2-2.

**Figure 2-2. NSSE Benchmarks (Kuh, 2003, p. 26)**

The benchmarks suggest that student engagement in higher education is improved by the provision of five elements:

1. **A high level of academic challenge**: challenging intellectual and creative work is central to student learning. The promotion of high levels of student achievement is achieved by emphasising the importance of academic effort and setting high expectations for student performance;
2. **Student-faculty interaction**: students learn how experts think about and solve practical problems by interacting with faculty members inside and outside the classroom;

3. **Active and collaborative learning**: students learn more when they are intensely involved in their education and asked to think about what they are learning in different settings;

4. **A supportive campus environment**: students perform better and are more satisfied at institutions that are committed to their success and cultivate positive working and social relations on campus; and

5. **Enriching educational experiences**: complementary learning opportunities in and out of class augment academic programs. Opportunities include diverse experiences, the use of technology and work experience.

Student engagement in these five types of activities is considered educationally purposeful, as it is expected to lead to deep levels of learning and the production of lasting and measurable gains and outcomes (Kuh, Kinzie, Schuh, Whitt & Associates., 2005). In order to develop more conclusive measures of engagement, some colleges in the United States now are combining the five elements identified by the NSSE with other measures, such as ePortfolios and scales of student learning such as assessment results and grade point averages (Kuh, 2003).
Measuring Student Engagement

Measuring student engagement in higher education is an increasing requirement for administrators and academics (Coates, 2006). Measures include quantitative and qualitative indicators, such as how much students engage and the actual processes and practices of student engagement. A measurement of ‘student engagement’ is suggested as a salient indicator of the effectiveness of university education (Coates, 2006, July 26). Kuh (2003) states that:

> to assess the quality of the undergraduate education at an institution, we need good information about student engagement: the time and energy students devote to educationally sound activities inside and outside of the classroom, and the policies and practices that institutions use to induce students to take part in these activities. (p. 25)

However, as Harper and Quayle (2009) state, “educators must have the requisite skills and expertise to analyse the campus environment and determine where gaps in engagement and achievement exist” (p. 8).

A number of strategies currently exist. For example, educators engage in self-reflection singularly or as a team before developing strategies to resolve student engagement issues (Baxter-Magolda & King, 2004). The process of self-reflection focuses attention on the limitations and strengths of the educator or team that either facilitate or impede student engagement. Self-reflection should be a core process for teachers and teaching teams undertaken during and at the end of teaching sessions.

Another strategy for educators and researchers is to listen to students in order to understand how to enhance their educational experiences and improve engagement. Harper and Quaye (2009) contend that “barriers to achievement and engagement can result from making decisions without qualitative input from students” (p. 8). In summary, Harper and Quaye (2009) state, “in an era in which
student engagement is receiving increasing attention, providing undergraduates with numerous, sustained opportunities to participate actively in determining the appropriate methods for enriching their academic and social experiences in higher education cannot be overstated” (p. 9). The listening process however, requires more than quantitative surveys; it requires a conscious decision to listen to all that students have to say and to provide tools that empower students to communicate their opinions and needs.

Universities wishing to use data on student engagement to validate the provision of a quality learning experience and investment often find that “the lack of a context-sensitive instrument to measure student engagement is an important gap in the information” (Coates, 2006, p. 2). This thesis seeks to better understand student engagement by providing a sense of the context (an ePortfolio). This context is explored by modelling student engagement with the ePortfolio, which enables a clearer appreciation of student decisions to engage and disengage.

**Modeling Student Engagement with Technology**

Student engagement is important to universities and educators, and the emergence of the ePortfolio is one strategy used by universities. The previous discussion has highlighted the importance of students being engaged, of attempts to measure engagement and the factors that impede engagement. The following section discusses approaches used to model engagement with technology. First, this section discusses existing models derived from theory-based research in Information Systems that have focussed primarily on initial acceptance of new technology. These include Rogers’ (2003) innovation diffusion theory, Davis’ (1989) Technology Acceptance Model (TAM), and Ajzens’ (1991) theory of planned behaviour. These
models are drawn from the discipline of Information Systems and Diffusion studies. The chapter concludes with the presentation of a new model of student engagement with technology that built upon these existing models and was developed by this researcher to capture the practices of ePortfolio use.

**The Technology Acceptance Model**

The Technology Acceptance Model (Davis, 1989) (Figure 2-3) is the most widely applied model of user acceptance and usage in relation to information technology (Malhotra & Galletta, 2005). It was conceived to address the concerns of software vendors and information systems managers in relation to predicting and explaining software usage behaviour. The important constructs in relation to determining the intention to use an information technology innovation were identified as *perceived usefulness* and *perceived ease of use* (Davis, 1989, p. 320). Perceived usefulness is defined as an individual’s perception that the technology or computer application will help them perform better. Perceived ease of use is defined as the degree to which a person believes that using the technology or computer application would be accomplishable (Davis, 1989).

![Figure 2-3 Technology Acceptance Model (TAM) (Davis, 1989)](image)

The two constructs developed from perceived ease of use and perceived usefulness are, the *attitude toward use* and the *behavioural intention to use*. Attitude
toward use is defined as the user’s evaluation of the advantages of using the technology while behavioural intention to use is a measure of the possibility a person will employ the technology (Davis, 1989).

Both attitude and behavioural intention are critical in the study of the use of information technology (Oliver & Omari, 1999). The intention to perform a particular behaviour has been shown to be an effective predictor of the actual behaviour itself (Davis, 1989). TAM has received extensive empirical support through validations, applications and replications, suggesting that the TAM is robust across time, settings, populations and technologies (Davis, 1989; Ifinedo, 2006; Malhotra & Galletta, 2005; Venkatesh, 2000; Venkatesh & Davis, 2000; Venkatesh et al., 2003; Wu, Tsai, Chen & Wu, 2006). The following section explores some underpinning research behind the two constructs of ‘perceived ease of use’ and ‘perceived usefulness’ in an academic environment.

**Perceived Ease of Use**

Perceived ease of use is a subjective measure based on an individual user’s knowledge, experience and confidence. It is determined by the user’s computer self-efficacy, adjusted to account for the system’s usability as tested through using the system (Venkatesh & Davis, 2000). The construct is supported by Bandura’s (1977) research on self-efficacy which sought to address the question of what mediates knowledge and action. Bandura (1986) defines the performance component of self-efficacy as:

people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances. Self-efficacy is not concerned with the strategies one has but with judgments of what one can do with whatever strategies one possesses. (p. 391)
Students feel self-efficacious when they are able to view themselves as succeeding in challenging situations, which in turn determines their level of effort towards the task. Bandura (1977, 1986) determined that self-perceptions of efficacy influence whether students believe they have the coping strategies to successfully deal with a particular situation. Self-efficacy also may determine whether learners choose to engage in a given activity and may determine the amount of effort they invest in a given academic task, provided the task is perceived as challenging (Perkins & Salomon, 1992).

Several researchers have investigated the relationship between self-efficacy and learning and academic achievement (Lent, Brown & Larkin, 1986; Multon, Brown & Lent, 1991; Pajeres & Schunk, 2001; Schunk, 1994). They determined that self-efficacy has a positive influence on academic achievements and that self-efficacy brings together the effort of skills, previous experience, mental ability, or other self-beliefs on subsequent achievements. Self-efficacy and perceptions of ease of use are believed to have a crucial impact on student engagement with technology.

**Perceived Usefulness**

Perceived usefulness is a construct where the user believes in the existence of a use-performance relationship (Davis, 1989). Within an academic environment, use-performance or perceived usefulness is reinforced by a desire to succeed through assessment, to improve employability and through the enhancing of learning skills and knowledge. According to Venkatesh and Davis (2000), perceived usefulness has been shown to be a strong determinant of usage intentions.

The TAM, then, is a useful tool for explaining usage intentions and behaviour during the adoption phase. However, the TAM fails to adequately address the issue
of long-term engagement with technology. The next section examines some of the different methods researchers have used to extend the TAM through exploring long-term technological engagement.

**Extending the Technology Acceptance Model**

It is not enough to know that there has been acceptance of the technology. An initial measurable change in an individual’s behaviour and attitude does not indicate dedication to long-term usage. Acceptance is only the first step in the long term success and viability of a technology (Bhattacherjee, 2001; Limayem, Cheung & Chan., 2003). There is a need to know whether the acceptance is superficial and transient or is lasting, and whether it is evident in usage behaviour and the level of integration in the user’s values (Kelman, 1958). As the ‘father of the field’, Kelman (1958) suggests that, by shedding light on usage behaviour and value integration, systems implementers can:

make different predictions about the manifestations and consequences of the new attitudes; about their durability; about the number of different attitudinal areas that will be affected by them; and about the ways in which they will be translated into action. (p. 52)

Although these comments by Kelman were written prior to the technology boom, they remain relevant for the levels of commitment to software engagement.

Researchers seeking to extend the TAM focus on long-term viability and on the model’s explanatory power through the addition of external factors. The long-term viability of systems adoption has been explored in Bhattacherjee’s (2001) research through a post-acceptance model. This model proposed that users form initial expectations prior to usage and then, through use, develop perceptions about the technology (perceived usefulness). Through an assessment of their original
expectations (satisfaction level), they form a continuance intention. Limayem, Cheung and Chan (2003) identified a direct relationship between initial usage and continuance intention. However, research by Bhattacherjee (2001) has shown that the reasons for continuance of engagement are not necessarily the same as for acceptance:

these studies view continuance as an extension of acceptance behaviours, implicitly assume that continuance co-varies with acceptance and are, therefore, unable to explain why some users discontinue IS [information Systems] use after accepting it initially. (p. 352)

As Bhattacherjee (2001) notes, current acceptance models provide limited explanation of a user’s commitment that may emerge after initial acceptance.

A history of studies of long-term viability has built a picture of technology systems adoption. These studies include Zmud’s (1982) study of the impact of technology implementation. This study related innovation behaviours to factors such as innovation phase (initiation, adoption and implementation) and to the type of innovation and the compatibility of the innovation. Kwon and Zmud (1987) also studied long-term viability of systems adoption by examining the incorporation of technology into existing systems, and created a framework for understanding organisational adoption and diffusion. The framework highlighted five contextual factors: user community characteristics, organisational characteristics, technology characteristics, task characteristics and environmental factors. Cooper and Zmud (1990) explored routinisation of technology innovation and noted that the determinants of initial adoption differ from those for later stages of routinisation and infusion. Cheung and Limayem (2005) explored the impact of habit in the continuing use of technology and showed that, as students gain more experience with a system, there is a shift from a consciously driven behaviour to a habitual behaviour.
Other researchers have extended the TAM by improving its explanatory power. To do this they have added external factors to shed light on the internal issues of perceived usefulness and perceived ease of use. Igbaria, Zinatelli, Cragg and Cavayne (1997), for example, added intra- and extra-organisational factors such as management support and external training. Venkatesh and Davis (2000) added job relevance and results; Ifinedo (2006) added technology and user characteristics. Taylor and Todd (1995) found self-efficacy to be most important. Research in the educational sphere added perceived enjoyment (Lee, Cheung & Chen, 2005) and perceived playfulness as salient determinants of student intention to use (Moon & Kim, 2001).

Cheung and Limayem (2005) have commented, however, that instructors should refrain from over-stating the benefits of technologies, as confirmation (or lack of confirmation) of benefits play an important role in determining long-term usage patterns. Technology that does not measure up to expectations may result in higher levels of disengagement.

Several researchers have recently identified commitment as the key to implementation successes and failures (Alavi & Leidner, 2001; Grover & Davenport, 2001; Malhotra & Galletta, 2005; Schultze & Leidner, 2002). This is supported by the research of Tangney, Baumeister and Boone (2004) who concluded that students with high self-control had better grades, showed fewer impulse control problems, had better interpersonal skills and had more optimal emotional lives. Indeed, they concluded that self-control might be at the core of commitment to technology adoption.
The major work in extending the TAM, however, has been done by Malhotra and Galletta (2005) who added ‘psychological attachment’ to the model. They extended the TAM by incorporating Kelman’s Social Influence Theory, arguing that psychological attachment should be the construct of interest.

**Psychological Attachment Model**

The *Psychological Attachment Model* (PAM) explores the long-term commitment to system usage. Through the PAM, Malhotra and Galletta (2005) sought to “establish a theoretically precise and psychometrically consistent conceptualisation of the system usage commitment construct” (p. 119). Psychological attachment became their construct of interest incorporating Kelman’s (1958) Social Influence Theory into the Technology Acceptance Model. Kelman (1958) recognised three levels of psychological attachment, based on choices made by the user. These were internalisation, identification and compliance. These levels form the basis of the Psychological Attachment Model (PAM) (Malhotra and Galletta, 2005) shown in Figure 2-4.

![Psychological Attachment Model (PAM)](image)

*Figure 2-4. Psychological Attachment Model (PAM) (Malhotra & Galletta, 2005)*
The legend provided with Figure 2-4 (see Table 2-1) shows the linkages between perceived ease of use, perceived usefulness, attitude toward using, and the behavioural intention.

Table 2-1. Legend for PAM

<table>
<thead>
<tr>
<th>Based on Technology Acceptance Model (TAM) (Davis, 1989)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Perceived usefulness</strong>: has a positive influence on attitude toward use.</td>
</tr>
<tr>
<td><strong>Perceived ease of use</strong>: has a positive influence on attitude toward use.</td>
</tr>
<tr>
<td><strong>Perceived usefulness</strong>: has a positive influence on behavioural intention to use.</td>
</tr>
<tr>
<td><strong>Attitude toward use</strong>: has a positive influence on behavioural intention to use.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Affective: based on personal norms and affective processes (emotional commitment)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Internalised-Based Commitment</strong>: adoption based on the congruence with one’s own personal norms and values. Self directed learners, life long learners</td>
</tr>
<tr>
<td><strong>Identification-Based Commitment</strong>: adoption based on relationship to influencing agent i.e. peers, academic and support staff.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Compliance: based on social norms and cognitive processes (minimising failure)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Compliance-Based Commitment</strong>: adoption based on hoping to achieve favourable response from others i.e. assessment, employment.</td>
</tr>
</tbody>
</table>

Internalisation-based commitment occurs when the users adopt behaviour because it is aligned with their personal values and goals. For example, a user who has clear long-term goals to gain employment in their profession may be motivated to use an ePortfolio as a self-marketing employment tool. Others motivated by academic achievement may use an ePortfolio as a self-directed learning and reflective tool to store and reflect on their assignments.

Identification-based commitment occurs when the user adopts behaviours or attitudes to achieve congruence with other individuals or groups. For example, a user
may adopt an ePortfolio due to peer pressure. This pressure may be indirect (as a component of self-marketing, ‘because I need to do this because everyone else is’) or direct (when a respected teacher or peer suggests using the ePortfolio, ‘I should do this because my teacher said it would help with my learning’). 

Compliance-based commitment occurs when the user is driven by external rewards or in order to avoid penalty. For example, users may make use of an ePortfolio because it is required for assessment. However, once the assessment is completed, commitment to use the portfolio may diminish, ‘because I can’t see any point to this but have to do it anyway’, or ‘I won’t use this again after this assignment is completed’.

These models take a big picture approach for technology implementation and focus on experience and intention to engage. However, these models have not taken up the issue of long-term engagement.

**Introducing a New Model of Student Engagement with Technology**

The models discussed in the previous section did not look at long-term engagement, a factor necessary for successful implementation. In order to take this into account I developed a model in 2005, while working in the ePortfolio project, which sought to understand long-term engagement and how actual use affects student engagement. Following extensive reading of research in technology implementation (Cheung & Limayem, 2005; Cooper & Zmud, 1990; Kwon & Zmud, 1987; Zmud, 1982) and work-related observations of student use of ePortfolios and discussions with colleagues, a model was formulated that incorporated factors related to initiation, adoption and implementation. The *Model of Student Engagement with Technology* (MSET) (Version 1) (see Figure 2-5) is presented as a
means of modelling long-term engagement with technology (in this case with an ePortfolio). Based on the work of Davis (1989), the MSET retains perceived usefulness and perceived ease of use as key constructs in the acceptance of software. The Psychological Attachment Model also is maintained.

![Diagram of Emmett's Model](image)

*Figure 2-5. Emmett’s Model of Student Engagement with Technology (MSET) (Version 1)*

The MSET (Version 1) adds two new constructs to the Psychological Attachment Model, *actual usefulness* and *actual ease of use*, both of which may be evident over time but may also vary in intensity. These two constructs are necessary for investigating how students take up and use the ePortfolio that, by its very description, requires long-term engagement and commitment to use. While students may perceive the usefulness of the ePortfolio and are encouraged by its initial ease of use, long-term engagement brings a different range of external influences.

This model developed from the need to understand long-term engagement and the impact of actual use factors on the student commitment to use the ePortfolio. Through its impact on the data gathering and data analysis, this model subsequently
became a driving force behind the research methodology used in this study. This impact is discussed in detail in the following chapter.

**Summary**

This chapter discussed student engagement in higher education. Student engagement was considered an active involvement of the student and of the institution to provide opportunities and resources to stimulate and nurture engagement.

Student engagement was described as a complex multitude of attitudes and behaviours, not a simple on/off state of mind (Hockings et al., 2008). Engagement was also described in terms of the individual, as the same student may exhibit different indications and levels of engagement over different time periods, during a single task or over a course (Bryson & Hand, 2007). Three factors that support and impede student engagement with technology were detailed as: changing student demographics, the uptake of information communication technology (ICTs) and student engagement as negotiated engagement.

The institutions role in creating an environment in which all students feel connected and engaged in the university community and learning is an important criterion for successful education. Higher education researchers, academics, administrators and policy makers recognise the importance of understanding, monitoring and promoting student engagement (Krause, 2005). As such, the quality assurance programs within many universities acknowledge the role of the institution in adding value and enhancing the quality of the student experience.

The final section described well-known models used in fields of Information Systems and Educational Technology to help understand technological uptake. These
were the Technology Acceptance Model (TAM) (Davis, 1989) and the Psychological Acceptance Model (PAM) (Malhotra and Galletta, 2005). The chapter concluded with the development of a model to explore student engagement with educational technology, with a particular focus on ePortfolio use. This model added two new constructs to the Psychological Attachment Model, *actual usefulness* and *actual ease of use*. These two constructs are necessary for investigating how students take up and use the ePortfolio that, by its very description, requires long-term engagement and commitment to use. The model of Student Engagement with Technology (MSET) (Version 1) guided the research methodology of this study and, hence, impacted on the design of data gathering and analysis strategies. The data were subsequently used to refine the model’s mapping of student engagement with the ePortfolio and to identify key points for support interventions for students.
CHAPTER 3.0 METHODOLOGY

Introduction

This chapter outlines the interpretivist research paradigm and the case study approach utilized in this study. First, this chapter provides a description of the research context and participants. Second, it discusses the considerations and issues confronted with being a researching professional. Third, the chapter describes the methods of data collection and analysis and concludes with a discussion of the issues of trustworthiness and ethics.

Research Paradigm

The research paradigm selected for this study is an interpretivist paradigm, developed from the philosophy of Husserl’s phenomenology and studies of interpretive understanding known as hermeneutics (Mertens, 2005). This approach aims to understand “the world of human experience” (Cohen & Manion, 1994, p. 36).

Within the interpretivist paradigm, understanding human experience is achieved through understanding the “participants’ own views of the situation being studied” (Creswell, 2003, p. 8). That is, reality is seen as a “construct of the human mind” (Bassey, 1999, p. 42). As such, multiple realities exist, so that the researcher, the participants and the reader each interpret the phenomenon under investigation from their own standpoints and realities (Creswell, 1998). In this approach, understanding the various realities of the participants involves a process of examining the transcribed interview data and identifying the range of perspectives offered by the participants (Creswell, 1998). This approach recognises that, while
participants may have similar experiences, they may perceive and relate these experiences differently.

The interpretive paradigm also recognises the impact of the researcher’s own background and experience brought to the research. Maykut and Morehouse (1994) suggest that:

the qualitative researcher’s perspective is perhaps a paradoxical one: it is to be acutely tuned-in to the experiences and meaning systems of others—to in-dwell—and at the same time to be aware of how one’s own biases and preconceptions may be influencing what one is trying to understand. (p. 123)

As Guba and Lincoln (1988) suggest, the researcher tries to minimise the interactional “distance” or “objective separateness” between researcher and those being studied (p. 94). Thus, as researcher, I sought the position of ‘insider’ during data collection and, later, aimed for scholarly distance as I engaged in data analysis and writing.

Rationale for the Case Study Approach

One way to understand the complexities of student engagement with the ePortfolio is to investigate the phenomenon from the point of view of those who directly experience it, the students. In order to do this, I adopted an evaluative case study approach to investigate student accounts of their experiences. An evaluative case study seeks to understand what is happening within the specified case (Bassey, 1999). In this study, the case is an examination of student engagement with an ePortfolio. Mabry (2009) acknowledges that,

understanding the actual complexity of social and educational programs requires in situ investigation. Time on-site helps evaluators recognise the importance not only of policy makers’ issues but also other program aspects ant the perspectives and experiences of nonmanagerial stakeholders. Contact with program personnel and beneficiaries gives entree to the experiences and
perceptions of those who co-create it and to their criteria for and judgements of its quality. To apprehend multiple perspectives, evaluative case studies more commonly employ qualitative or mixed methods studies than quantitative methods alone. (p. 348)

The evaluative case study seeks to reveal the complexities and uniqueness of the research context while preserving the multiple perspectives and different and sometimes contradictory views of the participants (Yin, 2002). Mabry (2009) comments,

"case studies provide views from constituent elements – from implementation sites, from program aspects and personnel, from stakeholders. By attending to the experiences and perceptions of many, a democratic impulse is served by case studies and an understanding of the case is promoted – an understanding that supports policymaking. (p. 353)"

Understanding is achieved through describing and interpreting the students’ experiences of the ePortfolio and, in so doing, making value judgements about student engagement with the ePortfolio. The expected endpoint is that the research findings can inform policy, practices and procedures concerning the ePortfolio.

While definitions of case study abound (Bassey, 1999; Mabry, 2009; Stake, 1995; Stake, 1998; Stenhouse, 1988; Yin, 2002), this study works from a position that defines case study as “an exploration of a ‘bounded system’ or a case over time through detailed, in-depth data collection involving multiple sources of information rich in context” (Creswell, 1998, p. 61). Bassey (1999) extends the definition of case study in an educational setting and suggests that an educational case study is an empirical enquiry conducted within a localised boundary of space and time, concerning interesting aspects of an educational activity, program or system in its natural context. This definition provided the guidelines for the conduct of this research. Further, Yin (2002) suggests that a case study is appropriate when ‘What’ questions are posed. In this study, the following questions were posed:
1. What were the student opinions of the ePortfolio?
2. What were the patterns of student engagement with the ePortfolio?
3. What factors impacted on student engagement with this ePortfolio?

Each question sought understanding by investigating the participants’ own accounts of their experiences with the ePortfolio, including how and when they engaged with the ePortfolio and the factors that impacted on this engagement.

For a worthwhile case study, the data collection needs to be of a sufficient quantity for the researcher to be able to explore significant features of the case, create plausible interpretations of what is found and to test for the trustworthiness of these interpretations (Bassey, 1999). The researcher constructs a worthwhile argument about the research problem, relates that argument to relevant research in the literature, and provides an audit trail by which other researchers may validate or challenge the findings, or construct alternative arguments (Bassey, 1999).

The features that mark this research as an evaluative case study are:

- The student engagement with the ePortfolio is the bounded case because of the limits of the implementation in a single unit of study;
- The case of student engagement investigates a single cohort of undergraduate students undertaking a unit of study;
- An in-depth picture of student engagement with the ePortfolio is possible through analysis drawing on multiple sources of data collection, including a survey, interviews and observations;
- The context and setting for the case are important for understanding student engagement; and
• The findings of the study are presented and an audit trail of the research process is available (Bassey, 1999; Cresswell, 1998).

**My Role as a Researching Professional**

I began this study as an Educational Designer assigned to the ePortfolio project. I was seconded from teaching support to the ePortfolio project from 2003 to 2006. My job was to design interfaces and functionality in collaboration with programmers and clients, to provide support documentation and to conduct a literature search related to ePortfolios. Following the ePortfolio’s release in 2005, my role then focussed on the implementation and dissemination of information about the ePortfolio to students and academics through a series of workshops conducted in the faculties of Business, Law, Creative Industries and Education. Initially, these workshops focussed on the ePortfolio as a tool to assist students to improve their employability. Following approaches from several academic staff who sought to make use of the ePortfolio in their curriculum, I then designed a workshop to focus on the pedagogy of ePortfolios. I returned to teaching support in 2006 and have only participated in an advisory capacity in the ePortfolio project since that time.

As is the case with many Doctor of Education projects, where the researcher is investigating aspects of professional practice, there is a lag time between when the professional activity takes place and when the researching professional begins formal study. This study falls within this category. While the project commenced in March of 2005, the data collection process occurred from August 2006. It was the activity associated with the professional practice that initiated the formal study as a way to capture the insights and lessons learnt from the implementation of the ePortfolio. The survey and interview data were designed to capture a retrospective student
perspective of the ePortfolio, and to gain an understanding of the uptake of the ePortfolio over the 18-month period since it was introduced to the student cohort.

My interest in this project as a research study began in my role of educational designer, as I was looking for “another space in which to operate professionally” (Brennan et al., 2002, p. 70). The space I found was in the Professional Doctorate in Education. I was both a part-time ‘research student’ and a ‘professional worker’ (Brennan, 1998, p. 72). The Doctor of Education provided an ideal platform to contribute to knowledge and practice at the University, to contribute to scholarship and to provide legitimacy and guidance for my research activities (McWilliam, 2002). Doncaster and Lester (2002) add that:

the framework for the doctoral project provides for taking forward an area of application, maintaining a high level of thinking and action within and around it, and encouraging reflective and critical thinking that goes beyond the immediate practice. (p. 760)

As a researching professional, I was well positioned to undertake a practical inquiry into how undergraduate students engaged with the ePortfolio, with the intention of improving ePortfolio practice (Richardson, 2000). As Lester (2004) suggests, the idea of the researching professional is less important per se than that of the practitioner being capable of leading high-level understanding, development and change. Lester further conceptualises the researching professional as one who is a “vehicle for self-managed development as a leading professional taking forward an area of practice” (p. 761). Doncaster and Lester (2002) suggest that the dual roles of researcher and practitioner provide benefits in terms of practical outcomes for the organisation and the researchers own professional practice. Being a researching professional presents the opportunity to develop and strengthen thinking about practice and professional knowledge.
A key strength of being a researching professional is the researcher’s position within the research process. The researcher has familiarity with the environment and practices within which they work and research, affording the researcher the theoretical space to deconstruct their own personal knowledge, understanding and assumptions about their practice (Fox, Martin & Green, 2007). In my role as educational designer, I had insider access to academic and student participants, as well as access to University documents about the ePortfolio. In addition, the insider status facilitated access and established rapport with participating students, academics and professional staff (Platzer & James, 1997).

As a researching professional, I assumed multiple roles during the phases of this study (Brook, 1991). At different times I was researcher, participant observer, teacher and designer. During the study phases, different roles became more prominent than others. For example, in the early phases, I was the ePortfolio designer and the other roles were subservient to this. Later, during the workshop phase, I was teacher and observer. Finally, during the interviews and writing phases, I was prominently in the researcher role (see Figure 3-1).

![Figure 3-1. My roles and timeline of involvement with research context](image-url)
It was apparent from early in this study that I had, as Anderson and Herr (1999) describe, “a personal stake and substantial emotional investment” (p. 13). This raised the question of my subjectivity, which had to be managed in order to not compromise my interpretations (Brook, 1991). My positive views about the ePortfolio had to be balanced with the sometimes-conflicting perspectives of the students that emerged during this study. Conducting this study, as both researcher and professional, was simultaneously arduous, exhilarating, tiring, frustrating and enlightening.

A significant tension arose between my research and my practice. I found creating a boundary, in terms of work and research, was difficult, and particularly so when my research described my own practices. Brennan (1998, p. 79) states that “this tension is not resolvable in favour of one or the other, but where both must necessarily remain active”. As a researching professional, I saw the need to be an outsider, to look critically at my own work and to comment dispassionately. As Eppley (2006) argues:

a researcher, by nature has to have some level of “outside-ness” in order to conduct research. This does not mean that the inside perspective is surrendered; both exist simultaneously. There is othering in the very act of studying, a necessary stepping back or distancing in varying degrees. There can be no interpreting without some degree of othering. Researchers, then, can be neither Insider nor Outsider; they are instead temporarily and precariously positioned within a continuum. (para. 11)

The tension was eased following my departure from the project in 2006, thus providing extra professional distance, although not fully alleviating the emotional connection to the ePortfolio. I have been careful to be as dispassionate as possible in presenting the research findings, in particular where criticism concerned my workshop presentation and software design skills.
Issues of Institutional Authority and Power Relations

As a researching professional, I brought to the research both institutional and professional resources and institutional issues of power relations. I had access to data sources within the organisation that may not have been as readily available for researchers who were external to the ePortfolio project. The data sources included ePortfolio statistics and design documents. Acknowledging this position of institutional authority, I had to be careful to be ethical in dealing with confidential documents and resources about the ePortfolio. As evidence of this, I have de-identified the university involved in this study.

As an expert in the ePortfolio design and implementation, I was aware that communicating with students had to be non-threatening in terms of my presentation of authority and expertise. As a non-academic, not involved in assessing the students, I believe that I was able to develop a strong rapport with the study participants and so I was able to get closer to the student’s experiences because of their willingness to provide their accounts to me.

A key focus in any research is awareness of the power relations between the researcher and research participants and of where, when and how power relations are being used. As Fox, Martin and Green (2007) suggest, the research process is “permeated with relations and influence based on power” (p. 88). The researcher has access to, and engages in, power relations in many forms and brings resources, knowledge and position to the role (Fox et al., 2007; Handy, 1988). These matters are discussed in more depth later in this chapter.

The issue of power relations is evident also within the outcomes of the research (Fox et al., 2007). Throughout the study, I ensured that students were aware
of how and why the research was being undertaken and how the findings could be used to inform university policy and practice. Students were informed that the research findings would enable a better understanding of engagement with the ePortfolio, and provide feedback on the design of the ePortfolio and on the implementation process. Additionally, students were told that the results would be used to improve the ePortfolio and the workshops. I hoped that providing this information to students would encourage them to consider themselves within the research context and recognise how the implementation of the findings might support future students and their engagement with the ePortfolio.

The Research Site – an Australian University

The University involved in this research is a large Australian university, with a current enrolment of approximately 40,000 students. The University is one of the largest providers of bachelor degree graduates into full-time employment in Australia each year, and its graduate employment rate is well above the national average for Australian universities.

Study Design

This study was designed with four stages. I briefly outline the stages here. In later chapters, these stages are discussed in more depth.

Stage One: Identifying the problem and locating it within the Literature and Practices

As discussed in Chapter 1, the ePortfolio project originated from a desire to provide the University’s students with a means for collecting and presenting greater evidence of their achievements than could be displayed solely by their academic
transcript. The explicit aim was to address concerns that exiting graduates were not clear about the full complement of skills that they had developed throughout their university career. Hence, the university management considered that the development of the ePortfolio would have a positive effect on student transition from the university to graduate employment. The ePortfolio enables students to record, catalogue, retrieve and present reflections on experiences, along with artefacts that provide evidence of the development of graduate capabilities (See Appendix A for more information about the ePortfolio).

Determining success in the adoption of an innovation such as an ePortfolio is difficult. To date, evidence has relied upon uptake figures. For example, usage figures gathered in 2006 and 2007 suggest that the implementation of the ePortfolio was highly successful. The figures indicate that the number of individual student ePortfolios had grown from zero upon release in 2004 to 23000 by February 2007. However, such figures do not reveal how students are actually engaging with their ePortfolio or how they are using it for employment, learning or assessment purposes. As an educational designer I was concerned about how little we knew about how students actually were engaging with the ePortfolio. This focus became the catalyst for this research.

An extensive literature review of ePortfolios and student engagement was undertaken (see Chapters 1 and 2) to show that little is known about how students engage with ePortfolios. The examination of technology use and adoption within higher education focussed on research models developed within the disciplines of Information Systems (IS) and Educational Technology. Specifically, I used Davis’ (1989) Technology Acceptance Model (TAM) and Malhotra and Galletta’s (2005)
Psychological Acceptance Model (PAM), drawing on these two models to explore acceptance and adoption (Venkatesh et al., 2003). However, I realised that these models did not provide an adequate model of student engagement, and, as discussed in Chapter 2, this understanding led me to consider developing my own model of student engagement with the ePortfolio.

**Stage Two: Development of a Model of Student Engagement**

After investigating the literature on student engagement, the two models discussed in Stage 1 (TAM and PAM) and my participation in the ePortfolio, I developed the Model of Student Engagement with Educational Technology (MSET) (Version1). Within this model, I added the two constructs of *actual usefulness* and *actual ease of use*. These constructs were developed further to become long-term *engagement intention* and *commitment to use*. The model was designed as a tool to inform the examination of student engagement with the ePortfolio and to highlight reasons for engagement and disengagement. This model is discussed in depth in chapter 5.

**Stage Three: Engaging in field work related to the study of Student Engagement**

As a Learning Designer, I was concerned that the figures collected on student interaction with the ePortfolio did not capture how the students were actually engaging with the tool. This concern led me to consider undertaking my own research to investigate this matter.

In 2005, I was approached by an academic in the Faculty of Education seeking assistance to introduce the ePortfolio to a cohort of pre-service education students. This opportunity provided an ideal case study for three fundamental
reasons. First, this group of potential participants had an initial compulsory introduction to the ePortfolio followed by voluntary usage, allowing students to make engagement decisions based on their own opinions of the tool and learning needs. Second, I was able to engage in a researching professional role. This enabled me to assume the multiple roles of researcher, educational designer and workshop convenor. Third, entry to the research site was possible following the invitation by the academic to conduct the workshops.

The research questions for the study were finalised and the data collection undertaken. The research questions were finalised as:

1. What were the student opinions of the ePortfolio?
2. What were the patterns of student engagement with the ePortfolio?
3. What factors impacted on student engagement with this ePortfolio?

Data collection was undertaken using an attitude survey, observations, student interviews and the reading of relevant documents. The survey and individual interviews took place during August to October 2006, 18 months after the original workshop. This time frame was as a result of the commencement of the doctoral process in March 2004, the ethics approval process, and the need to give students time to build their ePortfolios. Additionally, as a researching professional the ‘professional’ requirement to deliver the workshop, occurred prior to my study being conceptualised and approved. Unfortunately the opportunities to interact with students using the ePortfolio were limited after 2006, in hindsight this is a limitation for this study.
Stage Four: Data Analysis and Refining the Model

During the data analysis, I read and re-read the data. Data that fitted into the initial categories were identified. Deviant data (data that does not fit into the categories) were also identified. I subsequently developed a new framework of data categories and extended the engagement model. The data analysis and the evolution of the Model of Student Engagement with Technology (MSET Version 2) are discussed later in this chapter and in chapter 5.

Research Participants

The group of participants were a cohort of second and third year students enrolled in a unit within a Bachelor of Education degree (n=105). This cohort was introduced to the ePortfolio as a core component in one of their curriculum units. The cohort offered the possibility of detailed and rich descriptions of student engagement with the ePortfolio.

Access afforded the opportunity to interact with the students and to explore their expectations and perceptions of the ePortfolio’s usefulness and ease of use. I also sought participants who could participate in an initial compulsory session with using the ePortfolio followed by a period of voluntary interaction using the ePortfolio. This extended period provided students with the opportunity to experience the ePortfolio and assess its benefits and difficulties, and then to voluntarily decide whether to continue to engage or not.

All participants in this study were female. This is because the field of education is predominately female. The participants were studying fulltime and attending university as internal students. The majority of students were aged 20-24
years (n=21), with only six students older than 29. The age distribution is shown in Figure 3-2.

![Student Ages](image)

**Figure 3-2.** Participant age distribution

The participant age distribution figures (Figure 3.2) are congruent with national figures of education students in Australia (DEST, 2006a). The national figures show that, in 2005, 80 percent of the final year education students were female. The majority of students were domestic (97 percent), over half of the group was aged between 20 and 24, and most were ‘full-time’, on campus students (90 percent).

All participating students completed an online questionnaire. As well, students were asked to indicate if they would participate in an interview. Three students who elected to be interviewed were chose at random, the fourth was the only student who elected to be interviewed and who had engaged with the ePortfolio. Alyssa was a 22 year old student studying fulltime and internally. When interviewed, she was in the third year of her four-year degree. Carol was a 24 year old student studying fulltime and internally. When interviewed, she was also in the third year of
her four-year degree. Dana was a 19 year old student studying fulltime and internally. When interviewed, she, too, was in the third year of her four-year degree. Betty, the only interviewee who continued to engage with the ePortfolio, was 44 years old. She was studying fulltime and internally. When interviewed, she was in the final year of her four-year degree.

Data Collection Methods

The data collection methods selected for this case study include document analysis, observations of students in the workshops, an exploratory survey, interviews with students, and keeping a researcher journal. In selecting the data collection methods, consideration was given to the topic being researched, the participants and the appropriate method type (see Table 3-1).

Table 3-1. Data Collection Methods

<table>
<thead>
<tr>
<th>What/who was being Researched</th>
<th>Data Sources</th>
<th>Researcher Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>The University and the ePortfolio</td>
<td>Documents, General Observations, Journal</td>
<td>Designer</td>
</tr>
<tr>
<td>ePortfolio in the Faculty of Education</td>
<td>Documents, Observations in Workshops, Exploratory Survey, Journal</td>
<td>Teacher</td>
</tr>
<tr>
<td>Individual Participants A-D</td>
<td>Exploratory Survey, Student Interviews, Journal</td>
<td>Researcher</td>
</tr>
<tr>
<td>Voluntary Workshops in Faculty of Education</td>
<td>Observations in Workshop, Journal</td>
<td>Observer</td>
</tr>
</tbody>
</table>

Data collection for case studies relies on multiple sources of evidence (Yin, 1994). As Mabry (2009) suggests, “to apprehend multiple perspectives, evaluative case studies more commonly employ qualitative or mixed methods studies than
quantitative methods alone” (p. 348). Additionally, “many case studies employ the hallmark methods of qualitative data collection – observation, interview, and document analysis” (p. 348). Yin (2002) provides three overarching principles important for data collection in case study research: (a) multiple methods; (b) a formal assembly of the evidence; and (c) a chain of evidence, from the questions to the data and to the conclusions drawn. Incorporating these principles into a case study substantially improves the quality of the study (Yin, 2002).

To understand student expectations, their patterns of engagement and the factors impacting on engagement with the ePortfolio, I used Yin’s (1994) suggestion of “two pools of sites” (p. 86). The larger pool of students was the whole student cohort. They participated in an attitude survey. The attitude survey aimed to “produce quantitative and qualitative data as part of the case study evidence” (Yin, 2002, p. 91). The smaller pool of four students was involved in individual student interviews, and had volunteered their interest. Yin (1994) suggests that interviews provide insights into the causal processes within the individual cases, whereas surveys provide evidence of the prevalence of the phenomenon. These two methods, as well as the other methods of document collection used in this study, are discussed in depth in the following sections.

**Document Collection**

Analysis of a collection of documents was used to provide insight and background information (Genzuk, 2001; Richards, 2005) about the University and the ePortfolio project. Documents created, modified, or used by the ePortfolio project team and participants were examined. These documents helped to provide contextual information for the study, to inform conversations with students and to
aid in the creation of the interview questions. Significant documents examined in this study were:

- The University Policies and Procedures. This document provides insights into the guidelines for the use of the ePortfolio as designated by the university;
- The ePortfolio project documentation incorporating the design principles and processes and the findings of student focus groups. As the ePortfolio designer, I had been responsible for producing much of this documentation;
- Papers written by the ePortfolio team and University academics about their use of the ePortfolio; and
- The ePortfolio website and HELP documentation.

**Participant Observation and Field Notes**

Participant observation as a method of data collection is fundamental to many case studies and requires an understanding of the role of the researcher as a participant observer (Marshall & Rossman, 1995). As the workshop facilitator, I had an insider view of what students were doing with the ePortfolio. I saw that my role was one where my participation had an influence on the participants’ behaviour (Yin, 1994). For example, students were observed to engage with the workshop tasks when I approached, but to disengage as I moved away. I recorded field notes of such observations about the workshops in my own ePortfolio.

Ideally, the researcher spends a considerable amount of time in the setting to be acquainted with the site and participants (Marshall & Rossman, 1995). However, I was already an insider in my role as ePortfolio designer. In addition, I spent seven hours in workshops with the cohort of students in the initial phase, and then a further two hours in voluntary seminars with students in the following year. Consequently, I
was able to undertake a number of roles, including ePortfolio teacher, support provider and researcher. As I was immersed into the workshop setting, I had insider access to gauge the students’ experience with the ePortfolio from their perspectives. This provided opportunities to examine student and academic use of the ePortfolio by observing what students were actually doing during the workshop sessions.

**Attitude Survey**

An attitude survey was used to gather information on student perspectives of their experiences with the ePortfolio. Often an investigation of attitudes is used to understand and predict participants’ reactions to an object or change, and how behaviour can be influenced (Ajzen & Fishbein, 2005). In this study, the survey was used to ascertain students’ expectations of the ePortfolio, their attitudes towards the introductory lecture and workshop and the information they took away from those sessions.

Attitude surveys typically consist of a series of statements to which students are asked to express agreement or disagreement against a rating scale (Shaw & Pieter, 2000). The survey developed for this study (see Appendix D) comprised forty-five questions delivered to the participant cohort in August 2006 (18 months after their initial compulsory workshop and 6 months after their 2nd set of voluntary workshops). The survey initially was delivered via an electronic survey accessed through the University’s online learning and teaching system, a familiar technology platform for students. A printed survey was used later to improve the response rate; this issue discussed in more depth later in the section on survey response rates.
An example from the survey is provided below (Figure 3-3). A Likert scale (strongly agree – strongly disagree) was combined with a request for additional comments.

<table>
<thead>
<tr>
<th>Section 4: This section of the survey asks for comment on the extent to which you value the ePortfolio in helping you to gain employment.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4-1 I believe the ePortfolio will have a positive impact on my employment prospects.</strong></td>
</tr>
<tr>
<td><strong>4-2 I believe the ePortfolio will be a useful resource in preparing for interviews.</strong></td>
</tr>
<tr>
<td><strong>4-4 Do you have any other comments about the value of the ePortfolio in helping you to gain employment?</strong></td>
</tr>
</tbody>
</table>

*Figure 3-3. Extract from attitude survey*

An attitude survey should, ideally, comprise three design principles. It should be short and easy to use, particularly if an electronic survey is used (Torkzadeh & Van Dyke, 2001). Second, the survey should allow students to express their own opinions and attitudes in open text fields (Shaw & Pieter, 2000). Finally, the Likert scales used should include reversed scales or should make use of different scales (Rovai, 2002).

Using these three design principles, the survey designed for this study was simple and short. Open text questions were provided for students to express their opinions in their own words. The scoring scale was changed from ‘strongly agree – strongly disagree’ to ‘very difficult – very easy’ for some questions as shown in Figure 3-4. This change of scoring scale did not appear to present any difficulties for the students in completing the survey.
I believe the ePortfolio will have a positive impact on my employment prospects.  

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Uncertain</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
</table>

3-1 I found writing reflections on experiences  

<table>
<thead>
<tr>
<th>Very Difficult</th>
<th>Somewhat Difficult</th>
<th>Neutral</th>
<th>Somewhat Easy</th>
<th>Very Easy</th>
</tr>
</thead>
</table>

Figure 3-4. Extract from survey showing different scoring scale

The survey questions were divided into sections that provided a grouping of questions and initial themes for data analysis. Each section was based on a major activity (i.e. workshop) or a particular area that would promote my understanding of student use of the ePortfolio (i.e. technical issues). The questions in section 9 were sourced from the ‘Learning and Studying Questionnaire’ (LSQ), an outcome of the Enhancing Teaching and Learning Environments (ETL) project (Entwistle, McCune & Hounsell, 2002). The survey groupings are shown below (Table 3-2).

Table 3-2. Survey Question Groupings

<table>
<thead>
<tr>
<th>Section</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 1:</td>
<td>Lecturer’s role in introducing the ePortfolio.</td>
</tr>
<tr>
<td>Section 2:</td>
<td>ePortfolio workshop facilitator’s role in introducing the Portfolio</td>
</tr>
<tr>
<td>Section 3:</td>
<td>Use of the ePortfolio.</td>
</tr>
<tr>
<td>Section 4:</td>
<td>Value of the ePortfolio in helping you to gain employment.</td>
</tr>
<tr>
<td>Section 5:</td>
<td>Technical issues with using the ePortfolio.</td>
</tr>
<tr>
<td>Section 6:</td>
<td>Experiences with the ePortfolio.</td>
</tr>
<tr>
<td>Section 7:</td>
<td>Commitment to the ePortfolio.</td>
</tr>
<tr>
<td>Section 8:</td>
<td>How you use the ePortfolio.</td>
</tr>
<tr>
<td>Section 9:</td>
<td>Approaches to learning and study.</td>
</tr>
</tbody>
</table>
Survey Testing and Implementation

I initially presented the design of the survey to ePortfolio Project team members at the University and to fellow doctoral students and supervisors. This is in line with Burns’ (1997) strong recommendation to present the initial set of items to a sample of participants. The survey also was presented to a focus group of nine Masters students within the Education Faculty. They found the survey straightforward to understand, although one international student had difficulty with the term ‘selection criteria’ so this was changed to ‘job applications’.

The survey then was programmed in an online setting using propriety software from HostedWare (https://www.hostedware.com/). A link to the survey was provided on the students’ online learning site. The final step in implementation was the release and introduction of the survey to students. The survey was introduced and demonstrated to the students during a lecture on July 19, 2006.

Survey Response Rate

Initial student response rates to the survey were low. This is in line with Nulty’s (2008) suggestions that, in general, online surveys are less likely to achieve response rates as high as those administered on paper. This was particularly true of this study where, despite the offering of an incentive (iPod Shuffle), the participation rate was not high (17 from 105, or 16%). The low participation rate, perhaps, was indicative also of the time delays between the workshops and survey, and the level of student disengagement. To raise participation rates, a printed version of the survey was created, and students who had not completed the electronic survey were asked to complete the survey prior to a lecture on August 2, 2006. This elevated the participation rate to 42 percent (45 out of 105).
The question as to the adequacy of the response rate is an issue that requires clarification. Nulty (2008) states, “whether or not a response rate is adequate depends (in part) on the use that is being made of the data” (p. 306). In this study, the quantitative survey data was used to complement qualitative methods (Roberts, 2002). Nau (1995) suggests that a variety of methods used in conjunction may provide complementary data sets which together give a more complete picture that can be obtained using one method. Therefore, while a higher response rate would have been preferred, the level achieved provided sufficient data to undertake the study.

**Student Interviews**

Interviews are a major tool in the qualitative researcher’s toolbox. They are essential in the instance of case studies, as interviews aim to understand people and their activities (Burns, 1997; Erlandson, Harris, Skipper & Allen, 1993; Silverman, 2005). An interview is described as a verbal exchange, often face to face, in which an interviewer tries to elicit information, beliefs or opinions from another person (Burns, 1997; Silverman, 2005). This study used semi-structured interviewing and drew on the students’ survey answers as a guide for the interview and to seek clarification and elaboration of responses. The students’ survey answers provided a direction to the interview so that the focus was on exploring crucial issues in detail. The rationale behind the interviewing process was “that only the person who understands the social reality in which they live is the person themselves. No structure imposed by the interviewer will encapsulate all the subtleties and personal interpretations” (Burns, 1997, p. 331).
The participant interviews aimed to provide detail about each interviewee’s experience of the ePortfolio, how they engaged with ePortfolio, and the factors that affected their decision to engage or disengage with the ePortfolio. To gather as much information as possible, I had planned originally to interview three students from the disengaged group and three from the engaged group of students, identified from student survey responses. However, only one student indicated their continued engagement and a willingness to be interviewed. The three students from the disengaged group were chosen at random from those who indicated a willingness to be interviewed on their survey. All interviews were approximately one hour in length and took place in my office at the University. Each student interview was audio recorded with the consent of the student (refer to Appendix D for the consent package) and then transcribed. The names of participants were changed in order to protect their anonymity. The interview dates were:

Carol (disengaged) - August 14, 2006
Dana (disengaged) - August 15, 2006
Alyssa (disengaged) - September 4, 2006
Betty (continued to engage) - September 6 and October 2, 2006

When contacted to set up an interview time, Betty was involved with her student practicum. Her interview had to be postponed several times and finally took place on September 6, 2006. At this interview, Betty offered a second interview so that she could explain, in more detail, some issues that she was having with the ePortfolio and also to provide feedback about her interview and the role of the ePortfolio in this, for a teaching job with the Education Department. The second interview took place on the October 2, 2006.
**Researcher Reflective Journal**

I kept a reflective journal during the study. This journal documented my reflections on my personal experiences of the research process (Borg, 2001), and it also served to add trustworthiness as another source of evidence (Erlandson et al., 1993). The journal was kept in the ePortfolio, which provided me with the opportunity to use the ePortfolio as the students could, and also provided insight into any usability issues they might be having. I wrote regularly in the journal and my comments contained insights, reasons for decisions, and concerns about the progress of the research and personal observations of students and the ePortfolio project (See Appendix F for an example entry). The regularity of entries replicated the ebb and flow of the study. For example, during periods when the study gained pace I would write more regularly than during quiet periods.

The benefits to the researcher in keeping a journal stem from the process of writing as well as generating and logging ideas associated with the product (Burns, 1997) (Borg, 2001). The journal writing provides a forum for self-reflection where ideas are generated and explored. This journal provided a location to place not only my own comments and reflections but also those of research supervisors and companions. Additionally, the process gave me a safe place to put comments, ideas and discussion that would not appear in any finished documents but served as a pathway to future thoughts and ideas. The journal, therefore, served as a source of evidence for analysing my own experiences and views about the ePortfolio.

**Storing Data**

In keeping with the advice of Marshall and Rossman (1995), two separate files of data were made. One contained print resources and the other held electronic
resources. This method permitted a systematic approach to data analysis and interpretation whilst making the writing less complex (Huberman & Miles, 1998).

Electronic data were stored in protected access folders on the University servers. This provides 24-hour access and full back up of the data. At the completion of the study, all data was copied to CDROM for long-term storage. Print-based data were stored in a series of chronologically organised archive boxes, initially at the University in a locked filing cabinet, and later transferred to a secure location off site for long-term storage.

Data Analysis

The data analysis was a progression, a continuing process that began on the first day that the cohort of participants was identified. As Erlandson et al. (1993) points out, “it must be in the forefront of the researcher’s mind that data analysis occurs during data collection as well as after data analysis” (p. 113). Data analysis continued with the reading of available documents that provided insight and background information to the main themes of the ePortfolio, the University and some of the various examples of ePortfolio implementation.

The survey data provided a rich source of descriptive statistics and student comments. The descriptive statistics provided summaries of the whole participant group (n=45), about their opinions and views concerning the ePortfolio. The use of descriptive statistics enabled large amounts of data to be displayed in a straightforward way using tables and graphs (see Figure 3-5 for an example).
My lecturer emphasised the role of the ePortfolio as an assessment activity.

<table>
<thead>
<tr>
<th>Answer</th>
<th>Quantity</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>8</td>
<td>17.78%</td>
</tr>
<tr>
<td>Agree</td>
<td>10</td>
<td>22.22%</td>
</tr>
<tr>
<td>Uncertain</td>
<td>19</td>
<td>42.22%</td>
</tr>
<tr>
<td>Disagree</td>
<td>3</td>
<td>6.67%</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>5</td>
<td>11.11%</td>
</tr>
</tbody>
</table>

Answered 45 100.00%

Unanswered 0 0.00%

Total 45 100.00%

Figure 3-5. Example data analysis of survey question

The analysis was enhanced through the provision of a measure of central tendency, the mean, the ‘middle’ value or average value of the data. Summing all responses and dividing that total by the number of scores calculated the central tendency.

As proposed by Burns (1997), I began with the organisation of student comments and interview data to provide a sense of direction and a means to place the confirmations and contradictions that were arising. The initial organisational categories were the same as those used to structure the survey. These categories were drawn from the relevant literature. The categories focussed on the phases of: introduction to the ePortfolio, using the tool, what students thought of the tool and how they engaged with it (see Table 3-3).

Table 3-3. Initial Categories for Data Analysis

<table>
<thead>
<tr>
<th>Initial Categories for Data Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecturer’s role in introducing the ePortfolio.</td>
</tr>
<tr>
<td>ePortfolio workshop facilitator’s role in introducing the ePortfolio</td>
</tr>
<tr>
<td>Use of the ePortfolio.</td>
</tr>
<tr>
<td>Value of the ePortfolio in helping to gain employment.</td>
</tr>
<tr>
<td>Technical issues with using the ePortfolio.</td>
</tr>
</tbody>
</table>
Experiences with the ePortfolio.
Commitment to the ePortfolio.
How students used the ePortfolio.
Approach to learning and study.

Themes were developed following repeated reading and classification. These themes were, in turn, confirmed or refuted by a search for evidence in all the data sources, including interview and survey data, participant observations and field notes. I found that some data were not represented by the initial categories. For example, students had preconceived opinions about the usefulness and the ease of use of the ePortfolio, and it was apparent these opinions could change once students began to use the ePortfolio. I therefore decided to use the Model of Student Engagement with Technology (MSET) (Version 1) as the data categories. This also served as a practical method of judging the value of the model as a way of capturing the student responses. Table 3-4 illustrates the resulting taxonomy of data categories created using the MSET (Version 1).

Table 3-4. Data Categories based on the MSET (Version 1)

<table>
<thead>
<tr>
<th>Perceived Usefulness</th>
<th>Lecturer’s Role</th>
<th>Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Message</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Critical reflection</td>
</tr>
<tr>
<td>Students</td>
<td>Preconceptions</td>
<td>Commitment</td>
</tr>
<tr>
<td></td>
<td>Timing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Year - graduation</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Actual Usefulness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workshop Facilitator</td>
</tr>
<tr>
<td>Observations</td>
</tr>
<tr>
<td>Message</td>
</tr>
<tr>
<td>Workshop Plan</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Perceived Ease of Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Actual Ease of Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ease of Use</td>
</tr>
<tr>
<td>Writing reflections</td>
</tr>
<tr>
<td>Creating Adding</td>
</tr>
</tbody>
</table>
As I read and re-read the data, it became apparent that some evidence appeared to extend beyond the Model of Student Engagement (MSET) (Version 1). Analysis began to show specific points at which students were making decisions about whether to engage or disengage. For example, evidence suggested that what students knew previously about ePortfolios in general, and about the ePortfolio specifically, might have affected their decision to engage. Other questions that arose included:

- What effect would previous employment experience have on the decision to engage or not?
- What effect did the workshop have on the engagement decision?
• What effect did the first unsupervised interaction with the tool have on the engagement decision?

The final data analysis themes and categories that were developed are shown in Table 3-5.

Table 3-5. Final Data Analysis Themes

<table>
<thead>
<tr>
<th>Theme</th>
<th>Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior Knowledge and Experience</td>
<td>Lecture</td>
</tr>
<tr>
<td></td>
<td>Employment experience</td>
</tr>
<tr>
<td></td>
<td>Other Portfolios / ePortfolios</td>
</tr>
<tr>
<td></td>
<td>Timing of introduction</td>
</tr>
<tr>
<td></td>
<td>Technology</td>
</tr>
<tr>
<td></td>
<td>Reflection</td>
</tr>
<tr>
<td>Initial Supported Engagement</td>
<td>Workshop</td>
</tr>
<tr>
<td></td>
<td>Student Opinions</td>
</tr>
<tr>
<td></td>
<td>Technical</td>
</tr>
<tr>
<td>Initial Independent Engagement</td>
<td>Effort</td>
</tr>
<tr>
<td></td>
<td>Technical</td>
</tr>
<tr>
<td></td>
<td>Support</td>
</tr>
<tr>
<td>Ongoing Independent Engagement</td>
<td>Employers</td>
</tr>
<tr>
<td></td>
<td>Motivation</td>
</tr>
<tr>
<td></td>
<td>Technology</td>
</tr>
<tr>
<td></td>
<td>Access</td>
</tr>
</tbody>
</table>

The development of the final data analysis themes invoked a revisit of the Model of Student Engagement with Technology (MSET) (Version 1). Chapter 5 documents the evolution of Version 2 of the Model of Student Engagement with Technology.
Ethical Considerations

Case study research shares a strong personal interest in the lives and views of the participants. As Silverman (2006) states, “when studying people’s behaviours or asking them questions, not only the values of the researcher but the researcher’s responsibilities to those studied have to be faced” (p. 316). Marvasti (2004) adds:

the researcher enters a relationship with those she or he studies. The ethics of social research have to do with the nature of the researcher’s responsibilities in this relationship, or the things that should or should not be done regarding the people being observed and written about…Good manners are a good beginning, but actual research scenarios may require guidelines that go beyond common courtesy. (p. 133)

Guidelines for this research meet the Code of Conduct for Research based on the joint National Health and Medical Research Council and the Australian Vice-Chancellors Committee (NHMRC/AVCC, 2007) Statement and Guidelines on Research Practice. This code describes the obligations on university researchers to comply with the ethical framework governing research at the university and other relevant institutional and regulatory requirements.

Ethics considerations are concerned with the role of the researcher, the role of the participants, and the relationships between the researcher and participants (Umanitoba, 2004). Fox et al. (2007) contends that “the key to all ethical guidelines is the need to ensure that the physical and psychological well-being of research participants is not adversely affected by the research” (p. 103). With these principles in mind, all student participants were provided with an explanatory coversheet for the survey (See Appendix D). This coversheet addressed four ethical issues. First, student privacy was paramount and hence students were not required to add their name to the survey and therefore their question answers and comments were de-identified. Second, all interviews were conducted in the privacy of my office and no
student names were used during the taping of the interview and, subsequently, did not appear on any transcripts. Ensuring privacy also encouraged students to answer survey and the later interview questions openly without fear of reprisal. Third, no identifying names were used in writing the thesis. All student names were given pseudonyms. Finally, all data from surveys and interviews were securely stored.

Students were additionally advised that the submission of the completed survey was accepted as an indication of their consent to participate in the research.

To provide students with the confidence that these measures were in place, they were provided with my contact details if they had any questions and the contact details for the Research Ethics Officer if they had concerns or complaints.

Ethical clearance for this research project fell within the scope of the university’s research ethics arrangements project and qualified for Level 1 (Low Risk) ethical clearance (See Appendix E).

**Trustworthiness**

This case study is based on understanding a real-life phenomenon, student engagement with an ePortfolio. However, as Lincoln and Guba (1985) pose, “how can an inquirer persuade his or her audiences that the research findings of an inquiry are worth paying attention to?” (p. 290). The onus, then, is on the researcher to address concerns of trustworthiness in an ethical manner. Seale (1999) suggests that “trustworthiness of a research report lies at the heart of issues conventionally discussed as validity and reliability” (p. 266). The extent to which the reader can trust the findings in this study is addressed by the following descriptions of the strategies used to deal with these concerns.
Silverman (2006) suggests that matters of reliability and trustworthiness can be satisfied through the provision of extended extracts of interview data, including the question that elicited the data. Data from observations should be accompanied by the relevant context of the observation (Silverman, 2006). Burns (1997) notes that in qualitative research it is often left to the reader to ask, “To what extent can I relate what is in this study to my own situation? (p. 383). Similarly, Janesick (2000) points out that the value of a “case study is its uniqueness; consequently reliability in the traditional sense of replicability is pointless” (p. 394). In providing extended extracts and a rich description of the relevant contexts the reader of this study is asked to make his or her own judgements about the data presented and the relevance for their own contexts.

This thesis uses the concept of crystallisation as “a better lens through which to view qualitative research designs and their components” (Janesick, 2000, p. 392). Crystallisation has been suggested by Richardson (2000) as an alternative to triangulation. Triangulation in qualitative research is best understood as a strategy that uses different methods to validate findings, assuming that there is a fixed point or theory to be triangulated. Richardson (2000) however, argues convincingly that there are “far more than three sides from which to approach the world” (p. 934), and proposes ‘crystallisation’ as an alternative visual metaphor that suggests a deeper, more meaningful, understanding of the subject. The concept of crystallisation recognises the many facets to any given approach to understanding the social world (Janesick, 2000). As Janesick (2000) adds, “what we see when we view the crystal depends on how we view it, how we hold it up to the light (p. 392). In this case study, the different facets of the crystal (student engagement with an ePortfolio)
were explored using a variety of methods including an attitude survey, student interviews, reflective journal, documents, observations and conversations. The developing model of engagement used for the data analysis categories also provided a series of facets with which to view the data.

**Summary**

The interpretivist paradigm and the single case study approach were outlined as the methodological approach and research design for this study. The research questions posed sought understanding by investigating the participants’ own accounts of their experiences with the ePortfolio; including how and when they engaged with the ePortfolio and the factors that impacted on this engagement.

The interpretive paradigm recognises the impact of the researcher’s own background and experience brought to the research. Hence, the researcher’s role as a researching professional was discussed, and the issues of power and relations explored.

Data collection was focused on the principles of collecting sufficient quantity for the researcher to be able to explore significant features of the case, create plausible interpretations of what is found and to test for the trustworthiness of these interpretations. The data collection methods were detailed, including an attitude survey, student interviews, document collection, researcher reflective journal and observations. The approach to data analysis was described as a progressive process using data categories based on the MSET Version 1. Issues associated with ethical and trustworthy research were addressed. The trustworthiness of this research was described in terms of reliability and crystallisation (Richardson, 2000) as an alternative visual metaphor to triangulation, and which suggests a deeper, more
meaningful, understanding of the subject. The following chapter presents the research data and analysis.
CHAPTER 4.0 THE ePORTFOLIO: ADOPTION AND ENGAGEMENT

Introduction

This chapter presents a case study of student engagement with an ePortfolio within the Faculty of Education at an Australian University. This chapter first discusses the data interrogation based on Emmett’s Model of Student Engagement with Technology (MSET). Second this chapter presents the student opinions about the implementation of the ePortfolio following the introductory lecture, hands-on workshops and the unit’s critical reflection. Third, the pattern of student engagement is described. Finally, the opinions and reported experiences of usefulness and ease of use of the ePortfolio are detailed. This chapter draws on data from observation notes, interview transcripts, documents and survey data compiled during the fieldwork.

Data Interrogation

The data were initially interrogated using the framework of the Model of Student Engagement with Technology (MSET) (Version 1) as shown in Figure 4-1.

Figure 4-1. Emmett’s Model of Student Engagement with Technology (MSET) (Version 1)
The MSET (Version 1) was introduced in Chapter 2. This model was adapted from the work of Davis (1989) and Malhotra and Galletta (2005), and was developed as a means of modelling long-term engagement with technology. Emmett’s MSET (Version 1) uses the key constructs of “perceived usefulness” and “ease of use” from Davis’ (1989) Technology Acceptance Model (TAM) and incorporates some aspects from the Psychological Attachment Model from Malhotra and Galletta (2005). Two new constructs, “actual usefulness” and “actual ease of use”, were added. These constructs then lead to an intention to engage with technology and a commitment to use.

Following initial data interrogation using the constructs of the MSET (Version 1) another model, the MSET (Version 2) (see Figure 4-2), was developed to take account of the constructs derived from the analysis of the data but not incorporated within the original MSET (Version 1). These new constructs are:

- Prior Knowledge and Experience, leading to imagined usefulness and imagined ease of use;

- Initial Supported Engagement, leading to supported experience of usefulness and supported ease of use;

- Initial Independent Engagement, leading to actual experience of independent usefulness and actual ease of use; and

- Ongoing Independent Engagement, leading to ongoing experience of usefulness and ongoing ease of use.
Figure 4.2: Emmett’s Model of Student Engagement with Technology (MSET) (Version 2)
Each construct leads to one of four decision points at which stage students decide whether to engage with, or to disengage from the ePortfolio. The revised version, of the MSET (Version 2), is discussed in Chapter 5 based on the research findings detailed in this chapter. The following sections present the research findings based on student opinions of the ePortfolio introduction sessions they were provided with, which highlight prior knowledge and experience, and initial supported engagement.

**Student Opinions about the Introduction of the ePortfolio**

This section presents student opinions about the three opportunities they had to learn about the ePortfolio. The opportunities were an introductory lecture, followed by a one-hour workshop, and completion of an assessment task.

The one-hour introductory lecture took place in week two of semester one, 2005. This introduction was followed by a one-hour hands-on workshop in a computer laboratory in week three. The aims of these sessions were to outline the benefits of the ePortfolio for student learning and describe how it could assist the students with the job application process at the end of their university course. It was hoped that students would view the ePortfolio as a useful tool and that the hands-on workshop would encourage students to feel comfortable in using it. It was expected that a positive view of the usefulness of the ePortfolio, and its ease of use, would shape the students’ attitudes toward using the ePortfolio. The expectation by the lecturer and by myself, as facilitator and leader of these sessions, was that students would develop an intention to engage long-term with the ePortfolio.
Opportunity 1: The Introductory Lecture

The ePortfolio was first introduced in a lecture given by the unit coordinator in week two of semester one, 2005. The one-hour lecture provided an introduction to the ePortfolio and described its benefits for learning and for employment. As part of this study students were later surveyed about their views of the ePortfolio based on this introductory lecture. The survey was undertaken 18 months after the lecture (Responses = 45 or 42%). This time lag was due to the work requirements of being involved in the ePortfolio project as a researching professional and the lengthy design and conceptualisation phases of the doctoral process. Students were asked to reflect on the purposes of the ePortfolio and the benefits in using it that had been stressed by the unit coordinator. These were that the ePortfolio was:

1. a reflective learning tool that would help students become life-long learners and strengthen their academic achievements;
2. a tool that would be useful in writing job applications and a useful adjunct to the job interview process; and
3. an assessment tool with which to complete the reflection task associated with the unit.

The survey provided the students with the opportunity to reflect back on these three purposes. Perhaps because the survey was taken 18 months after the lecture and the students had already engaged with the ePortfolio to varying degrees, there was a high level of uncertainty and divergence in responses in relation to these three purposes. Data were not collected concerning attendance at the introductory lecture; therefore some of this uncertainty about the purposes of the ePortfolio may have been due to non-attendance. Twenty-two percent of students, for example, were
uncertain about the purpose of the ePortfolio as a learning tool, 35 percent were uncertain about the purpose of the ePortfolio in helping them to get a job, and 42 percent were uncertain about the ePortfolios purpose for assessment. Student comments provided in the qualitative part of the survey are indicative of the diversity of student opinions related to the purpose of the ePortfolio, with one student commenting, “we were not told that it was part of the assessment”, while another said “it was emphasised as useful in relation to the assessment for this unit”. One student said, “She [Unit Coordinator] was unable to indicate how this method would be any more relevant than using a paper portfolio in an interview process”.

These findings, related to the introductory lecture, indicate divergent opinions of the purpose of the ePortfolio and how useful it would be for them. The introduction provided to students was short in duration, was not detailed enough to alleviate any misgivings that students may have had, and needed to provide opportunity for students to raise their concerns. In the future, any introductory session needs to address these negative student opinions by facilitating discussion toward alleviating their concerns. This is a significant finding in relation to future implementation: that is, some students may have already decided to disengage right at the start and therefore without the benefit of the complete implementation program.

**Opportunity 2: The Hands-on Workshop**

The students’ second opportunity to learn about the ePortfolio occurred during the workshops held in week three. Students were required to attend only one workshop. The workshops introduced the ePortfolio to the students (n=30 per workshop) in a hands-on environment in an on-campus computer laboratory. Each
student had access to a computer with connection to the ePortfolio via the university network. Students were guided through the features of the ePortfolio and were encouraged to ask questions. My recollections of the workshops recorded in my research field notes indicate that few students asked questions. Questions that were asked related to students being lost in the software and requiring guidance in navigating the ePortfolio.

Each workshop for the students was limited to one hour, and no extra workshops were allocated to those groups. The one-hour allocation and the quantity of content meant that I moved through the workshop at a rapid pace. Although I tried to move around the room to provide individual support, with thirty students in each workshop, it was difficult to address each student’s concerns. With limited time available, it was also impossible to fully discuss the process of critical reflection. I had to presume that this had been introduced during their course. There was no time to explore and discuss examples of successful ePortfolios and no time to demonstrate the process of creating artefacts (i.e. video, document scans). Consequently students had to rely on their own skills and what they could learn from each other.

In the workshops, the history of the ePortfolio was explained, my role in its design was discussed and the benefits of using the ePortfolio for learning and employment were outlined (see Appendix B for the workshop plan). The workshop’s overall aim was for students to develop a positive opinion of the usefulness of the ePortfolio and to encourage long-term engagement. Building on the key points of the introductory lecture, the main points that were emphasised during the workshop were:

- the importance of reflecting on experiences using the ePortfolio;
that self-direction in learning would be required in order to use the ePortfolio effectively; and

• that the ePortfolio would be beneficial to them in getting a job.

I hoped, therefore, that students would believe that the ePortfolio could be useful to their learning and employability and that it would be easy to use, thus encouraging sustained engagement.

Survey questions were also used to ascertain whether the students gained awareness of the benefits of the ePortfolio from the workshops. The survey data indicated that 82 percent of students agreed or strongly agreed that the workshop discussed the importance of reflecting on experiences (Figure 4-3). In addition, 70 percent of students agreed or strongly agreed that the workshop emphasised the importance of self-direction in using the ePortfolio (Figure 4-4). Finally, the survey indicated that 83 percent of students agreed or strongly agreed that the workshop discussed the role of the ePortfolio in helping students to get a job (Figure 4-5).

<table>
<thead>
<tr>
<th>Answer</th>
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<th>% of Total</th>
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<tbody>
<tr>
<td>5 Strongly agree</td>
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<tr>
<td>4 Agree</td>
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</tr>
<tr>
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<td>1</td>
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</tr>
<tr>
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<td>0</td>
<td>0.00%</td>
</tr>
<tr>
<td>Answered</td>
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<td>100.00%</td>
</tr>
<tr>
<td>Unanswered</td>
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<td>0.00%</td>
</tr>
<tr>
<td>Total</td>
<td>45</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Figure 4-3. Survey Question: Reflecting on experiences
2.2 My facilitator emphasised the importance of self-direction in using the ePortfolio.

<table>
<thead>
<tr>
<th>Answer</th>
<th>Quantity</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
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<td>26</td>
<td>57.78%</td>
</tr>
<tr>
<td>3 Uncertain</td>
<td>10</td>
<td>22.22%</td>
</tr>
<tr>
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<td>3</td>
<td>6.67%</td>
</tr>
<tr>
<td>1 Strongly disagree</td>
<td>0</td>
<td>0.00%</td>
</tr>
<tr>
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<td>100.00%</td>
</tr>
<tr>
<td>Unanswered</td>
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<td>0.00%</td>
</tr>
<tr>
<td>Total</td>
<td>45</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Figure 4.4. Survey Question: Importance of self-direction in using the ePortfolio

2.3 My facilitator emphasised the role of the ePortfolio in helping me to get a job.

<table>
<thead>
<tr>
<th>Answer</th>
<th>Quantity</th>
<th>% of Total</th>
</tr>
</thead>
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<td>4 Agree</td>
<td>25</td>
<td>55.56%</td>
</tr>
<tr>
<td>3 Uncertain</td>
<td>2</td>
<td>4.44%</td>
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<tr>
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<tr>
<td>1 Strongly disagree</td>
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<td>Total</td>
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Figure 4.5. Survey Question: Helping to get a job

The survey data suggest that the majority of students agreed that they had been informed, during the workshop, of the underpinning principles of the ePortfolio, that critical reflection and self-direction could be beneficial to them, and that the ePortfolio could help them to get a job. The qualitative survey comments provided by the students, though, revealed a high degree of variance. For example, one student commented, “I thought it would be useful to build up a collection of experiences and artefacts”. Another student said, “After the first workshop I didn't feel that the portfolio would be helpful”. Overall, the data indicated a polarised
group of students who reported either that the ePortfolio would be useful or that it would not.

Student comments revealed that ‘relevancy’ and ‘effort required’ were key decision influences as to whether or not to engage with the ePortfolio. While some students appreciated the organisational and artefact storage properties of the ePortfolio, many remained unconvinced of its value. One student best summed up the expectations of many students when she commented, “personally I will not use it. I can, however, appreciate its organisational, reflective and recording value of one’s academic career in the light of employment.”

As part of the practical aspect of the workshop, students were asked to duplicate my instructions on the projected screen and to add some text as a practice reflection, and then to add that reflection to their ‘ePortfolio View’. They were then asked to release their ePortfolio View to me. Students can create multiple versions of their ePortfolio (called ePortfolio Views) for different audiences. These views were only released to me during the workshop; I did not have access beyond this period. At this time I was only concerned with student understanding the process of creating their ePortfolio and not their ability to write critical reflections.

Student comments made in the survey about ease of use issues were a precursor to comments made later in individual student interviews and are discussed in following sections in relation to the reasons students gave for disengaging. Again, these comments, demonstrated the diversity of student opinion about the ePortfolio. As one student said, “the portfolio seemed fiddly”. Another suggested that there was “very limited explanation in how to use it”. On the other hand, one student said that the ePortfolio “was easy to understand”.
From personal observations written in my research field notes, some students were not on task during the workshop and I was concerned that they may not understand how to use the ePortfolio. As I wrote in my journal:

I think a lot of these students are going to struggle with the ePortfolio after these workshops as they seemed easily distracted. Many students were checking email and not following what I was doing. I need some better strategies to motivate the students during the workshops and afterwards.

Detailed student comments bear out these personal reflections. As Alyssa said, “last year I got a bit lost during the workshop”. Carol commented, “I mean, it sounds like a great idea, but I found that one hour was very rushed and I didn’t completely get a grasp of it”. Carol suggested the addition of extra workshops as a solution:

I think a few more workshops would have been helpful – because we only had an hour, it was mostly you just saying, okay everybody, open the page and then you go to this section and you go to this. Like try and keep to actually how to use it. It was so rushed and trying to show up as much as possible about the whole layout and setup and everything. So yes, I definitely think a few more workshops would have been helpful for someone like me at least, to give me more time to digest the idea and think about it a bit more, because it was one workshop and then boom, we never heard about it again.

Although no additional workshops were scheduled, students were provided with support services to help them develop their skills in using the ePortfolio. These included an ePortfolio help desk (available via phone) and printed help documents. Betty was the only student who said that she had accessed the help phone line. She also reported that she had found the experience beneficial. Other students, however, stated a preference for face-to-face guidance. As Dana said, “I think having someone there to guide you through it is probably more beneficial”. Alyssa added:

when it comes to new things like that, I need to have one on one introduction to it rather than having the class thing where you sort of, it’s hard to stop you, because there are other students in the room.
Students identified the lack of individual support as having serious consequences for their engagement as they struggled to cope with the new learning experiences presented by the ePortfolio. However, the ability to provide such personalised assistance was limited by the resources available. Appropriate and ongoing support was a recurring issue for students and is revisited in a later section that discusses the technical skills of the students.

The findings from this section demonstrate a failure to win the ‘hearts and minds’ of the students. While the focus of the workshop was on the physical use of the ePortfolio (ease of use) it was apparent that not enough time was allocated to discussion concerning the usefulness of the ePortfolio. In the future the workshop needs to focus on explaining the pedagogy and usefulness of the ePortfolio and more interactively exploring student opinions and concerns. In hindsight, I was probably too optimistic about the level of student engagement that was achievable following this implementation. I know now that no matter how good the introductory sessions were, not all students would have engaged. However, I did underestimate the importance of student perceptions and opinions. These perceptions and opinions, and the reasons students gave for disengaging are discussed in later sections.

In the future, additional workshops should be scheduled that allow for discussion of the ePortfolio, the process of critical reflection and in providing technical assistance in creating artefacts. Although the ePortfolio contained an extensive series of help documents and electronic animations including exemplar ePortfolios, students typically did not access these documents. This has implications for anyone introducing ePortfolios in that students need sustained pedagogical and technical support, at least in the first year of use. The final year of use may also
require specific support related to the use of the ePortfolio in the employment process.

I also was cognisant of the danger of over-selling the ePortfolio and hence in describing the benefits of the ePortfolio, I was careful to present all aspects of functionality. For example, I pointed out that the ePortfolio could not be used with external viewers and that a preferred option was to make use of the ePortfolio and then to print out the finished product. While I did stress the benefits of using the ePortfolio, I also pointed out that some employers might actually prefer a printed document. At the time of the workshops, I recorded in my journal that I was concerned that:

in conducting these workshops I find I am not completely comfortable with introducing and marketing a product that is difficult to align with student needs and goals. I am not sure how to resolve this dilemma other than highlighting these feelings to the project team and recording them in my thesis.

I was also careful to inform the students that, although the ePortfolio was useful and important, the process of collecting, selecting, reflecting and documenting what they had learnt was equally important to their growth as a learner and in becoming a job applicant. In fact, I explained that if they chose not to use the ePortfolio they could still achieve benefits to their learning and employment by documenting their experiences and learning. The message I tried to get across was that it was the process rather than the tool that was important. Perhaps by being honest about the limitations of the ePortfolio during the workshop I added to the levels of disengagement.
Opportunity 3: Assessment and Critical Reflection

As detailed previously, in addition to attending the introductory lecture and a hands-on workshop, students were required to complete a reflective activity using the ePortfolio as part of a larger assessment task. Subsequently, at all workshop sessions, one of the unit tutors was present so that questions pertaining to the content of the critical reflection could be explored.

The use of the critical reflection had two purposes, first to encourage students to use the ePortfolio following the workshops and second to engage students in critical reflection.

Many students indicated in the survey that, without the motivation of the critical reflection, they would not have used the ePortfolio. As Boud (1995) states, “assessment methods and requirements probably have greater influence on how and what students learn than any other single factor” (pp, 39-40). Biggs (2003) suggests that student learning is determined largely by assessment and not by the teaching or the curriculum content. Sixty-four percent of students, for example, indicated they would only use the ePortfolio when it was necessary for assessment (Figure 4-6).

<table>
<thead>
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<tr>
<td>1 Strongly disagree</td>
<td>1</td>
<td>2.22%</td>
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<td>Total</td>
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Figure 4-6. Using the ePortfolio for assessment
As one student in the survey commented:

I really liked how they introduced it as a compulsory task to complete some sections of our portfolio however I haven’t added anything since – I think this should be a core feature of each subject, a criteria to reflect on participation in order to pass.

Assessment can be a powerful motivator. As Race (1995) states, motivation is about forming goals and then making an effort to achieve them, that is ‘wanting to learn’ (p. 61). As discussed previously, students make decisions of where to commit resources based on satisficing decisions. Assessment requires students to commit resources based on satisficing decisions, often to the exclusion of other tasks. As Carol, during her interview, stated:

I’m the type of person I’ll have something assessed and it’s going to determine whether I pass or fail, I’m going to put my effort into it. Whereas if it was just trying to teach me for my benefit I’d be more likely to go, I’m focusing on what I … actually need to make me pass this unit.

Yes, it could have some sort of rating, marking. If you got 10% towards your final grade or something, I think you’d probably find more people were more likely to be involved in it than not.

Dana supported Carol’s comments adding, “just the fact that you’ve got all the other assignments and things to worry about and there’s no purpose, kind of thing”. When asked about assessment as a motivator, Dana replied, “Yes, that’s a motivator”. When asked about making the ePortfolio a compulsory requirement for assessment, Dana replied, “I think so. I kind of see it as compulsory. You’ve got to have something to show them [employers]”. Many students then, viewed assessment as a positive motivator to engage with the ePortfolio.

The findings related to the use of assessment as an initial engagement tool indicate that although students had to engage with the ePortfolio for this task, most chose to disengage following completion. However, mandating the use of the
ePortfolio for assessment in order to achieve engagement has some inherent problems as assessment-driven ePortfolios may lose the valuable insight that students make into their own unique learning and working experiences (Acker, 2005). Breault (2004) warns that portfolios are in danger of becoming simply another test unless viewed as “a more formative type of evaluation and serve more as a snapshot of a given moment in the preservice teacher’s progress towards becoming a professional” (p. 858). Additionally, Kimball (2005) argues that, “ironically by attempting to gain a more valid vision of student learning, portfolios are potentially more intrusive than large-scale testing” (p. 438). In the future, while the use of the ePortfolio solely for assessment might solve disengagement, perhaps a more course-wide pedagogical approach to its use might encourage more students to engage. As Betty, when asked in her interview about what might encourage other students to use the ePortfolio, suggested:

I don’t know if this will help but [lecturer], she was our maths lecturer, last semester had just had it. At the end of each lecture she goes, write down two things you have learned from today’s lecture. Great stuff. No one’s ever asked me that, and you would go, oh yes, and they could do that at the end of each semester, like in a tutorial or lecture or something. Let’s go to a workshop, let’s go to a computer lab. Right. Write down what did you learn in the subject for the last six months. Yeah, it’s not going to be an assessment piece but it could be built into the last tutorial, don’t you think?

McCoy and Barrett (2004), in researching the application of ePortfolios in teacher education, found that assessable ePortfolios are viewed by students as a compulsory task required for graduation. Because of this, many students indicated that they would not continue with the ePortfolio process after graduation.

The use of ePortfolios for assessment is not without obstacles for students and staff:
• academic staff need to be more explicit and consistent in applying assessment criteria;

• there is an inverted value of work and commitment from students (e.g. 1st year students do not see the need, 3rd year students wish they had had it in 1st year);

• student workload can restrict reflection to critical events; and

• there is increased academic staff workload in reading, assessing and providing feedback (Acker, 2005).

Further, Farr Darling (2001) noted from interviewing 12 portfolio creators, that the lack of clarity and objectivity associated with expectations and evaluation was a crucial factor for preservice teachers. Anderson, DeMeulle and Knowlton (1996) advocate bringing students into the assessment process more deeply, while acknowledging that as preservice teachers become “active stakeholders in assessment many questions and ambiguities arise concerning reliability, validity, and value of portfolio assessment” (p. 6). Perhaps as Breault (2004) suggests, “if we are going to ask our students to confront the more ambiguous requirements of authentic assessment we need to be willing to accept – and act – upon the more ambiguous results of that assessment” (p. 858). If the use of the ePortfolio is to be a focus of assessment then academics and students need to be more involved in formulating the outcomes, guidelines and requirements for ePortfolio assessment. In this way the perceptions of the ePortfolio and the student results will become less ambiguous.
The second purpose of the assessment task was related to writing a critical reflection. Several students indicated that writing this critical reflection was difficult. This point, was exemplified by Carol, who stated:

I’m in the third year and reflections still get me. I am the person that just writes out what happens. Like this is what we did, but there’s no what I learnt. So with my prac I found a lot of comments saying, you need to actually go deeper into it and say what did they learn, what did the children learn from the experience, what did you learn, what would you change? So I’m slowly trying to learn how to write it better.

The issue, as Carol explained it, was that while she could recite what had occurred or could describe an experience, highlighting what she learnt was far more difficult.

The importance of fostering and supporting the reflective process as a foundation for learning is emphasised within adult learning theories of andragogy (the art and science of helping adults learn) (Knowles, 1984b). Boud and Walker (2001) state that how the learner makes meaning out of experience is more important than the experience itself: “learning outcomes of experience will be determined more by learners than by the one who designed the experience or who assisted in reflection on it” (p. 33). Mezirow (1991) and Freire (2001), too, stress that the heart of all learning lies in the way we process experience, in particular, our critical reflection of experience. As Freire (2001) states, “critical reflection on practice is a requirement of the relationship between theory and practice…to teach is not to transfer knowledge but to create the possibilities for the production” (p. 30).

Enabling students to see how reflection is important to learning and that the ePortfolio can be a tool to aid critical reflection is vital for the successful implementation of an ePortfolio. As Salmon (2002) adds:

the notion of reflective practice suggests that skills cannot be gained in isolation from context. Reflective practice focuses on individual interpretation of events and the framing of these into suitable actions. Implicit
in this notion is the idea that practitioners can be prepared for professional situations through such an approach. It also implies a process leading from novice to expert in a field. (p. 380)

However, as Kimball (2005) warns, the over simplified conception of ePortfolio pedagogy as “collect, select, reflect and present” may be a useful mnemonic, but unfortunately straightens the recursivity of reflection into a rigid linear process (p. 450). ePortfolio as a technology often does not facilitate the students returning and adding to a particular reflection. Instead it seems to promote a ‘write and forget’ attitude in students.

The difficulty of writing critical reflections had been recognised previously during the ePortfolio design process. To assist students to write their reflections, a scaffolded approach was introduced based on behavioural interviewing techniques where students were encouraged to write reflections against situation, task, action, result and learnt (the STARL acronym) (see Table 4-1). This acronym was spoken about briefly in the workshop and was detailed in the help documentation.

Table 4-1. STARL

<table>
<thead>
<tr>
<th>Situation</th>
<th>The situation is the context in which the experience occurred.</th>
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<tbody>
<tr>
<td>Task</td>
<td>The task is what was actually required of you in the situation. When reflecting on your actions, ask yourself why you chose to respond in that particular way.</td>
</tr>
<tr>
<td>Action</td>
<td>Action refers to the steps that you personally took in response to the task.</td>
</tr>
<tr>
<td>Result</td>
<td>Result refers to the outcome of your actions. How did your actions contribute to the completion of the task? How did your actions affect the final outcome of the situation?</td>
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</table>
Learnt

Learnt refers to the things you have learned from the experience. Highlight any skills or abilities that you have developed or improved as a result of the experience. Think about whether you have gained a deeper understanding of any particular issues. Think about how you might apply what you've learned to other situations.

The value of the proforma was supported by student comments. Carol remarked:

I mean [previously] nobody ever gave me a format to write a reflection. If somebody would have said these are the kinds of things that you need to cover to be classed as a reflection to actually have some sort of a meaning and be useful to you in the future that would have been helpful.

Carol was shown the proforma briefly in the workshop. It was only when she was able to discuss it one-on-one in the interview that she realised how useful this was as a way of organising her writing of critical reflections.

Students were encouraged to add a title for their reflection, a context, a date and a description up to 1500 words (See Figure 4-7). Students could also add private notes that were not viewable by anyone else.

Figure 4-7. Description field in ePortfolio
The issue for some students was that, although the acronym (STARL) offered a structure, the description field on the form was blank, so that students could add their entries in any way they chose. Without the support of the acronym as exemplified by Carol, students struggled to compose their critical reflections. Also missing from the acronym and the support documentation was a pedagogical discussion of what “critical” meant. More useful for the students would have been a series of questions, and perhaps a short reading on how to write a critical reflection.

**Student Engagement with the ePortfolio**

The first part of this chapter has detailed the student opinions about the opportunities provided to the students to learn about the ePortfolio. These included the introductory lecture, attendance at a hands-on workshop and the completion of a critical reflection as an assessment task. This section details the student engagement with the ePortfolio.

The students engaged with the ePortfolio in qualitatively different ways. The data revealed two distinct categories of engagement:

1. continued voluntary engagement; and
2. engagement based only on assessment followed by disengagement.

As the survey showed, some students continued to engage voluntarily with the ePortfolio but most disengaged after the initial completion of the assessment task. The patterns of engagement revealed by the survey data indicated a high level (86%) of student disengagement after the assessment task was completed. This suggests that students were strongly motivated by the assessment and not by the suggested benefits to learning and employment. Only six students from the survey participant group (n=45) continued to engage past the compulsory period.
Student Study habits

To ascertain if a link existed between reported commitment to study and continued ePortfolio use, students were asked to provide details in the survey (see Appendix D) of how they evaluated their own study habits. It was speculated that students who said they were committed to their study would be more likely to engage with the ePortfolio, while students who reported being less committed to their studies were thought to be less likely to engage with the ePortfolio. Survey responses (n=45) indicated that the majority of this cohort reported that they put high levels of effort into their study (93%), related their learning to practical or real-life contexts (86%), had good time and resource management skills (50%), and reflected on their learning and work experiences (51%). Despite the general self-reporting of good study habits amongst the students surveyed, just six of the 45 students reported continued engagement with the ePortfolio.

The interviews (n=4) offered the opportunity to examine this discrepancy between reported high level of study habits and low levels of ePortfolio engagement in more depth. Each interviewee’s comments about their study habits are now presented in turn. Only Betty continued to engage with the ePortfolio beyond the assessment requirement.

Alyssa, when asked how her studies were going, commented, “Good really good so far. I’m really enjoying it and I find that putting in the extra effort pays off”. She described herself as a student who put a lot of effort into her studies, pushed herself to make a good job of her study, and tended to work steadily during the semester. Alyssa indicated that she often related what she was learning to practical or real-life contexts. In contradiction, she saw herself as not always thinking through
topics. In the survey, she commented that she felt that she did not take enough time to reflect on her practicum experiences or on the best way to teach. In the interview, when asked to clarify this, Alyssa said:

sometimes I do, sometimes I don’t. It just depends when I think I really need it. … especially after prac I sort of reflect back on my folders that I do throughout the prac and, as I said before, when it comes to assignments I sort of look back and have a look at my other assignments that I have previously done.

Carol described herself as a student who put an effort into her studies and tried to push herself to make a good job of her study. She too, indicated that she tended to work steadily during the semester. Carol and Alyssa both related what they learned to practical or real-life contexts, although they stated that they did not always think through topics in more depth. Carol felt that she did not take enough time to reflect on her work experiences or on the best way to work:

I think the first year or so I didn’t even keep assignments. I’d be like, yeah, cool, I passed, chuck it. But speaking to a few other people who were like, “You don’t keep your assignments”? Hang on maybe I should keep my assignments. Now I’ve started collecting them but I’ve only got last year’s and this year’s. That first year was just, yeah, I passed, that’s great.

Carol also expressed concerns related to her time management skills:

I’m not very good with my management so it’s always a frantic rush when an assignment’s due. I don’t really think about what needs to be done a million years from now, whereas I kind of focus on the immediate. So when the portfolio time comes in I’ll be like frantic, trying to organise everything. Whereas in that sense it would be good to kind of go, oh it’s already done. Yes, I’m the sort of person that kind of focuses on the immediate needs that need to be done and yeah, trying to do work for something that doesn’t need to be done right now is taking time away from things that I need to finish first.

Dana, like Carol and Alyssa, said that she too put a lot of effort into her studies and that she often related her learning to practical or real-life contexts, and that she generally pushed herself to make a good job of it. Dana also admitted that
she relied on what she was taught rather than thinking through topics for herself. Unlike Carol and Alyssa, Dana indicated that sometimes she took the time to reflect on her studies and that she also worked steadily during the course rather than leaving things until the last minute.

Betty indicated that she also put a lot of effort into her studies and that she often related what she had learnt to practical or real-life contexts. She generally pushed herself to make a good job of her studies and tended to work steadily rather than leaving things to the last minute. Betty described herself as someone who took time to reflect on her studies.

In this study, student opinions about their own level and quality of effort appear at odds with their engagement with the ePortfolio. However, student self-reports always raise the issue of the believability of the data (Johnston & Pennypacker, 1993), although other evidence suggests that students are accurate and credible reporters of their activities (Pace, 1984; Pascarell, 2001). The positive study habits reported by these participants and the low level of engagement with the ePortfolio suggests that, at least for this group of students, factors other than study habits were the reason for disengagement.

**Reasons Students gave for Disengaging from the ePortfolio**

This section presents the factors that students reported contributed to whether they chose to engage with the ePortfolio beyond the assessment task. This section is organised into issues associated with the usefulness of the ePortfolio and second the ease of use of the ePortfolio.
Issues Associated with the Usefulness of the ePortfolio

Student reported that issues of the usefulness of the ePortfolio were based on what they heard in the introductory lecture, what they experienced during the workshops and in completing their assessment task, and any further engagement. These issues reflected six themes:

- the desire for print resources rather than electronic;
- the usefulness of the ePortfolio for organising and storing artefacts;
- the usefulness of the ePortfolio as a resource for employment;
- the usefulness of the ePortfolio as a resource for learning;
- single unit implementation versus course implementation; and
- the lack of access to the ePortfolio following graduation.

Each of these themes is now addressed in turn.

The Desire for Print Resources rather than Electronic

The first theme relates to the preference for printed resources rather than electronic ones. One student commented in the survey “I feel my remaining time would be better spent developing a tangible portfolio”. In this student’s view, the ePortfolio was not real; it was, instead, imaginary or virtual. Another student confirmed this opinion when she said, “I would probably still feel more comfortable producing hard copies of my work”. This fact became more poignant in that external access to the ePortfolio was restricted.

As with many university technical infrastructures, the University’s major software systems are protected by password access. This control prohibits external access behind the University firewall. The firewall is a collection of security measures designed to prevent unauthorised electronic access to the University
computer systems. The firewall also prevents external viewer access to the ePortfolio. Hence the value of the ePortfolio was diminished in the eyes of students by its lack of ability to be shown to viewers external to the University. It is hoped that the lack of external access will be resolved in 2010. This was an issue about which many students expressed disquiet during their workshops: that the ePortfolio could not yet be shown to potential employers outside the university and, hence, required printing out. As Betty noted:

we don’t even think people can access it or something, everyone said well, what’s the point. So I think that was a downside.

This concern was also noted by a student who had disengaged and was frustrated by the fact that she could not provide an electronic resource to viewers outside of the university:

I stopped using the portfolio when I found out I couldn’t download it to give as a resource for future employers to access instead of giving a paper based portfolio.

This raised the issue for students of the usefulness of a tool where functionally is not complete. It also reinforces the dangers associated with overselling the ePortfolio capabilities.

**The Usefulness of the ePortfolio for Organising and Storing Artefacts**

The second theme relates to the usefulness of the ePortfolio as a place to store and organise student artefacts. When one student was asked how she thought the ePortfolio could help her, she commented that it would “allow me to get my thoughts onto screen”. Another student thought that the ePortfolio would help her “organise my ‘me’ information”. A third student commented that the ePortfolio would allow her to “become more organised, both of my thoughts and artefacts”.

Other students believed that the ePortfolio would be useful “in storing some of my current works and artefacts” and that it “would be useful to build up a collection of experiences and artefacts”.

Other students, however, recognised that using the ePortfolio to organise and store artefacts would entail considerable effort on their behalf: “I thought it was beneficial but still haven’t accessed it as much as I should have”. Another student commented that “I think it would help very much so, however I need to use it more”.

As a storage mechanism for artefacts, an ePortfolio offers an organisational framework that may not be available in traditional storage devices available to students. The University ePortfolio reported on in this study offers students the ability to store and organise artefacts based on graduate capabilities, both generic and discipline specific. Students can also name their own capability, as a placeholder for items that they believe do not fit under designated capabilities. However, the organisation of student artefacts may require a more customisable approach for the ePortfolio where the student can create multiple storage areas based on their own framework.

*Usefulness of the ePortfolio as a Resource for Employment*

The third theme relates to the value of using the ePortfolio as a resource for gaining employment. For example, when asked whether they felt the ePortfolio would help them gain employment, 31 percent of students agreed that the ePortfolio would have a positive impact on employment prospects (Figure 4-8). However, 44 percent were uncertain, and 17 percent disagreed.
4-1: I believe the ePortfolio will have a positive impact on my employment prospects

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Figure 4-8. Survey Question: Impact on employment prospects

When asked if they believed the ePortfolio would be a useful resource in preparing for interviews, 46 percent either agreed or strongly agreed with the statement, while 28 percent were uncertain and 22 percent disagreed (Figure 4-9).

Similar findings occurred when students were asked about the usefulness of the ePortfolio in writing job applications, where 37 percent of students were uncertain and 41 percent either agreed or strongly agreed that it would be useful (Figure 4-10).

4-2: I believe the ePortfolio will be a useful resource in preparing for interviews.

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</tr>
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</tr>
<tr>
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</tr>
<tr>
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<td>10</td>
<td>22.22%</td>
</tr>
<tr>
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</tr>
<tr>
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<td>100.00%</td>
</tr>
<tr>
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</table>

Figure 4-9. Survey Question: Usefulness in preparing for interviews
4-3: I believe that the ePortfolio will be useful in writing job applications.

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<tr>
<th>Answer</th>
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</tr>
<tr>
<td>Total</td>
<td>45</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

**Figure 4.10. Survey Question: Usefulness in writing job applications**

As shown in relation to overall usefulness, students’ comments about the ePortfolio in terms of employability reflected a high degree of uncertainty. As one student commented, “I really can't say as to whether or not it will help me gain employment. I think I can gain employment without using it”. Another added:

> having worked in the recruitment industry I'm not sure how easily the ePortfolio will be to transfer to employers. I think they are keener on your experience you can draw on and the answers to their questions rather than reading things.

Of the 31 percent who felt that the ePortfolio would help them gain employment, one student commented that the ePortfolio would “probably improve my chances of getting a job”. Alyssa, in answer to an interview question about how the ePortfolio would help her get a job, replied, “Well, by letting our future employers look at, you know, my credentials, and what I’ve achieved over the years, and basically just getting a whole picture of me”. Alyssa could see how the ePortfolio might add to other records of achievement (such as her academic record) and that it might contribute to a better overall representation of her skills.

Students were also concerned about the level of interest that potential employers would show in their ePortfolio. Others questioned the actual usefulness of
the ePortfolio in the employment process. As one student commented, “a lot of past students have told me schools prefer to see a paper version of a portfolio”. Another suggested, “many employers do not want to look at an electronic source”. As Temple, Allan and Temple (2003) discovered in their research, school principals still prefer printed copies of any portfolios. In fact, most principals only wanted responses to selection criteria with a covering letter, not an ePortfolio.

Due to the minimal uptake by participants in actually using the ePortfolio, this next section is based on the recollections of Betty, who was the only participant who reported trying to use the ePortfolio in seeking employment through the Education Department.

The key points arising from Betty’s interview (with this researcher) were the relevance of the ePortfolio to:

- applying for employment;
- undertaking an interview; and
- preparing for her Education Department interview.

At the time of completing the research survey, Betty had just received documentation from the Education Department, her preferred prospective employer, about the final year job interview process. Betty expressed concern about the apparent disconnection between the attributes that she was addressing in the ePortfolio and the selection criteria required for the Education Department recruitment process:

I thought the [attributes] were all important, to use it for my portfolio or for my interview … to me they weren’t connected.
I understand that they’re not [feeders for the Education Department], but I just thought, now I look back I just feel like I’ve wasted so much time. I don’t feel it was connected to the interview questions at all.

Betty then added, “the amount of time that I spent doing my ePortfolio now seems to be a waste when I should have been writing my selection criteria”. The final comment from Betty from her survey responses was most concerning. When asked, “What do you think now about how the ePortfolio could help you?” Betty replied “Not very much”. Betty also showed considerable angst in her survey answers (see Table 4-2).

Table 4-2. Survey Answers from Betty

<table>
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<td>4.1 I believe the ePortfolio will have a positive impact on my</td>
<td>Disagreed</td>
</tr>
<tr>
<td>employment prospects.</td>
<td></td>
</tr>
<tr>
<td>4.2 I believe the ePortfolio will be a useful resource in preparing for</td>
<td>Strongly Disagreed</td>
</tr>
<tr>
<td>interviews.</td>
<td></td>
</tr>
<tr>
<td>4.3 I believe the ePortfolio will be useful in writing selection</td>
<td>Disagreed</td>
</tr>
<tr>
<td>criteria.</td>
<td></td>
</tr>
</tbody>
</table>

Betty also commented in her survey that:

the things that I have reflected upon in my portfolio don’t seem to match very well with what is required of me to write for the selection criteria for [the Education Department].

Betty’s survey comments were a surprise, as she had appeared to be the student most engaged with the ePortfolio. She had attended voluntary workshops prior to the unit workshop. She indicated in the survey, that she had 31-40 additions to her ePortfolio. In previous informal conversations, recorded in field notes, Betty had discussed how she was using the ePortfolio to reflect on her assignments at the end of each semester. Her negative survey comments as detailed above were reinforced
in the first research interview when Betty commented: “Oh yes. I was probably feeling very negative [laughter]. I remember going, “What’s the point of this. I’m letting him know”.

The second issue expressed by Betty related to the difficulty of using her ePortfolio in an interview setting with a potential employer not prepared for the use of an ePortfolio. As Betty stated:

when I had my interview I had ten minutes to present my portfolio. I wasn’t going to go through each subject. I didn’t have time. So all this effort that I put in, I just had to slip through. I said “this is an electronic portfolio”. I didn’t have a laptop, that wasn’t what I was focused on anyway.

As employers become more accustomed to students presenting their work in an electronic format, this issue may become less critical. However, for students in the next few graduating cohorts this will be relevant. Students need to be provided with effective alternatives, such as presenting their ePortfolio on a CD for later viewing by the interview panel or by using a printed version of their ePortfolio in the interview.

The final issue of concerns to Betty was in relation to her job interview and whether or not the ePortfolio had aided her. Evidence of her preparedness for the Education Department interview is provided in the following conversation that was part of Betty’s research interview.

*Interviewer:* one thing that the ePortfolio was trying to achieve was that you would have it as background; even just the process of thinking about those things may have helped.

*Betty:* you’re right. It probably got me thinking that way and [I] was more prepared… Yes, I hear what you’re saying and yes it probably had. It was probably in my psyche. I went in with my guns blazing. This is what I’ve done, very confident
Interviewer: I suspect that behind the scenes it did help you and gave you a lot more confidence about who you are.

Betty: that’s right, and I guess if they had a question or wanted to know what I did in the subject I’d have it there.

This excerpt shows that the ePortfolio had an important impact on how prepared Betty was for the interview process, although perhaps not as Betty had anticipated. For Betty, the usefulness of the ePortfolio was related to confidence and preparedness, rather than to the physical or virtual storage of reflections and artefacts. This is a useful finding in relation to ongoing ePortfolio developments and implementation workshops as it emphasises the value of the ePortfolio as a process tied to critical reflection, more than a product. This is in line with the emerging consensus that the ePortfolio is both product and process (Joint Information Systems Committee (JISC), 2008).

**Usefulness of the ePortfolio for Learning**

The use of ePortfolios for learning is an important ‘raison d’être’ for their implementation. As Yancey (2001) states, in an ePortfolio:

students are responsible for telling their own stories of learning: for explaining what they did and did not learn, for assessing their own strengths and weaknesses as learners, for evaluating their products and performances, for showing how that learning connects with other kinds of learning (in the classroom and without), and for using the review of the past to think about paths for future learning. (p. 19)

This is especially true when students are provided with the opportunity to reflect on their successes and failures (Kuhn, Schaubule & Garcia-Mila, 1992; Siegler & Jenkins, 1989). Darling (2001) concluded that while ePortfolios can benefit learning it would not benefit those students who are unwilling to meaningfully engage in ePortfolio activities.
Several students expressed opinions about the usefulness of the ePortfolio to their learning. As one student said, “it is a good place to summarise all my learning”. Another student added that it allows a “good reflection process and development of learning [so] that I can display myself as a potential teacher”. Betty during her interview commented:

relevancy would be a big one. Like I can see how I could use it for remembering what I was doing in each subject to help me in the end with the Education Department. So to me it was a memory. I really want to remember what was relevant in each subject and how it could help me.

Going back to the relevancy thing … it was good for my character building and whatever and my knowledge of what I was doing. … I loved the course because it all made sense to me. I understood how it was reconceptualised and that’s I think why I got such good marks – never got such good marks in my life. Everything made sense to me.

Another student, while acknowledging the benefits of the ePortfolio, still chose to disengage: “Personally I will not use it. I can however appreciate its organisational, reflective and recording value of one’s academic career”.

The usefulness for learning relates not just to the use of the ePortfolio but also to student learning in general. For example, Carol was asked whether the idea of critical reflection, as emphasised in the workshop, had influenced her in other ways:

I guess it made me think about saving really good marks from assignments and examples of work that I’d done to be able to show people later on.

So it did make me think, oh maybe I should start collecting stuff that I’ve done from uni and thinking about what I’m actually doing in my units and how it’s going to help me in the future.

So it did sort of trigger a ‘start thinking about it’ sort of thing. If nobody had ever said, like if we’d never done that workshop, I’d probably still be at this stage going, it’s next year, I’ve got to worry about it till next year, and by then it would be like, oh, I don’t have anything to put in it, so I’m screwed.

I guess in that sense it was good because it did sort of make me start thinking now’s the time to start thinking about it. So that was helpful in that sense, definitely.
Carol had started thinking about the concept of the ePortfolio, that is, that collecting and reflecting on “stuff that I’ve done from uni” would benefit her in the future. This is an important finding. The basic concept of collect, select and reflect is useful for students learning even if they do not eventually make use of the ePortfolio technology.

The workshops about the ePortfolio raised concerns for the students about their preparation for the employment process, and also supported the process of collecting artefacts and reflection, with flow-on benefits for learning. Acker (2005) sums the issue when he states:

> as important as final outcomes are, students’ insights into their own unique learning and work processes are ultimately more valuable. At the beginning of the journey, however, students typically are concerned only with meeting a requirement, perhaps unrelated to their ultimate career goals. Without seeing the value at the beginning of the process, many students only superficially contribute to their ePortfolios. Lacking baseline data, the ultimate learning process improvements are invisible and the potential of ePortfolio is diminished. (p. 1)

This finding suggests that the key to improving learning and employability is not that students necessarily make use of the ePortfolio tool, but that critical reflection can assist them to improve their learning which ultimately helps them to realise their potential.

**Single Unit Implementation versus Course Implementation**

Another key theme identified by the research participants that impacted on student engagement with the ePortfolio, was the implementation of the ePortfolio into only a single unit within their course. This had the effect of marginalising or cocooning the ePortfolio. Other academics did not refer to the ePortfolio, nor did they encourage its use. It became evident that, in some other units within their
course, students were even receiving contradictory messages about the use of the ePortfolio. For example, some students, in conversation with the researcher, reported being told by academics “I don’t see any point to you using it”, “What’s the ePortfolio?” and “I don’t have time to look at your stuff”. In light of this issue, Dana provided the following suggestion about what might encourage students to use the ePortfolio:

just referring to it maybe. Get the lecturers to say this is something you could put on your portfolio.

I think for the reflection part, because on every practicum we have to reflect just about every day. That could be something we could write our reflections on.

Maybe talking to unit coordinators and maybe, you know, a way of linking it. You offload an assignment to it or a prac, prac reflections or something like that. Get you to use it more.

Course-wide, rather than single unit implementation, is suggested as a powerful motivator for students to use and continue to use the ePortfolio. Consistent referral of the importance of the ePortfolio also may assist those students who are struggling academically to see the relevance of the ePortfolio for their learning and employment potential. Course-wide implementation will also increase the students’ use of the ePortfolio and improve their skills in writing critical reflections and creating artefacts.

Lack of Access to the ePortfolio following Graduation

Another major issue for students was the lack of access to their ePortfolio following graduation. When informed of this, some students were concerned about what would happen to their reflections and artefacts and how to save them in a useable format after graduation. Interoperability of ePortfolios (the ability for
ePortfolio systems to exchange and use data) has been a key issue for ePortfolio developers and implementers. For example, during key transition points for students (to other universities or as professionals), their ePortfolio requires a standard of interoperability if moved from one system to another (Lorenzo & Ittelson, 2005). There are also issues of interoperability with the types of artefacts stored within an ePortfolio. Another key interoperability challenge is with their language structure, particularly where an ePortfolio follows a student from one context to another. The IMS Global Learning Consortium is currently developing a set of specifications for ePortfolios that will provide a standard of interoperability among systems and support the transfer of learner artefacts and reflections (Lorenzo & Ittelson, 2005).

In conversation with students, during the interviews and as recorded in my journal notes, there was a strong view that the ePortfolio would be a valuable tool, especially in preparing for their first year of teaching. As one student commented in the survey, “I believe that it [ePortfolio] will be useful in my final year, to help me prepare for my first year out”. From my journal notes:

in talking to students from this cohort and others I am still encouraged by their comments about what they think of the ePortfolio. Education students in particular feel that it would be of value in their teaching, particularly in their first year. We really need to sort out the issue of how long they have access after they finish their course.

When the students were introduced initially to the ePortfolio, the University policy stated that students would have approximately 3-6 months access depending on the date of their graduation ceremony. As this policy became a major drawback to marketing the ePortfolio, availability was subsequently extended to one year, with a further nine years in archive. This extension was in place when this cohort of students began their workshops. As Betty said, “when you [this researcher] first saw
us ... you said we don’t have access to it after a year. So I think that was a downside”.

In the intervening months between the workshops and the research interviews, the policy related to student access was again upgraded to allow students to have access for life to the ePortfolio. As Betty commented:

that would be wonderful. You can add to it. That’d be great”, “and when we got told you can’t use it and then we thought well why put the effort in it, so I think that will change that people can use it.

It is anticipated that allowing students to have access for life to the ePortfolio will be a positive marketing policy for future ePortfolio use.

**Issues associated with the Ease of Use of the ePortfolio**

This section examines the ease of use issues experienced during the workshop, in completing the assessment task and in any subsequent engagement that challenged the students’ long-term commitment to ePortfolio use. The following four issues arose from the student surveys and interviews:

• coping with the complexity of the ePortfolio;
• lack of time when developing an ePortfolio;
• the timing of when students engaged with the ePortfolio; and
• the timing of the introduction of the ePortfolio;

Each is now discussed in turn.

**Coping with the Complexity of the ePortfolio**

While some students found the ePortfolio “easy to understand”, others found it “confusing”. As Kaminski, Seel and Cullen (2003) discovered, students are:

comfortable with a wide range of information technologies that support document creation and communications, they often arrive at our institutions somewhat unskilled and even insecure about those technologies that are tied
generally to course management or specifically to the academic discipline. (p. 54)

The implications for ePortfolios suggest that students may not have the skills base to successfully navigate and use their ePortfolio and to create useful artefacts. Insecurity about technology and low computer efficacy are distracting issues for students that could lead to higher rates of disengagement. As recent research from the Centre for Recording Achievement in the United Kingdom concerning ePortfolios for assessment found:

the most frequently mentioned difficulties were associated with users’ skills and confidence or with technical issues. There were several mentions of both staff and students lacking skills, being fearful of technology or being unwilling to invest the time needed to learn a new system, especially when this was additional to learning the use of the institutional VLE. (Strivens et al., 2009, p. 18)

Three points related to the complexity of the ePortfolio to emerge from the survey and interviews in this study were:

1. the level of students’ own technical skills and computer self-efficacy;
2. the students’ knowledge and skills to create artefacts; and
3. the time required to re-learn the ePortfolio after a period of inactivity.

First, students reported a lack of experience and a low level of computer self-efficacy. This was considered to contribute to the high level of student disengagement. Students who reported that the ePortfolio was too hard to use disengaged following the workshop and critical reflection. As Alyssa commented,

last year I got a bit lost during the workshop when I was doing it and from then on it sort of confused me and I sort of I was a bit scared to go back in and try it myself without anyone helping me.

Not only did Alyssa get “lost” in the workshop, her reported lack of confidence in using computer technologies generally meant that she did not try the
software on her own. This was echoed by another student who said, “as I am fairly computer illiterate, the workshop just added to the intimidation and overwhelming feeling I have around accessing programs”. These findings have also been echoed by Kaminski, Seel and Cullen (2003) who reported that student technology skills have been identified as a crucial factor affecting undergraduate students’ ability to gain the most from their university experience. It is additionally important to distinguish between an individual’s general computer self-efficacy, which conceptually spans a range of computer applications (for example word processing, games and entertainment), and self-efficacy regarding a specific software application (ePortfolio) (Yi & Davis, 2003).

Student responses to the survey question about difficulties in using the ePortfolio were diverse with 42% either agreeing or strongly agreeing that they would have no difficulty, while 35% felt they would have difficulty. The level of uncertainty was also quite high at 22% (see Figure 4-11).

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<tr>
<td>1 Strongly disagree</td>
<td>7</td>
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</tr>
<tr>
<td>Total</td>
<td>45</td>
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</tbody>
</table>

*Figure 4-11. Survey Question: Using the ePortfolio after the workshop*

The high level of uncertainty was reflected in all questions concerning the technical use of the ePortfolio. Indeed, this was signalled during the hands-on workshop, when
this researcher observed students’ early disengagement from learning about the ePortfolio.

The second point, the high level of concern about the technical difficulty in creating artefacts for the ePortfolio, also was noted in the comments by the interviewees. The use of an ePortfolio requires technical skills beyond the ePortfolio itself. Students need skills in creating artefacts, including audio, video, scanning files. When these skills are learnt within the context of creating an ePortfolio the learning is more concrete. Mullen, Britten & McFadden (2005) believe that “learning technical skills while you are building your portfolios, as compared with learning discrete computer skills separate from any real purpose of doing so, is a powerful model” (p. 28). In this case, the support necessary to teach the skills of artefact creation was absent and this was one important reason for student disengagement. Additionally, there were no specific workshops conducted at the University at that time for students to learn skills in artefact creation, except where mandated in their course. As Alyssa said:

I’m not used to computers and any sort of software that’s on those computers and on-line, I’m sort of, I’m not very good with computers, so that’s why I found it difficult to use and sort of navigate.

She added, “it [ePortfolio] sort of confused me and I was a bit scared to go back in and try it myself without anyone helping me”. Carol also expressed concern about her ability to use the software:

I mean I’ve got a computer at home all the kind of mod cons and I’m not scared of technology. But just not fully understanding how to actually work my way through it.

I mean uploading artefacts; I would have no idea how to even start thinking about doing that. I don’t even know how to scan documents to put it onto the computer, then to be able to – it’s just too many steps.
It was good doing an example. We had to type in something and add it in and then …

I just found it quite complicated, the whole adding people to be able to view your portfolio and you could release it to everybody to see it, or you can’t, or you don’t want certain people. It was just very complex for me.

The third point, the complexity of using the ePortfolio, in particular, and trying to remember how to use it when their engagement was sporadic, was a common theme. Immediate versus delayed task performance (Yi & Davis, 2003) has been identified as a major contributing factor to diminished performance following a gap in use. The complex nature of the ePortfolio meant that students needed to refresh themselves on how to use the software if there had been an intervening time gap between engagement sessions. As another student in the survey, said, “I don't use the portfolio because I don't fully understand how to use it. Also it takes up too much time trying to work it out.” As one student in the survey, stated, “because I do not use it regularly I find it difficult to remember how to navigate.” Betty added:

because I did it once every six months so I’d totally forget the steps, so in my mind sometimes it wasn’t very user friendly to be honest. I actually had to write the steps down, I have to click on that. I have to click on that. Ease of use would be probably one factor that might turn people off, but then again having the computer help I think I did ring them up once or twice, so that was good.

The complexity issue was, in part, also due to the number of possible criteria or graduate capabilities that the students could reflect upon in their entries. When using the ePortfolio, students were required to select a particular graduate capability to reflect upon, for some students this could mean selecting one from one hundred and ten capabilities. There was no provision for students to select multiple capabilities for one reflection. As Dana commented:

it does take time trying to work your way through each of the sections. It’s not as simple as opening up a page and sticking something in there and then
you’re gone. You have to sort of try and remember where under Communication, and there’s a whole list of other things and you go into that, and then it takes you to another page and there’s just so many facets to it, so many areas you can add to it.

The implications for technical support, from the above issues, are important to the success of the ePortfolio implementation. Available to students were a quick reference guide that was handed out at the workshop, a series of online resources and an email and phone support number. The online resources included ‘how to’, exemplars of ePortfolios and reference material dealing with portfolios. This material was designed in a similar format to other University systems with which students were familiar. The email and phone help was available during business hours. Students could also access the general IT support network for help. As Dana commented, “yeah, I’ve had a look [at the help documents]. They’re pretty straightforward I suppose. I think having someone there to guide you through it is probably more beneficial I think”. Another student in the survey, said, “I only used this for one term then stopped using it. I needed my tutor to help me with the technical aspects and issues I had”. Carol was one student who acknowledged the importance of the reference guide:

I mean you’re handed out that piece of paper [quick reference guide] as well. That kind of gave you guidelines, and I’ve still got that at home. Because I thought, well, I think I’m going to need to hold onto this.

As discussed previously, Betty was the only student who said that she had contacted the support network. Successful ePortfolio implementation requires a varied and comprehensive support program that is accessible to students when required and as their needs change. The provision of such a program is a significant burden on institutional resources but is a core component of the university responsibility to student engagement.
**Lack of Time when developing an ePortfolio**

The three key points to emerge from the data concerning time were that: the ePortfolio was not prioritised as highly by students as other tasks, students thought the ePortfolio would take too much time to develop, and the difficulty in trying to anticipate what employers would need two or three years ahead. As discussed in the literature review, students cope with their busy lives and competing tensions of work and study by satisficing. Satisficing is where students make decisions concerning where to allocate their scarce resources (Yorke, 2006). Students make decisions based on their own individual situations, to place their finite resources where they feel that they will get the required result. For instance, in order to graduate, many students made decisions that provided them with a ‘good enough’, rather than an ideal, result (Yorke, 2006). In this way, a student’s engagement pattern with a university often is based on their resourcing decisions. This raises the paradox of students in their first year not seeing the benefits of the ePortfolio, while those in their final year suddenly trying to create an ePortfolio in a rush and recall experiences that occurred months if not years in the past. The key points students highlighted as influencing their decisions are now discussed in turn.

Despite acknowledging the potential benefits of the ePortfolio, students had to prioritise their activities. The reality was that the ePortfolio was prioritised as less important than other tasks and, subsequently, there was little time left to engage with it. Alyssa best summed up this issue when she said:

I could see how it would be beneficial to me in the future although I didn’t feel that it was a necessity - something I had to do as part of the course - so that’s sort of another thing that sort of put me off it, I suppose.
Lack of time to create an ePortfolio and the realisation of the significant amount of time required for the task also affected the engagement intentions of the students. As one student said, “It is an extra 'job' to do and time is so precious during semester. I want to have a go at adding to it but am uncertain I will use it”. One other student added, “I thought it would help but recognised it would take a lot of time to be effective”. Additionally, another student, while recognising the benefits of the ePortfolio, also found the lack of time an issue, “it is a good place to summarise all my learning – when I have time to reflect, compose and add them!” Carol, in her interview, reinforced this point when she said:

yes, I think the fact that it was harder than what I expected it to be and a lot more effort on my part was needed. A lot more time would need to be set aside and planning. I mean you can’t just open it up and sit there and go, okay, what am I going to write? You have to organise yourself before you get into it and work out, okay, what do I put in there? Which sections am I going to add to and have to kind of think about it before you get in there?

Carol’s comments highlighted the difficult task of developing an ePortfolio: that a lot of effort was required, and more time would need to be allocated to planning and organising the ePortfolio. As Carol suggested, creating an ePortfolio is not simple. The ePortfolio cannot be approached without forethought. The pressure created by the extra workload and need for planning was stressful for students already feeling overloaded by their course. As Carol said:

It’s a lot of extra stress and worry and thinking about how you’re actually going to set it out and what you’re going to add to it that I think kind of put me off a little bit.

Both Carol and Dana were put off by the lack of available time and the enormity of the task ahead in creating an ePortfolio. As Dana said:

I think it’s more me than the actual program that is holding me back from using it. From what I said before, having to organise myself, get myself sorted and think about something, than the actual program.
It just seems so massive. You think oh God, I can never fill it up, it’s just going to look empty if I add one little thing here and one little thing there. You just kind of think; am I going to be able to actually make it look like it’s a proper thing, because there’s so many sections to fill in.

Another point related to temporal matters was that the ePortfolio was being developed two or three years in advance. In other words, what an employer might be looking for in a couple of years may be different to current expectations. For example, the issue for Carol was that what an employer is interested in at the end of her course may differ to what was being added now to her ePortfolio. As Carol stated:

my brain does enough thinking as it is just to survive uni let alone going extra deeper, you know, all the reflections and trying to decide what would be helpful for my future employment. If someone was looking at this, what do I want to add to be beneficial?

Yeah, a little bit of actually using it but mostly just me trying to organise myself to work out thinking about two years in advance when I want to go look for a job, what would I want on there, sort of thing.

A combination of required (assessable) tasks and a set of suggestions of what to include in the ePortfolio might have alleviated some of this trepidation. Exemplar ePortfolios showing the types of generic and discipline specific artefacts and reflections to include would have offered some suggestions. The use of peer mentors or advisors may also be useful in encouraging and fostering engagement. These mentors may be current students who have used the ePortfolio previously or former students who have successfully completed the employment process.

Effect of Gaps in Time between Experiences and Reflection

This section explores the consequences for students when they used the ePortfolio sporadically. This problem arose for those students who left their use of
the ePortfolio to the mid-semester breaks or to the end of the year, and then they tried to remember the details of accessing the ePortfolio, or the specifics of a particular experience or artefact. As Betty said:

trying to remember what I did the six months previously because it was the recent six months was what was fresh on your mind, but I just went back and looked at what assessment pieces I had and fitted that in so that was good.

Time I would say is another factor for other people. I can’t speak really too much for other people, but it’s almost like I said it was good and sometimes at the end of six months I didn’t have the time to do it but at the end of the year I had to go back and it was really hard. I had to go back and get out each of my subjects and remember what I did and how that fitted into the [ePortfolio attributes].

The closer the time gap between experiences to be entered into the ePortfolio and reflection, the more relevant student writing should be and the clearer the learning opportunities. Students need to be encouraged to write in the moment, not six or twelve months later. As Strivens et al. (2009) reporting on research from the Centre for Recording Achievement highlighted “one problem equally associated with print-based portfolios is encouraging students to keep them regularly updated throughout a period of learning, rather than completing them in a rush at the end” (p. 17). The Centre (Strivens et al., 2009) advocated the use of date-stamping for artefacts and reflections as a method for tutors to identify the practice and to build in more support and provide better motivation to make regular reflections. This is not as easy as it seems, many students are busy with university, work and their social life. A gap between when they had a noteworthy experience and when they reflected on it makes it more difficult to write and remember what occurred and what lessons were learnt.
Timing of the Introduction of the ePortfolio

The timing of the introduction of the ePortfolio was an issue raised by several students. The introduction was based on the completion of the ePortfolio development and by the time it was ready to use these students were in second and third year. Some students (particularly third years) were discouraged by the quantity of work required to create a quality ePortfolio with such a short amount of time remaining in their course. As one student commented, “it seems a little late to be emphasising this program when little time remains to develop a quality document”. Another student added, “it seems like something that I should have started at the beginning of my degree. I feel as though if I start it now, it would take me forever to update it”. As the implementation of the ePortfolio gathers pace across the university and first year students are introduced to it at the start of their course, this issue should be ameliorated. For example, several faculties now include voluntary ePortfolio sessions in their orientation programs at the commencement of their courses.

Summary

This chapter detailed the results and discussion of a case study of the implementation of an ePortfolio. The chapter was presented in three parts. The first section detailed the student opinions about the opportunities provided to learn about the ePortfolio through the introductory lecture, workshops and the assessment task. The second detailed student engagement with the ePortfolio. The pattern of engagement was revealed as a high level of disengagement (86%) following the completion of the compulsory assessment task. This is acknowledged as a disappointing outcome of the implementation process but has provided useful data
on why students made the decision to disengage. The third part discussed student opinions and experiences of usefulness and ease of use with the ePortfolio. In relation to usefulness of the ePortfolio, the constraints around print or electronic portfolios and external access, the use of the ePortfolio to store artefacts, the usefulness of the ePortfolio to both employment and learning, the single unit implementation and issues related to access following graduation. Students revealed that, in terms of the ease of use they found that the complexity of the ePortfolio, the effect of gaps in time between experience and reflection, the timing of the introduction of the ePortfolio and lack of time all impacted on their decisions to engage or disengage.

In assessing the opinions and issues raised in this chapter with the Model of Student Engagement (Version 1) four decision points emerged when students made decisions about whether to engage or not that were not evident in the model. These decision points were:

1. prior knowledge and experience
2. initial supported engagement
3. initial independent engagement
4. ongoing independent engagement

These decision points were subsequently incorporated into the Model of Student Engagement with Technology as Version 2 and are detailed in the following chapter in relation to the study findings.
CHAPTER 5.0 MODELLING STUDENT ENGAGEMENT WITH AN ePORTFOLIO

Introduction

The previous chapter described the opportunities provided insights into a cohort of undergraduate Education students’ perceptions about what they had learnt about the ePortfolio through an introductory lecture, workshops and an assessment task (critical reflection). The chapter also identifies and discusses the factors related to the usefulness and ease of use of the ePortfolio that impacted on student engagement and long-term commitment to the ePortfolio.

This chapter first returns to the model of student engagement first presented in Chapter 2. An amended and refined version (Version 2) of the Model of Student Engagement with Technology (MSET) is presented that takes into account new understandings derived from the data analysis.

The Model of Student Engagement with Technology (MSET) Revisited

The Model of Student Engagement with Technology (MSET) (Version 1) (see Figure 5-1), initially presented in Chapter 2, was developed as a means of modelling long-term engagement with an ePortfolio. Based on the work of Davis (1989) (Technology Acceptance Model, TAM), and Malhotra & Galletta, (2005) (Psychological Attachment Model, PAM) the Model of Student Engagement with Technology (MSET) (Version 1) adapted perceived usefulness and perceived ease of use as key constructs in student attitudes toward engaging with the ePortfolio. The MSET (Version 1) included the constructs of actual usefulness and actual ease of use with the ePortfolio as ways of demonstrating long-term student engagement.
The MSET (Version 1) was a useful starting point for examining the engagement of students in using the ePortfolio. However, following repeated reading and analyses of the student data derived from this study, it became evident that the MSET (Version 1) did not detail student engagement sufficiently to highlight what appeared to be multiple decision points. These decision points emerged to show moments when students made decisions to disengage from or continue with the implementation process. While Version 1 of the model accounted for perceived ease of use and usefulness, it did not account for engagement, decisions students’ made based on prior knowledge and experience. Furthermore, the differentiation between engagement intention and long-term commitment was not explicit. In other words, the model did not differentiate between initial independent engagement and the ongoing independent engagement in the use of the ePortfolio.

Therefore, following repeated analysis of the student data, a second version of the model (see Figure 5-2) was developed that more clearly delineates the stages of student engagement with the ePortfolio.

Figure 5-1. Emmett’s Model of Student Engagement with Technology (MSET) (Version 1)

![Diagram of Emmett's Model of Student Engagement with Technology](image-url)
Figure 5-2. Emmett’s Model of Student Engagement with Technology (MSET) (Version 2)
Version 2 presents greater detail of the process of engagement and reasons why students chose to disengage at specific stages and illustrates the key engagement points and decision points. Version 2 of the MSET now includes:

- Prior Knowledge and Experience, leading to imagined usefulness and imagined ease of use;
- Initial Supported Engagement, leading to supported experience of usefulness and supported ease of use;
- Initial Independent Engagement, leading to actual experience of independent usefulness and actual ease of use; and
- Ongoing Independent Engagement, leading to ongoing experience of usefulness and ongoing ease of use.

Each construct leads to one of four decision points (as illustrated in Figure 5-2), at which stage students decide whether to engage, or to disengage with the ePortfolio.

In determining these decision points, there was also evidence that students might change their opinions about engagement based on new information or experience. For example, students who heard from peers that the ePortfolio was not useful may form a negative opinion about usefulness. Then, as a result of a workshop, they may discover that the ePortfolio actually is of value. Another example exists where students who have decided to disengage due to the lack of access following graduation are encouraged to re-engage due to changes in access policy. With these examples in mind, feedback mechanisms were added to the model wherein new experiences with the ePortfolio can either confirm or alter a student's opinion at each decision point.
The following sections examine each of the four constructs and decision points that support the second version of the Model of Student Engagement with Technology. Each of the following figures has been extracted from the MSET-2 for the purpose of highlighting each decision point.

**Decision Point A: Prior Knowledge and Experience**

The first construct is based on student prior knowledge and experience (see Figure 5-3). It is from this construct that students develop opinions based on their opinions related to imagined usefulness and imagined ease of use. Factors that may influence their level of commitment at this point include peer comments, employment experience, university marketing and use of the ePortfolio within other courses.

![Figure 5-3. MSET (Version 2) Decision Point A](image)

For example, students may have had previous experience with job seeking that affects their views of how beneficial the ePortfolio might be for them. Comments made by other academics or peers who have used the ePortfolio also may influence students’ opinions in approaching the implementation process. These findings are in line with those by Tosh, Penny Light, Fleming and Haywood (2005) who found that, in their research on student engagement with an ePortfolio, “many students seemed disillusioned with how the ePortfolio was promoted to them” (p. 8).
Computer self-efficacy and perceptions of ease of use also had a crucial impact on student engagement with the ePortfolio. Bandura (1977, 1986) determined that self-perceptions of efficacy influence whether students believe they have the coping strategies to successfully deal with a particular situation. Self-efficacy also may determine whether learners choose to engage in a given activity and may determine the amount of effort they invest in a given academic task, provided the task is perceived as challenging (Perkins & Salomon, 1992). As Cohen and Bobrowicz (2009) found, “students need to be confident in their own abilities to be able to initiate, persevere with and complete a task in the face of perceived difficulties which challenge their coping skills” (p. 5). Students who lack self-efficacy will not be receptive to the task or learning the software resulting in de-motivation and disengagement.

It is notable at this point that compulsory use of the ePortfolio for assessment purposes mean students may form an opinion but bypass Decision Points A and B as they are required to use the ePortfolio. Barrett (2005) suggests that “high stakes assessment and accountability are killing portfolios as a reflective tool to support deep-learning. Those mandated portfolios have lost their heart and soul: not creating meaning, but jumping through hoops!” As discussed previously students are motivated by assessment, however their long-term engagement intention is driven by more than assessable requirements.

**Decision Point B: Initial Supported Engagement**

The next decision as to whether or not to engage with the ePortfolio, Decision Point B, occurs following the initial supported engagement (see Figure 5-4). At this point, students decide whether to engage or disengage based on their
experiences in the hands-on workshop. Some students who decided to disengage at this point were identifiable in the workshops, that is, they were checking email and undertaking other tasks not related to the ePortfolio and the practice tasks.

![Diagram](image)

**Figure 5-4. MSET (Version 2) Decision Point B**

Following this initial supported engagement, the student group appeared polarised between those who could see a use for the ePortfolio and those who could not, and by those who found the ePortfolio easy to use and those who did not. As Tosh et al. (2005) suggest:

> this does raise and important issue when deciding to adopt an e-portfolio. Students want and need information about its value and they want to see champions – examples from others who have used the approach. This can be difficult at the introduction of a new technology and a new educational approach – someone has to be the ‘guinea pig’… Students have to know what an e-portfolio is, how to use one and, most importantly, how it will benefit them in order for the project to succeed. (p. 8)

Indeed while the focus for the workshop was the technology, the need to educate students about the value of the ePortfolio and how to critically reflect are paramount.

Hadley (2006-2007) argues:

> in a high-tech learning environment, we have incorporated, integrated, and infused technology to ever increasing levels of sophistication in the quest to create motivating, meaningful learning. It is tempting to focus on the technology and spend the majority of instructional time on expanding and perfecting technology skills. When incorporating the electronic portfolio, the question for the instructor becomes, “What aspect of the electronic portfolio is the most germane to my instructional goal?” If the goal is reflection or
growth, it is important to reserve the time to teach the basics of this reflective venue and target student focus on the reflective factor.

The fundamental point is that students need to know why their knowledge and critical reflections are important (Ramaley & Zia, 2005).

Technology challenges to student ePortfolio engagement were also identified by Tosh et al. (Tosh et al., 2005) and Wetzel and Strudler (2006). As Gerbic et al. (2009) found, “that initially becoming confident with the technology is the main challenge and only when this is addressed can attention be given to supporting students in their development of new habits of learning based on portfolio use” (p. 330). The cognitive load imposed by learning the ePortfolio therefore can influence the amount of cognitive resources available to use the tool effectively (Angeli, 2005). The complexity of the ePortfolio design needs to be balanced between the cognitive load on students and how the ePortfolio is to be used.

The initial supported engagement point is crucial in providing the motivation and the skills for students to proceed to the next step when they begin to use the ePortfolio on their own. Students will be motivated to learn the software if they can see benefits to their learning and employability.

Decision Point C: Initial Independent Engagement

At the initial independent engagement Decision Point C (see Figure 5-5), students were beginning to use the ePortfolio on their own, either to complete the assessment item or to document their own experiences. It was at this point that students needed the most help and support, as what was learnt in the initial workshop may have been forgotten. Their actual experiences of how the software aligns with
their goals and their level of computer literacy are crucial factors in continued engagement or disengagement.

![Figure 5-5. MSET (Version 2) Decision Point C](image)

Following their initial independent engagement, comments again were polarised between students who continued to engage and those who disengaged based on their actual experience of ease of use and actual usefulness. The studies by Tosh et al. (2005), Wetzel and Strudler, (2006), Lin (2008) and Gerbic et al. (2009) suggest that over time, students can recognise the potential benefits of ePortfolios, given the right technological and pedagogical support. Lin (2008) also found that:

> increased time commitment, uncertainty regarding purpose and audience, and limited knowledge about the content and organizational strategies are some of the salient issues mentioned by teacher candidates. Obviously not all participants in this study felt that the portfolio and/or e-portfolio processes offered new insight into their learning or had a positive impact on their student teaching. (p. 198)

During this point of initial independent engagement students are at most risk of disengaging. Influences of time management, motivation and self-efficacy are at their strongest. It is at this point that students require technical and pedagogical support. Students also need feedback on their progress from academics, peers and where possible employers. Early intervention to support at risk students will be beneficial in the ongoing independent stage.
**Decision Point D: Ongoing Independent Engagement**

Following on from their initial supported experience with the ePortfolio, students were faced with the ongoing independent engagement decision at Decision Point D (see Figure 5-6).

![Decision Point D Diagram](image)

**Figure 5-6. MSET (Version 2) Decision Point D**

The students’ decision to continue to engage or not at Decision Point D is based on their individual ongoing experiences of usefulness and ongoing ease of use. The issue of delayed task performance (Yi & Davis, 2003) suggests that without ongoing technical support, peer and academic involvement in guiding and providing feedback, and the motivation provided by employers student performance will diminish or disappear. The continual identification of opportunities to use the ePortfolio by academics and students is also recommended (Peacock & Murray, 2009). The results of the Tosh et al. (2005) study are indicative of this trend, where data gathered before students used the ePortfolio indicated that a majority of students believed that the tool would be helpful to them in their course. However, data gathered after use, showed a dramatic shift, with most students now suggesting that the ePortfolio had not helped them. Not living up to expectations is a primary failure of ePortfolios and one that needs more research. By over-emphasising the benefits of the tool educators are in danger of de-motivating students in the long-term. As Tosh
et al. (2005) suggest, “if students believe there is something in the process for them it will greatly enhance their experience of the e-portfolio and increase engagement” (p. 15). Students not only need to ‘believe’ but also need to be shown that ‘there is something in the process for them’, only then will engagement levels justify the development and implementation of an ePortfolio.

The Explanatory Power of the MSET (Version 2)

The Model of Student Engagement with Technology (MSET) (Version 2) presents greater detail of the process of engagement and reasons why students choose to disengage at specific stages and illustrates key engagement decision points. The MSET (Version 2) goes beyond figures of technology uptake to present understandings of how a cohort of students engaged with the ePortfolio. Version 2 of the MSET now incorporates decision points identified as:

- Prior Knowledge and Experience, leading to imagined usefulness and imagined ease of use;
- Initial Supported Engagement, leading to supported experience of usefulness and supported ease of use;
- Initial Independent Engagement, leading to actual experience of independent usefulness and actual ease of use; and
- Ongoing Independent Engagement, leading to ongoing experience of usefulness and ongoing ease of use.

The explanatory power of the model is based on the identification of the types of decisions students make and when they make them during the engagement process. Research suggests that students interact with educational software in different ways
(Bangert-Drowns & Pyke, 2002) and that the time and energy students devote to educationally purposes (Kuh, 2003) is the best indicator of their learning. This model presents a greater depth to understanding ‘student interaction’ and the ‘time and energy devoted’ than was previously available. The model identifies a timeline of engagement and demonstrates that engagement decisions change over time. The MSET (Version 2) extends the work of previous researchers in developing the Technology Acceptance Model (TAM) (Davis, 1989) and the Psychological Attachment Model (PAM) (Malhotra & Galletta, 2005). The MSET (Version 2) acknowledges the reasons why students choose to engage or disengage but places these reasons in a decision timeline.

The MSET (Version 2) can be utilised by institutions to better direct and time future implementation and support activities. The first decision point highlights the need to be aware of negative preconceptions based on previous experiences either with the software, the implementation plan or the employment process. For example, students with previous experience with portfolios or the employment process may not view the ePortfolio as useful as students who have no preconceived opinions. It is important to alleviate these preconceptions through open discussion about the students’ concerns and issues. Students also need to know what the long-term outcome of engagement might be; this is best achieved through the use of exemplars, peer mentors, former student users and discussions with potential employers.

The second decision point underlines the importance of the initial supported engagement stage. The winning of the hearts and minds of the students is crucial if students are going to proceed to the voluntary stage in the engagement process. Students must be shown the software with time for the less computer skilled students
to keep up, critical reflection writing skills need to be analysed and the reasons for using the ePortfolio discussed. There is a fine balance at this point between the time available for workshops and what needs to be learnt. This was evident in this study where the time available was not adequate.

The third decision point emphasises the need for ongoing support for students following the initial introductory session. Mechanisms (additional workshops, support videos) that focus on computer efficacy and the production of artefacts are essential if long-term engagement is to be achieved. The additional workshops, both voluntary and compulsory, are required at key points during the students’ ePortfolio experience. The need to support students past the initial independent stage is crucial and with a tool like an ePortfolio and must be embedded within the pedagogy of a course structure.

The fourth decision point suggests the importance of ongoing support for students. This support is required in order to facilitate ongoing technological and pedagogical engagement with the ePortfolio. For example, the difference between the types of support provided to first year and final year students. While first year students are more focussed on immediate concerns rather than employment that maybe 3-4 years in the future. Final year students are focussed on the more immediate requirements of employers and how their ePortfolio can assist with the employment process of addressing selection criteria and interviews. A careers and employment section within the university and specific employers are best positioned to provide the support final year students’ need during sessions designed to discuss employment issues. In this way the University not only markets the ePortfolio but
also facilitates the employers understanding of what a student ePortfolio is and what it may contain. Ongoing support also has a strong motivational effect on student use.

Summary

This chapter has revised the model of student engagement presented in Chapter 2 as a means to better understand and anticipate student decisions concerning engagement and disengagement with the ePortfolio. Version 2 of the Model of Student Engagement with Technology (MSET) includes four decision points that determine student engagement. These are identified as prior knowledge and experience, initial supported engagement, initial independent engagement and ongoing independent engagement. The benefits of the revised model lie in being able to identify the types of decisions students might make, and at what point they are at in the engagement process. Understanding these factors can facilitate the direction and timing of future implementation activities and support resources for the ePortfolio implementation. Through such enhanced activities and resourcing, more students may be encouraged to engage with the ePortfolio as a longer-term activity.
CHAPTER 6.0 CONCLUSION

Introduction

This chapter draws together the findings of the research that considered a case study of student engagement with an ePortfolio. First, this chapter revisits the research problem. Next the findings of the study are discussed in relation to the research questions. Then, critical reflections on the research process are presented. The chapter concludes with a set of criteria for re-conceptualising the University ePortfolio, a set of recommendations for university practice, possible areas for future research in relation to ePortfolios in higher education and final comments.

The Research Problem Revisited

The research problem emerged during my time as the learning designer on a project to deliver an ePortfolio to 40,000 students at a major Australian University. My concern was that despite the number of ePortfolios registered by the University (23,000 by February 2007) I suspected that many students had not actively engaged. I noted that the number of ePortfolios created by students did not reveal the degree to which students were actually engaging with the ePortfolio as demonstrated by, for example, adding critical reflections or artefacts. The fact that students could create and release an ePortfolio View that had no quality content was of concern and masked the lack of engagement.

The importance of students engaging with the ePortfolio is premised on research that suggests that the time and energy that students devote to educationally purposeful activities is the single best indicator of their learning and personal development (Kuh, 2003). Further research notes that ePortfolios are considered to
have a positive effect on student learning and their employability (Acker, 2005; Barrett & Carney, 2005; Boud, 2001; DiBiase, 2002). However, in seeking to understand student engagement with the ePortfolio it is acknowledged that students engage with educational software in qualitatively different ways (Bangert-Drowns & Pyke, 2002), with some students working independently, strategically, creatively and persistently, while others engage only when required and the disengage from the volitional components of the process. Darling (2001) concluded that, while ePortfolios can benefit learning, it would not benefit those students who are unwilling to meaningfully engage in ePortfolio activities. Those students who do not invest the time and effort required risk missing out on the benefits to their learning and employability that may accrue from engaging with the ePortfolio. The research problem, then, acknowledges the importance of understanding student engagement with the ePortfolio. This understanding is useful in the development of improved implementation frameworks and support mechanisms for ePortfolio use with students.

This study offers insights into whether students engaged with an ePortfolio when it formed a voluntary component of their university experience. Furthermore, this study provides a student perspective on the ePortfolio implementation process and technical design. The findings from this study should enable the University to assess the ePortfolio and its capacity to make a difference to the lives and learning of their students. Additionally, the findings provide a lens through which more focussed interventions can be developed in order to improve the level of engagement (Costley & Stephenson, 2009). Finally, this study contributes to the international body of
knowledge concerning the design and implementation of ePortfolios in higher education.

**Postscript - My role as a researching professional**

I have been recently appointed to the position of Senior Lecturer eLearning in a university School of Medicine. This new position is designed to provide strategic direction and leadership in elearning and teaching innovation, and my role is to lead a team in identifying and developing high quality, didactically sound online resources for the School of Medicine. I also am responsible for researching best practice in elearning, and providing innovative and effective solutions to enhance student learning.

My design and development experience, and the doctoral research into ePortfolios are providing a strong scholarly basis for designing the use of ePortfolios in the School of Medicine. Additionally, the findings and recommendations of this study, including the Model of Student Engagement with Technology (MSET) and criteria for developing user-friendly software, have been applied to the new project. The doctoral study of the University ePortfolio has supported my work in articulating the design and support requirements for an ePortfolio. The Model of Student Engagement with Technology (MSET) developed in this thesis is proving to be a useful tool in highlighting and designing the support mechanisms required for the ePortfolio, specifically, and in the field of elearning. I am using this model to form the cornerstone of further research into establishing best practice in elearning for the School of Medicine.
Revisiting the Research Questions

This study was located in the Faculty of Education and examined engagement with the ePortfolio of a cohort of second and third year education students (n=105) enrolled in a four year Bachelor of Education degree. The students were introduced to the ePortfolio in an introductory lecture and a hands-on workshop in a computer laboratory. The aim of the introductory sessions was to outline the benefits of the ePortfolio for student learning and how it could assist the students with the job application process at the end of their university course. Students were then required to complete a compulsory assessment task - a critical reflection - using the ePortfolio. Following this, engagement with the ePortfolio was voluntary. In order to offer insights into student engagement with the ePortfolio, the following research questions were addressed:

1. What were the student opinions of the ePortfolio?
2. What were the patterns of student engagement with the ePortfolio?
3. What factors impacted on student engagement with this ePortfolio?

In discussing the findings of this study it is beneficial to recall the overarching definition of an ePortfolio. This thesis draws on an emerging consensus that the ePortfolio is both product and process (Joint Information Systems Committee (JISC), 2008). An ePortfolio is commonly defined as:

a personal digital collection of information describing and illustrating a person's learning, career, experience and achievements. ePortfolios are privately owned and the owner has complete control over who has access to what and when. (European Institute for E-Learning, 2007, p. 1)

The use of ePortfolios tends to fall within one or more of three purposes: assessment, learning and employability (Acker, 2004; Barrett & Carney, 2005; Danielson & Abrutyn, 1997; Wolf, 1999). These three purposes do not necessarily co-exist across
ePortfolios; some ePortfolios are designed specifically for a single purpose and others for multiple purposes. The research questions are now used to structure the reiteration of the research findings.

**Question 1: What were the Student Opinions of the ePortfolio?**

The findings of this study indicate that student opinions proved to be a critical factor in the engagement intentions of the students. It was expected that a positive opinion of the usefulness of the ePortfolio, and its ease of use, would shape the students’ attitudes toward using the ePortfolio. Conversely, negative opinions would increase the student disengagement. Student opinions were formulated prior to the implementation sessions as preconceptions, were changed or reinforced during the workshop based on their initial supported engagement, and then again when students first used the ePortfolio independently, and finally as part of their ongoing engagement. In response to the first research question, student opinions were polarised around five themes:

1. The usefulness of the ePortfolio in helping them to get a job;
2. The usefulness of the ePortfolio for their learning;
3. The motivational impact of the assessment task;
4. The time and effort required to make use of the ePortfolio; and
5. The ease of use of the ePortfolio.

**Student Opinions about the usefulness of the ePortfolio in helping them get a job**

Student opinions related to the usefulness of the ePortfolio in helping them to get a job demonstrated conflicting opinions about the relevance of using an ePortfolio, rather than a paper portfolio, in an employment and interview process. While students appreciated the organisational qualities of the ePortfolio and the
storage of artefacts, they were not as convinced about the usefulness of the electronic version. This was evident in those students with previous employment experience who retained the belief that employers would prefer a printed document. The findings in this study are parallel to Wetzel and Strudler (2006) in suggesting that students are concerned about whether potential employers will view their ePortfolio. Comments by Betty revealed that she needed convincing that the ePortfolio is a valuable element in the preparation process even if the employer did not view it.

Students reported being told by peers that school principals wanted printed documents. This is in line with research by Temple, Allan and Temple (2003) who questioned school principals about their readiness to accept ePortfolios, and received a clear reaction, “all the principals and vice-principals said they didn’t want an electronic document, and they didn’t want a portfolio. They wanted paper-based curriculum vitae, response to key selection criteria and a cover letter” (p. 9). This is an important finding as employers, as users of the end product, may not yet be ready to accept ePortfolios. Students are rightly concerned about this matter and will require convincing as part of a multi-faceted support approach that also involves employers.

The final issue for students related to using the ePortfolio for employment was recognising the alignment between their ePortfolio attributes and those required by potential employer. The lack of recognition of the alignment caused Betty to resent the ePortfolio and to disengage as it failed to meet expectations. This finding supports Kimball (2005) who suggested that this is a major cause of student disenchantment with ePortfolios. Again, the involvement of employers is crucial in developing capabilities and standards that can be communicated to students and used
in the ePortfolio framework. Students also need to be aware of the benefits of the ePortfolio process as distinct from the ePortfolio product.

*Student Opinions about the usefulness of the ePortfolio for their learning*

The student opinions related to the usefulness of the ePortfolio for their learning are indicative of the different study habits of students. For example, for Carol, the practice of reflecting on assignments and practicums was triggered by her introduction to the ePortfolio. Another student viewed the ePortfolio as a good place to summarise her learning. The recommendations from the students were that their needs to be consistency in messages about the usefulness of the ePortfolio for their learning across their units of study and that academics need to assist them in identifying aspects of their learning that could be added to their ePortfolio. While the implementation process raised awareness of the ePortfolio as a learning tool, it was not as successful in encouraging students to reflect on their learning. Acker (2005) sums the issue when he states:

> as important as final outcomes are, students’ insights into their own unique learning and work processes are ultimately more valuable. (p. 1)

The ability to compose critical reflections about their learning was an issue raised by several students. In a university, an important social and professional context for students, reflection involves looking back on experiences so as to learn from them. As Salmon (2002) says:

> reflective practice focuses on individual interpretation of events and the framing of these into suitable actions. Implicit in this notion is the idea that practitioners can be prepared for professional situations through such an approach. It also implies a process leading from novice to expert in a field. (p. 380)
The findings of this study also support the use of the reflection support tool (STARL) discussed previously. This scaffolded approach was introduced based on behavioural interviewing techniques where students were encouraged to write reflections against the Situation, Task, Action, Result and Learnt acronym. Critical reflection practice should be a core element of the university experience; it is also an important skill that students can carry forward into their professional lives.

**Student Opinions about the usefulness of the motivational impact of the assessment task**

Students are often more concerned (quite appropriately) with meeting assessable requirements of their course, than in making ongoing reflective contributions to an ePortfolio. Biggs (2003) suggests that student learning is determined largely by the assessment and not by the teaching or the curriculum. Many students indicated in the survey that, without the motivation of the critical reflection, they would not have used the ePortfolio. Sixty-four percent of students, for example, indicated they would only use the ePortfolio when it was necessary for assessment. One student suggested making the ePortfolio a compulsory requirement for assessment.

However, student engagement would therefore be based on compliance, not on the self-realisation of the benefits to learning or employment. The use of an ePortfolio for large-scale assessment presents some major concerns. Breault (2004) warns that portfolios are in danger of becoming simply another test unless viewed as “a more formative type of evaluation and serve more as a snapshot of a given moment in the preservice teacher’s progress towards becoming a professional” (p. 858). McCoy and Barrett (2004), in researching teacher education, found that
assessable ePortfolios are viewed by students as something they have to do to graduate. Because of this, many students indicated that they would not continue with the process after completing the assessment task.

**Student Opinions about the time and effort required to make use of the ePortfolio**

Student opinions about the time and effort required to create an ePortfolio are characterised by the belief that the ePortfolio seemed too hard and a lot of work. Students were concerned about the additional workload when they already felt overwhelmed by their academic workload. The ePortfolio was viewed as an ‘extra job’ and that making proper use of the ePortfolio would require organisation and planning. As Carol suggested, creating an ePortfolio is not simple, “It’s a lot of extra stress and worry and thinking about how you’re actually going to set it out and what you’re going to add to it that I think kind of put me off a little bit”. The ePortfolio cannot be approached without forethought. The level of concern about the effort and time required is best summarised by Dana:

> I think it’s more me than the actual program that is holding me back from using it. From what I said before, having to organise myself, get myself sorted and think about something, than the actual program.

> It just seems so massive. You think oh God, I can never fill it up, it’s just going to look empty if I add one little thing here and one little thing there. You just kind of think; am I going to be able to actually make it look like it’s a proper thing, because there’s so many sections to fill in.

**Student Opinions about the ease of use of the ePortfolio**

Student opinions about the ease of use of the ePortfolio raised two issues. First, students reported a lack of technical experience and a low level of computer self-efficacy. For example, 42% of students either agreed or strongly agreed that they
would have no difficulty in using the ePortfolio, while 35% felt they would have difficulty. The level of uncertainty was also quite high at 22%.

Second, students indicated a high level of concern about the technical difficulty in creating artefacts for the ePortfolio. As discussed previously, creating artefacts (audio, video, scanning files) for inclusion in an ePortfolio requires technical skills beyond the ePortfolio itself. This finding is consistent with the work of Lane (2007), who in her research at the University of Washington, who found that students who already had advanced technical skills were comfortable with a single workshop. However, less advanced students needed more ongoing support. These findings are also in line with similar findings by Kaminski, Seel and Cullen (2003) who discovered that while students are comfortable with a range of communication, document creation and edutainment software, they are unskilled and insecure using technologies more aligned with academic pursuits.

These findings are significant, as there is a tendency to view student groups as skilled users of information technologies. The implications for ePortfolios suggest that a number of students may not have the skills base necessary to successfully navigate and use their ePortfolio, and to create useful artefacts. Insecurity about technology and low computer efficacy are distracting issues for students that could lead to higher rates of disengagement.

**Question 2: What were the patterns of Student Engagement with the ePortfolio?**

In response to the second research question many students disengaged early in the implementation phase. The pattern of student engagement with the ePortfolio has been one of initial engagement based on an assessment task, and then subsequent disengagement. Of the 45 respondents to the survey, only 13 percent (or 6 students)
used the ePortfolio beyond the initial compulsory assessment requirements. The level of disengagement is highlighted as a disappointing outcome of the implementation process.

The Model of Student Engagement with Technology (MSET) (Version 1), initially presented in Chapter 2, was developed as a means of modelling long-term engagement with an ePortfolio. Version 1 of the model was derived from the work of Davis (1989) with the Technology Acceptance Model (TAM) and the Psychological Attachment Model (Malhotra & Galletta, 2005). The MSET (Version 1) was a useful starting point for examining the engagement of students in using the ePortfolio. However, following repeated reading and analyses of the student data derived from this study, it became evident that the MSET (Version 1) did not detail student engagement sufficiently to highlight emerging engagement decision points.

To better understand student engagement with the ePortfolio, a Model of Student Engagement with Technology (MSET) (Version 2) was developed (see Figure 6-1). The MSET (Version 2) highlights the key decision points for student engagement:

1. prior knowledge and experience
2. initial supported engagement
3. initial independent engagement
4. ongoing independent engagement
Figure 6-1. Emmett’s Model of Student Engagement with Technology (MSET) (Version 2)
The MSET (Version 2) goes beyond usage figures to present understandings of how a cohort of students engaged with the ePortfolio and suggests ways to improve the implementation and support practices. The explanatory power of the model is based on the identification of the types of decisions students make and when they make them during the engagement process. Research suggests that students interact with educational software in different ways (Bangert-Drowns & Pyke, 2002) and that the time and energy students devote to educationally purposes (Kuh, 2003) is the best indicator of their learning. This model presents a greater depth to understanding the ‘interaction’ and ‘time and energy’ than was previously available and has implications for the direction and timing of future implementation and support activities. It is proposed that this model represents an opportunity for other researchers to test its efficacy in other contexts, perhaps leading to further refinements.

**Question 3: What factors impacted on Student Engagement with this ePortfolio?**

In response to the third question, the factors that impacted on student engagement with the ePortfolio were the mostly negative opinions students developed and their negative experiences in using the ePortfolio.

As discussed previously the negative student opinions about the ePortfolio were generally concerned with the usefulness of the ePortfolio for their learning and employability, the motivational impact of assessment, the time and effort they believed the ePortfolio would require and how easy the ePortfolio appeared to be to use. Many students were not willing to invest the time and effort into the ePortfolio because they could not see any return on this investment. Instead they made reasonable and logical personal decisions to put their efforts elsewhere. As Coates
(2005) suggests, it is the student who ultimately holds the responsibility for their learning. Students who disengage from the learning experiences presented to them may not fully gain the skills and knowledge required to compete in the employment marketplace.

The reasons students provided for their engagement decisions based on their experience with the ePortfolio are woven into three themes: training, technical and temporal.

**Training factors that impacted on Student Engagement**

Students found the training provided during the implementation program, based on an introductory lecture and a single workshop were inadequate. Students were concerned that their technical skills and computer self-efficacy were not adequate, and hence they wanted additional face-to-face or one-on-one sessions that included bridging technical difficulties with the ePortfolio and with creating artefacts, and sessions that focused on skills in writing critical reflections. Without additional workshops students found it difficult to move beyond their initial supported engagement. While support mechanisms were available including via telephone, email, video and documents, students indicated a preference for additional one-on-one training.

**Technical factors that impacted on Student Engagement**

The lack of external viewer access to the ePortfolio was a factor for student engagement. Students were concerned that having made the effort and having committed time to the ePortfolio, employers (without external access) would not be able to view their work. This finding supports the research of Wetzel and Strudler
who also found that students were concerned that employers should actually view their ePortfolio. While other researchers point to the preference for print-based portfolios (Temple et al., 2003) the realisation that employers would not even have this choice was of concern to students.

Students also raised the issue of the complexity of using the ePortfolio, in particular trying to remember how to use it when their engagement was sporadic. The complex nature of the ePortfolio meant that students needed to refresh themselves on how to use the software if there had been an intervening time gap between engagement sessions. As one student stated, “because I do not use it regularly I find it difficult to remember how to navigate”. As shown by Kennedy et al. (2006), many students are technically savvy but, when faced with technology beyond mobile phones, iPods or email, student skills show considerable variation. K Cavik and Caruso (2005) found in their research that students over-rate their skills, that they have difficulty with problem solving and dealing with new kinds of technology or applications. Their data suggests that the transfer of skills between information technology for entertainment and academic purposes is questionable.

Research from the Centre for Recording Achievement concerning ePortfolios found that the most frequently mentioned difficulties reported by students and staff related to users’ skills, confidence and technical issues (Strivens et al., 2009).

Temporal factors that impacted on Student Engagement

Students reported three factors based on temporal matters: they lacked the time to create an ePortfolio; a gap in time between experience and reflection made using the ePortfolio difficult; and the timing of the introduction of the ePortfolio was an issue. As discussed previously students are time poor and, for many, their
allocation of time is better put to assessable tasks during the semester. This meant that students would be faced with adding to their ePortfolio during semester breaks and trying to remember what had occurred and what they learnt. This finding is echoed by research from the Centre for Recording Achievement (Strivens et al., 2009) who highlighted the need for monitoring usage by students and providing support and justification for use. Motivation then becomes the key at a time when advice and support from academic and peers were not available.

For this group of students as second and third years they preferred to have their introduction to the ePortfolio in first year. They felt that the effort and time required to bring their ePortfolio up to a standard was beyond their resource capability at this late stage of their course. Although this is an issue specific for this group of students it has implications for others implementing ePortfolios.

**Reflections on the Research Process**

An interpretivist paradigm was selected for this study, and an evaluative case study approach was chosen to reveal the complexities and uniqueness of the student engagement while preserving multiple perspectives by the students (Yin, 2002). Multiple data collection methods included document analysis, classroom observation, exploratory survey, student interview and the maintenance of a researcher journal.

The professional doctorate afforded the opportunity to engage in the investigation in a scholarly, theoretically and methodologically rigorous way. My role as a “researching professional” (Costley & Stephenson, 2009; Lester, 2004) meant that I was both insider and outsider. As an outsider, my role was to look critically at my own work and to comment dispassionately. As an insider however, a
significant tension arose between my research and my practice. Creating a boundary, in terms of work and research, was difficult. The tension between simultaneously being an insider and outsider was eased following my departure from the project in 2006, thus providing extra professional distance, although not fully alleviating the emotional connection to the ePortfolio.

I was careful to acknowledge my position of institutional authority and to be ethical in dealing with confidential documents and resources about the ePortfolio. The tension of being both the designer and researcher in asking questions of the students was apparent, as Nunkoosing (2005) suggests:

> power is always present in the transactions of the interview, as it is in all human interactions. In the interview, power takes many forms and degrees, and we can conceive of the various forms of power constantly shifting back and forth between the interviewer to the interviewee. (p. 699)

By being the designer the interviews also became discussions about the use of the ePortfolio, as in the interview with Betty in relation to her interview with a potential employer. This enabled the students to feel as if they were both contributing to my research and to the design of the ePortfolio. Throughout the study, I informed the students that the research findings would enable a better understanding of engagement with the ePortfolio, provide feedback on the design of the ePortfolio and on the implementation process. Perhaps someone that was not so close to the project could have conducted the interviews. However, as a researching professional, I believe I developed a strong rapport with the study participants and that I was able to get close to the students’ experiences because of their willingness to provide their personal accounts. For example, Dana at the conclusion of her interview asked, “I hope I’ve helped”. Alyssa also mentioned that she had wanted to come to her
interview and that she had discussed this with other students. She felt that she was providing feedback not just for herself but also on behalf of other students.

I aimed for trustworthiness through the use of extended transcribed extracts and a rich description of the relevant contexts so that readers can make their own judgements about the data presented and the relevance for their own contexts (Silverman, 2006). As Janesick (2000) points out, the value of the “case study is its uniqueness; consequently reliability in the traditional sense of replicability is pointless” (p. 394). It is left to the reader to answer the question, “to what extent can I relate what is in this study to my own situation?” (Burns, 1997, p. 383)

This thesis used crystallisation as “a better lens through which to view qualitative research designs and their components” (Janesick, 2000, p. 392). As Richardson (2000) argues convincingly, there are “far more than three sides from which to approach the world” (p. 934), and proposes ‘crystallisation’ as an alternative visual metaphor that suggests a deeper, more meaningful, understanding of the subject. In this case study (student engagement with an ePortfolio), the different facets of the crystal were explored using a variety of methods including an attitude survey, student interviews, reflective journal, documents and observations.

As an organic process this study has undergone a number of re-conceptualisations since 2004, when it commenced. Initially, the problem was conceptualised as a critical review of the reflections and artefacts students had added to their ePortfolios. Because the University ePortfolio was used only sporadically, I discovered it would be difficult to gain access to a site where students were actively adding to their ePortfolio. Following the request in early 2005 to implement the ePortfolio for the Faculty of Education, my focus shifted to examine how ePortfolios
may improve student metacognition. However, following the workshops in 2005 and my growing concern about whether students were engaging with the ePortfolio, understanding student engagement became the driving influence.

**Building on this Research**

In the future this study could be built on by increasing the number of participants across the Education Faculty and by incorporating other disciplines. Additionally, by adding access to the student ePortfolios a more in-depth analysis of engagement is possible.

The Faculty of Education and the single unit implementation bound this study. Thus limiting the study to the perspectives of a small sample of students as obtained through a survey, observations and interviews (n=45 survey responses and n=4 student interviews). In this study these limited perspectives were balanced by the incorporation of rich data. The intention was not to investigate the ePortfolio implementation beyond these boundaries of space and time. Extending the boundaries to the whole university would require a larger sample size over a longer timeframe.

In the future this study could be enriched through access to student ePortfolios. While it was not the intention of this study to examine the critical reflections and artefacts students had added, access could be valuable in investigating the quality of student engagement. Future research on student engagement with the ePortfolio should be more wide ranging, in space and time, and include an analysis of reflections and artefacts added to the ePortfolio.
Critical Reflections on my Facilitator Role in the Implementation Process

My critical reflections on my role as facilitator, and the influence that my own performance may have had on student opinions and engagement, has been personally confronting. My own reflections on the workshop and other related implementation processes were that the implementation was not as successful as I had hoped. Although I had not expected a 100% level of engagement, more students than I had anticipated disengaged from the ePortfolio project.

The process of undertaking this thesis and critically reflecting on my own performance has, nevertheless, been informative. Hunter (2007) considers the task of reflecting on teaching as the most important work for any facilitator and describes the process as “a life journey – a scary and exciting journey that will take you to places within yourself that will surprise, delight, inspire, as well as disturb, horrify and disgust you” (p. 46). Hunter (2007) points out that effective facilitators have to learn to cope with their doubts and fears and that part of the facilitator’s developmental journey is to accept their shortcomings and imperfections. The outcomes from this reflective process will serve to improve my own performance through the realisation of the importance of student opinion, the diversity in student computer skills and the lack of student skills in writing critical reflections. Each of these matters needs to be catered for in re-designing the workshop and implementation program for this University’s ePortfolio.

Student disengagement was high, although student comments about the usefulness of the ePortfolio also indicated that the tool could be worthwhile for learning and employment. While student engagement is a better measure of the success of the implementation process than numbers, a more complete picture can
only be achieved through evaluating student academic and employment outcomes. That is, has the development of critical reflection skills led to better student learning outcomes, or has the use of the ePortfolio led to improved student employment outcomes? The investigation of an ePortfolio in relation to successful outcomes is an area that requires more research before ePortfolios can be better understood and their potential achieved.

**Reconceptualising the University ePortfolio**

The findings of this study suggest the need for the University ePortfolio to be reconceptualised in order to enhance student engagement. The students who participated in this study highlighted both strengths and difficulties with the ePortfolio. Their main concerns involved the complexity in using the ePortfolio software. For instance, they were concerned about how to populate, or “fill” the ePortfolio, as they were required to add evidence in relation to graduate attributes. The students’ identification and documentation of attainment of graduate attributes (also called graduate capabilities, key competencies, transferable skills, employment skills) are seen as key outcomes of the ePortfolio process. Another concern raised by the students was that, because they used the ePortfolio on an irregular basis, they had difficulties remembering how to use it. However, students still believed that the ePortfolio and the critical reflection process would be beneficial to their learning and employment prospects.

The current design of the University ePortfolio is based on an organisational need for students to show progress against a number of graduate attributes. For example, the University identified ten capabilities and the Faculty of Education identified eighteen specific attributes. The student’s task is to select the specific
attribute that they are addressing in their ePortfolio and then concentrate on
composing a critical reflection and adding artefacts as evidence of that particular
attribute (see Figure 6-2 for a process chart). Students must be online and connected
to the database of attributes as they compose their reflections, thus reducing the
immediacy of the reflective process. The current design therefore has complicated
the interface design and added to issues associated with delayed task performance.

In considering the students’ feedback and most universities purposes for
implementing ePortfolios, the following set of six design criteria were developed to
advance future design and implementation of ePortfolios:

1) **ePortfolios be accessible through a range of technologies** - PC,
Mac, phone and tablet allowing offline access to input reflections and
artefacts with a synchronisation function to the main database

2) **ePortfolios should include feedback mechanisms** - to enable all the
following stakeholders to actively engage in the construction of the
ePortfolio:
   i. Academics
   ii. Peers
   iii. Employers
   iv. Accreditation bodies, and
   v. Support staff

3) **ePortfolios should enable a semantic web** - through the assignment
of multiple attributes, keywords and groups of users to a single
reflection or artefact as they are added
4) **ePortfolios should include a search function** - to facilitate the retrieval of reflections and artefacts, and the creation of conceptual links

5) **ePortfolios should provide guided access to tasks** - for the expert user, this function should be able to be turned off

6) **ePortfolios should include an administrative interface** - that shows progression against capabilities and is viewable by student and academic and should function as a short-cut to the search and viewing / editing of reflections and artefacts

With this set of principles the process of using the ePortfolio is reconceptualised in terms of privileging student learning over administrative compliance. The first and most important action is for the student to input their critical reflections and add artefacts. The student then assigns keywords and capabilities to that reflection or artefact (see Figure 6-2 for a process chart). In this way, students would be encouraged to write critical reflections as a pedagogic activity, and then attend to addressing the organisational capabilities, thus allowing flexibility in the topics of critical reflections and artefacts added to the ePortfolio. The linkages created between artefacts and reflections create a semantic web (Gerber, Van der Merwe & Barnard, 2008) that enables conceptual searching of keywords, graduate attributes and users. Creating these linkages could be completed at the time of writing or later in order to meet accreditation or assessment needs. This design would simplify the input functions and make the ePortfolio more useable in an offline mode. Additionally, as students often work within groups for projects and
assessments, students should be able to assign student names and to share their reflection or artefact with peers. A feedback mechanism is a crucial functionality.

Figure 6-2. Reconceptualising the ePortfolio Process
Recommendations for University Best Practice

As a final part of this thesis, five recommendations for university good practice are presented. These recommendations are general statements of good practice drawn from the literature, practice and the case study reported in this thesis. They are:

1. sustainable implementation is more often achieved through small steps building on one another;
2. that a clear definition of the purpose of an ePortfolio is crucial for students and staff;
3. that ePortfolio pedagogy should be the driving force not the technology;
4. that the merit of the ePortfolio is fostered in students and staff; and
5. that supporting delayed task performance is crucial.

Each of these recommendations is now presented in detail.

**Recommendation 1: Sustainable implementation is best achieved through small steps**

Sustainable implementation of innovations is more likely to come from the academics with small steps building on one another, than from outside, as a large-scale imposed reform. Small step ePortfolio implementation process is supported by research (BECTA, 2007; Strudler & Wetzel, 2005; Wade, Abrami & Sclater, 2005) and suggests a gradual building of capacity based on strong support mechanisms and administrative leadership. A small step implementation would begin with early adopters using the tool in their courses and gradually influencing other academics to embrace the ePortfolio in their courses. Often this influence will arise from students wanting advice and help from academics in different courses. As this pressure from
below grows the organisation must begin the support process for students and academics to ensure that no one is left behind or disadvantaged.

The implementation process reported in this study is an example of one step in a long journey leading to more sustainable change. As Hassell (2007) found when researching ePortfolios, “the extent to which electronic portfolios were used program-wide impacted the way that students and faculty members perceived the value of this educational phenomenon” (p. 155). Students should have multiple exposures to the software in differing scenarios, in writing for learning and self-marketing, about the differences and how to construct a finished product for different audiences. This reinforces the view that a combined strategy from academics, technology professionals and student support services in careers and employment is needed.

**Recommendation 2: A clear definition of the purpose of an ePortfolio is crucial**

Students often are guided by the requirements of curriculum and pedagogy and the organisational marketing and support mechanisms used to introduce the ePortfolio. There is a need to establish clear guidelines concerning the purpose and use of an ePortfolio (JISC, 2008). Without this step, an ePortfolio can mean different things in different contexts and to different users. The lack of clarity in defining the purpose of an ePortfolio may result in high levels of disengagement through not meeting individual student needs and goals and by not addressing the pedagogical requirements of the academics that guide the student use (Kimball, 2005).
Recommendation 3: ePortfolio pedagogy should be the driving force not the technology

The third implication for ePortfolio implementation is that the technology should not determine the pedagogy; the pedagogy should decide how the technology is designed and used. Kimball (2005) highlights four theoretical principles of portfolio pedagogy that should guide the use of ePortfolios for learning. First, ePortfolios encourage a reiterative process of reflection on performance and learning. Second, ePortfolios enable connections to be made between actions and learning. Third, the emphasis should be on the process of learning. Finally, students need to take control and responsibility for their learning. Where the use of ePortfolios is underpinned by pedagogy the more likely academics are to use the ePortfolio in learning contexts. Hassell (2007) in her research found that, when the electronic portfolio practice in this Department was consistently implemented and diffused across the curriculum, the academic community in the programs and department was forced to rigorously evaluate and re-evaluate standards and learning outcomes and make the process equitable (p. 155).

The ePortfolio then becomes an enabling technology, where the activity of constructing an ePortfolio is focused on learning, not on the technology.

Recommendation 4: That the merit of the ePortfolio is fostered in students and staff

This thesis has examined engagement with an ePortfolio within a small group of students. In order to determine the merit of the ePortfolio as part of the university student experience more research is required that looks at larger numbers of students and what outcomes are being achieved. For example, Clemson University found that using ePortfolios has “freed us [the university] to think about general education as
something other than a smorgasbord of courses” (Ehrmann, 2004a, p. 8).

Additionally, Clemson University is extending its ePortfolio research to better understand student learning,

we’ll not only assess student work but also use student portfolios for research - where are students learning what they are learning? For example, what are students learning while outside the classroom, in jobs, at home, and in extracurricular experiences? What kinds of learning should we foster, more intentionally, outside the course? (Ehrmann, 2004a, p. 8)

The investment in ePortfolio development and implementation is enormous financially, pedagogically and for support mechanisms. To measure whether a return on investment is achieved requires research across a range of areas including student learning and employment outcomes, student computer literacy, assessment and uptake by students and academics.

**Recommendation 5: Supporting delayed task performance is crucial**

The sustainability of ePortfolio use is dependant upon supporting the delayed task performance (Yi & Davis, 2003). Yi and Davis (2003) found that task performance after training was significantly influenced by both the performance during the initial workshop and post-training self-efficacy. In order to improve post-training self-efficacy and long-term engagement it is recommended that ongoing technical support, peer and academic involvement in guiding and providing feedback, and the continual identification of opportunities to use the ePortfolio by academics and students are fostered. It is also important to identify employers who can provide the motivation required to support student performance. Without these measures on-going student engagement and task performance will diminish or disappear.
Suggestions for Further Research

This study suggests areas for further research and discussion about student engagement and the use of ePortfolios. Two possible future research questions are:

*Moving beyond the numbers: how to measure student engagement with an ePortfolio?* As discussed above the ePortfolio has the potential to provide insight into what and how students are learning. This research would focus on examining student engagement through the quality of student interaction with an ePortfolio. Analysing student reflections and artefacts would provide a measure of the level of student engagement with the ePortfolio. Students who use the ePortfolio as a storage tool and whose critical reflections are simple stories are not as engaged as others who actively critique their experiences and learning. This research would therefore focus on the quality of interaction not quantity.

*What are the attitudes towards the use of ePortfolios for a range of users, such as students, employers, teachers, government bodies, and universities?* If ePortfolios are to meet their stated aims for improving students’ employment chances, then more research needs to be undertaken on determining the opinions of users and intended viewers. Through a possible action research model opinions could be canvassed from all stakeholders and then applying what is learnt into actions toward marketing and support. As has been shown in this study, the university-wide implementation of an ePortfolio requires buy-in from teachers and employers. To do this, implementers need to know what their opinions are and how to address negative opinions. Once these opinions are known plans and processes can be put into place that aim to resolve and support issues.
The crucial call is for those who are working with ePortfolios to take the opportunity to examine and observe them in action, and to share the findings of their research with the expanding ePortfolio research community. ePortfolios are not going away. Considerable resources are being provided to develop and implement them in universities and we must find ways to do this as successfully as possible.

**Final Comments**

The pattern of student engagement with the ePortfolio revealed in this study has been one of initial engagement based on an assessment task, and then subsequent disengagement.

The crucial message from this research is that students will not adopt an ePortfolio just because it is there. The analogy that, “if we build it they will come” does not hold true. Students need to be introduced to and properly supported in using an ePortfolio. They also need to be encouraged through appropriate ongoing activities and supported technically and pedagogically in building their ePortfolio.

As Ehrmann (2004) states:

> using an ePortfolio does not, by itself, create any magical kind of improvement in education. The software may cost money and using it consumes valuable time. However, if faculty and students can use the portfolio to alter teaching/learning activities – that’s where the potential payoffs can be found. (p. 1)

Kimball (2005) suggests that, additionally, the role of ePortfolios needs to be clarified, either bringing them more into alignment with pedagogy, or distinguishing them more clearly from it. The most obvious method would be to ensure that critical reflection is the centre of ePortfolio software and activities, both for students and for those implementing the innovation. In order to capitalise on past investments, the university should see current implementation strategies as just the beginning of a
much longer process. While the ePortfolio is still being used at the University this use remains sporadic and is dependant upon academic and individual student motivation. The real rewards for students, academics and the university lie in the future.
REFERENCES


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APPENDICES

The following Appendices are included in this thesis:

<table>
<thead>
<tr>
<th>Appendix A:</th>
<th>The University ePortfolio</th>
<th>Provides more details about the University ePortfolio.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appendix B:</td>
<td>Workshop Plan</td>
<td>Contains the workshop plan used for the cohort of student participants.</td>
</tr>
<tr>
<td>Appendix C:</td>
<td>Assessment Task</td>
<td>Details the assessment task this cohort of students was required to complete using the ePortfolio.</td>
</tr>
<tr>
<td>Appendix D:</td>
<td>Survey</td>
<td>Contains the survey used as part of the data gathering for this thesis.</td>
</tr>
<tr>
<td>Appendix E:</td>
<td>Ethical Clearance</td>
<td>Provides a copy of the ethical clearance certificate for this study.</td>
</tr>
<tr>
<td>Appendix F:</td>
<td>Sample Journal Entry</td>
<td>Provides an example of a journal entry I made during this thesis.</td>
</tr>
</tbody>
</table>
Appendix A The University ePortfolio

This appendix provides more details about the University ePortfolio.
The University ePortfolio

The proposal to provide an electronic portfolio tool to the Universities students was formulated in 2002, with design and development taking place during 2003-2004. The ePortfolio was designed to be university-wide, non-faculty specific and closely aligned with careers and employment. Under the sponsorship of the University senior management a design and development team was convened involving personnel from Information Technology, Teaching and Learning Support, and the Careers and Employment department.

**ePortfolio Graduate Attributes**

A framework of employment-focused graduate attributes for the ePortfolio was developed in 2002-2003. These attributes were then mapped against the standards of specific industry groups; for example, the Employability Skills Framework as identified by the Business Council of Australia and the Australian Chamber of Commerce and Industry (BCA/ACCI, 2002). The final list of attributes were endorsed by the Faculty Deans and the Teaching and Learning Committee and included: communication, teamwork, problem solving and critical thinking, life management/lifelong learning, technical/professional/research, managing/organizing, social/ethical responsibility, leadership, creativity/design, initiative/enterprise.

The ePortfolio also extends these graduate attributes beyond the university classroom, allowing students to reflect on their personal, community and work life in relation to the attributes. While the ePortfolio operates with a generic set of graduate attributes, different faculties are able to generate their own graduate attributes based on specific employer or professional body requirements. The Faculty of Education
for example, as part of its customisation of the ePortfolio, has developed a set of specific professional standards that apply to pre-service education students. These standards are similar to the requirements for student’s provisional registration with the Education Department.

**Testing and Release**

The design of the ePortfolio was extensively tested through student focus groups and pilot studies using approximately 4000 students across a variety of faculties and units. Based on the feedback, some minor modifications were made to the navigation and support materials. The ePortfolio was subsequently released to all students (approximately 40,000) in February 2005 following an extensive period of consultation with students, academic staff and employers.

**Technical Infrastructure**

The ePortfolio is embedded within the university technical infrastructure and accessed via the university administration system with which all students are familiar. The ePortfolio was designed to be similar in navigation and layout to the administration system, and was designed to incorporate simple web-forms and a significant level of HELP support. Access to the ePortfolio is available from any computer that is connected to the Internet, including all computer labs and wireless spaces on campus, and to home computers. The system was tested on broadband and dial-up accounts to ensure that data transfer speed would not be a disadvantage to external students.
**Functionality**

The ePortfolio enables students to record, catalogue; retrieve and present reflections on experiences, along with artefacts that evidence the development of graduate attributes. From the homepage students can:

- add, edit and manage experiences and artefacts, and create, release and export their ePortfolio. Students can also link their details, photograph and academic history.
- store up to 128mb of artefacts and link them to their ePortfolio.
- export their ePortfolio as a text file.
- see who has viewed their ePortfolio.
- view ePortfolios that have been released to them as individuals or as part of a cohort.
- access sample ePortfolios, electronic and print guides, and tutorials.
- create, release and manage their resumé.
- undertake a basic self-assessment against the ePortfolio graduate attributes.

**Ownership**

The critical issue of who owns the ePortfolio, the student or the institution, was resolved by university policy. While the university provided the technology for students to create their ePortfolios, the student owned the content. Each student controls what they enter, whom they allow to view the content (including how much and when), and if and when content is removed from their ePortfolio. Students and graduates have access to their ePortfolio and File Manager area for as long as is required.
**Scaffolding Reflective Activities**

To assist students to write their reflections a scaffolded approach was introduced based on behavioural interviewing techniques where students were encouraged to write reflections against the STARL acronym.

<table>
<thead>
<tr>
<th><strong>Situation</strong></th>
<th>The <em>situation</em> is the context in which the experience occurred.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Task</strong></td>
<td>The <em>task</em> is what was actually required of you in the situation. When reflecting on your actions, ask yourself why you chose to respond in that particular way.</td>
</tr>
<tr>
<td><strong>Action</strong></td>
<td><em>Action</em> refers to the steps that you personally took in response to the task.</td>
</tr>
<tr>
<td><strong>Result</strong></td>
<td><em>Result</em> refers to the outcome of your actions. How did your actions contribute to the completion of the task? How did your actions affect the final outcome of the situation?</td>
</tr>
<tr>
<td><strong>Learnt</strong></td>
<td><em>Learnt</em> refers to the things you have learned from the experience. Highlight any skills or abilities that you have developed or improved as a result of the experience. Think about whether you have gained a deeper understanding of any particular issues. Think about how you might apply what you've learned to other situations.</td>
</tr>
</tbody>
</table>
Appendix B Workshop Plan

This appendix contains the workshop plan used for the cohort of student participants.
Workshop Plan

This is a workshop plan for the ePortfolio based on a 50 minute session in a computer lab.

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Objectives</td>
<td>By the end of this workshop students should understand:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- What the ePortfolio is</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Where to find it</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- How to release a ePortfolio View</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- How the ePortfolio could be used</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Where to get Help</td>
</tr>
<tr>
<td></td>
<td>Students</td>
<td>should be able to:</td>
</tr>
<tr>
<td></td>
<td>should be</td>
<td>- Add experiences</td>
</tr>
<tr>
<td></td>
<td>able to:</td>
<td>- Add artefacts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Add create a ePortfolio View</td>
</tr>
<tr>
<td></td>
<td>Background</td>
<td>This workshop is a hands-on introduction to the features of the ePortfolio.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>What is a Portfolio?</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>For many years Portfolios have been used in the areas of visual media</td>
</tr>
<tr>
<td></td>
<td></td>
<td>such as art and drama, and in the fields of student teaching and nursing.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>They are often collections of things used to provide potential clients</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or potential employers with proof of capabilities. They resided in a</td>
</tr>
<tr>
<td></td>
<td></td>
<td>filing cabinet or on a shelf until required. They were often singular</td>
</tr>
<tr>
<td></td>
<td></td>
<td>in nature, and had to be carried from one place to another.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>What is an ePortfolio?</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ePortfolios are a new form of portfolio, an electronic tool that offers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the possibility of</td>
</tr>
</tbody>
</table>
incorporating, electronic artefacts, the World Wide Web and databases for storing, sorting and viewing artefacts and experiences.

They can exist as multiple entities; many viewers can view them synchronously; and they can be stored in a database for sorting, viewing, safety and backup.

<table>
<thead>
<tr>
<th>The ePortfolio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is an online tool that students can use to record, catalogue, retrieve and present reflections on experiences and artefacts, such as photos, documents or videos that support the development of graduate capabilities.</td>
</tr>
<tr>
<td>Students are responsible for their ePortfolio. They have control over the input of experiences and artefacts, and assign who can view their work. The ePortfolio also offers a dynamic environment for students to seek feedback from peers, academic staff and careers officers.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Uses of ePortfolio</th>
</tr>
</thead>
<tbody>
<tr>
<td>The ePortfolio is able to support all three styles of portfolios which enables flexibility in construction and presentation:</td>
</tr>
<tr>
<td>Employment – students add experiences and artefacts against a matrix of graduate attributes and settings.</td>
</tr>
<tr>
<td>Learning – the work evolves dynamically as a result of interest, motivation and reflection. Students can reflect on experiences to make new connections, personalise their learning experiences and gain insights about current and future activities.</td>
</tr>
<tr>
<td>Assessment – as required by individual academics or Faculties.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Benefits of an ePortfolio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deepens the quality of learning, in the form of critical thinking or development of a questioning attitude</td>
</tr>
</tbody>
</table>
Enables students to better understand their own learning processes

Increases active involvement in learning and personal ownership of learning

Enhances creativity by making use of intuitive understanding

Fosters reflective practice and creative interaction

Enhances employability through a viewable ePortfolio, assisting with writing selection criteria, and preparation for interviews.

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>15min</td>
<td>ePortfolio</td>
<td>This is a hands-on demonstration of the features of the ePortfolio. Students should follow the process on their lab computer.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Access</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Access to ePortfolio is via the administration system under the Student Services Tab.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. View others – Sample ePortfolio</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Show the sample ePortfolio so that users have an idea what the finished ePortfolio will look like.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Overview</td>
</tr>
<tr>
<td></td>
<td></td>
<td>From main page talk briefly about each of the tools – include the information and news areas.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Adding experiences (STARL)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Demonstrate how to add an experience using the STARL acronym</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Situation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Task</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Action</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Results</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Learnt</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Activity</strong>: students to add a simple reflection against one of the ePortfolio skill set or faculty</td>
</tr>
</tbody>
</table>
specific set. Students need to save their work as it will be used later.

Demonstrate briefly the file manager tool and lead into adding artefacts.

5. Adding artefacts
Briefly show the screens and talk to the process.

**Activity:** students to add a file to File Manager (if time add to reflection above)

6. Creating a view
Briefly show the screens and talk to the process.

**Activity:** students to create an ePortfolio view using the reflection added earlier. Students should give the view a title and save. Students can view and edit their ePortfolio view.

7. Release a view
Briefly show the screens and talk to the process.

8. Export
Briefly show the screens and talk to the process.

9. Help
Briefly show the screens and talk to the process.

<table>
<thead>
<tr>
<th>Handouts</th>
<th>ePortfolio worksheet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Quick Reference Guide</td>
</tr>
<tr>
<td></td>
<td>Art of reflection – STARL</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resources</th>
<th>Computer lab</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PPT slides</td>
</tr>
<tr>
<td></td>
<td>Data Projector</td>
</tr>
</tbody>
</table>
Appendix C Assessment Task

This appendix details the assessment task this cohort of students was required to complete using the ePortfolio.
Assessment Task

Creating a Web-story and using ePortfolio: Technology-enhanced Learning in SOSE and HPE

Materials Required

- digital camera, or mobile phone with camera, or photos that can be scanned
- a learning friend/ buddy – this is a puppet or persona doll
- syllabus documents – SOSE, HPE, Technology, Early Years curriculum
- each group will have access to their own group work area on the online learning site.

Preparation

1. attend first lecture and workshop – very important!
2. form a group for 5-6 students from your allocated tutorial group
3. appoint one (1) person to liaise (if needed) with tutors
4. familiarise yourselves with content of current syllabus documents
5. develop a story framework to guide your group activities
6. determine your groups’ technology needs
7. practice with technology including familiarisation with your group work area in the online learning site
8. develop and personalise your group’s buddy. Give it a name and persona.
9. decide on an age grouping or year level for whom you will orient this task.

Part 1: Web-story (group and individual)

1. develop a story board to organise your groups’ story
2. assign each person to construct a specific part of the story
3. as individuals:
   a. photograph the learning friend in an appropriate context
   b. construct meaningful, flowing text around this image (2-3 paragraphs for each student’s story segment)
   c. create 2-3 appropriate hyperlinks/ story segment to support your web-story
   d. establish 3-5 links to curriculum outcomes as per syllabus documents
4. upload your text and image to your tutorial work area on the teaching site.
Part 2: Literature Link (group)

1. find an appropriate storybook that can be thematically linked to your web-
  story (see notes on Assessment 3 to help with this)
2. take an image of your learning friend reading this storybook
3. write a synopsis of the storybook
4. state why this book was chosen.

Part 3: Field Visit Evaluation (group)

1. find a field site related to your web-story content, which can further extend
  learning into a real-world context.
2. visit with your group and learning friend
3. take a photograph of your group and buddy to add to your group work area on
   the online site.
4. investigate and critique this field site in terms of its appropriateness for your
   chosen age group/ year level (see example on-line for details)
5. when you have completed all aspects of this task, have one person only email
   your tutor to let them know that it is now available for viewing and marking.

Part 4: ePortfolio Reflection (individual)

1. Submit a 400 word critical reflection, using the ePortfolio, about your
   experience in this technology-enhanced learning project. In this reflection
   comment upon the following:
   a. What you learned about: group learning, using technology for
      learning, SOSE/ HPE learning.
   b. What are the implications of this project for your teaching? Discuss:
      integrated curriculum, productive pedagogies, community-based
      learning, and variety in assessment tasks for children.
Appendix D Survey

This appendix contains the participant information sheet and survey used as part of the data gathering for this thesis.
Participant Information Sheet

Study Title:

EXPLORING THE PATTERNS OF ENGAGEMENT WITH AN ePORTFOLIO OF EMERGENT TEACHING PROFESSIONALS.

David Emmett
Doctoral Student
Faculty Of Education, QUT
Ph: 38644378
Email: d.emmett@qut.edu.au

Description

This study will explore the patterns of engagement with an ePortfolio of emergent teaching professionals. Through this study a better understanding of why some students continue their engagement with the ePortfolio and others disengage will emerge. The outcomes of this study will then generate guidelines for support interventions that can improve the levels of student engagement with the ePortfolio. The researcher requests your assistance in completing this questionnaire in order to gather data concerning these factors.

Participation

Your participation will involve completing this questionnaire. You will also be asked to indicate your preparedness to be interviewed in order to gain a more in-depth appreciation of the engagement factors.

Expected benefits

It is expected that this project will benefit students through providing the ePortfolio team with research related to the development and targeting of ePortfolio interventions to strengthen student engagement with the ePortfolio.

Risks

There are no risks associated with your participation in this project.

Confidentiality

All comments and responses are anonymous and will be treated confidentially. The names of individual persons willing to be interviewed will be requested, but will be changed in the written document to protect anonymity.
Voluntary participation

Your participation in this project is voluntary. If you do agree to participate, you can withdraw from participation at any time during the project without comment or penalty. Your decision to participate will in no way impact upon your current or future relationship with the University.

Questions / further information

Please contact the researcher if you require further information about the project, or to have any questions answered.

Concerns / complaints

Please contact the Research Ethics Officer on 3864 2340 or ethicscontact@qut.edu.au if you have any concerns or complaints about the ethical conduct of the project.

Consent

The submission of the completed questionnaire is accepted as an indication of your consent to participate in this project.
### Section 1: This section of the survey asks for comment on your lecturer’s role in introducing the ePortfolio.

<table>
<thead>
<tr>
<th>1-1</th>
<th>My lecturer emphasised the role of the ePortfolio as an assessment activity.</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Uncertain</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>My lecturer emphasised the role of the ePortfolio as a reflective learning tool.</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Uncertain</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>1-3</td>
<td>My lecturer emphasised the role of the ePortfolio in helping me to get a job.</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Uncertain</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>1-4</td>
<td>Do you have any other comments on your lecturer’s role in introducing the ePortfolio?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Section 2: This section of the survey asks for comment on your ePortfolio workshop facilitator’s role in introducing the ePortfolio.

<table>
<thead>
<tr>
<th>2-1</th>
<th>My facilitator emphasised the importance of reflecting on experiences.</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Uncertain</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-2</td>
<td>My facilitator emphasised the importance of self-direction in learning.</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Uncertain</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>2-3</td>
<td>My facilitator emphasised the role of the ePortfolio in helping me to get a job.</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Uncertain</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>2-4</td>
<td>I felt that I would have no difficulty in using the ePortfolio after the workshop.</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Uncertain</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>2-5</td>
<td>Do you have any other comments about the role workshop facilitator’s role in introducing the ePortfolio?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Section 3: This section of the survey asks on your use of the ePortfolio.

<table>
<thead>
<tr>
<th>3-1</th>
<th>I found writing reflections on experiences.</th>
<th>Very Difficult</th>
<th>Somewhat Difficult</th>
<th>Neutral</th>
<th>Somewhat Easy</th>
<th>Very Easy</th>
</tr>
</thead>
</table>
Section 4: This section of the survey asks for comment on the extent to which you value the ePortfolio in helping you to gain employment.

<table>
<thead>
<tr>
<th>4-1</th>
<th>I believe the ePortfolio will have a positive impact on my employment prospects.</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Uncertain</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-2</td>
<td>I believe the ePortfolio will be a useful resource in preparing for interviews.</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Uncertain</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>4-3</td>
<td>I believe the ePortfolio will be useful in writing job applications.</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Uncertain</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>4-4</td>
<td>Do you have any other comments about the value of the ePortfolio in helping you to gain employment?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Section 5: This section of the survey asks for comment on the technical issues with using the ePortfolio.

<table>
<thead>
<tr>
<th>5-1</th>
<th>I found using the ePortfolio -</th>
<th>Very Difficult</th>
<th>Somewhat Difficult</th>
<th>Neutral</th>
<th>Somewhat Easy</th>
<th>Very Easy</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-2</td>
<td>I found adding Artefacts -</td>
<td>Very Difficult</td>
<td>Somewhat Difficult</td>
<td>Neutral</td>
<td>Somewhat Easy</td>
<td>Very Easy</td>
</tr>
<tr>
<td>5-3</td>
<td>Navigating around the ePortfolio is -</td>
<td>Very Difficult</td>
<td>Somewhat Difficult</td>
<td>Neutral</td>
<td>Somewhat Easy</td>
<td>Very Easy</td>
</tr>
<tr>
<td>5-4</td>
<td>I access the ePortfolio mainly from Home, Uni, Work or other -</td>
<td>Home, University, Work, Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-5</td>
<td>On average how many hours and minutes would you spend on the ePortfolio in a session?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-6</td>
<td>Any additional comments related to access or time required to use the ePortfolio?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Section 6: This section of the survey asks for comment on your experience with the ePortfolio.

<table>
<thead>
<tr>
<th>6-1 My experiences with the ePortfolio have been positive.</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Uncertain</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-2 I believe the ePortfolio has helped me become a better learner.</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Uncertain</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>6-3 I believe the ePortfolio improved my learning during this unit.</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Uncertain</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
</tbody>
</table>

### Section 7: This section asks for comment about your commitment to the ePortfolio.

| 7-1 How did you think the ePortfolio could help you after the initial workshop? | Strongly Agree | Agree | Uncertain | Disagree | Strongly Disagree |
| 7-2 What do you think now about how the ePortfolio could help you? | Strongly Agree | Agree | Uncertain | Disagree | Strongly Disagree |
| 7-3 I only use the ePortfolio when it is for assessment. | Strongly Agree | Agree | Uncertain | Disagree | Strongly Disagree |
| 7-4 I continue to use the ePortfolio to reflect in other units. | Strongly Agree | Agree | Uncertain | Disagree | Strongly Disagree |
| 7-5 I use the ePortfolio to reflect on my experiences outside university | Strongly Agree | Agree | Uncertain | Disagree | Strongly Disagree |
| 7-6 How often do you use the ePortfolio? | Daily, weekly, monthly, At end of semester, rarely, never |
| 7-7 Approximately how many entries have you made in your ePortfolio? | 1-5, 6-10, 11-20, 21-30, 31-40, 41-50 more |
| 7-8 Approximately how many artefacts have you added to your ePortfolio? | 1-5, 6-10, 11-20, 21-30, 31-40, 41-50 more |

### Section 8: This section of the survey asks for comment about how you use the ePortfolio.

| 8-1 I only use the ePortfolio to reflect on academic experiences. | Strongly Agree | Agree | Uncertain | Disagree | Strongly Disagree |
| 8-2 I use the ePortfolio on a regular basis. | Strongly Agree | Agree | Uncertain | Disagree | Strongly Disagree |
Section 9: This section of the survey asks for comment on your approach to learning and study.

<table>
<thead>
<tr>
<th>Question</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Uncertain</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-1 I generally put a lot of effort into my studying.</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Uncertain</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>9-2 In making sense of new ideas, I often relate them to practical or real-life contexts.</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Uncertain</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>9-3 I tend to learn things without thinking about the best way to work.</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Uncertain</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>9-4 I rely on what we are taught rather than thinking through topics for myself.</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Uncertain</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>9-5 I often take time to reflect on my work experiences.</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Uncertain</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>9-6 I look at research carefully to reach my own conclusions about what I am studying.</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Uncertain</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>9-7 I often take time to reflect on my studies.</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Uncertain</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>9-8 Whatever I am working on, I generally push myself to make a good job of it.</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Uncertain</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>9-9 I tend to work steadily during the course, and not leave things until the last minute.</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Uncertain</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
</tbody>
</table>

If you are willing to participate in an interview with the researcher please provide your name and Email address below.

Demographic information

Gender: F [ ] M [ ]
Age:

Enrolment Status: Fulltime  □  Part time  □

Enrolment Mode: Internal  □  External  □
Appendix E Ethical Clearance

This appendix provides a copy of the ethical clearance certificate for this study.
Ethical Clearance Certificate

Queensland University of Technology
University Human Research Ethics Committee

LEVEL 1 (Low Risk)
APPLICATION FOR APPROVAL TO UNDERTAKE
RESEARCH INVOLVING HUMAN PARTICIPANTS

A significant proportion of research which involves the participation of humans, or impacts upon humans, can be approved under Level 1. The University has established a process which enables researchers to confirm whether or not their project falls within this Level and the following types of research may qualify:

- Human research with no significant risk or ethical issues (before the implementation of any risk management strategies associated with the research design); or
- Anonymous questionnaire, surveys or interviews involving non-sensitive matters.

By completing this form the researcher confirms that their project would qualify for Level 1 clearance and would not require full ethical review by the University. Projects which qualify for review under Level 1 are considered by the Chair, University Human Research Ethics Committee (UHREC). Please forward the completed form to the Research Ethics Officer, Office of Research, C Block Podium, Gardens Point Campus.

Section One

Project Title: Doctor of Education - Examining the link between using the QUT Student Portfolio and Metacognitive Skills

Chief Investigator: David Emmett

FACULTY: Education

SCHOOL: Early Childhood

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Other Investigators:

DURATION OF THE PROJECT
from Sem. 1 2003 to Sem. 2 2007
Appendix F Sample Journal Entry

This appendix provides an example of a journal entry I made during this thesis.
Sample Journal Entry

Experiences - Doctorate Reflections

Academic

Project Update May 2005
Had an interesting meeting with the Creative Industries and IT project team in reference to their work in reflection and their requirements for the Student Portfolio. Their reflections on the use of the Student Portfolio:

• IT students struggled with reflecting and found it perplexing - based on Myer Briggs most students were ISP or IST and were underachievers in reflective practice. They were constantly looking for the correct answer - however it did force them to evaluate tasks and the positioning of task in the curriculum.

• under Myer Briggs are certain types predisposed to reflecting INT?

• Gender differences are apparent - females tend to get the concepts quicker than males - males live for the moment and don't enjoy the process of reflection they are more secretive

• Females are more open about their reflections - I have also observed this in workshops where males tend to hide their work as I move around the room.

A question to think about is whether the Myer Briggs would be a useful tool to analyse students for my study as applying categories ie M_F etc Myer Briggs