UNIVERSITY OF SOUTHERN QUEENSLAND

Enhancing Pre-service ESL Teachers' Computer Competency in an Online Learning Environment: A Web Portfolio Approach to Learning and Assessment in Malaysia

A Dissertation submitted by

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ABSTRACT

Studies have shown positive outcomes and benefits of using Web portfolios to document teacher learning and professional development. In particular, Web portfolios have potential for displaying evidence of a teacher's competency in using multimedia and a range of online tools. The purpose of this study was to explore the use of Web portfolios as a learning and assessment tool by pre-service English as a second language (ESL) teachers in a computer-assisted language learning (CALL) course offered at a Malaysian university. Web portfolios were introduced as part of the CALL course for two main purposes: firstly, as a learning tool to enhance future ESL teachers' competency in integrating computer applications; and secondly, as an assessment tool to evaluate future ESL teachers' competency in integrating computer applications to achieve the objectives of the CALL course. Participants in the study were 128 pre-service ESL teachers who were recruited based on their enrolment in the CALL course. The course lecturer also participated in the study in collaboration with the researcher with a view to integrating Web portfolios into the CALL course. The pre-service ESL teachers' learning experiences in the 14-week CALL course were studied through mixed method sequential explanatory design that employed quantitative and qualitative measures. Data was obtained from questionnaires (a pre-questionnaire and a post-questionnaire), interviews and an analysis of Web portfolios. This study found that Web portfolios have a positive impact on the participants' self-perceived computer competency. There were also promising outcomes in the use of Web portfolios as a learning and assessment tool for future CALL practitioners. Although there were challenging issues confronting the development of Web portfolios in this study such as time investment, unfamiliarity with the portfolio concept, inadequate computer skills and lack of practice, these challenges can be overcome through proper introduction and increased Web portfolio practices particularly when Web portfolios have become more established within the context of the study.

CERTIFICATION OF DISSERTATION

The work submitted in this dissertation is original, except as acknowledged in the text. The material herein has not been submitted, either in whole or in part, for any other award at this or any other university except where acknowledged.

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Signature of Candidate   Date

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Signature of Principal Supervisor   Date

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Signature of Associate Supervisor   Date

ACKNOWLEDGEMENT

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CHAPTER ONE

INTRODUCTION

1.1   Background to the Study

Teachers have become increasingly familiar with the affordances of the Internet, resulting in a significant reassessment of their teaching repertoire. While technology-driven teachers welcome the Internet as a solution to many of their teaching and learning concerns, there exist those who are not very receptive to integrating the Internet into the classroom. The tone of these teachers' voices reflects anxiety, apprehension and skepticism. Clearly, these teachers would require some degree of persuasion from various key players in the field of teaching and learning. In addition to pressures asserted by top-down government policies, there has been an increasing demand for technology-using teachers particularly by students who foresee their future significantly shaped by technologies associated with the Internet (Christina & Hazman, 2010). This has undoubtedly created a compelling need for those engaged in the training of teachers to include a new range of skills identified through the innovative use of Internet technologies in their preparation courses.

In Malaysia, particularly, the demand for technology-using teachers has been highlighted with the government being in the forefront of promoting the use of information and communication technologies (ICT). At the outset, the nation witnessed the setting up of the National Information Technology Council (NITC), Malaysia in 1994 that is an organisation responsible for the strategic management of ICT nationwide (Ministry of Science, Technology and Innovation, 2011). Accordingly, it functions as a main advisor and consultant to the government. Since its inception, national ICT policies were outlined including a National IT Agenda, Open Source Software Master Plan and National Broadband Initiative (Ministry of Science, Technology and Innovation, 2011).

As the government continues to provide a firm platform for ICT development in the country, the education sector, in particular, has also experienced radical transformations. In 1996, under one of the nation's key ICT initiatives, Multimedia Super Corridor Malaysia (MSC) was established with a vision to become a global ICT hub (NITC, 2011). The efforts of MSC are being realised through seven flagship applications - one of which was the Malaysian Smart School initiative. The technology-supported Smart Schools initiative was designed to prepare Malaysia's future generation for the digital age in line with the nation's aspiration to achieve the goals of Vision 2020. Prior to the piloting of Smart Schools, computer literacy was introduced in 60 secondary schools with computer facilities as early as 1992 (Ministry of Education Malaysia, 1992) and to another 322 schools in 1999 (Ministry of Education Malaysia, 2000). In addition to the government's exceptional investment in the ICT infrastructure, the Malaysian Smart School Initiative can be regarded as the catalyst for further developments of ICT in education. For instance, the ICT curriculum was launched as a subject at secondary schools replacing the previously information technology curriculum introduced in 1999 (Ministry of Education Malaysia, 2005). The *ICT Literacy* (ICTL) Program was later introduced at the primary and secondary schools with existing computer access. By the end of 2007, there were 5631 primary schools and 1793 secondary schools offering ICTL (Ministry of Education Malaysia, 2008).

With ICT development as a backdrop, focus in recent years was in the training of teachers to use technology effectively (Ng, 2010). Accordingly, agencies, within the Ministry of Education, were made responsible for conducting training. For example, pre-service and in-service training of teachers is being handled by the Teacher Education Division. The Institut Aminuddin Baki focused on training for Heads of schools and other school administrators. The Educational Technology Division, the Curriculum Development Centre and the Examinations Syndicate were in charge of orientation courses. Additionally, specialised short-term courses were conducted by the State Education Departments, the state Educational Resource Centres and the Teacher Activity Centres (Chan, 2002). One of the many courses conducted was the *Teaching Courseware Program* that was designed to assist teachers in the use of ICT for the teaching and learning of the English language with the support of multimedia as initiated in programs at the secondary school level (Ministry of Education, 2008).

ICT continues to be the driving force following the recent education reformation in Malaysia. As reported in the nation's Master Plan for Educational Development (2006 – 2010), a total number of 38760 teachers have undergone training in the use of ICT conducted by the teacher training division in 2006 (Ministry of Education Malaysia, 2006). Further ICT training has also been identified as a way to reinforce professionalism in the teaching field.

Caught in the middle of the ICT movement are English language teachers whose roles have been emphasised due to the overarching recognition of English as the language of the globalised world (Muhammad Kamarul, 2003). Additionally, the predicted advancements in ICT will have a significant impact on the context of English language teaching leading to an increasing concern regarding the additional pedagogical and technical skills required of the English language teacher (Warschauer, 2004). Drawing from this concern, studies have been undertaken to identify IT competencies specific to the needs of English language teachers in Malaysia "to assist teachers with different computing ability to achieve a common understanding of what constitute an IT competent teacher" (Norizan & Mohamed Amin, 2004, p. 8). Essentially, the identified IT competencies can be used to prepare those entering the teaching profession and to guide in the professional development of teachers (Norizan & Mohamed Amin, 2004). Along these lines, another approach specifically designed for English language teachers is a computer-assisted language learning (CALL) course that is being offered to future English as a second language (ESL) teachers undertaking the Bachelor of Education Teaching English as a Second Language (TESL) degree program.

Although an increasing number of English language teachers are being trained to familiarise themselves with the technological prerequisites of future classrooms, an emerging concern is the way online learning is fast becoming a preferred mode of learning. The increasing uptake of online learning has prompted teacher training institutions to enhance present training conditions by optimizing future teachers' exposure to online learning. Gold (2001) stresses that "for teachers to teach effectively online they need to have had an online learning experience" (p. 36). As an institution specialised in the training of teachers, Universiti Pendidikan Sultan Idris (UPSI) has taken the lead in training teachers online by introducing the use of a

learning management system, *WebCT,* in the year 2000 (Muhammad Rais & Yusup, 2004). In an effort to better sustain its online learning initiatives, UPSI later developed a customized learning management system named *MyGuru* (which means 'my teacher' in English) and more recently upgraded to *MyGuru2*. With an objective to implement online learning in its present practices, UPSI has made it compulsory for lecturers to upload their CVs, course outlines, learning materials and lecture notes onto *MyGuru2*. In addition, lecturers are encouraged to apply other features of *MyGuru2* such as *online assignment* and *online discussion* to their conventional face-to-face lectures. In 2011, *MyGuru3* has been introduced as a platform specifically developed to cater to the needs for online distance education in UPSI. In one respect, along with a solid infrastructure to accommodate online learning, UPSI has the capacity to continue to encourage online learning particularly through the use of different educational tools that support online learning.

1.2   Statement of the problem

While there have been a number of studies in regards to online learning and the use of educational tools in Malaysia, those studies tended to focus on the perceptions of students and teachers on the use of certain applications available on the Internet. They were also inclined towards identifying factors that impede the use of online technologies among students and teachers. It is only recently that interest in teacher's online professional development has emerged in Malaysia prompting teachers to fully utilize online technology to improve their own learning (Muhammad Kamarul, 2003; Muhammad Kamarul & Mohamed Amin, 2004).

Still limited, however, are studies investigating the use of educational tools that are able to not only support teacher's learning online but also assess teacher's competency in using online technologies. It has been found that online learning initiatives frequently resort to traditional forms of assessments such as paper-based exams regardless of the features of online learning environments that support "dynamic, performance-based, process- and product-based methods and approaches to assessment" (Moallem, 2005, p. 31). Portfolio assessment seems to have emerged as a result of the demand for alternative forms of assessment for online learning that capitalises on giving students greater control and ownership of their learning through

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the integration of summative and formative assessment processes (McLoughlin, 2003). Despite the broad use of portfolios in teacher education worldwide, their use in Malaysia has not been fully explored. Possibly, this is due to the nature of teacher training programs, which is still predominantly exam-oriented. However, with the introduction of school-based assessment in the Malaysian education system in the year 2011, the role of portfolio-based assessment has gained immediate importance. Charanjit and Arshad (2013) found that one of the concerns of teachers implementing school-based assessment in an ESL context was internalising the fundamental features inherent to assessment portfolios prior to being able to effectively use it in their classrooms. Considering that there will be many more teachers who are still not familiar with or have limited experience in the use of assessment portfolios, there is a strong reason for introducing portfolios as a learning tool during their pre-service training period.

With a background in training future ESL teachers in CALL, it is the researcher's personal interest to explore this area further due to its relevance and timeliness. Drawing primarily from the literature on teacher training and development, the researcher was attracted to the wide adoption of portfolios, in particular, the use of technology in the development of electronic portfolios as a learning and assessment tool. With the support of online technology, Web-based electronic portfolios (hereafter Web portfolios) have been introduced. While studies on the use of Web portfolios in other contexts have reported positive outcomes resulting in a "knowledge base [that] is both wide and culturally complex" (Yancey, 2009, p. 32), the implementation of e-portfolios within the Malaysian context is still at its infancy and is also limited to individual efforts at course level rather than large scale institution-wide ones. To illustrate, several studies published in this context have indicated that portfolio use is still underexplored (Boon, 2004; Mohd. Rashid & Mohd. Asri, 2007; Siti Fatimah, Nor Sakinah & Hamidah, 2007). This has sparked the researcher's motivation to further discover its worth and application in the training of pre-service ESL teachers in the Malaysian context.

In this study, Web portfolios are recommended as a tool in view of their potential to support three aspects of training teachers online: first, portfolios are suitable for assessing teachers' learning in context (Darling-Hammond & Synder, 2000; Harland,

2005; Meeus, Van Looy & Van Petergem, 2006); second, they are effective tools for the assessment of learning in higher education (Acker, 2005; Barrett, 2000; Barrett, 2004; Chang & Tseng, 2009; Evans & Powell, 2007; Hartland, 2005; Mullen, Bauer & Newbold, 2001; Son, 2009; Tisani, 2008); third, Web portfolios support features of learning online (Lopez-Fernandez & Rodriguez-Illera, 2009; Meeus, Questier & Derks, 2006).

1.3 Research Aims and Questions

This study investigates the use of Web portfolios as a learning and assessment tool for pre-service teachers in a CALL course offered at a Malaysian university. Web portfolios were introduced as part of this CALL course with two main aims: (1) as a learning tool to enhance future ESL teachers' competency in integrating computer applications; and (2) as an assessment tool to evaluate future ESL teachers' competency in integrating computer applications to achieve their course objectives.

As stated in the CALL course synopsis, the following are the CALL course objectives:

> The CALL course aims to give future teachers exposure to computer technology in learning English as a second language. The main part of this course is to raise students' awareness of the different ways computer applications can enhance language learning. This will be accomplished by exposing students to selected computer applications and by encouraging students to explore their potential. Students will also be introduced to the potential of the World Wide Web as a learning and teaching resource. Students will be required to demonstrate their understanding of computer applications through hands-on experience of evaluating, adapting and producing materials for language learning. (CALL course synopsis, 2009)

Further stipulated in the CALL course synopsis are the learning outcomes of the CALL course. It is expected that by the end of the CALL course the students should be able to:

1. Use educational technologies and ICT in teaching and learning ESL;
2. Think creatively and critically in using and designing computer-enhanced ESL materials;
3. Critically select ESL teaching and learning resources from the internet;
4. Manage information through ICT effectively for lifelong learning;
5. Demonstrate ethical and professional values, attitude and behaviour when using computer technology in teaching.

With a view to achieving the aims of the study, three research questions were formulated.

(1) What impact does the use of Web portfolios in the training of pre-service ESL teachers have in relation to trainees' computer competency?

The first research question was formulated to allow the researcher to determine the effectiveness of Web portfolios when used as a tool in the CALL course. Given that one of the main objectives of the course is to enhance trainees' computer competency, this question is answered by identifying the differences in the way trainees perceive their competency prior to and after being introduced to Web portfolios. For this purpose, data has been collected through two sets of questionnaires: a pre-questionnaire and a post-questionnaire. Data supporting this question was also captured through focus group interviews with students.

(2) How effective are Web portfolios in providing evidence of pre-service ESL teachers' learning and development as future CALL practitioners?

The second research question was focused on the effectiveness of Web portfolios as a learning tool in the CALL course. It seeks to find out how trainees' have used their Web portfolios to consolidate their learning experiences while taking the CALL course. It also intends to find out how far they have used their Web portfolios as a

projection of their skills and competency as a future CALL practitioner. This question is answered by analysing data collected from the two sets of questionnaires, focus group interviews with students and a semi-structured interview with the CALL course lecturer. The results from the analysis of Web portfolios also contribute to answering this question.

(3) What factors facilitate and hinder the development of Web portfolios as a learning and assessment tool in the CALL course?

The third research question is aimed at identifying various factors that contribute to, and hinder the development of Web portfolios as a learning and assessment tool. These factors will highlight areas that require improvements in the development of Web portfolios as a learning and assessment tool in future applications in similar settings. These factors are identified based on data collected from a post-questionnaire, interviews and Web portfolios.

1.4   Significance of the Study

This study is significant for its contributions to the following areas:

(a) Teacher training in Malaysia

The study envisions the use of Web portfolios beyond a tool for assessing pre-service ESL teachers' computer competency in an online environment. It attempts to promote the use of Web portfolios as an alternative approach to assessment particularly in the manner it is able to support dynamic features of online learning. The study is also intended to increase the awareness of these teachers on the merits of owning a Web portfolio as a way of encouraging them to reassess their computer competency from time to time. This is seen as an essential step to assist future teachers in dealing with their skills being outstripped by the rapid advancements of technology by the time they begin teaching in schools. The study provides insights into the use of Web portfolios as an approach to empower teachers by documenting their own practices as part of professional growth and development. It pursues to make a significant contribution in the area of teacher training by addressing the value

of developing and maintaining a Web portfolio for the professional development of future teachers.

(b) Web portfolio development

Findings of the study will be used to suggest a framework that outlines factors, which are worth considering when Web portfolios are used as a tool to facilitate and consolidate learning experiences not only in future courses offered at UPSI, but also in other institutions that share similar characteristics. The findings on the students' experiences on the use of *Google Sites* as a platform for Web portfolios may also be used to expand the current body of literature on Web portfolio development. Technical dimensions of *Google Sites* found supportive for Web portfolio development have been explored in this study along with its technical limitations and other related issues. The development of a Web portfolio Assessment Rubric presented as a product of this study is expected to be a valuable and practical future reference, particularly as a guide when introducing Web portfolios as part of the coursework assessment in a CALL course.

(c) Methodological knowledge

This study has employed a mixed methods approach following sequential explanatory design which is an approach that is not one that has been extensively used in studies concerning portfolio use in the Malaysian context. The previous studies that were explanatory in nature and were intended to unfold the potential uses and value of electronic portfolios as an innovative tool possibly to improve professional practice and augment learning. While this study is not precluded from similar objectives, the use of both quantitative and qualitative approaches has allowed for a more comprehensive and in-depth exploration to be undertaken. The design of this study has also enabled the researcher to draw from multiple sources of data for a closer examination of issues concerning the use of Web portfolios from different perspectives. Although this study acknowledges that using a single approach of collecting data (e.g., in-depth interviews, case studies) may provide equally valuable information from multiple perspectives, employing a mixed

methods design was considered more useful in gaining information about specific processes affecting the students in this study when using Web portfolios.

1.5   Terms and Definitions

There are several terms included in this study that have been widely used and broadly defined. In order to facilitate the understanding of the use of the following terms within the context of this study, definitions of the terms are given below.

Artefacts are evidences of work that are collected over a period of time to display achievements, learning or skills. They can be in the form of assignments, certificates of past qualifications, lesson plans etc. Artefacts can also be in electronic format and presented in the form of CDs, DVDs, USB drives etc. When artefacts are compiled to be presented in Web portfolios, the artefacts need to be transformed or saved into a Web-enabled format before they can be uploaded to the Web. For example, an assignment needs to be saved into a Word or PDF format prior to being uploaded to the Web. Cambridge (2010) explained that artefacts that are included in electronic portfolios must suit the purpose of the portfolio and the link between the artefact and the purpose of the portfolio needs to be clear.

A portfolio in this study is characterised as a collection of artefacts such as assignments, project samples, or reflective notes among other documents that provide "evidence of skills, experience, and learning" (DiMarco, 2006, p. 12). A portfolio that is developed in this study is a Web portfolio. A Web portfolio contains artefacts similar to those of a traditional paper-based portfolio but the main difference lies in the formatting of those artefacts that are Web-enabled. As such, artefacts such as .doc documents, .html webpages, .wav video files and .mp3 sound files can be stored in a Web portfolio. A Web portfolio is usually developed online, thus making Internet connections compulsory for it to be accessed, viewed and maintained. In the literature on portfolio use, other terms such as electronic portfolios and digital portfolios are also used interchangeably with Web portfolios. For ease of use, the term Web portfolios has been selected for use in this study instead of its format specific term of Web-based electronic portfolios.

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Computer applications refer to various computer programs that are available commercially or as an open source over the Internet. The broad definition of computer applications takes into account all different devices, hardware and software that are operated with the use of the computer both stand-alone and networked. However, for the purpose of this study, the term computer applications is also used to refer to online computer applications which are associated with the use of the Internet, computer-mediated communication (CMC), Web 2.0 tools and Web publishing, unless otherwise is specified.

The definition of the term 'computer competency' in teacher education is one that has evolved based on the changing needs and demands of teachers. The "changing trend in what constitutes a computer competent teacher" (Norizan & Mohamed Amin, 2004, p. 3) implies that there is also a requirement for computer competency to be clearly defined within the context of this study. Generally, the study uses computer competency to refer to an individual's competency in using computers as a tool to perform tasks. It includes tasks performed using selected software and programs installed on the computer and also those that run online. Computer competency also relates to the individual's competency in using the computer to perform online synchronous and asynchronous communications such as chatting and emailing, respectively. An individual computer competency may also be reflected in his or her use of the Internet as an information resource whereby skills such as browsing or surfing, downloading and uploading are employed. Online computer competency refers to an individual's competency in managing computer applications that require Internet connectivity. In this study online computer competency or computer competency in an online environment involves using the computer to search and browse the Internet, managing CMC and using Web 2.0 tools. It also concerns retrieving saving, publishing and printing a range of resources available on the Internet. The use of Web authoring and publishing tools is also considered as a skill within an online environment in this study.

In Malaysia, English is considered as a second language. The Malay language or *Bahasa Malaysia* is the national language of Malaysia. English is gaining recognition as the medium of instruction of many higher learning institutions in Malaysia. The

use of English as a medium of instruction is strongly encouraged in the training of future teachers, particularly in the training of future ESL teachers in Malaysia.

In this study, pre-service ESL teachers are students enrolled in the Bachelor of Education (Teaching of English as a Second Language) program at a teacher training institution in Malaysia. Often, they have had no teaching experience or limited teaching experience in the teaching of English as a second language. They are trained to become future teachers at secondary schools in Malaysia upon graduation.

1.6   Overview of the Dissertation

Presented in this first chapter are the background of the study, statement of the problem, research aims and questions, significance of the study and terms used in the dissertation. Subsequent chapters in the dissertation have been organised as follows: Chapter Two describes the literature relevant to the research questions posed in the study. The chapter explores issues surrounding the use of technology in teacher education with a focus on preparing future teachers for technology integration. The chapter also provides an overview of portfolio use explaining their various types and purposes in education. It also briefly discusses the use of Web technology in relation to e-portfolio development. There is also a section that provides an overview of related studies on e-portfolio use within the language learning context. Literature supporting the use of e-portfolios in teacher education in international contexts and the context of the present study are also reviewed in this chapter. The final section of this chapter presents the constructivist view to learning as the underpinning framework theoretical framework for this study.

Chapter Three presents the research design of the study where sequential explanatory mixed methods design was employed. The chapter describes the context in which this study was conducted and the participants recruited. Presented in this chapter are also descriptions of data collection techniques and data analysis procedures. It also provides a brief overview of the pilot study conducted. The chapter also discusses ethical considerations appropriate to this study.

In Chapter Four, the results of the study are presented. The analysis of the pre-questionnaires and post-questionnaires are presented followed by the thematic analysis of qualitative data from interviews. The analysis of Web portfolios is also presented highlighting the assessment of the panel of reviewers and the researcher. In addition, the chapter offers a summary of the results from the pre-and post-questionnaires, focus group interviews and semi-structured interviews, and Web portfolios.

Chapter Five focuses on the discussion of the results of the study and explores key findings that are evident in the study. The discussions were developed by relating them to the three research questions posed and by providing supporting evidence. Links to previous studies were also made to further strengthen the discussions presented. The chapter ends with some personal reflections of the researcher.

Chapter Six concludes the dissertation by addressing the research questions posed at the beginning of the study. It provides four conclusions by drawing upon the key findings and discusses several limitations to illuminate the challenges and constraints that were involved in the study. Implications of findings for future Web portfolio use as a learning and assessment tool in similar contexts are also presented. Finally, drawn from the key findings and the researcher's experiences in carrying out the study, the chapter provides some recommendations for further study in the area of Web portfolios. The chapter concludes with some personal reflections of the researcher.

CHAPTER 2

LITERATURE REVIEW

2.1   Overview

Chapter Two presents a thematic review of the body of literature supporting the development of Web portfolios as a learning and assessment tool in the present study. It explores key concepts that underpin this study and which provide a frame for the investigation and design of the present study. The first body of literature included in this review provides an overview of the role of technology in the context of teacher education with a focus on the importance of preparing teachers for technology integration. The second body of literature reviewed presents the broad applications of portfolios in education and some major contributions that studies in this area have made in conceptualizing the major types and purposes of portfolios. It also briefly discusses the benefits of using the Web as a platform for the development of e-portfolios. The chapter then moves to focus its discussion on the different ways e-portfolios have been utilized in teacher education. Because the purpose of this study was to explore the perceptions of pre-service ESL teachers, a section on e-portfolio use within the language learning context was also included in this review. Though may be common in many international contexts, the portfolio concept is still new and relatively limited in use in the context of the study. To illustrate the extent of their use, key studies in the use of portfolios in Malaysia are also discussed. Presented in the final section of this chapter is the constructivist view on learning as the underpinning theoretical framework of the present study.

Given that much of the literature reviewed in the present study has used the term 'e-portfolio' in its discussion as an umbrella term referring to both digital and Web formats of portfolios, the researcher has maintained the use of this term in major sections of this review. The use of the term 'e-portfolio' was also to facilitate the researcher in maintaining consistency in writing and flow of ideas. However, within the literature of e-portfolios, some studies have used the term 'Web-based electronic portfolios' in an attempt to specify and limit the scope of their study. A similar term 'Web portfolios' was also used by the researcher primarily to focus on the distinctive

characteristics of the web-based format of electronic portfolios investigated in the study.

2.2   Technology in teacher education

Tim Berners-Lee said "Twenty years ago when I wanted to reframe the way we use information, the way we work together, I invented the World Wide Web" (March, 2009). As seen today, the Web has certainly become an indispensible technology that is fast transforming education. Close to a decade ago, a concept that was initiated by O'Reilly (2005) gave birth to the second generation of the WWW, popularly known as Web 2.0. Amidst all the hype and newly coined label attached to Web 2.0, also known as the read/write Web, the wave of excitement has to do with how the new Web has further broadened the Web's former role as an information resource and communication tool. To illustrate its enhanced potential in education, it has also been argued that "the first decade of what most people have experienced as the WWW was not entirely true to the original vision and what is being described as Web 2.0 is not so much an extension of the WWW as a completion of that original vision" (Albion, 2008, p. 183).

In much the same way that the Web has impacted education in its earlier form, Web 2.0 has continued to significantly revolutionize teacher education (Greenhow, 2007). While teachers have been excited about "the more participative and potentially paradigm-changing environment for building and sharing knowledge" (Albion, 2008, p. 181), they are also reminded that with new technologies, there will exist new challenges. Two such challenges have been underlined by Albion (2008) that come hand in hand with the use of Web 2.0 in teacher education, namely, the use of Web 2.0 tools to enhance teacher preparation and the preparation of teachers for applying Web 2.0 tools as an authentic practice. In light of these challenges, the use of Web 2.0 caused implications for teacher education prompting teachers to "transform their pedagogy to leverage the affordances provided through the integration of Web 2.0 tools" (Archambault, Wetzel, Foulger & Williams, 2010, p. 4).

Within teacher education, the field of second language teaching and learning has also been radically challenged by Web 2.0. One particular area is CALL, where teachers

have been identified as the key players responsible for the integration of technologies for example, through their selection of tools, pedagogical designs and innovative approaches in the classroom. With the emergence of Web 2.0, CALL teachers have also been confronted with pressing issues concerning the use and integration of new technologies and the importance for teachers to develop specific knowledge and skills with regards to the use of technology in their classrooms (Hegelheimer, 2006; Hubbard, 2004; Levy & Stockwell, 2006). Generally, the prevalent discourse among CALL researchers concerning technology integration revolves around investigations into teacher's level of computer competency, attitude towards the use of technology, perceived value of technology and knowledge of specific technologies (Atkins & Vasu, 2000; Milbraith & Kinzie, 2000; Son, Robb & Charismiadji, 2011; Wozney, Venkatesh & Abrami, 2006). Other researchers have also looked into perceived usefulness, self-efficacy and ease of use as some of the most significant determiners impacting teachers' intentions for technology use (Anderson & Maniger, 2007; Chen, 2010; Ma, Anderson & Streith, 2005; Sadaf, Newby & Ertmer, 2012; Teo, Lee & Chai, 2008; Yuen & Ma, 2002).

While the studies often explore technology integration at the classroom level, another direction undertaken is to unfold the complexities involved at the training level. Hong (2010) stressed that the "ultimate goal of CALL teacher education is to enable L2 teachers to integrate CALL technology into their classroom with confidence and knowledge" (p. 53) and one way of achieving that goal was to focus on the teachers' integration of technology in their teacher education programs. However, Hong (2010) pointed out that research explaining the relationship between L2 teacher's technology integration to their previous technology education is still scarce. Only very few studies have emerged to explore teacher's integration of technology as being influenced by the inadequacy of training. Besides Hong (2010), the lack of training for teachers to integrate CALL has encouraged Kessler (2006) to closely examine teachers' perceptions of CALL preparation and how such preparation linked to CALL practices among participants who graduated from Master of Arts programs and have taught languages. He reported that that the integration of new technologies into teacher preparation courses was still insufficient, arguing that "formal language teacher preparation programs have largely neglected to equip their graduates with the related knowledge and skills they need to enter today's technologically advanced

language classroom" (p. 35). Even with the increasing pressure for teachers to use technology, Egbert, Paulus and Nakamichi (2002) addressed another challenge in technology integration by pointing out that "teachers are using technology in ways that fit their current practice, rather than transforming their practice through the use of technology" (p. 111). They further stressed that teachers are not learning what they need to know about integrating new and advanced technologies due to the possibility of being introduced to technology that is either outdated or not relevant to their current practices. Teacher preparation courses have been blamed for causing this disservice and have been urged to consider introducing teachers to technologies that are more relevant for their future practice.

In the course of understanding teachers' practices in integrating technology, it is also worthwhile to probe deeper into teachers' knowledge bases that inform their practices. For this reason, Koehler and Mishra (2005) have called attention to the integration of technology advocating that "introducing technology to the educational process is not enough to ensure technology integration since technology alone does not lead to change" (p. 132). They further discussed the intricacies associated with teaching with technology by pointing out that some inherent properties of newer technologies cause difficulties in terms of their application (Koehler & Mishra, 2009). The changing nature of technology was identified as one of the reasons why teachers find it challenging to use more technology in their classrooms. They argue the need for teachers to have a starting point for thinking about technology integration that can help them not only to understand technology and its affordances but also provide them with the means to navigate their teaching within technological constraints. With this in view, technology integration among teachers has been the centrepiece of Koehler and Mishra's (2009) technological, pedagogical, content knowledge (TPACK) framework. This conceptual framework has been built upon the original constructs of Shulman's (1986, 1987) Pedagogical Content Knowledge (PCK). Figure 2.1 is a graphic representation of the TPACK framework.
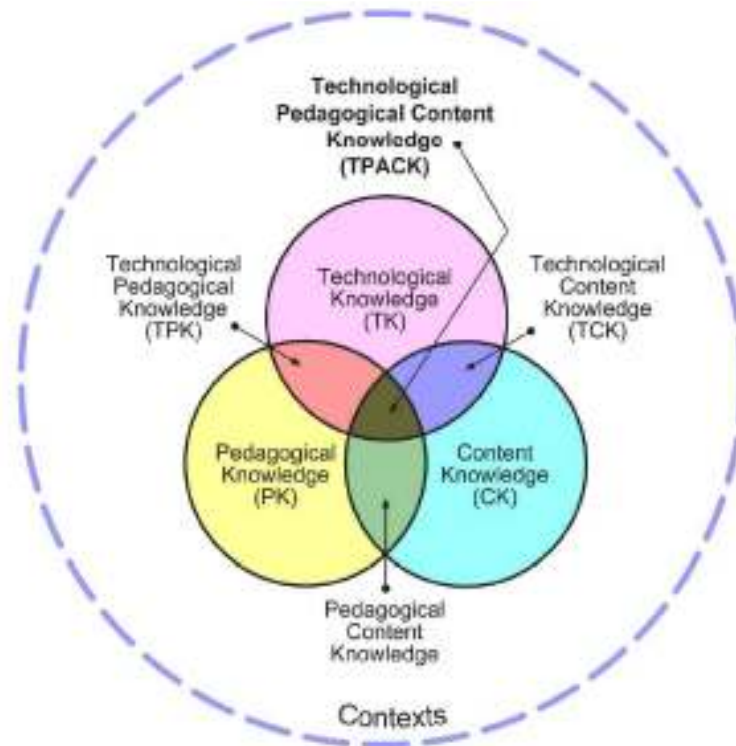
Figure 2.1. The TPACK framework and its knowledge components
(www.tpack.org, 2012)

The TPACK framework illustrates the different types of knowledge bases that teachers tap into when they work with technology and when they seek to integrate technologies as part of their classroom practice. Abbit (2011, p. 282-283) has provided a summary of the seven knowledge domains described by Mishra & Koehler (2006) as the following:

- **Pedagogical knowledge** (PK): Knowledge of nature of teaching and learning, including teaching methods, classroom management, instructional planning, assessment of student learning, etc.
- **Content knowledge** (CK): Knowledge of the subject matter to be taught (e.g., earth science, mathematics, language arts, etc.)
- **Technology knowledge** (TK): Continually changing and evolving knowledge base that includes knowledge of technology for information processing, communications, and problem solving, and focuses on the productive applications of technology in both work and daily life
- **Pedagogical content knowledge** (PCK): Knowledge of the pedagogies, teaching practices, and planning processes that are applicable and appropriate to teaching a given subject matter
- **Technological content knowledge** (TCK): Knowledge of the relationship between subject matter and technology, including knowledge of technology that has influenced and is used in exploring a given content discipline

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- **Technological pedagogical knowledge** (TPK): Knowledge of the influence of technology on teaching and learning as well as the affordances and constraints of technology with regards to pedagogical designs and strategies
- **Technological pedagogical content knowledge** (TPCK): Knowledge of the complex interaction among the principal knowledge domains (content, pedagogy, technology)

Mishra and Koehler (2009) postulated that the TPACK framework can potentially urge teachers "to move beyond over-simplified approaches that treat technology as an 'add-on' and instead to focus again, and in a more ecological way, upon the connections among technology, content, and pedagogy as they play out in classroom contexts" (p. 67). Clearly their ideas have been picked up by teacher training institutions today as they move away from learning *about* technology to learning *through* and *with* technology. Looking back at CALL, researchers such as Hubbard and Levy (2006) have outlined the technical and pedagogical knowledge and skills for CALL that they claimed to be a framework "at its broadest level" as their goal was nowhere near being prescriptive but was intended to serve as a guide. They stated that the pedagogical dimension can be related to the pedagogical content knowledge dimension identified by Shulman's (1986). The framework is presented in Figure 2.2 below.

	Technical	Pedagogical
CALL Knowledge	Systematic and incidental understanding of the computer system, including peripheral devices, in terms of hardware, software, and networking.	Systematic and incidental understanding of ways of effectively using the computer in language teaching.
CALL Skill	Ability to use technical knowledge and experience both for the operation of the computer system and relevant applications and in dealing with various problems.	Ability to use knowledge and experience to determine effective materials, content, and tasks, and to monitor and assess results appropriately.

Figure 2.2. Technical and pedagogical knowledge and skills for CALL (Hubbard & Levy, 2006)

Although the present study was not designed to illustrate how TPACK is developed through e-portfolios, the TPACK framework was a logical way forward for deriving a clear understanding of the knowledge bases pre-service teachers build in their e-portfolios. The TPACK framework also provides a sound foundation for justifying

the researcher's motivation to explore e-portfolios as a tool that can potentially enhance the integration of technology among pre-service ESL teachers.

Despite the various reasons teachers provide for using or avoiding technology, studies have pointed out that teachers with experience with technology are more inclined toward integrating technology in their classrooms (Egbert, Paulus, & Nakamichi, 2002; Hernandez-Ramos, 2005). The literature also emphasized that for teachers to appreciate technology, its purpose has to be relevant to them. Teachers also need to be comfortable using the technology and for them to be so, they need to be properly introduced to the technology. Studies have also implied that there may be deficiency in training to use technology that has caused teachers to fall short from successfully integrating technology into their present practices. The present study acknowledges that Web 2.0 is potentially an ideal platform for teachers to learn about technology and to integrate it into their future practices. When specifically looking at the present study where e-portfolios were developed in a CALL course, teachers are able to learn about new technologies and implement them simultaneously as they develop their e-portfolios on the Web. Thus, the teachers get to experience technology in a "situated authentic context" that has been identified as an important consideration for changing teachers' practices (Egbert, Paulus, & Nakamichi, 2002). At the same time, teachers will be able to experience for themselves the use and affordances of Web 2.0 tools when they develop their e-portfolios. Albion (2008) also suggested that "the development of learner communities around e-portfolios using Web 2.0 tools appears to offer a way forward to increase professional engagement of teachers while building the authentic experience required to support use of Web 2.0 in their practice" (p. 196).

2.3   Setting the scene: Portfolios in education

Stefani, Mason and Peglar (2007) described an imaginary scenario where portfolios were used as indispensable social gizmos. They envision portfolios as personal online spaces where everyone "would store their 'life's work' and make presentations of it in different formats for an array of different audiences ... a constant updatable companion: a diary, a CV, a record, a forward planner" (p. 8). While this may no longer be an imagined scenario in today's world, the portfolio has

clearly come a long way from its original form. The word 'portfolio' originating from the Latin *porta* (to carry) and *foglio* (leaf, sheet) was known to be used as early as 1722 (www.merriam-webster.com, 2011). Following a long tradition from various fields of study such as arts, music, photography, engineering, and medicine, portfolios have become well-received in the field of education for a range of purposes such as employment, assessment, professional development, and life-long learning (Barrett, 2007; Klenowski, 2002; Zubizarreta, 2004, 2009).

One of the earliest publications on the use of portfolios in education was published by Paulson, Paulson and Meyer (1991). It defined a portfolio as:

> a purposeful collection of student work that exhibits the student's efforts, progress, and achievements in one or more areas. The collection must include student participation in selecting contents, the criteria for selection, the selection for judging merit, and evidence of student reflection. (p. 61)

In its simplest form, a portfolio resembles a container for storing and managing learning evidence making it a valuable tool for reflecting upon one's work and growth over a period of time. It is a learning product that is used for the "meaningful documentation" of an individual's abilities (Barnstable & Barker, 2008, p. 471). A portfolio provides "evidence of skills, experience, and learning" that is showcased in the form of artefacts such as assignments, project samples and reflective notes among other documents (DiMarco, 2006, p. 12).

As the use of portfolios becomes more recognised and diversified, practitioners have characterised them according to their types and uses. Smith and Tillema (2003) have proposed clarifying portfolio types according to two dimensions: (i) the purpose of the portfolio; (ii) the setting of use. From these two dimensions, they identified four portfolio types: the dossier portfolio, the training portfolio, the reflective portfolio and the personal development portfolio. Lorenzo and Ittleson (2005) presented their views on the three types of electronic portfolios: student's e-portfolio, teacher's e-portfolio and institution's e-portfolio in which the development of each type of e-portfolio has attracted different issues and challenges. They have discussed issues such as e-portfolio contents, maintenance requirements, ownership and assessment

are that dependent on the three types of e-portfolios identified. Stefani, Mason & Peglar (2007) have also identified at least four types of portfolios in education: showcase portfolios, reflective portfolios, development portfolios and assessment portfolios. Barrett (2007) further added that the multiple purposes of portfolios such as those for learning, assessment, employment, marketing and showcasing best work has complicated research and the literature on portfolio use but she asserted that "it becomes clear that the term portfolio should always have a modifier or adjective that describes its purpose" (p. 436). Whilst Barrett's point is one logical way to explain the diversity in portfolio types, it can be argued quite often there are overlapping portfolio purposes. However, one clear distinction can be made between portfolios for learning, assessment and employment as they relatively include artefacts that explicitly fit their purpose.

When portfolios are used in teacher education for professional development they are further distinguished as teaching portfolios (Seldin, 1997; Zeichner & Wray, 2001) and learning portfolios (Mansvelder-Longayroux, Beijaard & Verloop, 2007; Zubizarreta, 2004). Teaching portfolios were an idea conceived by Lee Shulman in the 1970s based on his deep passion for research on teaching (Kinnard, 2007). Shulman defined a teacher's portfolio as a "structured documentary history of a set of coached or mentored acts of teaching, substantiated by samples of student portfolios, and fully realized only through reflective writing, deliberation, and conversation" (1998, p. 37). He also mentioned one of the benefits of portfolios as being able to "institutionalize norms of collaboration, reflection, and discussion" (p. 36). The elements of collaboration, reflection, and documentation were also the three elements that were reiterated by Zubizaretta (2004) in his conceptualization of learning portfolios.

According to Barrett (2007), the concept of a learning portfolio introduced by Zubizaretta (2004) was one that originated from Seldin's (1997) work on teaching portfolios. While the content of a teaching portfolio reflects the "strengths and accomplishments" of a teacher (Seldin, Miller & Seldin, 2010, p. 3), the motive behind developing a learning portfolio was to enable students to benefit from the product as well as the process of learning. Zubizaretta (2004) emphasised that the primary purpose of a learning portfolio was "to improve student learning by

providing a structure for students to reflect systematically over time on the learning process and to develop the aptitudes, skills and habits that come from critical reflection" (p. 15). He proposed a learning portfolio framework that exhibits the "dynamic nature of engaged learning" consisting of three fundamental components: reflection, documentation, and collaboration (p. 19). Based on this model, learning is maximized when all the three components are activated potentially "transforming an incidental learning activity into a deeper enduring learning process" (p. 21). Figure 2.3 illustrates these three components.
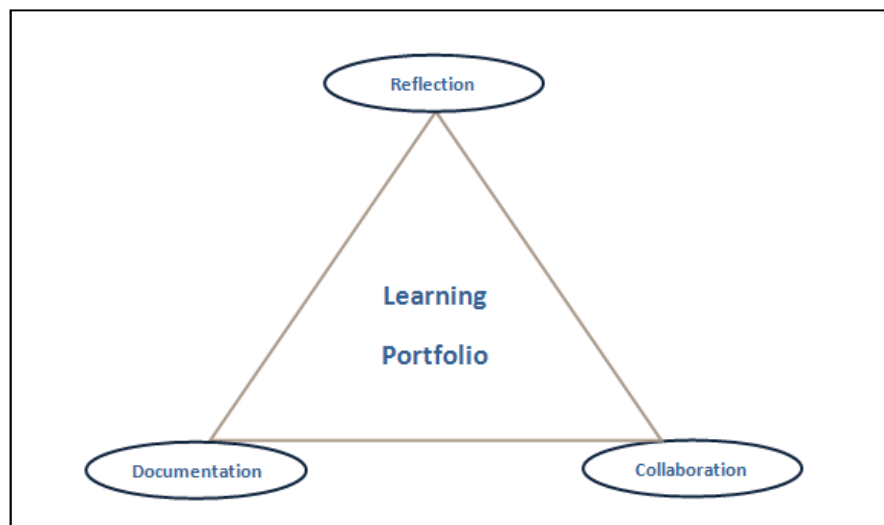
Figure 2.3. The Learning Portfolio Model (Zubizaretta, 2004).

In addition to the different portfolio types and the various ways they are defined, attention has also been placed on the presentation of portfolios. Portfolios can generally be presented in both paper and electronic formats. In its traditional paper-based form, a portfolio is constructed through the compilation of physical documents. Alongside the paper-based portfolio is the electronic portfolio or, more simply, e-portfolio. They can be further identified as either a digital portfolio or a Web portfolio. The different portfolio presentation types are illustrated in the following diagram (Figure 2.4).
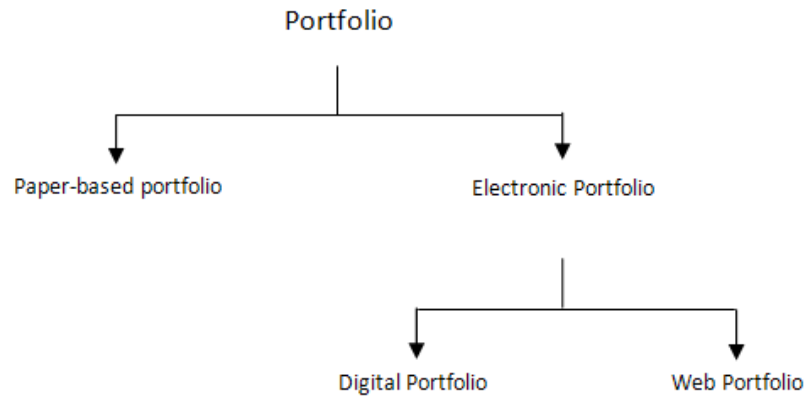
Figure 2.4. The different portfolio presentation types.

Irvine and Barlow (1998) have referred to digital portfolios as portfolios that are both CD-ROM based and web-based. However, other researchers such as Donaldson (2012) and Lopez-Fernandez & Rodriguez-Illera (2008) have linked virtual learning environments in their description of digital portfolios suggesting that they exist in a Web-based format. While terms referring to portfolios have been used interchangeably, Barrett (2000), for example, has tried to differentiate digital portfolios from electronic ones by the type of file formats used in the compilation of artefacts. She pointed out that electronic portfolios included both analog (e.g. videotapes, microfilms and printed photographs) and computer readable file formats (e.g. Microsoft Word documents, PDF files and MP3 files) while digital portfolios are assembled using only digital files or computer-readable files.

DiMarco (2006) has also provided a clarification that a web-based portfolio is an electronic portfolio that is delivered via the Internet and presented as webpages instead of the other typical formats of delivery platforms such as CD-ROM and DVD (DiMarco, 2006). However, it has been observed that as the Web becomes increasingly popular, CD-ROM based portfolios seem to be a less preferred option. Although, the term 'digital portfolios' is still very much in use, it is no longer limited or restricted to CD-based portfolios. A web-based portfolio (web-based portfolio is referred to as Web portfolio henceforth) also allows users to include artefacts in several media types that are organised using hypertext links (Barrett, 2000). The ascending use of technology in the construction of portfolios has caused Web

portfolios to emerge as "the most widely used new media format for electronic portfolios" (DiMarco, 2006, p. 13). As a result, the traditional paper-based portfolios are fast being replaced by Web portfolios due to their inefficiency in terms of capturing the "dynamic and complex processes of teaching and learning" (Avraamidou & Zembal-Saul, 2002, p. 6) and their limitations in addressing issues such as storage, cost, and portability (Tosh, Werdmuller, Chen, Light & Haywood, 2006; DiMarco, 2006). The ease of access to technology and the availability of innovative technologies have also been identified as reasons why Web portfolios are becoming more popular for the presentation format of portfolios (Zubizaretta, 2009).

Another way of appreciating the worth of portfolios is by recognising the processes involved in constructing them, as emphasised by Smith and Tillema (2003), who note, that the "strength of portfolios is derived from the process" (p. 626). In terms of a process, portfolio practitioners are in agreement that portfolio development follows the consistent process of (1) collection, (2) selection, (3) reflection, (4) projection (Barrett, 2000; Danielson & Abrutyn, 1997). Barrett (2000) added presentation as the fifth and final stage of the development process. Each portfolio development process is presented and described in Table 2.1.

Table 2.1
Portfolio Development Process

Portfolio development process	Description
(1) Collection	Save artefacts that represent the day-to-day results of teaching and learning.
(2) Selection	Review and evaluate the artefacts saved and identify those that demonstrate achievement of specific standards or goals.
(3) Reflection	Reflect on the significance of the artefacts chosen for the portfolio in relation to specific learning goals.
(4) Projection	Compare the reflections to the standards or goals and performance indicators, and set learning goals for the future.
(5) Presentation	Share the portfolio with peers and receive feedback.

Note. Adapted from "Electronic portfolio=multimedia development+portfolio development," by Barret, H., 2000, Retrieved from electronicportfolios.org/portfolios/EPDevProcess.html

When constructing e-portfolios, Barrett (2000) has aligned portfolio development processes to multimedia development processes proposing that both processes

complement each other. By the adoption of Ivers & Barron's (1998) Decide-Design-Develop-Evaluate model, Barrett (2000) reintroduces a five stage multimedia development process; (1) decide, (2) design, (3) develop, (4) implement and (5) evaluate. Table 2.2 presents the multimedia development processes and the description of each process.

Table 2.2
Multimedia Development Process

Multimedia development process	Description
(1) Decide	Determine needs, goals and audience for the presentation
(2) Design	Determine content and sequence of the presentation
(3) Develop	Gather and organise multimedia materials to include in the presentation
(4) Implement	Give the presentation
(5) Evaluate	Evaluate the presentation's effectiveness

Note. Adapted from "Electronic portfolio=multimedia development+portfolio development," by Barret, H., 2000, Retrieved from electronicportfolios.org/portfolios/EPDevProcess.html

When e-portfolios are published on the Web, their construction processes are parallel to those of creating a website involving key processes such as information design, visual design, webpage design and Web authoring (DiMarco, 2006). At present, Web portfolios can be constructed using webpage creation software that utilises WYSIWYG editors such as Microsoft's FrontPage and Adobe's Dreamweaver making the key processes of constructing a website and webpages (i.e. creating pages, editing pages and linking Web content) much less demanding compared to creating a website using manual HTML coding. There are also various template-based website creation tools that are freely available on the Internet for education purposes (i.e., *Jimdo*, *Google Sites*, *SnapPages*, *Webnode*, and *Weebly*) that teachers and students with limited computer competency can use to develop their portfolios. Alongside these Web creation tools, Barrett (2010) has suggested various types of Web 2.0 tools such as blogs, wikis and online presentation builders, that can be used to construct portfolios. She has also listed a range of open source portfolio systems and commercial portfolio systems such as Chalk & Wire (http://www.chalkandwire.com/), FolioTek (http://www.foliotek.com/) and Mahara (http://mahara.org/). Depending on the type of website creation software or tool used,

the construction of a Web portfolio will require the initial process of registering for a site. Following this, website developers will use drag and drop functions to execute a number of steps required to build webpages.

Gibson and Barrett (2003) explained that e-portfolios "is a new kind of container that can be developed along two paths" (p. 559) one of which uses generic tools (GT) such as word processing, HTML editor, multimedia authoring tools, portable document format (PDF) and other common productivity tool software whereas another uses customized systems approaches (CS) that involves servers, programming and databases. When GT are used, learners would construct their portfolios using any available storage space. In contrast, CS users operate within an online database environment where structure and storage stage are made available for students to store and organize their portfolios. While the debate revolving around the inherent strengths and weaknesses in both approaches to e-portfolio construction has led them to suggest a hybrid approach that integrates both GT and CS into one single platform, Gibson and Barrett (2003) stressed that "which tools and how deep they are developed varies with the context as well as the challenge facing the learner and their supporters" (p. 576).

Researchers are generally in agreement that e-portfolios have been preferred over their paper-based counterpart for adding an "extra dimension to student learning as well as giving a choice and variety to reporting and presenting that learning" (Woodward & Nanlohy, 2004). Being able to publish work online appears to be a strength of e-portfolios that highly reflects its use as a learning tool. The act of making individual work public not only increases the students' motivation to produce their best pieces of work but in doing so, they have also been reported to practise self-assessment and also self-reflection upon assuming the responsibility for their own learning (Abrami & Barrett, 2005). Access to a variety of audiences that comes hand in hand with publishing work online is another advantage of e-portfolios mentioned by Pierson and Kumari (2000) who also emphasized the flexibility of the Web in terms of providing space where multiple users can access and retrieve e-portfolio content.

Donaldson (2012) further added the use of Web 2.0 tools has potentially changed the dynamics of Web users from passive consumers of information into producers who are not only able to produce digital content but also publish them to other users. He pointed out that education built around e-portfolios creates huge pedagogical benefits as it "ties together various student-generated artefacts into a coherent whole [forming] an environment in which technology use has a clearly identified purpose" (November 1, 2012). E-portfolios developed on a Web 2.0 platform also increase opportunities for e-portfolio developers to participate in collaborative activities involving the sharing of information and exchanging of feedback that are facilitated and encouraged by the platform itself. They are also supportive of reflection and revaluation through storing multiple reiterations of students' work over a period of time as well as providing a mechanism that allows students to easily edit and revise their work (Avraamidou & Zembal-Saul, 2003).

On a much broader perspective, Batson (2002) stated that the use of e-portfolios has become appealing due to the intersection of three trends in higher education that reflect the new ways students learn. Firstly, students are now mostly developing and saving their work in electronic form. Secondly, they also have ready access to the Web and finally, the students are able to manage large volumes of their work online using databases made available via websites. Kimball (2003) has moved on to highlight the similarities between the Web and portfolios in terms of their characteristics in an attempt to point out how the Web is useful in matching and expanding the rationales of portfolios. He emphasised three aspects of the Web, namely, connectedness, diversity and multimedia capabilities that may well support and increase the usefulness of portfolios. The following Table 2.3 summarizes the parallel structure of portfolios and the Web discussed by Kimball (2003).

Table 2.3
Parallel structure of portfolios and the Web

Matching aspects	Portfolio rationale	Web features
Connectedness	• Recognizing and making connection between accomplishments and learning	• Using clickable words, buttons, and graphics within or outside a single page or to some other page of a website.

	• Making connections between own learning to those of others	
Diversity	• Collecting a diverse range of artefacts that are evidences of one's own accomplishments and learning that are brought together in one place.	• Capitalising on the Web's standard interface to hold a vast variety of materials and viewpoints that can be accessible through a familiar and convenient framework-a Web browser.
Multimedia	• Displaying a diverse range of artefacts that exhibits one's range of competencies.	• Including not only written documents, but a range of other media elements such as pictures, sound, and even video that expands the possibilities of what are counted as artefacts.

Similar views were also shared by Clark (2009) who further pointed out that one of the driving forces for the use of e-portfolios is the "dynamism of digital communication technologies" in the recent years where technology has provided the capacity for documenting and publishing student learning in diverse formats (p. 18). There is also an increasing interest in using multimedia self-authoring in the creation of self-portraits through social networking sites such as *Twitter* and *Facebook* allowing e-portfolios to speak "the language of today's student body" (p. 18). Nevertheless, even with clear advantages of using the interactive learning environments rendered by the Web for the development of e-portfolios, the same technology may also inhibit their use. In particular, studies have reported that among the most common technology related concern surrounding e-portfolios are technical skills, technical support, Internet access and selection of platforms (Barrett, 2007; Kocoglu, 2002; Lin, 2008; Saad Al Kahtani, 1999; Wetzel & Strudler, 2006).

2.4   E-portfolios in teacher education

According to Meeus, Van Looy and Van Petegem (2006), the use of portfolios as a tool for professional development in teacher education can be traced back to the idea of a *Schoolteacher's Portfolio* conceptualised by Bird (1990) who argued that the "borrowed idea of a portfolio must be reconstructed for its new setting" (p. 243).

Bird (1990) discussed the intricacies of teaching that may well be difficult to capture through simply documenting work in a "dignified container" (p. 243). Even after two decades, researchers have not lost sight of Bird's concern regarding the content of portfolios in teacher education. Nevertheless, much recently, the role of portfolios within teacher education has evolved from being a concept to a common practice (Ritzhaupt, Ndoye & Parker, 2010).

Studies on the use of e-portfolios in teacher education have mainly centered on the students' perceptions of e-portfolios (Lin, 2008; Ritzhaupt, Singh, Seyferth, & Dedrick, 2008; Wetzel & Strudler, 2006; Wright, Stallworth, & Ray, 2002) and anecdotal or self-reports concerning the way various institutions have implemented e-portfolios in their courses (Lamson, Thomas, Aldrich, & King, 2001; Love, McKean, & Gathercoal, 2004). There is also a growing research base that shows that e-portfolios support reflective thinking (Avraamidou & Zembal-Saul, 2002; Avraamidou & Zembal-Saul, 2003; Ayan & Seferoglu, 2011; Darling-Hammond & Snyder, 2000; Zeichner & Wray, 2001; Pitts & Ruggirello, 2012) and ways in which e-portfolios encourage students' use of technologies (Barrett, 1999; Bartlett, 2002; Kilbane & Milman, 2005; Sherry & Bartlett, 2004; Wright, Stallworth, & Ray, 2002). The challenges and benefits associated with the use of e-portfolios have also been the focus of many studies (Gatlin & Jacob, 2002; Read & Cafolla, 1997; Wetzel & Strudler, 2006). Reported were also how e-portfolios can potentially be used to improve the quality of teacher practices during preparatory courses and to facilitate the professional development through their dual roles as a learning and an assessment tool (Bartlett, 2006; Evans, Daniel, Mikovich, Metze, Norman, 2006; Hung, 2012; Sherry & Bartlett, 2004; Peters, Chevrier, LeBlanc, Fortin, Malette, 2006).

Researchers have implied that despite the growing adoption of e-portfolios into teacher education, more investigations are needed to understand their true worth due to their multifaceted application and diversity of use. The rise of large-scale and long-term studies investigating the impact of e-portfolio use among students in an international platform not only exemplifies the increasing recognition of e-portfolios as a learning and assessment tool but also the intensity of their adoption in educational contexts. For example, the recognition of e-portfolios as an emergent

technology in teaching and learning has captured the interest of the Australian Learning and Teaching Council (ALTC) to explore the diverse approaches to e-portfolio use by students in Australian universities with a view to ascertaining the scope, penetration and reasons for their use (Hallam & Creagh, 2010).

Similar concerns were also voiced by Joyes, Gray and Hartnel-Young (2010) in their review of twenty one recently funded e-portfolio projects in the UK in order to develop an understanding of effective practice. Aside from the many benefits that they found pertaining to e-portfolio use, they also highlighted several preconceptions regarding the value of e-portfolios. One of the many facets of e-portfolio practices they looked into was the transformative nature of e-portfolios that makes them difficult to fit exactly into existing pedagogical systems. This challenges some of the preconceptions such as e-portfolios can easily replace paper-based portfolios and their construction can save time.

Wetzel and Strudler (2006) also reported the costs and benefits of e-portfolios in teacher education based on their large-scale descriptive study of six university programs in the United States of America by studying the perspectives of students in programs thought to be mature in their implementation of e-portfolios. They identified three overarching categories concerning the costs and benefits of e-portfolios cited by the students that involved program implementation issues, access to and reliability of technology used, and time and effort expended. Strudler and Wetzel (2008) have also investigated the costs and benefits of e-portfolio use from the perspective of the faculty and identified several factors that impacted faculty time and effort expended. They also highlighted faculty perception of student engagement and learning, nature of student reflection, and alignment of faculty goals with e-portfolio initiatives, among others, as factors that impacted faculty satisfaction with e-portfolios.

Generally, these studies have highlighted that even when e-portfolios are well integrated within teacher education, contextual factors surrounding e-portfolio implementation and the alignment of course goals to practices are strong influences in the success of e-portfolio use. Given the depth and scale of studies conducted to investigate the use e-portfolios in international contexts, there seems to be a

consensus that e-portfolios have indeed established a significant role in teacher education. This has provided a strong ground for studying their worth in other contexts with a view to building an increased understanding of factors that contribute to the success in e-portfolio implementation such as the one undertaken in the present study.

One approach to viewing the merits of e-portfolios in teacher education is to study their use as a learning tool from the perspective of the students. Wetzel and Strudler (2006) emphasized that the voices of students are important when referring to e-portfolios as innovative tools that can potentially trigger educational changes. Lin (2008) further stated that student perceptions of their e-portfolio experiences will help practitioners improve their practices and policies but is an area that that is still underexplored compared to the perspectives of administrators and faculty. Tosh, Light, Fleming, and Haywood (2005) also added that it is crucial to understand students' views on the use of e-portfolios particularly if e-portfolios are to play a key role in their educational experiences.

From the perspectives of students, one of the main benefits of developing e-portfolios is the way it fosters reflective skills. Montgomery (2003) stressed that reflective practice is an extremely valued attribute of effective teachers that has been a long-withstanding goal in teacher education. Through the seminal work of John Dewey (1933) and Donald Schon (1983) reflective practices are recognized as a skill that is fundamental for both beginning and experienced teachers (Montgomery, 2003). The reiterative process of constructing e-portfolios is also one that fosters critical thinking and self-assessment that are often evidenced through reflections that students include in their e-portfolios. Rhodes (2010) illustrated how reflection itself is considered a learning activity in the construction of e-portfolios:

> Reflection has not only become an essential way for students to speak in their own voices—it has also become a way for them to both learn and provide evidence of their capacity for critical thinking, analytic reasoning, and integrative learning. Reflection at strategic points in the development of the e-portfolio creates a venue for the iterative and formative examination and demonstration of learning and can play a summative role at key points in the assessment of student progress and achievement. (p. 9-10)

The value of reflection has also been discussed in the study by Wetzel and Strudler (2006) who pointed out that reflection is an added benefit of e-portfolios despite the required time and effort it demands from students. But they cautioned that reflection could be an element that may be over-emphasised if not properly integrated within the e-portfolio development process. One way reflection can be integrated as part of an integral part of developing an e-portfolio has been reported by Oner and Adadan (2011) who examined the types of reflective thinking indicators among pre-service teachers by employing reflection-based tasks as a way to enrich the experiences during their teaching practices. Despite much emphasis being placed on fostering reflection, Zeichner and Wray (2001) suggested transitioning beyond the obvious conclusion that portfolios promote greater reflection, towards providing teacher educators with a clearer view of the specific quality of reflection that is required.

Doig, Illsley, McLuckie and Parsons (2006) pointed out that writing in the reflective mode is a task that may not be familiar to most students and that they would require to be introduced at an early stage so that they know what is expected of them. They go on to advocate the importance of reflection and reflective writing by pointing out that the skills in reflective writing are more challenging than the skills required for students to develop and manage their e-portfolios. Nevertheless, they stressed that the e-portfolio itself can encourage the reflective process. A similar point was also made by Oner and Adadan (2011) who found that the use of the e-portfolio system *Mahara* was useful in facilitating reflection by providing flexibility in terms of posting and editing assignments, access and exchange feedback from peers on top of the anytime Internet access to the platform.

The increasing use of e-portfolios in teacher education corresponding to the demand for technology-using teachers has also captured the interest of many researchers (Bartlett, 2006; Farrell, 2008; Lamson, Thomas, Aldrich, & King, 2001; Lin, 2008). This has resulted in the role of technology and the technological skills involved in the course of e-portfolio construction emerging as a common theme being discussed in the literature. Generally, researchers have also proposed for the use of e-portfolios as a way to learn about technology. The study by Lin (2008) who reported the use of e-portfolios among 38 undergraduates in an elementary teacher education program

found that aside from the benefits of e-portfolios in developing reflective practice and effective learning strategies, the students in her study claimed to have gained technology skills as a result of developing e-portfolios. Technology skills, however, was also identified as the main area where students felt most challenged in particular, among students who had limited technological skills. Also reported were the problems faced by students in preparing their artefacts in digital formats and troubleshooting hardware and software.

Other technological challenges were also reported. For example, Tosh et al. (2006) illustrated that technical problems originate from students having to learn about the e-portfolio technology itself and to work within the limitations inherent to an e-portfolio system. Recognising the important role of technology skills in the development of e-portfolios, Lamson et al. (2001) argued that comprehensive training is a crucial consideration particularly because training can reduce the anxiety and frustration related to the compilation and evaluation of e-portfolios. Training has been proposed not only for students who are involved in the construction process of e-portfolios, but also for the faculty whose role is to provide support and evaluation of the students' e-portfolios. Lab technicians should also be trained as they will participate in answering questions students may have when constructing e-portfolios. However, they have also concluded that the lack of information and understanding of the e-portfolio development process was another factor that inhibits the successful development of e-portfolios.

Positive outcomes in terms of learning new technology skills were reported by Wetzel & Strudler (2006) whose students built e-portfolios using templates requiring them to create their own webpages. As claimed by the students, developing e-portfolios was a way for them to acquire technological skills that they might need in their future classrooms. The students in the study conducted by Peters et al. (2006) have also exemplified how e-portfolios have been valued as a tool that augments their skills with technology indicating that they also perceived the technological gains valuable in their future careers.

Aside from enhancing technological skills, another benefit associated to the use of e-portfolios was pointed out by Wade, Abrami & Scalter (2005) who stressed that the

development processes of e-portfolios fosters students to become self-regulated learners. During this process they participate in self-regulated activities involving them in meaningful tasks, obtaining support from peers and evaluating their learning (Perry, 1998). In addition to fostering self-regulation among students, the use of e-portfolios encourages collaboration as they provide an advantage for sharing and providing feedback to take place in a single platform (Chang, 2001). It is within this single platform that formal and informal learning can be demonstrated through the wide range of learning evidences that can be included in e-portfolios.

Portfolio assessment is another dimension of portfolio use that has received much attention in teacher education. Portfolio assessment exemplifies an authentic assessment of students' learning (Hart, 1994) that has been "borrowed from the artistic domain as a reaction against the psychometric approach to assessment" (Meeus, Van Looy & Van Petegem, 2006, p. 130). One of the claims that have been made concerning the use of portfolio assessment is in the way students have more control over the assessment process. However, the typical assessment process involves making subjective judgements on the quality and content of students' work that proved problematic. For example, Falls (2001) who conducted a case study for a semester on the use of a reflective process in the implementation of e-portfolios reported the difficulties in grading individualized portfolios. Due to the capacity of e-portfolios to store huge amounts of evidences, assessment becomes a huge challenge as it would involve examining the quantity and quality of evidences included in e-portfolios. Additionally, concerns have also been voiced regarding the authenticity of digital evidences that are included as it would be difficult to ascertain the originality of evidences that are produced in digital formats that are included in e-portfolios (Abrami & Barrrett, 2005).

E-portfolio assessment issues are also related to the difficulties of standardizing the diverse range of materials complementing portfolios as pointed out by Martyn (2007). She referred to problems pertaining to the holistic evaluation of e-portfolios due to variables such as the mode and purpose of materials included for assessment in professional electronic portfolios that have been constructed in a three-year case study that involved 1300 second language learners in a Professional English for Arts course. Martyn (2007) also mentioned that the teachers in her study found the

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assessment procedure to be time-consuming and inconvenient. It required the teachers to make transitions from their traditional way of marking and their unfamiliarity with technology, in particular online marking, appeared to be one of the reasons of inefficiency when assessing e-portfolios.

Another concern in employing portfolio assessment involves making subjective judgements on the quality and content of students' work. Inconsistency in judgement influences its reliability as an assessment tool prompting the introduction of rubrics (Hart, 1994). Rubrics entail the use of a set of criteria for judging students' work that "brings transparency to the assessment, which makes expectations explicit" (Jonssons & Svingby, 2007, p. 140). Rubrics were recommended to ease the task of assessing portfolios (Goldsby & Fazal, 2001; Yao, Foster & Aldrich, 2009) particularly in dealing with the complexities of assessing portfolio content (Goldsby & Fazal, 2001; Martyn, 2007; Yao, Foster & Aldrich, 2009). Although the use of rubrics will increase the reliability of portfolio assessment, other threats to reliability such as inter-rater and intra-rater reliability will need to be further addressed (Jonssons & Svingby, 2007; Moskal & Leydens, 2000).

2.5   E-portfolios and language learning

The late twentieth century saw the beginning of e-portfolios in English language classes (Hawisher & Selfe, 1997). Their introduction into the language classrooms was also around the same time Warschauer and Healey (1998) discussed the future of CALL and predicted that teachers will have to teach their students how to write effectively online due to the exponential growth of computers accelerated by the use of the Internet and the Web. They also expected that the Web will be used not only as a distribution vehicle for publishing of student print writing but also as a medium where students learn how to publish materials that fit multimedia environments. Similarly, Goodwin-Jones (2008) also pointed out that the Internet has "precipitated changes in modes and uses of writing online" (p. 7) which can be interpreted as indicative of a clear strength in the use of e-portfolios to monitor the growth and development of language competencies. Simultaneously, this has given rise to research that looks into the potential of e-portfolios for the improvement and assessment of writing skills.

2.5.1 Improvements of language skills

One study in particular was conducted by Baturay and Dologlu (2010) who explored the use of e-portfolios in relation to the assessment of EFL students' writing skills among 58 students who were enrolled in an online elementary level English course in a distance education school of a public university in Turkey. The participants were divided into two groups; a traditional assessment group and an e-portfolio group, for comparisons to be made in terms of their level of language proficiency. The design, development and implementation of e-portfolios in this study were based on an adaptation of Moya and O'Malley's (1994) Portfolio Assessment Model for paper-based portfolios. Although the findings showed no significant differences in the writing performance between the two groups, the students who used e-portfolios claimed to have benefited from the experience. The students found e-portfolios were a useful way for them to self-assess their language development which was also a process that facilitated them to think about improving their future work.

Another study by Chen (2005) also explored the use of e-portfolios in improving ESL writing skills. Her study was conducted among twenty English major students in a Taiwanese university with an aim of finding out whether students experience change in writing and learning through using e-portfolios. She was also interested to find out how the changes in writing and learning occur when e-portfolios are used as part of a writing curriculum that was designed to deliver an English composition course. The course itself was one that was transitioned from paper-based format to electronic format and was delivered using a webcourse system developed by the National Chung Cheng University in Taiwan. By working on their e-portfolios through the webcourse system, the students were actively posting and responding to journal entries, sharing drafts and reviewing comments, turning in peer and self–evaluations, and showcasing their portfolio electronically. Data obtained from a questionnaire survey, interviews, classroom observations, students' web postings and portfolios revealed positive outcomes with regards to the students' attitudes and writing concepts. Although Chen's (2005) study primarily focused on writing performance, she has raised the issue of assessing visual texts, media and hyperlinks that are evident in the presentation of students' electronic writing products. She

indicated a strong value in subscribing to an e-portfolio writing pedagogy as a means to empower EFL university students as writers and also designers.

2.5.2 Technological challenges and considerations

Due to the complexities and technological challenges involved in using e-portfolios for language learning, Grant (2010) has posed the question of whether it is necessary for teachers to move from paper-based to e-portfolios. She pointed out that the implications e-portfolios have for students, teachers and institutions need to be carefully considered before teachers move from traditional to e-portfolio assessment in ESL classrooms. Two of the major concerns that were identified are the decision about the availability of technology and also levels of computer competency of students and teachers. As Saad Al Kahtani (1999) pointed out, students who are not technologically competent will face challenges in the process of developing e-portfolios and may end up being discouraged.

Technological issues have also been highlighted in a study reported by Siu (2013). Her study involved the development of e-portfolios by over 1500 students enrolled in five EFL courses offered in an English Language Centre (ELC) at the City University of Hong Kong from January 2009 to August 2010. The five courses were Written Language (Regular module), Written Language (Business module), Spoken Language, Foundation English and Presentation Skills. The main aim of her study was to first examine feelings of teachers and students regarding the process of creating e-portfolios as defined in the e-portfolio components of their courses. The second aim was to find out if the students experienced improvements in higher–order thinking skill such as critical thinking through reflecting on their learning processes.

Siu's study faced five challenges in the process of incorporating e-portfolios. The first challenge was related to the capacity problem of the Blackboard Personal Platform (hereafter: Bb system) that was employed for the students' e-portfolio since most of the students' work to be incorporated into their e-portfolio was in video format. The capacity problems were solved by instructing the students to upload their videos into *YouTube* and simply pasting the URL in their e-portfolios. The Bb system was later changed to *Google Sites* as a way of dealing with memory space in the students' e-portfolios. The second challenge involved the preparation of detailed

user manuals tailored to the needs of the ELC courses. Preparing the user guides for both the Bb system and *Google Sites* was found problematic because it concerned writing up the user guides in English that was understandable to the students. Having to update the user guides on a regular basis to incorporate changes to the *Google Sites* and *YouTube* was also found to be troublesome and time-consuming.

The three other challenges described in this study were to establish a technical support team within the ELC, to handle resistance from participating teachers who perceive learning new skills places additional burdens on them and to motivate students to produce quality e-portfolios by awarding them for their incentives in completing their e-portfolios. The final challenge pointed out in this study was the use of the e-portfolio platform as a channel for ongoing peer and teacher comments. Although the e-portfolio platform had a built-in function to facilitate feedback exchanges, the teachers in this study wanted exemption from checking the feedback the students exchanged with their peers. This was because the teachers viewed checking individual feedbacks by students as time consuming and viewed them as an added burden to their workload. Through online questionnaires, findings of the study suggest that the incorporation of e-portfolios into three of the five ELC courses was successful in three aspects; providing a user-friendly platform, managing workload and helping students organize their work. Unfortunately, the results indicated that the use of e-portfolios did not help the students increase their awareness of the need to reflect critically on their learning or their strength and weaknesses in English. E-portfolios were also not found to be helpful in making students more aware of their progress and of what they have achieved on the course.

2.5.3   Pedagogical gains and constraints

E-portfolios have also received a lot of attention in the field of language learning in response to the transition from a teacher-centered to a more learner-centered communicative approach to language learning pedagogy where innovative teaching methods have placed more value on fostering students' reflection and developing their meta-cognitive skills (Clark, 2009). This transition has also caused a shift from traditional forms of assessment to alternative ones in order to respond to the demands for a more diversified range of skills and learning outcomes from students (Klenowski, 2002). A study by Martyn (2007) exemplified how e-portfolios were

used to reflect a learner-centered approach to learning languages and how their uses have attracted some assessment issues. In Martyn's study, e-portfolios were employed on a large scale in a professional English language course over a period of three years among 1300 Arts students who were second language learners. The e-portfolios that were developed in her study had a role of a learning portfolio, were used for both formative and summative assessment purposes and would be potentially refined for employment applications. The content of e-portfolios was carefully designed to prepare students for various field of work upon graduation that included writing resumes, writing letters and also preparing introduction videos. The students were also instructed to present their e-portfolios in a professionally presented homepage. The assessment of the e-portfolios focused on two major categories; content and communication. While these two categories were also used in the rubrics for a holistic evaluation of the completed e-portfolios, they were assessed individually.

2.5.4 Frameworks for e-portfolio development

Recent developments in the use of e-portfolios in language learning involved the development of frameworks to identify the distinct processes involved in the development of e-portfolios. While the use of frameworks that are parallel to the development of paper-based portfolios has been recommended by Woodward and Nanlohy (2004), other studies have moved to expand paper-based development processes for use with e-portfolios. One example is a study by Hung and Huang (2010) that concerns the use of the CRADLE framework that was adapted from Gottlieb (1995). This framework was developed to investigate the experiences and perceptions of students at each stage of their portfolio development. It is presented in the following diagram (Figure 2.5).
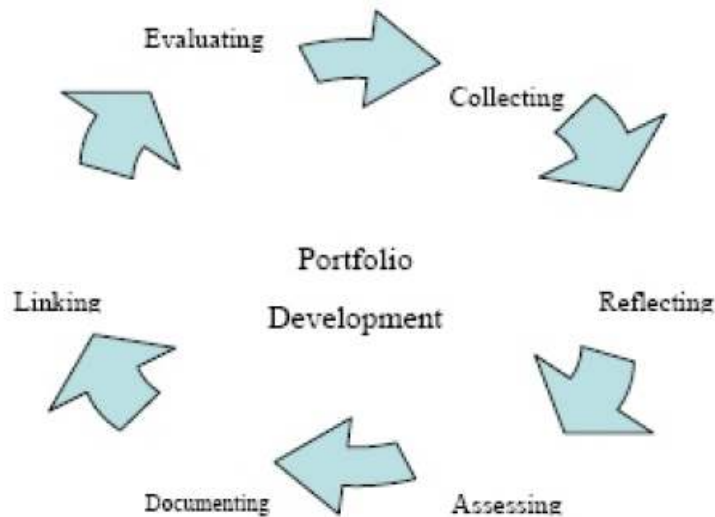
Figure 2.5. The CRADLE framework for portfolio development (Gottlieb, 1995).

Hung and Huang (2010) have adapted and modified the framework when using it to study the use of e-portfolios as a learning and assessment tool among EFL/ESL students in Taiwan. They introduced an e-portfolio development framework called CRADLE-T that included a technology dimension suited for studying the impact of using e-portfolios in their context. The discrete e-portfolio development processes identified in the CRADLE-T framework were then used in their study as a coding scheme for data analysis. The CRADLE-T framework is illustrated in Figure 2.6 below.

Figure 2.6. The CRADLE-T framework for e-portfolio development (Hung & Huang, 2010).

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Although the CRADLE-T framework appears to be useful in investigating the discrete processes involved when students engage in the process of developing their e-portfolios, the benefits of using this framework for guiding future applications of e-portfolios in other contexts were not discussed in detail. It was also not made explicit how the technology dimension has impacted on the processes involved in the development of e-portfolios. The technology dimension in the CRADLE-T may be worth exploring since the CRADLE framework itself is very similar to the e-portfolio development process framework that was developed by Barrett (2001) who has been a strong advocate for the use of e-portfolios in education.

Nunes (2004) has also looked at the process of designing portfolios from a much broader perspective. She argues the need for portfolio development to be guided by principles that reflect current pedagogical thinking prevalent in the EFL context. Following this, Nunes (2004) proposed two underpinning principles for the development of portfolios that focuses on the process being "dialogic, and facilitate[ing] on-going interaction" and documenting "the reflective thought of the learner" (p. 328). These design principles were later adopted by Papadima-Sopchocleous (2011) for the construction of e-portfolios in a case study where she analysed the use of e-portfolios for fostering reflection and autonomy of seven fourth-year students in her B.A. CALL course. Papadima-Sopchocleous reported positive outcomes of the use of e-portfolios as an instrument that promotes reflection and autonomous learning suggesting one of the benefits of e-portfolios as a tool that enables students to be more in control of their learning. While Nunes' (2004) principles are useful for guiding the development of e-portfolios in the study, Papadima-Sopchocleous' (2011) study did not focus on the use of technology in facilitating reflection and autonomy despite it being conducted within a CALL context.

2.5.5 Tools for professional development

Another aspect that captured the interest of researchers was the use of e-portfolios as a tool to enhance professional development among language learners. One example is a study conducted by Kocoglu (2008) who used the perceptions of EFL student teachers on the use of e-portfolios as a way to enhance their professional

development. The participants of this study were five senior level teacher candidates who were interviewed about their perceptions towards the development e-portfolios. The teacher candidates were given the flexibility to decide on the type of software for e-portfolio development but they had to include a range of artefacts such as several classroom observation tasks, evaluation papers, student teacher narratives and student teachers' journals. Kocoglu reported his findings in two sections; a pre-portfolio construction phase and a post-portfolio construction phase. His findings revealed that the teacher candidates experienced technical difficulties associated with the development of e-portfolios during both construction phases. Interestingly, the teacher candidates viewed having to cope with technical challenges as a way of increasing their technological knowledge and use; simultaneously, enhancing their professional development.

The study also showed that developing e-portfolios was not only beneficial in learning new technological skills but also useful in keeping students abreast with the latest technological innovations. Another important finding that was reported was in terms of how the teacher candidates viewed the e-portfolio process as a collaborative and supportive one. They seemed to have placed a high value in being able to ask questions, get help and receive feedback from their peers, faculty members and the researcher herself. They also had the opportunity to view ideas and experiences from different perspectives. Unfortunately, unlike the study conducted by Papadima-Sopchocleous (2011), Kocoglu's study revealed that these activities involving the use of e-portfolios that did not seem to contribute to enhancing reflective practices among the teacher candidates. Thus, the study suggests further research be undertaken to examine if electronic portfolios are potentially as useful as paper-based portfolios in developing reflective practices through written reflective narratives or portfolio artefacts.

One common focus in the development of e-portfolios in language learning seems to be on their use as an assessment tool. However, as seen in the studies by Siu (2013) and Martyn (2007), e-portfolio assessment is a complex and intricate process demanding more attention in particular when they are implemented on a large scale. Thus, there seems to be a need for designing e-portfolio assessments that are well-suited to the e-portfolio environments or their purposes within each unique context.

In terms of the use of e-portfolios as an innovative technology, it still seemed unclear whether the positive results for the use of e-portfolios as a tool in enhancing writing was primarily because of the inherent characteristics of e-portfolios or by the portfolio approach itself. Although the studies included in this review mentioned the increasingly important role of technology in e-portfolio development within an ESL/EFL context, not all of the studies that mentioned technology use were explicit about the type of technology used to develop e-portfolios and to a certain extent, how the e-portfolio is supposed to look like as an end product. There may also be a case for constructing frameworks that better clarify the role of technology in e-portfolio development such as the one reported in the study by Hung and Huang (2010) given that technology choices have a strong impact not only in the presentation of e-portfolios but also in the processes involved in developing them.

2.6   Related studies in the Malaysian context

Resembling other international contexts, early studies on the use of portfolios in Malaysia began with the use of paper-based portfolios where the focus was generally as an alternative form of assessment (e.g., Boon, 2004; Mohd. Rashid & Mohd. Asri, 2007). One of the earliest studies reported was conducted by Boon (2004), who focused on the use of paper-based portfolios as an alternative form of assessment in a teacher training program. He reported a case study that involved nine student teachers who completed their coursework through the portfolio process. Although he claims that portfolios had a positive impact in terms of the student teachers' learning, time and the ability to understand tasks associated with the development of portfolios were identified as the two main challenges.

In another study, Mohd. Rashid and Mohd. Asri (2007) used a portfolio approach as an attempt to move away from an exam-oriented to a more school-based assessment. Their study investigated students' perceptions on the use of portfolios as an assessment tool in an ESL writing classroom through qualitative measures involving interviews and observations. The portfolios of fifty students containing their best five pieces of writing were assessed and the results were compared to the students' timed single-draft essays. The authors concluded their study with the recommendation that portfolios should be used because of "its potential to allow assessment to become a

teaching strategy to improve learning, and to draw on students' strengths rather than focusing on their weaknesses" (p. 60).

Researchers in Malaysia have also been following closely the growing interest in the integration of various emerging technologies into the construction and presentation of portfolios that has taken place in international contexts. As a result, there has been a shift from the use of paper-based to electronic portfolios; a move that has been anticipated in view of the accessibility of technology in schools and higher education (Nor Hazlen Niza, 2009). There has also been diversity in the use of portfolios whereby studies have begun exploring their use other than as an alternative assessment. As stated by Thang, Lee and Zulkifli (2012), to date, universities such as Universiti Teknologi Malaysia (UTM), MARA University of Technology (UiTM), Universiti Malaysia Sarawak (UniMAS), and Universiti Teknikal Malaysia in Malacca (UniTEM) have reported the use of e-portfolios. Other universities particularly those that specialise in teacher education namely Universiti Pendidikan Sultan Idris (UPSI), Universiti Kebangsaan Malaysia (UKM), Universiti Putra Malaysia (UPM) and Universiti Sains Malaysia (USM) have also recently published studies investigating the use of e-portfolios (Farrell, 2008; Muhammad Kamarul & Mahbub Aksan, 2012; Raja Nor Safinas & Yoon, 2012; Thang et al., 2012).

Most studies in this context were explanatory in nature. They were case studies involving a small number of participants (at both undergraduate and graduate levels) and the length of each study did not exceed three months or approximately one semester. These studies also reported the use of a range of "innovative technologies" that had a less formal feature compared to customised e-portfolio systems (Stefani, Mason & Peglar, 2007). To illustrate, some of the innovative technologies that were reported to be used as a platform for the development of e-portfolios in this context were *Google Groups* (Muhammad Kamarul & Mahbub Aksan, 2012), social networking site creator *Ning* (Raja Nor Safinas & Yoon, 2012), *Fusive Web* (Farrell, 2012) and *Yahoo Geocities* (Siti Fatimah et al., 2007; Thang et al., 2012). Blogs were also a common feature in the e-portfolios developed and blog postings were used to study the effectiveness of using e-portfolios (Farrell, 2008; Raja Nor Safinas & Yoon, 2012).

Some of the studies conducted in this context have emphasised the role of electronic versions of portfolios as an approach to enhance the use of technology among students in higher institutions. In a study by Siti Fatimah, Nor Sakinah and Hamidah (2007) in UKM, a framework entitled "learning about computer with computer" was employed whereby first year degree students enrolled in a computer education course each developed a *w-portfolio* (Web-based portfolio) on a *Yahoo* platform over the course of a semester. The study intended to explore the potential of the Web as a platform for the management of students' learning and to nurture a W-portfolio culture by having their students use facilities afforded by Yahoo such as *Yahoo! Mail*, *Yahoo! Groups* and *Yahoo! GeoCities*. Siti Fatimah et al. (2007) indicated that there were a number of problems related to the assessment of students' projects such as on-time submission of assignments, virus infection on projects submitted, difficulties in the systematic storage and access to students' files that led them to resort to the Web as a solution. Through collaborative action research and multiple case studies, their study reported that there were still a few obstacles in encouraging the use of w-portfolios. It was discovered that the students were still unfamiliar with the technical aspects of their application and that the instructors reported that time and good ICT infrastructure required due consideration. Siti Fatimah et al. recommended that further exploration in terms of student achievement, employability and life-long learning need to be pursued as w-portfolios have "the power and potential to transform" (p. 331) assessment and learning. They also called for its application to be promoted in other courses within the teacher education program.

In another study, Thang et al. (2012) investigated the use of portfolios among six final year undergraduates who were enrolled in an elective course aimed at providing exposure to the current technologies available in English language teaching. Their study involved the use of interviews to gain insights into the students' overall experience of developing e-portfolios in the course. Also included were the students' feelings about the entire e-portfolio development process, challenges encountered and opinions regarding the benefits and drawbacks of creating e-portfolios. Thang et al. found that students who were less competent in ICT skills appreciated the process of developing e-portfolios more than those who were already competent ICT users. They indicated that students can develop e-portfolios without prior knowledge as

opposed to Barrett's (2000) view that skills in the development of e-portfolios may require students to take on a steep learning curve. However, Thang et al. stated that the most significant finding of their study was in terms of the psychological enhancements gained from developing e-portfolios reflected in the way students have acquired greater autonomy to seek out ways to improve on the quality of their portfolios and find ways to solve technical difficulties during the process of constructing their portfolios.

ICT skills were also identified as one of the competencies gained from the use of portfolios as an assessment tool as reported by Muhammad Kamarul and Mahbub Aksan (2012). Their study involved 55 pre-service TESOL teachers who had to create and maintain e-portfolios as part of their assessment for a Teaching through Literature course. *Google Groups* was used as a platform for their e-portfolio development where the participants were organized in groups in an effort to create an online community of practice among them. Their perceptions on the benefits and challenges of using e-portfolios as an assessment tool were obtained using three types of instruments – weekly journal, discussion journal and survey questionnaire. It was highlighted in the study that participants in their study were initially apprehensive about using ICT for the development of their e-portfolios as some of them had only basic skills and regarded themselves as not being computer literate. However, after three months of engaging in activities associated with the development of e-portfolios, the students were positive that their ICT skills were enhanced as was evident in their ability "to post comments, take part in discussion boards, reply to comments and criticize" (p. 1016).

Farrell (2008) also reported similar findings with regards to participants' reactions towards the use of ICT skills. Participants who began their development of e-portfolios with minimum ICT competency complained of the hard work and laborious e-portfolio task demanded. However, it was only after the e-portfolios were completed that they began appreciating the new skills they had acquired. Unfortunately, similar to the other studies, the ICT skills that were acquired were not specified in the study. Farrell (2008) stressed that ICT skills should be considered as an important aspect in the selection of an e-portfolio platform based on the technical difficulties experienced by the participants in developing their web-based e-

portfolios. Another aspect of e-portfolio development that was highlighted in the study was that the graduate students who participated in his study valued the potential of the e-portfolio for them to give and receive feedback from peers where peer and self-assessment became part of their learning experience. Getting help from peers to solve problems and to share materials were among the benefits of developing e-portfolios.

Feedback has also played a significant role in facilitating students' engagement as exemplified in the study conducted by Raja Nor Safinas and Yoon (2012). In their study, e-portfolios were developed as an alternative to face-to-face teaching and learning where participants were 25 in-service TESL Diploma of Education students. In their project, the course instructor stated that the e-portfolio was integrated as part of the course on the premise that it would allow the instructor to provide feedback and to encourage dialogic interactions between the instructor and the students and among the students themselves. While there were some positive gains reported through the use of e-portfolios in terms of the learning opportunities e-portfolios afforded, the study highlighted a number of constraints in terms of getting feedback from students and maintaining discussions when e-portfolios were used. It was noted that many students seemed to be passive observers who barely gave responses that provided justifications or reasoning. A similar situation was also experienced by Kamarul and Mahbub Aksan (2012) who pointed out that some of the responses students provided were "merely affirmation of others' opinions or views" (p. 1017).

In view of the studies conducted in this context, it seemed apparent that e-portfolios may soon find their way into the mainstream of the Malaysian education system. Although still at its infancy, the potential of e-portfolios as a learning and assessment tool has been increasingly recognised by researchers through short-term course level initiatives using various innovative technologies that caters for a range of purposes. It is implied that e-portfolios appeal to their needs so much that their worth requires further investigation. While there were several challenges reported such as technical problems due to poor Internet connectivity, lack of ICT skills, lack of reflective skills and practice, time-consuming development process, (Ang & Mohamed, 2010; Siti Fatimah et al., 2008; Thang et al., 2012) these challenges were not exclusive to the Malaysian context, but were more closely related to issues associated to being first

time users and the initial implementation of e-portfolios. As stressed by Thang et al. (2012), it is impossible to solve these problems within a short-term and a long-term goal addressing these concerns is required. The overarching concern with the use of e-portfolios is still the need for prospective users – students, instructors and institutions, to familiarize themselves with the concept of using portfolios to the point that they understand their potentials and limitations.

2.7   Constructivism as a theoretical framework

The underlying theory that frames this study is constructivism. This is because it is the most prevalent theory supporting the use of e-portfolios in teacher education (Avraamidou & Zembal-Saul, 2002; Barrett, 2001; Chau & Chen, 2010; Paulson & Paulson, 1996; Read & Cafolla, 1997). Constructivism is situated within the works of Jean Piaget and Lev Vygotsky cited in Fosnot (2005). It is a theory that describes how people learn or construct meaning (Fosnot & Perry, 2005; Richardson, 1997). While there exist two major strands of constructivism (i.e., cognitive constructivism and social constructivism), constructivists fundamentally view learning as "an active process of constructing rather than acquiring knowledge, and instruction [as] a process of supporting that construction rather than communicating knowledge" (Duffy & Cunningham, 1996, p. 171). The active construction of knowledge has also been described as a process of meaning-making that is "understood to be the result of humans setting up relationships, reflecting on their actions, and modelling and constructing explanations" (Fosnot, 2005, p. 280). Duffy and Orrill (2003) further described learning as being "in the activity of the learner" where he or she is in control of the inquiry and decision making process (p. 165). However, learning is also not an isolated process as it takes place within a social context; thus the interaction between learners and their peers becomes a necessary part of the learning process (Dalgarno, 2001). In other words, learning happens in a collaborative manner when learners share experiences with others, refine their understandings and question each other (Duffy & Orrill, 2003).

E-portfolios have been recognized as a learning tool that fundamentally upholds a constructivist view of learning through the key processes involved in constructing and maintaining an e-portfolio. The collaborative aspect of learning that is

emphasized by constructivists is perceived as a way "to ensure that students share responsibility and seek support from each other" (Duffy & Orril, 2003, p. 169). With the support of technology, the active process of constructing meaning dictates engaging students in "active, constructive, intentional, authentic, and cooperative learning" (Jonassen, Peck, & Wilson, 1999, p. 7). This process is mirrored in the construction of e-portfolios where students engage in activities that require them to critically record, assess, improve, and evaluate their own learning (Zubizarreta, 2004). Additionally, constructivists value the learning process as well as the product of learning (Gold, 2001; Mayer, 1999; Reeves & Okey, 1996) reflecting the main goals in the development of e-portfolios in the present study.

2.8   Summary

This chapter has introduced the broad area of technology use in teacher education. It has also provided an overview of portfolio use in education and linked technology as a catalyst for the increasing adoption of e-portfolios. Technological issues impacting the development of e-portfolios have also been highlighted in this chapter's review section. With a view to provide the range of issues and developments in the area of e-portfolios in teacher education, major studies focusing on the use of electronic portfolios as a learning and assessment tool were included. A section on the use of e-portfolios in the language learning context has also been included in this chapter in consideration of the context of the present study that focused on the use of e-portfolios among pre-service ESL teachers. Reported studies in the use of e-portfolios in Malaysia were also incorporated as part of the literature reviewed to determine the extent and scope of their past use. Finally, a theoretical framework was presented informing the design, scope and direction of this study.

CHAPTER 3

METHODOLOGY

3.1   Overview

This chapter presents the design of the study and the justification for the mixed methods approach undertaken. It provides a detailed description of the context and participants of the study. Information on data collection methods and procedures for the study are also presented followed by a report on a pilot study conducted. Finally, the final section included in this chapter addresses the ethical issues associated with the administration of the study.

3.2   Design

This study employed a mixed methods approach. The rationale for using this approach lies in the researcher's attempt to "legitimate the use of multiple approaches in answering research questions" (Johnson & Onwuegbuzie, 2004, p. 17). In this case, neither quantitative nor qualitative approaches alone appear to be sufficient to explore the complexities and processes that are involved in developing Web portfolios. The combination of quantitative and qualitative approaches, in a complementary manner, also allows the researcher to undertake "a more robust analysis" (Ivankova, Creswell & Stick, 2006, p. 3). One main consideration when undertaking a mixed methods study is in the timing of data collection and subsequently, the order of data to be collected. In terms of the timing of data collection, researchers often decide on data to be collected either by sequence or concurrently. The design of a mixed method study can further be distinguished according to the sequence in which qualitative and quantitative data are collected and analyzed. A sequential explanatory mixed methods strategy is one where the collection of quantitative data and analysis are followed by the collection and analysis of qualitative data. When qualitative data collection and analysis take place before the collection and analysis of quantitative data, the mixed methods study is known to follow a sequential explanatory strategy. As indicated by Creswell (2009), each strategy has its strong points that will appeal to researchers depending on the

aims of their study. In view of that, the present study has subscribed to a sequential explanatory design (Creswell, 2009; Creswell, Plano Clark, Gutmann, & Hanson, 2003). Justification for this type of mixed methods approach lies in the researcher's aim to use follow-up qualitative results as an approach in explaining and interpreting quantitative results. The design is typically identified as the collection and analysis of quantitative data followed by the collection of qualitative data in "two distinct interactive phases" (Creswell & Plano Clark, 2011, p. 71). Another typical feature of this design is also in the analysis of both quantitative and qualitative data before making the final interpretation.

In this study, quantitative data provided a general description for the use of Web portfolios as a learning and assessment tool. Simultaneously, the data also provided grounds for the identification of factors that facilitate and hinder students' development of Web portfolios. Qualitative data was used to help explain these factors in more depth from the participants' unique experiences and to describe the processes involved in developing Web portfolios in detail. Figure 3.1 illustrates the sequential explanatory mixed methods design employed in the study.
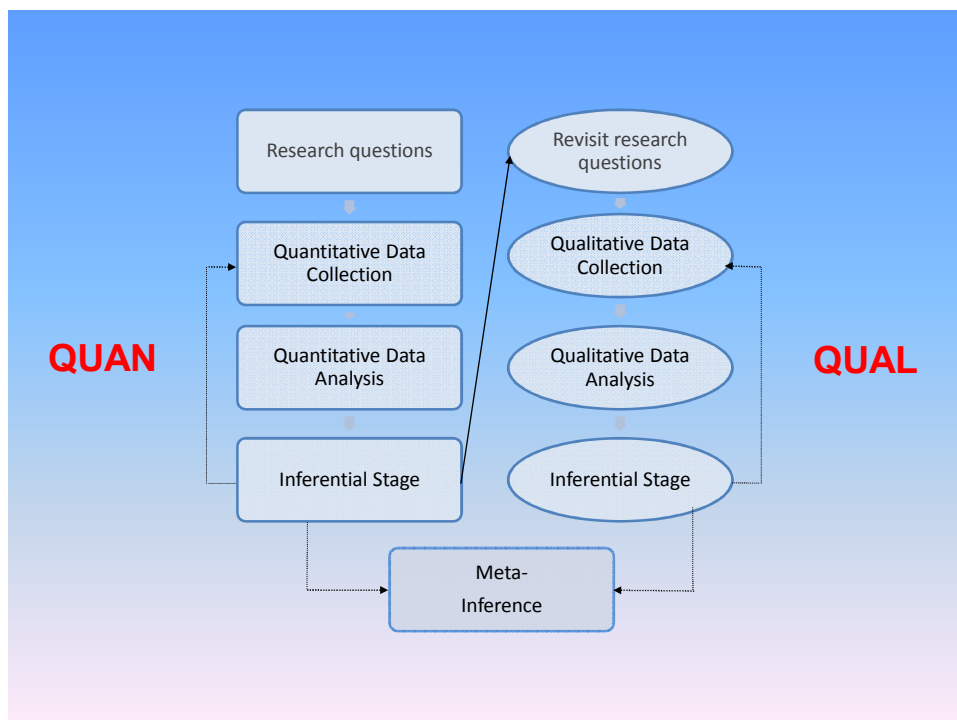
Figure 3.1. Graphic illustration of sequential explanatory mixed methods design (Teddlie & Tashakkori, 2009, p. 154).

3.3 Context

The study was conducted in an undergraduate course at a public university in Malaysia. The course called *Computer-assisted Language Learning* (CALL) was a core course offered by the Faculty of Languages and Communication to all students enrolled in the second semester of their TESL program. The CALL course was offered once a year and delivered for three hours each week over a semester of 14 weeks. The CALL content was delivered using both face-to-face and online modes through lectures, individual and group presentations, and online discussions. The CALL course included hands-on work in which students learn to use a specific technology, explore the potential of various computer programs for language learning, use computer programs to design and develop language learning materials, and work on course assignments. Students were also assigned online tasks via the university's learning management system known as *MyGuru* (which means 'my teacher' in English). It was compulsory for students to participate in online discussions and respond to questions posted by their course lecturer in *MyGuru* as part of their overall course assessment.

The rationale for selecting this site was in view of the university's reputation as an institution that specialises in teacher education. One of the university's primary roles is to respond to the demand for future teachers in the country. Additionally, the university also caters to the need for continuing professional development for in-service school teachers, headmasters and principals. This site was also selected on the basis of the researcher's familiarity with its academic and cultural context. The researcher's close working relationship with the CALL course lecturer enabled the researcher not only to obtain access to all students in the CALL course but also to fully employ the design of the study. In particular, the researcher was able to gain the course lecturer's full support in modifying the CALL coursework and assessment methods to suit the design of the study. This allowed the researcher to incorporate Web portfolio development as part of the CALL coursework without demanding additional workload on the part of the students. It was also based on the partnership with the course lecturer that the researcher was able to arrange face-to-face meetings with the students during lecture hours which otherwise would have been impossible.

3.4   Participants

Participants in the study were selected based on a purposive sampling procedure that involved selecting participants according to characteristics that were specified by the researcher as identifying those "from which the most can be learned" (Merriam, 2009, p. 77). The same participants were recruited in both the quantitative strand and qualitative strand of the study so as to conform to an "identical relation criterion" (Johnson & Christensen, 2008, p. 246) of sampling in mixed methods. Participants in the study have been identified as pre-service ESL teachers of a CALL course and their course lecturer.

A total of 128 pre-service ESL teachers who were undergraduate students taking the CALL course were invited to participate in the study. Their ages varied between 20 to 23 years. The students had a similar academic background as they had taken the same courses offered in the TESL program in the previous semester. They also had a similar level of English language proficiency. This was based on their Band Four score in Malaysian University English Test (MUET) results upon entry to the TESL program. Information regarding the students' computer skills was conveyed by the CALL course lecturer. She explained that the students had basic skills for using computer applications such as *Microsoft Word*, *Microsoft PowerPoint* and *Microsoft Publisher* through their exposure in completing assignments and conducting presentations in the previous semester. Apart from these applications, they were also familiar with synchronous and asynchronous communication activities and had regularly used the Internet to access teaching and learning materials. The students also participated in an online learning community via the university's learning management system *MyGuru*.

As the individual solely responsible for the CALL course, the course lecturer was also recruited. Prior to the researcher's visit to the university, communications with the course lecturer regarding the purpose and methodology to be employed in the study were communicated to the course lecturer via email. Further discussions on the Web portfolio development process and assessment procedures took place during the first few meetings with the course lecturer at the university. The course lecturer was

clearly very supportive in incorporating Web portfolios as part of the CALL coursework and was very keen to share her past experiences in delivering the CALL course. She had also provided detailed information regarding the organisation of the course, delivery, and assessment procedures to the researcher in order to facilitate the process of conducting this study. As such, her perspectives and insights, particularly on the overall implementation of Web portfolios as a learning and assessment tool in the course provided valuable data that helped illuminate factors associated with the implementation of Web portfolios in future CALL courses.

The course lecturer worked collaboratively with the researcher mainly in matters concerning the arrangement of face-to-face meetings with students, the construction of a rubric for Web portfolio assessment, and the finalisation of students' Web portfolio marks. The course lecturer was also actively involved in facilitating students' development of Web portfolios by providing feedback on the presentation and content of their Web portfolios. A major concern involving the assessment of students' Web portfolios was brought to the researcher's attention in one of the first few discussions with the course lecturer. She emphasised that the time allocated for the assessment of all the 128 students' Web portfolios by the end of the data collection period was not sufficient. In addition, she had to consider completing the assessment in her own time while having to keep up with other academic tasks. Prompted by these circumstances, the researcher had to resort to recruiting some willing participants to assist in the Web portfolio assessment process.

Both the course lecturer and researcher agreed on recruiting at least five participants as reviewers. The strategy was to allocate one reviewer to each of the five CALL course groups so that each of them had only the task of reviewing approximately 25 Web portfolios each. This course of action was intended to considerably reduce the review time allowing the researcher to keep to the timeframe for data collection. On the part of the researcher, this process was a time-consuming one as many of the individuals approached including lecturers at the research site and also those from other teacher training institutions declined the assessment of the Web portfolios. After the arduous task of setting up meetings to communicate the study's purpose and objectives with prospective reviewers, the researcher was successful in recruiting five participants forming a Web portfolio review panel.

The review panel members were recruited based on a range of criteria such as background in TESL, experience in using computers in education, and knowledge of *Google Sites*. The first panel member was a TESL lecturer specialising in CALL at a local university and had experience using *Google Sites* for language learning and teaching. The second panel member was a TESL post-graduate student who had recently completed research on the use of *Wikispaces* for language learning. The third panel member was an experienced English language teacher at the university who has had formal training in CALL. The fourth panel member was also an experienced language teacher with some experience using CALL. Finally, the fifth panel member was a qualified technician at the university with experience using *Google Sites*. The fifth panel member, however, did not respond to either forms of communication and did not submit any reviews. The researcher unfortunately had to consider this course of action as his signal that he had withdrawn from the study. This panel member was later replaced by a language teacher with experience in teaching online and developing online learning materials for various private universities in Malaysia. At least two face-to-face meetings with all panel members took place for the purpose of clarifying the Web portfolio review process. Subsequent communications with all panel members were conducted via email and telephone messages (SMS).

Each reviewer was responsible for reviewing Web portfolios belonging to one group of students ranging between 19 to 25 students per group. The groups were formed according to the pre-existing group in the CALL course. All the reviewers were invited to attend a briefing session where details about the study, their responsibilities as reviewers, and reviewing procedures were communicated. Technical concerns associated with the use of *Google Sites* were also discussed. For example, reviewers with no experience in using *Google Sites* were provided with explanations of how to access the students' Web portfolios. During the briefing session, the reviewers were also shown samples of Web portfolios whereby some critical areas were identified. To illustrate, the reviewers were instructed to pay particular attention to the arrangement of items in the sidebar of each Web portfolio reviewed because students had been given specific instructions in their Web portfolio Task Sheet to arrange the items accordingly. Another critical area was the use of the

'File cabinet' template and 'List' template in *Google sites* for items labelled 'Assignments' and 'Reflections' respectively.

In order to match all the participants' responses in the pre-questionnaire to those in the post-questionnaire, the researcher had opted to use codes to label both questionnaires. As an initial form of identification, the researcher referred to the participants' student numbers. Each student number was then replaced with a code such as A1, to indicate that the participant was the first student on the name list in group A in the CALL course. There was a total of five student groups each identified as A, B, C, D, and E, respectively. Similar coding was also applied to identify the participants in the focus group interviews. For example, 'S1_FG_5' was the code used to refer to the first student in focus group 5. In the case of the semi-structured interview with the course lecturer, the term 'course lecturer' was maintained. Codes such as R1, R2, R3, R4, and R5 were used to identify the five participants on the review panel. To identify each Web portfolio developed by the students, the actual URLs of the students' Web portfolios were used as most students had already used pseudonyms when naming their Web portfolios (e.g., https://sites.google.com /site/sakuraspringsite/).

3.5   Data collection

Data for this study was collected in three phases between January and April, 2011. Phase I was an introductory phase to find out students' awareness of Web portfolios. For this purpose, a pre-questionnaire (Appendix A) was distributed. In Phase II, A *Web Portfolio Training Workshop* was conducted by the researcher in two sessions. Each session took approximately two hours for two consecutive weeks. Both sessions were conducted during lecture hours where attendance in the workshop was made compulsory by the course lecturer. Following the workshop, the students began developing their Web portfolios. The Web portfolio development process took approximately 5 weeks and, throughout this process, the researcher's notes, and the students' online discussion threads were used to monitor and document the students' Web portfolio development process.

Phase III was the final stage of data collection which concerned the distribution of a post-questionnaire and Web Portfolios analysis. Focus group interviews with the students and a semi-structured interview with the course lecturer were also carried out. Upon submission of the Web portfolios, a panel of reviewers was set up to undertake a Web portfolio analysis. The Web portfolio analysis took approximately 3 weeks. Finally, at the end of the data collection, both the course lecturer and students were invited to participate in a *Research Project Debriefing Session.* Due to the poor attendance of students in the debriefing session, the researcher took the initiative to thank each student individually via email for their participation and commitment in the study. The email also included some suggestions as to how these students can continue to develop their Web portfolios for academic and professional use. The phases and methods of data collection are summarised in Table 3.1.

Table 3.1
Phases of Data Collection

Phases	Methods of Data Collection	Length of Time
1 **Introduction to Web Portfolios**	• Pre- Questionnaire	2 Weeks
Web Portfolio Training Workshop		2 Weeks
2 **Development of Web Portfolios**	• Threads from online discussion/ forum • Observation/Researcher's Notes	5 Weeks
3 **Post-Production of Web Portfolios**	• Threads from online discussion/ forum • Observation/Researcher's Notes • Post- Questionnaire	2 Weeks
	• Web Portfolio Analysis • Focus Group Interviews with Students • Open-ended interview with course lecturer	3 Weeks
Research Project Debriefing Session		

3.5.1 Quantitative data

Quantitative data was gathered using two sets of questionnaires: pre-questionnaire and post-questionnaire. The questionnaires were distributed and collected face-to-face during lecture hours. However, a few post-questionnaires had to be delivered by hand to the participants due to their absence in the final week of lecture and later collected by the researcher outside the research site. A total of 128 pre-questionnaires and 128 post-questionnaires were distributed. While all the pre-questionnaires were successfully collected, only 118 post-questionnaires were returned. Factors such as poor attendance in the final week of lecture due to the beginning of study leave and final exams hindered the researcher from obtaining the remaining post-questionnaires from the study participants.

The first data collection instrument was a self-designed questionnaire termed *Pre-questionnaire* (Appendix A). This questionnaire had been revised to incorporate changes such as language and formatting that were previously identified in a pilot study. The pre-questionnaire comprised five sections and was distributed to students at the beginning of the course prior to the students' development of Web portfolios. The questions in the first section of the questionnaire asked the students to use a 5-point rating scale to rate their level of computer competency in an online environment based on a list of ten tasks that students are likely to undertake while being online. The scale ranged from Expert, through Advanced, Intermediate, and Beginner to No Experience. The second section refers to questions pertaining to the students' attitudes towards the use of computer technology and the third section concerned the students' attitude towards learning. In both of these sections, the students were instructed to respond to a 5-point Likert scale with 5 as "Strongly agree" and 1 as "Strongly disagree". The fourth and final sections included questions about the students' familiarity with the use of portfolios and their demographic information that required the students to either choose their responses from the options given or to provide short answers or relevant details.

The second questionnaire was termed *Post-questionnaire* (Appendix B). It was distributed at the end of the course after the students submitted their final Web portfolios for assessment with the aim of obtaining information concerning students'

experiences in developing Web portfolios. The post-questionnaire consisted of six sections. For the purpose of comparison, the questions that appear in the first three sections of the post-questionnaire were identical to the questions which were presented in the first three sections of the pre-questionnaire (i.e., questions on students' computer competency in an online environment, attitudes towards the use of computer technology and attitudes towards learning).

The two other sections (i.e., Section D & Section E) included in the post-questionnaire were sections pertaining to students' perceptions of Web portfolios as a learning and assessment tool. The questions that appear in both sections were adapted from the learning and assessment domains in the Electronic Portfolio Student Perspective Instrument (EPSPI) of Ritzhaupt, Singh, Seyferth and Dedrick (2008). The internal consistency reliability of the learning and assessment domains for the instrument were reported to be both acceptable at $\alpha = .90$ and $.93$ respectively (Ritzhaupt et al., 2008). The EPSPI was used because it has been established in terms of its reliability and validity making it a practical choice for the researcher as recommended by McMillan and Schumacher (2010). However, in order to suit the purpose and context of the study, the two domains were rephrased to 'Students' perceptions of Web portfolios as learning tool' and 'Students' perceptions of Web portfolios as an assessment tool'. The term 'Web portfolio' was also used in the post-questionnaire instead of the term 'e-portfolio' in the EPSPI. Other characteristics of the EPSPI were maintained including the number of questions and the scale used. To illustrate, the section on the students' perceptions of Web portfolios as a learning tool consisted of 22 questions and their perceptions' on the use of Web portfolios as an assessment tool were made up of 10 questions. The students were asked to respond to a 5-point Likert scale with 5 as "Strongly agree" and 1 as "Strongly disagree".

The final section in the post-questionnaire (i.e., Section F) was designed to gather the students' opinions on their experiences of developing a Web portfolio. A total of 30 questions were posed and the students were instructed to respond by either choosing from the options listed, stating their answers in the space provided, or providing relevant details, whichever was applicable. The questions asked the students' opinion regarding their use of *Google Sites* as a platform for the development of Web portfolios and their perceptions of the tasks they had to complete in their Web

portfolios. The researcher also aimed to probe further into the processes involved while students developed their Web portfolios by posing questions related to the amount of time they have spent on developing their Web portfolios as well as the specific areas in their Web portfolios students spend most time working on. The students' responses to the pre- and post-questionnaires were analysed and used as a basis for constructing follow-up questions for the interviews.

3.5.2 Qualitative Data

Qualitative data was collected from two types of interviews: focus group interviews with the students and a semi-structured interview with the course lecturer. In addition to interview data, the study also incorporated data from the qualitative analysis of the students' Web portfolios. Another source of data was from the CALL course online discussion threads. Finally, data was obtained from researcher's notes as a way to capture reactions, questions, and so forth during the overall development of Web portfolios in the study.

Focus group interviews involve the "systematic questioning of several individuals simultaneously" (Fontana & Frey, 2003, p. 70-71). This data gathering technique is used to draw out the different viewpoints of individuals, particularly when they undergo similar experiences (Kvale, 2007; Kvale & Brinkmann, 2009). Focus group interviews were selected as an advantageous approach in encouraging students selected for the interview to describe and give details of their Web portfolio experiences in a collective manner. Patton (2002) stated:

> Unlike a series of one-to-one interviews, in a focus group participants get to hear each other's responses and make additional comments beyond their own original responses as they hear what other people have to say. However, participants need not agree with people to disagree. The object is to get high-quality data in a social context where people can consider their own views in the context of the views of others (p. 386).

The researcher also used focus group interviews as a way to help the students reflect on issues affecting them, as a group, while they were developing their Web portfolios in the CALL course. The focus group interview sessions were led by the researcher

as a moderator whose role included directing the process of inquiry and maintaining the interaction among participants (Fontana & Frey, 2003).

Following the mixed methods sequential data collection design (Teddlie & Tashakkori, 2009), interview questions (Appendix C) for the focus group were developed after the analysis of quantitative data was performed. The interview questions were based on the results of the pre- and post-questionnaire analysis that identified four areas of Web portfolio development that required further exploration. These four areas were included in individual sections of interview questions. The first section was designed to capture participants' experiences in developing Web portfolios by posing four questions. Questions such as 'What words would you use to describe your experience in developing a Web portfolio?' and 'What do you remember most about the process of developing a Web portfolio?' were asked. The second section concerned participants' use of Web portfolios as a learning tool which posed six questions, for example, 'Did developing the Web portfolios encourage you to think about your learning?' and 'Was it necessary for you to share your Web portfolios with others?'. The third section asked two questions pertaining to participants' use of Web portfolios as an assessment tool. The two questions asked were 'Do you have any concerns about your Web portfolio being assessed?' and 'Do you have any comments about getting marks for your Web portfolio?'. The final section was constructed to elicit participant's future directions in terms of the Web portfolios that they developed. The three questions posed in this section were 'How would you use your Web portfolios from this point onwards?', 'Would you recommend others to develop Web portfolios?', and 'Do you have any final words to share with me regarding the whole Web portfolio development process?'. Other questions were also posed to the participants in an effort to clarify or probe further into certain issues that emerged in the interviews.

Focus group interviews with students were organised after the students had submitted their Web portfolios for assessment. The participants in the focus group interviews were recruited on a voluntary basis. Since the students in the CALL course were already divided into five tutorial groups, the researcher set up two focus group interviews for each tutorial group. An equal number of students from each tutorial group were recruited so that all the groups were equally represented. The researcher

managed to set up two focus group interviews per tutorial and approximately six students were recruited in each focus group interview. Each focus group was numbered and identified as FG_1, FG_2, FG_3, FG_4, FG_5, FG_6, FG_7, FG_8, FG_9, and FG_10. Table 3.2 displays of the distribution of participants for the focus group interview.

Table 3.2
Distribution of Participants for the Focus Group Interview

CALL Group A (27 students)		CALL Group B (28 students)		CALL Group C (27 students)		CALL Group D (25 students)		CALL Group E (21 students)	
FG_1	**FG_2**	**FG_3**	**FG_4**	**FG_5**	**FG_6**	**FG_7**	**FG_8**	**FG_9**	**FG_10**

Unlike the typical number of between six to ten participants in each focus group (Kvale, 2007; Kvale & Brinkmann, 2009), the researcher managed to arrange for only smaller groups of three to four participants per group. Out of the total number of ten focus group interviews arranged, only seven focus group interviews were conducted due to the absence of a few group members during the scheduled interview time. While most of the students approached by the researcher were willing to participate in the focus group interviews, there were a few who did not turn up for the actual interview. For this reason, some interviews had to be rescheduled a few times and in some cases, the researcher had to proceed even with a small number of students. As a result, Table 3.3 displays the seven focus groups formed and the number of participants recruited in each group.

Table 3.3
Participants Recruited for each Focus Group

Focus Groups	FG_1	FG_2	FG_3	FG_4		FG_5		FG_6		FG_7	
CALL Group	C	D	A	A	B	A	B	C	E	B	E
No. of participants	4	5	2	1	2	1	3	2	2	1	2
Total no. of focus group participants									25		

The university's computer lab was used to conduct the focus group interviews. This location was identified as the most suitable and convenient place as the researcher had obtained access to the lab including the use of all equipment. This allowed the researcher to log-on to the students' Web portfolios during the interview when

necessary. For example, some participants wanted to recall or show the researcher some part of their Web portfolios in order to make their point clearer. This was done before the interview or immediately after the interview and was not audio recorded. Important points in these discussions have been recorded in the researcher's notes.

All interviews were recorded in order to make sure that everything that was said in the interviews was preserved for analysis (Merriam, 2009). Individual interviews took approximately 20 to 30 minutes. The length of each interview was highly dependent on the amount of information the participants were willing to disclose. Their openness in sharing personal and unique Web portfolio experiences with significant detail and depth was also another contributing factor. The interviews were conducted in English, mainly due to the medium of instruction of the CALL course. However, participants were informed beforehand that they were free to use the Malay language if they felt more comfortable doing so.

Interviews were utilised as an instrument for capturing the participants' own 'voices' from their own perspectives. In addition, interviews were used on the basis that "the participant's perspective on the phenomenon of interest should unfold as the participant views it (the emic perspective), not how the researcher views it (the etic perspective)" (Marshall & Rossman, 2006, p. 101). In this study, a semi-structured interview was also utilised where questions were posed in a "systematic and consistent order, but [the researcher is] allowed freedom to digress" (Berg, 2001, p. 70). As such, although the exact wordings and sequence of pre-prepared questions were used during the interview, researcher found opportunities to ask additional questions as a way of probing further into unanticipated issues that unfolded during the interview.

The semi-structured interview with the course lecturer was conducted after the students had submitted their Web portfolios for analysis. The interview was conducted in the course lecturer's office for approximately 45 minutes. The purpose of conducting the interview was to gain the lecturer's perspective on the introduction of Web portfolios as a learning and assessment tool in the CALL course. Prior to the interview, a list of questions was prepared to reflect on the purposeful and structured nature of an interview (Cohen, Manion, & Morrison, 2007). The objective of the

questions was to assist the researcher in obtaining a comprehensive picture of the processes involved as well as to uncover issues that may have affected the development of the students' Web portfolios. The course lecturer was also asked to reflect on her experiences in an effort to determine her position on the future implementation of Web portfolios in the CALL course. The four main sections were about the use of Web portfolios in relation to: (i) teaching and learning; (ii) assessment; (iii) reflection; and (iv) future use. Some sample questions are 'What was your first impression regarding the use of Web portfolios in the CALL course?', 'Do you think your students have clearly understood the purpose of developing Web portfolios?', and 'What sort of improvements would you recommend in terms of Web portfolio assessment?' Some additional questions were asked to probe further into issues that the researcher felt needed clarification. For example, the researcher needed to clarify how the lecturer would determine the final grades of the student's Web portfolios. There were also questions concerning the learning skills and practices of the students in the course as observed by the course lecturer. Insights into these aspects were regarded essential in the course of understanding the quality that can be expected in Web portfolios.

Qualitative data was also obtained from Web portfolios that the students in this study developed as part of their CALL coursework. The construction of the student's Web portfolios was based on the characteristics of a learning portfolio model (Zubizarreta, 2004) that emphasises on the activities of reflection, documentation and collaboration in the process of constructing portfolios. Evidences of their learning were also captured through the different types of artefacts the students included in their Web portfolios. The artefacts ranged across past and present assignments, links to online resources, video clips and *PowerPoint* slide presentations that the students had compiled as evidence of their learning. The portfolios were in a Web-enabled format that reflected the following characteristics: they were accessible over the Internet, interactive, and able to support documents in various digital formats (DiMarco, 2006). This characteristic of a portfolio is crucial in supporting the broad range of CALL materials the students used in the CALL course. It was specified, however, that the students' Web portfolios had to be written in English to conform to the medium of instruction of the CALL course. Two workshop sessions on Web

portfolio development were organised for this purpose. Each session took approximately two hours to complete.

Prior to the workshop, the researcher intended for the students to be given an overview of the various platforms available for constructing their Web portfolios. It was also her objective to encourage students to be able to demonstrate their individuality through the unique features of the different platforms available. Giving the students a free-hand at the selection of the Web portfolio platform would also encourage personal ownership and control of their individual Web portfolios. However, for practical reasons, the course lecturer and lecturer finally decided on *Google Sites* as a Web portfolio development platform. This was because the platform fulfils the characteristics of a Web-based portfolio earlier identified in the study and it was the most familiar to the researcher and the lab technician who were responsible for assisting the students with their Web portfolio development. Taken into consideration the decision–making process between the course lecturer and the researcher was also the training that may be needed in familiarising the students with the chosen platform. Other factors considered were the limited time frame for the study and the overarching issue of uniformity when assessing their Web portfolios. Thus, employing one standard platform was unquestionably the best course of action at that point in time. After the decision to use *Google Sites* was finalised between the course lecturer and researcher, the content of the workshop and accompanying materials were developed.

In the first two-hour workshop session, the students were introduced to the use of Web portfolios in education and were also provided with details about the study. Some accompanying materials were also distributed such as a Web Portfolio Development Checklist (Appendix E), Web Portfolio Task Sheet (Appendix F), and a few mini task sheets to get students started on their Web portfolios. The checklist served two main purposes: to ensure the inclusion of all compulsory elements in the Web portfolio and to check that all stages of Web portfolio development were completed. It also included the different stages of developing a Web portfolio using *Google Sites* as a platform for construction. For example, the checklist outlined the registration and orientation stage, practice stage, ongoing task stage, and finally, the submission stage. Upon completing all the required stages, students were to submit

the checklist to their course lecturer for verification purposes. The checklist was later returned to the students for reference purposes.

The Web portfolio task sheet was used alongside the checklist to specify the required tasks that needed to be completed and guidelines for selecting artefacts for the Web portfolios. A copy of the task sheet was supplied to individual students and whenever requested, clarification was offered by the course lecturer and researcher. The task sheet elaborated on the 11 items that were required in the students' Web portfolios. The items were described in terms of their objectives and corresponding tasks. For example, the first item on the task sheet was 'Home'. The objective of including the item was to introduce the Web portfolios by giving an overview of the purpose and content presented in the Web portfolios. Accordingly, the students' task was to create an interesting welcome page that reflected their personality and interests.

Mini task sheets, which were distributed to the students, consisted mainly of questions the students were to answer to help them recognise the purpose of portfolios in education as well as to assist them in understanding the process of developing content for their personal portfolios. Samples of the tasks included were 'Discuss the possible audience for your Web portfolio', 'What are some of the elements of your Web portfolio that needs to be updated regularly?', and 'Besides documents, what other ways may be useful to demonstrate your learning experiences?'. The students were encouraged to discuss and complete these tasks during the workshop sessions with the course lecturer and the researcher.

The second workshop mainly focused on introducing the students to *Google Sites* as a platform for the development of their Web portfolios. During the workshop, the students were given a demonstration of registering for a *Google Sites* account, creating a webpage, selecting a template, and inserting text among others. From this point onwards, the researcher encouraged the students to explore on their own the different applications in *Google Sites* and to begin working on their homepage. The course lecturer was also present during the workshops to assist the students with technical difficulties. She also offered the students help by giving them the additional information necessary for completing their Web portfolio task.

Following the two workshop sessions, the students generally worked on the Web portfolios in their own time. The researcher was given approximately 30 minutes at the beginning or the end of every lecture for four consecutive weeks to meet face-to-face with the students during lecture hours. This was a valuable opportunity for the researcher to monitor the students' progress and to assist in any difficulties they may have encountered. A range of problems were communicated to the researcher during the brief meetings with students. Among them were difficulties in registering for a site, locating a missing site, rearranging items in the side bar, editing text using a template, inserting media items, and editing the presentation or layout of the pages on their sites. While most of these problems were attended by the researcher or lab technician during face-to-face meetings with students, there were some students who posted their problems in *Facebook* asking other students who might have encountered similar problems for solutions. There were also instances when the researcher directed students to search the Internet for websites offering help to *Google Sites* users. The *Google Sites* Help Center (http://support.google.com /sites/?hl=en) was also a useful resource for the students.

At one of the meetings, the researcher demonstrated how the students could publicise and share their Web portfolios with other students. The students were also instructed to share their Web portfolio links with the course lecturer and researcher. By sharing their Web portfolio links, it became possible for the course lecturer and the researcher to access, view and monitor their progress online. It was also possible to give feedback and provide support to them when needed outside the lecture hours. While some students immediately shared their Web portfolios, some students were reluctant to share their unfinished Web portfolios as they were adamant about sharing only completed Web portfolios. They also experienced some difficulties with retrieving shared Web portfolios but these were easily rectified as the difficulties originated from the students' misspelled names and failure to change their Web portfolio settings in *Google Sites* properly.

After completing their Web portfolios, the students were instructed to submit a printed copy of their Web portfolios and a CD containing softcopies of assignments they were required to attach to their Web portfolios. This step was taken to show evidence of the students' work as well as a precautionary step in case their site was

disabled or accidentally deleted. Upon submission, they were also to include their Web portfolio addresses by stating them on the cover of their printed Web portfolios and by email to the researcher. Out of a total of 128 sites developed, the researcher received 125 Web portfolio site addresses via email. Addresses to these Web portfolios were then forwarded to a panel of reviewers who began analysing the Web portfolios immediately. The three other Web portfolios were unable to be retrieved and the students failed to respond to attempts at contact. Several attempts were made via SMS messages to their CALL group leader and by directly emailing the students. Despite these attempts, none of the three students responded. Prior to exiting the research site, a final thank you email was sent to all the participants in the study. The email included the researcher's contact address, a brief note of acknowledgement thanking all the participants, and a reminder to the students not to delete or change the privacy settings of their Web portfolios until the researcher had completed this study. Another email was to be sent out to advise students when the study was completed.

Qualitative data was also obtained through an online discussion forum that was set up in *MyGuru* as a way of studying and recognizing the depth of reflection and other happenings from the students' perspectives and their own words. In order to post and participate in online discussions via the *MyGuru* learning management system, the researcher had to request administrative privileges from UPSI's ICT Centre. Subsequent to the approval of this request, the researcher was given a username and password to log into the CALL course learning management page whereby her administrative privileges allowed her similar access as the course lecturer. The researcher also asked for the online discussion threads of participants in the CALL course to be stored until further notice to allow the researcher ample time to save and store all data pertaining to this study. This course of action was necessary to prevent any loss of data as a result of the *MyGuru* system being reset at the end of the semester.

In order to initiate discussions with the students about their Web portfolio development process, the researcher posted discussion topics such as 'Setting up your Web portfolio', 'Sharing the Web portfolio link with others', and 'What to do when you have completed your Web portfolio'. Questions were also posed for

example, 'How far have you understood the concept of a portfolio?' and 'If you can't see the pages you have created…Anyone with similar experience?'. Unfortunately, the researcher was unable to obtain any useful data through the online discussion forum. A contributing factor was that the students had opted to carry out discussions via *Facebook* instead of the online discussion facility in *MyGuru.* Despite considerable effort on the part of the researcher to retrieve information from the participants' *Facebook* posts on a voluntary basis, the students did not respond to the researcher's requests.

The study also used the researcher's notes as a qualitative data collection tool. Observations of the students, students' reactions to the completion of Web portfolio tasks, questions posed to the researcher during the two workshop sessions, issues discussed in conversations between the researcher and the course lecturer, brainstorming sessions with the students, and discussions with the students that transpired after each interview session were some examples of contents recorded in the researcher's notes. The researcher has also recorded some comments and reactions of other individuals whom she interacted with (e.g., lab technicians, the Head of English Language Program, TESL lecturers, those individuals approached as reviewers). Included were also the researcher's personal reflections, which often included the specific area in Web portfolio development that the researcher hoped to improve upon. The researcher's notes were used mainly to assist the researcher in recalling critical points encountered while at the research site.

3.6   Pilot study

The pre-questionnaire was piloted twice. The first pilot study was not successful as all the five students who had initially consented to participate withdrew after the pre-questionnaires were distributed. The researcher attributed the failure of this pilot study to the poor commitment of participants who were not only unfamiliar with the researcher but also had limited access to online communication while being away off campus during their semester break. In the second pilot study, the researcher was able to obtain assistance from a lecturer who was teaching at the research site. A copy of the pre-questionnaire was emailed to the lecturer and copies were made for distribution. The lecturer assisted in recruiting a group of 42 pre-service ESL

teachers who shared similar characteristics with those identified in the study and had completed the CALL course in the previous semester. Under the supervision of the lecturer, participants in the pilot study were instructed to identify and report back any difficult or ambiguous items in the questionnaires. Completed pre-questionnaires were then delivered by hand to the researcher a few weeks prior to the data collection period for the main study. Besides having to revise the use of some words and correcting the numbering of questions in the pre-questionnaire, there were other difficulties in answering the questionnaire reported. Item analysis was conducted and the Cronbach's Alpha was 0.898. From this analysis, the researcher identified three items that were problematic as they were worded in a negative voice (i.e; Section B, questions no. 5 & 15; Section C: question no. 7). When these three items were deleted from the questionnaire, the Cronbach's Alpha was raised to 0.906. However, the researcher decided to maintain these items in the pre-questionnaire in anticipation that better results would be obtained with a much larger sample in the main study.

3.7   Data analysis

Data was analysed according to a sequential mixed data analysis procedure whereby data was analysed in two connected stages (Teddlie & Tashakkori, 2009). The first stage involved the analysis of the quantitative data followed by the analysis of the qualitative data in the second stage. Findings of the study are presented in a single discussion section (Chapter 4) where inferences from each data source were synthesized to form meta-inferences (Teddlie & Tashakkori, 2009). The mixing of quantitative and qualitative data occurred when inferences drawn from the analysis of the pre- and post-questionnaires informed the development of subsequent interview questions. The findings from the Web portfolios analysis were also included to add depth to the qualitative data gathered from the interviews. The integration of the qualitative and qualitative strands into "a coherent whole" (Owuegbuzie & Teddlie, 2003, p. 377) was carried out before advancing to the final interpretation of the study's findings.

Computer-assisted data analysis software, *SPSS version 19* was used to facilitate the analysis of quantitative data gathered from both pre- and post-questionnaires. Descriptive statistical measures were used to check the frequencies, means and

standard deviations of the variables in both sets of questionnaires. A statistical test, paired sample *t*-test, was conducted to compare the mean scores from the two sets of questionnaires. By employing the test, the researcher was able to identify changes that occurred as a result of the use of Web portfolios in the CALL course. For example, the comparison of the students' perceived level of computer competency in an online environment prior to their construction of Web portfolios and after they have constructed their Web portfolios. Additionally, the paired sample *t*-test was also performed to identify additional information that can be linked to the students' perceived level of computer competency such as the students' attitude towards the use of computer technology, and attitude towards learning.

Qualitative data collection and data analysis of the interviews were carried out simultaneously to enable the researcher to probe further into issues as data were being collected (Ezzy, 2002). The recorded data from the focus group interview with students and semi-structured interview with the course lecturer were transcribed. Threads of online discussions and the researcher's notes were printed out as they did not require transcription. A preliminary exploration of all qualitative data was undertaken from which data were coded to identify key themes and issues that emerge from the study. Also, the data were manually analysed to reconfirm themes and patterns that were discovered in the study with the aim of enhancing the validity of the emerging themes and facilitating the saturation of data. The themes identified and their descriptions are reported in detail in the results chapter of this dissertation (Chapter 4).

Web portfolio analysis refers to the careful examination of the students' Web portfolios as a product of the study. The Web portfolio analysis was carried out by the panel of reviewers and researcher using the Web Portfolio Assessment Rubric (Appendix G). The rubric describes qualities of a Web portfolio with their corresponding grades. Grade descriptors (A, B, C and D) were used to correspond to five components of analysis - content, task completion, presentation, reflective practice, and language use. Components in the rubric were adapted from Barrett (2000) and Clarke (2008) and refinements to the components of the rubric were done on the basis of the course lecturer's feedback to ensure that the content and assessment of Web portfolios were parallel with the course objectives. Despite

having collected hardcopies or printouts of downloaded versions of the students' Web portfolios, the Web portfolios were assessed online to view all media elements such as audios, videos and animation. Assessing the Web portfolios online also enabled the authenticity of pictures, links, colours, and other distinct features of the Web portfolios to be preserved.

Accompanying the rubric is a Web Portfolio Review Report (Appendix I) which is a document used by the reviewers and researcher to record grades awarded to each Web portfolio and to provide comments on each of the five components in the rubric used for the Web portfolio analysis (i.e.; content, task completion, presentation, reflective practice, and language use). When completing the report, the reviewers were also encouraged to provide some useful feedback to help students improve their Web portfolios. For their own reference, the reviewers were also provided with materials that had been distributed to students such as the Web portfolio Task Sheet and Web Portfolio Development Checklist. Upon finalising the analysis of the Web portfolios, the reviewers were invited to complete a Web Portfolio Review Feedback Form (Appendix H). The purpose of the form was to obtain the reviewer's perspectives on the overall Web portfolio review process including their personal reactions to the use of the rubric as a tool. Their feedback was also useful to the researcher in refining the rubric as well as improving the process of assessing Web portfolios in future. Subsequent to the analysis of the Web portfolios by the panel of reviewers, the researcher too conducted an analysis of the Web portfolios using the specified rubric. Individual grades obtained from both the panel of reviewers and the researcher were used as reference when making conclusions about the student's overall Web portfolio experience in the CALL course.

The course lecturer gave some feedback based on her observations of the students' Web portfolios developed during lectures as she was unable to conduct individual analysis of the Web portfolios due to time constraints. Her feedback was recorded using the Web Portfolio Review Report. Upon the course lecturer's request, the grades obtained from the reviewers and researcher's Web portfolio analysis did not contribute to the students' final grades in the CALL course. This course of action was taken to expedite the submission of students' final grades for the CALL course

to the university's Academic department. Given these circumstances, the researcher had to concur with the course lecturer's request.

3.8   Ethical considerations

It was the researcher's obligation to maintain the integrity of the study by firstly seeking approval from the relevant organizations directly involved in the study. Accordingly, the researcher was granted permission for data collection in Malaysia by the research committee of UPSI, Malaysia and the Dean of the Faculty of Languages, UPSI for the study to be undertaken on its premises and for its students to be recruited as subjects for the study. The researcher was also granted permission to conduct research in Malaysia by the Economic Planning Unit, Prime Minister's Department. Full ethics clearance by the ethics committee of the University of Southern Queensland, Australia was also granted.

Informed consent was also obtained from all of the participants in this study as an ethical consideration for protecting their rights and welfare throughout the duration of this study (McMillan & Schumacher, 2010). Prior to data collection, consent from the participants was obtained. Consent forms were used to clearly and carefully communicate the types of information that is expected of participants and nature of participants' involvement. The consent form also included specific elements as emphasised by Merriam (2009) such as rights for participants to withdraw voluntarily, the study's objectives and data collection procedures, statements about protecting the participant's confidentiality, statements about known risk factors to the participants and expected benefits. In the consent forms distributed to the students, it was stated that their participation involved: (i) developing a Web portfolio as part of their coursework in the CALL course; (ii) answering two sets of questionnaires; and if selected; (iii) taking part in a focus group interview. They were also asked to consent to the use of their Web portfolio and other data generated in the CALL course such as information that appeared in online discussions, emails and assignments. In addition, consent was also requested for full access to the participant's Web portfolios throughout the duration of the study in both hardcopy and softcopy. The tasks the course lecturer agreed to do included: (i) integrating Web portfolios as part of the CALL coursework; (ii) collaborating with the researcher on

the design, development and assessment process of Web portfolios; (iii) allowing the researcher to select appropriate Web portfolio software and provide materials for the development of Web portfolios; (iv) providing the researcher with access to emails, assignments and online discussion threads that contained any information related to the development of Web portfolios; (v) giving feedback on the overall Web portfolio application process through an interview session; and (vi) permitting the researcher to monitor the development of the students' Web portfolios by granting full access to their Web portfolios throughout the study in both softcopy and hardcopy.

Consent forms were also distributed to the reviewers. The consent form indicated that their participation involved: (i) attending a briefing on the procedures and technicalities for the review of the Web portfolios; (ii) collaborating with the researcher and course lecturer regarding the assessment process of the Web portfolios; (iii) completing an assessment rubric for every Web portfolio; (iv) documenting their reviewing processes and experience; (v) writing a report of the overall review process and sending it to the researcher at the end of the review process; (vi) giving feedback on the overall Web portfolio review process through an interview session; and (vii) maintaining the privacy and confidentiality of the processes and results of the review of the Web portfolios.

In the course of maintaining honesty and trust, the researcher took precautionary measures to ensure that the data and information provided by the participants in the study were strictly used for the aims of the study. Additionally, the participants were given coded identities to preserve anonymity at all times. In order to conduct the study in a democratic manner, the participants were welcomed to make suggestions and to propose activities that would benefit them. To this end, the researcher maintained transparency during the course of the study as a demonstration of honesty and as a conscious effort to gain the participants' trust. The researcher recognised that her role as an academic staff member may influence the students' participation in this study. In order to encourage the students to openly discuss issues and honestly respond to questions being asked of them, the researcher held regular face-to-face meetings, informal discussions and online discussion forums with the students. It was hoped that the researcher's prolonged engagement with the students will make them feel more comfortable about sharing their experiences with the researcher.

3.9 Summary

This chapter has presented the design of the study and the justification for the mixed methods approach employed for the study. It has described the context of the study and participants. The data collection methods and data analysis procedures used for both the quantitative and qualitative data obtained were also presented. The chapter has also reported on the pilot study undertaken. Some ethical issues concerning the administration of the study were also included. The following Table 3.4 is used to illustrate the research questions, data collection method and data analysis procedures undertaken in the study.

Table 3.4

Research questions, data collection methods and data analysis

Data Collection Methods	Sequential Explanatory Mixed Methods Design					
	Quantitative Data		**Qualitative Data**			
Instruments **Research Questions**	**1** Pre-questionnaire	**2** Post-questionnaire	**3** Semi-structured interview	**4** Focus group interview	**5** Web portfolio analysis	**8** Researcher's notes
What impact does the use of Web portfolios in the training of pre-service ESL teachers have in relation to trainees' computer competency?	✓	✓	✓	✓	✓	
How effective are Web portfolios in providing evidence of pre-service ESL teachers' learning and development as future CALL practitioners?	✓	✓	✓	✓		
What factors facilitate and/ hinder the development of Web portfolios as a learning and assessment tool in the CALL course?	✓	✓	✓	✓	✓	✓
Data Analysis	Descriptive statistical measures (frequency tables and means), and thematic analysis of open-ended questions.		Thematic analysis of interviews. Web Portfolio Analysis using the Web Portfolio Task Sheet and Web Portfolio Assessment Rubric.			

CHAPTER 4

RESULTS

4.1 Overview

This chapter presents findings on the students' experiences of using Web portfolios as a learning and assessment tool. As described in the previous chapter, a mixed methods approach was employed and data was collected using questionnaires, interviews and students' Web portfolios. The chapter reports on the results of the analysis of data from the pre- and post-questionnaires from the perspectives of the students. It also presents a report on the findings from the analysis of interviews with students and their course lecturer. Finally, the analysis of the students' Web portfolios primarily from feedback obtained from the panel of reviewers and from the researcher's own analysis of the students' Web portfolios are presented. Also included to support the analysis of data in this study are the researcher's notes. Findings presented in this chapter have been structured according to the sequence of data collected in the study. As such, results from the questionnaires are presented followed by the results from the interviews and finally, the results from the students' Web portfolios are presented. All the findings obtained in this study will be brought together in the next chapter whereby they will be integrated and discussed based on the research questions posed in this study.

4.2 Results from questionnaires

From the total number of 128 pre- and post-questionnaires distributed, 128 pre-questionnaires and 118 post-questionnaires were returned. The pre- and post-questionnaires are shown in Appendices A and B. Scales used in both questionnaires have been tested for Cronbach's Alpha internal consistency reliability (α). Results for the analysis of reliability for the first three sections of the pre-questionnaire were all acceptable at $\alpha = .89$ (Computer competency in an online environment), $\alpha = .75$ (Attitudes toward the use of computer technology in learning and teaching) and $\alpha = .76$ (Attitudes toward learning). Results for the first three sections of the post-questionnaire were also at an acceptable level of $\alpha = .88$ (Computer competency in

an online environment), α = .86 (Attitudes toward the use of computer technology in learning and teaching) and α = .82 (Attitudes toward learning). Two other scales that were used only in the post-questionnaire were adapted from the learning and assessment domains of the Electronic Portfolio Student Perspective Instrument (EPSPI) (Ritzhaupt, Singh, Seyferh, & Dedrick, 2008) that reported an acceptable internal consistency reliability for both the learning and assessment domains at α = .90 and α = .93, respectively. In the present study, these two domains were improved to suit the objectives of the study and the revised scales used in the study for the 'Student's experiences in using Web portfolios as a learning tool' (learning domain) and 'Student's experiences in using Web portfolios as an assessment tool' (assessment domain). These two sections were tested for reliability and reported α = .94 and α = .89, respectively.

4.2.1 Demographic information

Students were asked to identify their gender in the pre- and post-questionnaires. In their responses, it was found that, out of the 128 students, there were 106 female (82.8%) students and the remaining 22 students (17.2%) were male. The composition of the students according to gender was not evenly distributed. This was mainly because the majority of students enrolled in the CALL course were females reflecting a common trend in the enrolment of students in Bachelor of Education TESL (B. Ed. TESL) programs throughout the teaching field in Malaysia.

The students were also asked to indicate previous teaching experiences in the pre-questionnaire. The results revealed that 116 students (90.6%) had no teaching experience. A total of six students (4.7%) had experience in teaching primary schools while one student (0.8%) had experience in teaching at primary and secondary schools. One student indicated experience in teaching at secondary schools (0.8%) and another student (0.8%) claimed to have had experience in teaching at a college. Three other students (2.3%) did not specify their teaching experience.

In addition to their teaching experience, students were also asked to indicate their results for the Malaysian University English Test (MUET). They would have taken this English test as a pre-requisite condition for their enrolment in the B. Ed. TESL

program. It was found that all students obtained a Band 4 for their MUET exam suggesting that their language competency was at the same level.

In response to the question regarding students' enrolment in a computer competency course, 37 students (28.9 %) responded that they had attended a computer course while a majority of 91 students (71.1%) indicated that they had no prior experience in attending a computer competency course.

4.2.2 Computer competency in an online environment

In the first section of the pre- and post-questionnaires, the students were asked to rate their level of computer competency according to a 5-point rating scale. The scale ranged from Expert, Advanced, and Intermediate, to Beginner and No Experience. With the purpose of gauging the students' competency in an online environment from their own perspectives, items in this first section in the pre- and post-questionnaires consisted of a list of ten tasks that students are likely to undertake while being online. The students rated their computer competency in an online environment twice in this study; firstly, in the pre-questionnaire prior to the students' Web portfolio development and secondly, in the post-questionnaire subsequent to their Web portfolio development. The pre-questionnaire results are presented in Table 4.1.

Table 4.1
Pre-questionnaire results of the students' perceptions of their own computer competency in an online environment

Competency in performing the following tasks	*SD*	Mean	Level of competency				
			5	4	3	2	1
1) Using common desktop tools (Word, PowerPoint, Publisher, Excel, etc.)	0.577	3.7109	8 (6.3%)	75 (58.6%)	45 (35.2%)	-	-
2) Using a Web browser (Internet Explorer, Mozilla Firefox, Netscape Navigator etc.) to find specific information on the Web.	0.7211	4.0859	38 (29.7%)	64 (50%)	25 (19.5%)	1 (0.8%)	-
3) Using a search engine (Google, Yahoo, MSN, etc.).	0.699	4.1953	46 (35.9%)	61 (47.7%)	21 (16.4%)	-	-
4) Using Web 2.0 tools (Blogs, Wikis, Google sites, etc.).	1.003	3.2540	15 (11.9%)	31 (24.6%)	58 (46%)	15 (11.9%)	7 (5.6%)

	SD	Mean	5	4	3	2	1
5) Using Web authoring tools (Dreamweaver, Front Page, Flash, etc.).	0.883	2.2283	-	7 (5.5%)	46 (36.2%)	43 (33.9%)	31 (24.4%)
6) Downloading materials (text, image, audio, video, software, online applications) from the Web.	0.861	3.8583	31 (24.4%)	55 (43.3%)	33 (26%)	8 (6.3%)	-
7) Managing computer-mediated communication (instant messages, email, chat, online forums, discussion boards, etc.)	0.871	3.7109	21 (16.4%)	61 (47.7%)	36 (28.1%)	8 (6.3%)	2 (1.6%)
8) Printing documents (text, image, audio, video) from the Web.	0.813	4.0156	36 (28.1%)	65 (50.8%)	20 (15.6%)	7 (5.5%)	-
9) Saving documents (text, image, audio, video) from the Web.	0.816	4.1563	49 (38.3%)	55 (43%)	19 (14.8%)	5 (3.9%)	-
10) Publishing materials (text, image, audio, video) on the Web.	1.068	3.3438	18 (14.1%)	40 (31.3%)	46 (35.9%)	16 (12.5%)	8 (6.3%)

Notes: N=128; 5=Expert; 4=Advanced; 3=Intermediate; 2=Beginner; 1=No Experience, *SD*=Standard Deviation.

The pre-questionnaire results indicated that there were three tasks that students performed most competently in an online environment. From the 128 students, more than fifty-percent of the students considered themselves at the intermediate level when it came to using common desktop tools (58.6%), using the Web browser (50%) and printing documents downloaded from the Web (50%).

It was found that, among the ten online tasks listed, 31 students (24.4%) claimed that they were the least competent when it came to using Web authoring tools. There were eight students (6.3%) who pointed out that they did not have experience in publishing materials on the Web and seven students (5.6%) indicated that they were inexperienced with using Web 2.0 tools. On the other hand, two other students (1.6%) stated that they did not have experience managing computer-mediated communication (CMC).

It was evident that students were generally competent users of search engines such as *Google*, *Yahoo* and *MSN*: 46 students (35.9%) were expert users, 61 students (47.7%) were advanced users and 21 students (16.4%) were intermediate users. Another task that students seemed competent at was saving documents such as texts

and images from the Web results showed that 49 students (38.3%) considered themselves as expert users and 55 students (43%) as advanced users.

The students' responses in the post-questionnaire were obtained after they were introduced to Web portfolios. In the analysis of the post-questionnaire, the students indicated that they experienced some improvements in terms of their competency in an online environment based on the ten tasks listed. The post-questionnaire results are shown in Table 4.2.

Table 4.2
Post-questionnaire results of the students' perceptions of their own computer competency in an online environment

Competency in performing the following tasks	SD	Mean	Level of competency				
			5	4	3	2	1
1) Using common desktop tools (Word, PowerPoint, Publisher, Excel, etc.)	0.5889	4.1130	27 (23.5%)	74 (64.3%)	14 (12.2%)	-	-
2) Using a Web browser (Internet Explorer, Mozilla Firefox, Netscape Navigator etc.) to find specific information on the Web.	0.670	4.2783	46 (40%)	55 (47.8%)	14 (12.2%)	-	-
3) Using a search engine (Google, Yahoo, MSN, etc.).	0.594	4.4348	56 (48.7%)	53 (46.1%)	6 (5.2%)	-	-
4) Using Web 2.0 tools (Blogs, Wikis, Google sites, etc.).	0.838	3.6195	18 (15.9%)	42 (37.2%)	45 (39.8%)	8 (7.1%)	-
5) Using Web authoring tools (Dreamweaver, Front Page, Flash, etc.).	1.045	2.8739	7 (6.3%)	21 (18.9%)	46 (41.4%)	25 (22.5%)	12 (10.8%)
6) Downloading materials (text, image, audio, video, software, online applications) from the Web.	0.789	4.2087	47 (40.9%)	48 (41.7%)	17 (14.8%)	3 (2.6%)	-
7) Managing computer-mediated communication (instant messages, email, chat, online forums, discussion boards, etc.)	0.689	4.2261	43 (37.4%)	55 (47.8%)	17 (14.8%)	-	-
8) Printing documents (text, image, audio, video) from the Web.	0.803	4.2870	53 (46.1%)	47 (40.9%)	10 (8.7%)	5 (4.3%)	-
9) Saving documents (text, image, audio, video) from the Web.	0.671	4.3913	55 (47.8%)	52 (45.2%)	6 (5.2%)	2 (1.7%)	-
10) Publishing materials (text, image, audio, video) on the Web.	0.956	3.9217	35 (30.4%)	47 (40.9%)	24 (20.9%)	7 (6.1%)	2 (1.7%)

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Of the 118 students who responded to the post-questionnaire, the results revealed that 56 students (48.7%) were expert users when using a search engine, 55 students (47.8%) were experts in saving documents from the Web and 53 students (46.1%) were experts in printing documents from the Web. There were also students who had no experience in using Web authoring tools and this has been represented by 12 students (10.8%) out of the 111 students who responded to this particular question.

Interestingly, there were two students (1.7%), from the 115 students who responded to this question, who still claimed that they had no experience in publishing materials on the Web even after they had experience in developing Web portfolios. A probable explanation for this is that they had experience in publishing text and image because it was required of them as part of their Web portfolio but these students may have indicated that they had no experience when referring to including both audio and video clips in their own Web portfolios.

Consistent with the results from the pre-questionnaire, most students (64.3%) also claimed that they were competent in using desktop tools. There was an increase in the number of students who reported having used Web authoring tools with only 12 students (10.8%) with no experience compared to the results in the pre-questionnaire in which 31 students (24.4%) were reported to have no experience. Nevertheless, the task of using Web authoring tools was still one of the ten online activities for which the students considered themselves least competent; only seven students (6.3%) as experts and 21 students (18.9%) as advanced users. Results from the post-questionnaire also reported that, out of the 111 responses obtained, 46 students (41.4%) regarded themselves as intermediate users of Web authoring tools indicating an identical result to the pre-questionnaire.

4.2.3 Attitudes towards the use of computer technology in learning and teaching

Questions related to students' attitudes towards the use of technology in learning and teaching were posed in Section Two of the pre- and post-questionnaires. This section consisted of 23 questions and a 5-point Likert scale was used. The scale ranged from Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree. The pre-questionnaire results are shown in Table 4.3.

Table 4.3
Pre-questionnaire results of students' attitudes towards the use of computer technology in learning and teaching

Statements	*SD*	Mean	Frequency & Valid percentages				
			SA	A	U	D	SD
1) I enjoy using computers.	0.524	4.6563	87 (68%)	38 (29.7%)	3 (2.3%)	-	-
2) I understand the limitations of using computers.	0.724	4.2913	55 (43.3%)	56 (44.1%)	14 (11%)	2 (1.6%)	-
3) Computers make learning a lot easier.	0.614	4.4766	69 (59.3%)	51 (39.8%)	8 (6.3%)	-	-
4) I enjoy exploring what computers can do.	0.673	4.4331	67 (52.8%)	49 (38.6%)	10 (7.9%)	1 (0.8%)	-
5) I cannot imagine working without a computer.	1.149	3.9688	57 (44.5%)	31 (34.2%)	23 (18%)	13 (10.2%)	4 (3.1%)
6) I wish to know more about computers.	0.661	4.5669	84 (66.1%)	31 (24.4%)	12 (9.4%)	-	-
7) Content of most subjects/courses can be learnt much easily with computers.	0.767	4.1496	45 (35.4%)	59 (46.1%)	20 (15.7%)	3 (2.3%)	-
8) I enjoy trying out new computer applications.	0.804	4.1719	50 (39.1%)	54 (42.2%)	20 (15.6%)	4 (3.1%)	-
9) I learn better when my instructor uses a computer.	0.908	3.7031	23 (18%)	58 (45.3%)	35 (27.3%)	10 (7.8%)	2 (1.6%)
10) My ability to use a computer will affect my grades.	0.999	3.3437	15 (11.7%)	43 (33.6%)	46 (35.9%)	19 (14.8%)	5 (3.9%)
11) Learning becomes more flexible with the use of computers.	0.699	4.1953	44 (34.4%)	67 (52.3%)	15 (11.7%)	2 (1.6%)	-
12) I am motivated to learn a course that integrates the use of computers.	0.831	4.0313	40 (31.3%)	58 (45.3%)	24 (18.8%)	6 (4.7%)	-
13) I would like to experience computer-based tests in my current and future courses.	0.911	3.8359	32 (25%)	53 (41.4%)	25 (27.3%)	6 (4.7%)	2 (1.6%)

	SD	Mean	SA	A	U	D	SD
14) There are aspects of using the computer for learning that worries me.	1.003	3.5078	20 (15.6%)	50 (39.1%)	36 (28.1%)	19 (17.2%)	3 (2.3%)
15) The use of computers sometimes makes my learning difficult.*	0.816	1.9453	1 (0.8%)	5 (3.9%)	18 (14.1%)	66 (51.6%)	38 (29.7%)
16) I have to know how to use a computer to maintain social relationships.	1.106	3.6406	30 (23.4%)	49 (38.3%)	28 (21.9%)	15 (11.7%)	6 (4.7%)
17) I communicate well with my instructor when I use the computer (e-mail, chat, bulletin boards etc.)	0.980	3.0859	9 (7%)	34 (26.6%)	50 (39.1%)	29 (22.7%)	6 (4.7%)
18) My ability in using computers has tremendously improved in the last few years.	0.653	4.3828	57 (44.5%)	66 (51.6%)	3 (2.3%)	1 (0.8%)	1 (0.8%)
19) Computer skills can be learnt.	0.528	4.7578	100 (78.1%)	27 (21.1%)	1 (0.8%)	-	-
20) The ability to use a computer can best be improved when it is formally taught.	1.047	3.6406	28 (21.9%)	50 (39.1%)	29 (22.7%)	18 (14.1%)	3 (2.3%)
21) Hands-on experience is compulsory when learning to use the computer.	0.738	4.2109	49 (38.3%)	59 (46.1%)	18 (14.1%)	2 (1.6%)	-
22) The Web is an important tool for future teachers.	0.664	4.3750	60 (46.9%)	57 (44.5%)	10 (7.8%)	1 (0.8%)	-
23) My experiences in using computer technology in the course were a positive one.	0.655	4.3359	55 (43%)	62 (48.4%)	10 (7.8%)	1 (0.8%)	-

Notes: N=128; SA = Strongly Agree; A = Agree; U = Undecided; D = Disagree; SD = Strongly Disagree; *SD*=Standard Deviation, *Negatively stated items.

The pre-questionnaire results suggest that the students had a generally positive attitude about the use of computer technology in learning and teaching. The results show that while 125 students (97.6%) enjoyed using computers, there was a total of 116 students (91.3%) who claimed that they enjoy exploring what computers can do. It was also found that a total of another 104 students (81.2%) enjoy trying out new computer applications.

A total of 120 students (93.7%) indicated that computers make their learning a lot easier and another 111 students (86.7%) added that they also make learning more flexible. There were 104 students (81.8%) who claimed that the content of most courses can be learnt much more easily with computers and 81 students (63.2%) further stated that they learn better when the instructor uses a computer. There were also 98 students (76.5%) who were motivated to learn a course that integrates the use of computers.

Eighty-eight students (69.3%) stated that they cannot imagine working without a computer and 115 students (90.5%) wished to know more about computers. Nevertheless, the 111 students (87.4%) who responded to the questionnaire pointed out that they understand the limitations of using computers. There were also a number of 104 students (81.2%) who disagreed that computers sometimes make their learning difficult.

A total of 127 students (99.2%) stated that computer skills can be learnt. While 78 students (60.9%) indicated that learning to use a computer can be best done through formal instruction, another 108 students (84.3%) pointed out that hands-on experience is also essential when learning to use the computer. However, there were 70 students (54.6%) who pointed out that there were aspects of learning using a computer that worried them but 22 students (17.1%) were found to have indicated otherwise.

A number of 123 students (96%) claimed that their use of computers for learning has improved tremendously in the last few years. Seventy-nine students (61.7%) stated that they needed to know how to use computers to maintain social relationships and there were 85 students (66.4%) who were rather keen on trying out computer-based tests in their current and future courses.

However, the results also showed that there were 50 students (39.1%) who could not decide whether using CMC such as e-mail, chat and bulletin boards was an effective way to communicate with their instructors. Another 46 students (35.9%) also indicated that they were not sure if their ability in using computers would affect their grades. Nonetheless, a number of 117 students (91.4%) claimed that their experience using computers in the course was a positive one and another 117 students (91.4%) stressed that the Web is an important tool for future teachers.

Results of the post-questionnaire also showed a generally positive attitude among students in terms of their use of computer technology in learning and teaching. The results are presented in Table 4.4.

Table 4.4

Post-questionnaire results of students' attitudes towards the use of computer technology in learning and teaching

Statements	*SD*	Mean	Frequency & Valid percentages				
			SA	A	U	D	SD
1) I enjoy using computers.	0.539	4.6695	83 (70.3%)	31 (26.3%)	4 (3.4%)	-	-
2) I understand the limitations of using computers.	0.689	4.3729	58 (49.2%)	46 (39%)	14 (11.9%)	-	-
3) Computers make learning a lot easier.	0.622	4.5339	70 (59.3%)	42 (35.6%)	5 (4.2%)	1 (0.8%)	-
4) I enjoy exploring what computers can do.	0.586	4.6017	77 (65.3%)	35 (29.7%)	6 (5.1%)	-	-
5) I cannot imagine working without a computer.	0.968	4.0427	47 (40.2%)	38 (32.5%)	22 (18.8%)	10 (8.5%)	-
6) I wish to know more about computers.	0.567	4.6293	78 (67.2%)	33 (28.4%)	5 (4.3%)	-	-
7) Content of most subjects/courses can be learnt much easily with computers.	0.786	4.3390	59 (50%)	43 (36.4%)	14 (11.9%)	1 (0.8%)	1 (0.8%)
8) I enjoy trying out new computer applications.	0.661	4.4492	63 (53.4%)	46 (39%)	8 (6.8%)	1 (0.8%)	-
9) I learn better when my instructor uses a computer.	0.822	4.0847	40 (33.9%)	53 (44.9%)	20 (16.9%)	5 (4.2%)	-
10) My ability to use a computer will affect my grades.	0.432	3.6356	27 (22.9%)	41 (34.7%)	33 (28%)	14 (11.9%)	3 (2.5%)
11) Learning becomes more flexible with the use of computers.	0.691	4.3707	55 (47.4%)	51 (44%)	8 (6.9%)	2 (1.7%)	-
12) I am motivated to learn a course that integrates the use of computers.	0.828	4.2542	55 (46.6%)	42 (35.6%)	17 (14.4%)	4 (3.4%)	-
13) I would like to experience computer-based tests in my current and future courses.	1.011	3.9573	43 (36.8%)	37 (31.6%)	29 (24.8%)	5 (4.3%)	3 (2.6%)
14) There are aspects of using the computer for learning that worries me.	0.987	3.7949	31 (26.5%)	45 (38.5%)	29 (24.8%)	10 (8.5%)	2 (1.7%)
15) The use of computers sometimes makes my learning difficult.*	1.172	3.0254	12 (10.2%)	32 (27.1%)	35 (29.7%)	25 (21.2%)	14 (11.9%)
16) I have to know how to use a computer to maintain social relationships.	1.085	3.7103	28 (23.7%)	51 (43.2%)	24 (20.3%)	8 (6.8%)	7 (5.9%)
17) I communicate well with my instructor when I use the computer (e-mail, chat, bulletin boards etc.)	1.196	3.5085	30 (25.4%)	32 (27.1%)	31 (26.3%)	18 (15.3%)	7 (5.9%)
18) My ability in using computers has tremendously	0.622	4.4576	62 (52.5%)	48 (40.7%)	8 (6.8%)	-	-

	SD	Mean	SA	A	U	D	SD
improved in the last few years.							
19) Computer skills can be learnt.	0.492	4.7094	85 (72.6%)	30 (25.6%)	2 (1.7%)	-	-
20) The ability to use a computer can best be improved when it is formally taught.	1.108	3.8644	42 (35.6%)	37 (31.4%)	24 (20.3%)	11 (9.3%)	4 (3.4%)
21) Hands-on experience is compulsory when learning to use the computer.	0.744	4.4237	65 (55.1%)	41 (34.7%)	9 (7.6%)	3 (2.5%)	-
22) The Web is an important tool for future teachers.	0.802	4.3136	57 (48.3%)	45 (38.1%)	13 (11%)	2 (1.7%)	1 (0.8%)
23) My experiences in using computer technology in the course were a positive one.	0.722	4.4407	65 (55.1%)	43 (36.4%)	7 (5.9%)	3 (2.5%)	-

Notes: N=118; SA = Strongly Agree; A = Agree; U = Undecided; D = Disagree; SD = Strongly Disagree; SD=Standard Deviation,*Negatively stated items.

The post-questionnaire results regarding students' attitudes towards the use of computer technology were consistent with those reported in the pre-questionnaire. The results show that 114 students (96.6%) enjoyed using computers. A total of 112 students (94.9%) also claimed that they enjoy exploring what computers can do and another 109 students (92.3%) enjoy trying out new computer applications.

A total of 112 students (94.9%) indicated that computers make their learning a lot easier and another 106 students (91.3%) added that they also make learning more flexible. There were 102 students (86.4%) who claimed that the content of most courses can be learnt more easily with computers but there were 14 students (11.9%) who were undecided when asked about this matter. Ninety-three students (78.8%) further stated that they learn better when the instructor uses a computer but five students (4.2%) disagreed and 20 students (16.9%) were undecided. There were also 97 students (82.2%) who were motivated to learn a course that integrates the use of computers but only four students (3.4%) indicated otherwise.

Eighty-five students (72.6%) stated that they cannot imagine working without a computer however 10 students were found to be undecided concerning this matter. There were 111 students (95.6%) who wished to know more about computers. Nevertheless, the 104 students (88.1%) who responded to the questionnaire pointed out that they understand the limitations of using computers. There were also 44

students (37.2%) who claimed that computers make their learning difficult but it was stated otherwise by 39 students (33%). A total of 35 students (29.6%) seemed undecided when it came to this matter.

A total of 115 students (98.2%) stated that computer skills can be learnt. While 79 students (66.9%) indicated that learning to use a computer can be best done through formal instruction, another 15 students (12.7%) did not agree with this statement and 24 students (20.3%) were undecided about it. However, there were 106 students (89.8%) students who pointed out that hands-on experience is also essential when learning to use the computer. Additionally, there were 76 students (65.5%) who pointed out that there were aspects of learning using a computer that worried them but 12 students (17.1%) were found to have indicated otherwise.

A number of 110 students (93.2%) claimed that their use of computers for learning has improved tremendously in the last few years. Although 79 students (66.9%) stated that they needed to know how to use computers to maintain social relationships, there were 24 students (20.3%) who were not sure about using computers to maintain social relationships. The results also show that there were 80 students (68.3%) who were rather keen on trying out computer-based tests in their current and future courses but 29 students (24.8%) seemed undecided about this matter.

There were 62 students (52.5%) who found using CMC such as e-mail, chat and bulletin boards was an effective way to communicate with their instructors but 25 students (21.1%) indicated otherwise and another 31 students (26.3%) could not decide whether they agreed with the statement. Sixty-eight students (57.6%) claimed that their ability to use a computer will affect their grades. However, there are 33 students (28%) who were undecided and 17 students (14.4%) did not agree that their grades would be affected by their ability to use a computer. Nonetheless, a number of 108 students (91.5%) claimed that their experience using computers in the course was a positive one and another 102 students (86.4%) stressed that the Web is an important tool for future teachers.

4.2.4 Attitudes towards learning

The third section of the pre- and post-questionnaires consisted of 14 questions in which a 5-point Likert scale was employed. The scale ranged from Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree. Results obtained from the pre-questionnaire are presented in Table 4.5.

Table 4.5
Pre-questionnaire results of students' attitude towards learning

Statements	*SD*	Mean	Frequency & Valid percentages				
			SA	A	U	D	SD
1) I learn best in groups.	0.881	3.7969	24 (18.8%)	67 (52.3%)	26 (20.3%)	9 (7%)	2 (1.6%)
2) I enjoy sharing my learning experiences with my course mates.	0.561	4.2500	40 (31.3%)	80 (62.5%)	8 (6.3%)	-	-
3) My course mates often give me useful feedback on my work.	1.050	3.6457	27 (21.3%)	52 (40.9%)	28 (22%)	16 (12.6%)	4 (3.1%)
4) I am more motivated to work on group assignments than individual assignments.	0.859	3.7813	29 (22.7%)	49 (38.3%)	43 (33.6%)	7 (5.5%)	-
5) I find it useful to refer to my previously submitted assignments when working with new ones.	0.756	4.0547	35 (27.3%)	70 (54.7%)	18 (14.1%)	5 (3.9%)	-
6) I learn from analysing how others have done their assignments, essays, presentations etc.	0.557	4.2734	42 (32.8%)	79 (61.7%)	7 (5.5%)	-	-
7) I cannot apply my work from previous courses to my present ones.*	0.848	2.2734	3 (2.3%)	8 (6.3%)	26 (20.3%)	75 (58.6%)	16 (12.5%)
8) I am open to comments given by other students.	0.601	4.2188	39 (30.5%)	79 (61.7%)	9 (7.0%)	1 (0.8%)	-
9) I value feedback given by my course mates.	0.531	4.3203	44 (34.4%)	82 (64.1%)	1 (0.8%)	1 (0.8%)	-
10) My course mates appreciate my feedback on their work.	0.709	3.7188	19 (14.8%)	54 (42.2%)	55 (43%)	-	-
11) I look forward to personalised feedback from my instructor on my work.	0.606	4.2031	39 (30.5%)	76 (59.4%)	13 (10.2%)	-	-
12) I take notes on work, skills or knowledge that I would like to improve on.	0.703	4.1563	41 (32%)	68 (53.1%)	17 (13.3%)	2 (1.6%)	-
13) Learning from my past experiences is a skill that I need to learn.	0.770	4.3465	60 (47.2%)	56 (44.1%)	8 (6.3%)	1 (0.8%)	2 (1.6%)

			SA	A	U	D	SD
14) Writing about my learning experiences will help me understand my work better.	0.817	3.8437	30 (23.4%)	52 (40.6%)	42 (32.8%)	4 (3.1%)	-

Notes: N=128; SA =Strongly Agree; A=Agree; U=Undecided; D=Disagree; SD =Strongly Disagree;, *SD*=Standard Deviation. *Negatively stated items.

There were 91 students (71%) who claimed that they learnt best in groups and a number of 78 students (60.9%) indicated they are more motivated to work on group assignments than individual assignments. However, 43 students (33.6%) were found to be undecided on the matter. When assignments are concerned, 121 students (94.5%) stated that they learn from analysing how others have done their assignments, essays and presentations and 105 students (82%) claimed that they found it useful to refer to their previously submitted assignments when working on new ones. Ninety-one students (71%) also indicated that they were able to apply their work from previous courses to their present one.

A total of 120 students (93.7%) claimed that they enjoyed sharing their learning experiences with their course mates and that their course mates often provide them with feedback. However, there were 79 students (62.2%) who regarded feedback from their course mates useful whereas 20 students (15.7%) did not and 28 students (22%) were undecided. The results show that 126 students (98.4%) valued the feedback they received from their course mates and 73 students (57.4%) pointed out that their course mates also appreciated receiving feedback on their work too. There were 55 students (43%), however, who could not decide whether their course mates valued feedback they received from them. The results also showed that 118 students (92.1%) were open to comments given by other students. In terms of feedback from their instructor, 115 students (89.8%) claimed that they look forward to receiving personalised feedback from their instructor on their work.

The results also revealed that 109 students (85.1%) were keen on taking notes on work, skills knowledge that they would like to improve on and 116 students (90.6%) claimed that learning from their past experiences was a skill that they needed to learn. There were also 82 students (64%) who seemed positive about being able to understand their work better through writing down their learning experiences whereas 42 students (32.8%) showed uncertainty about the matter.

Upon completing their Web portfolios, the students' attitudes towards learning were once again obtained from the post-questionnaire. The results are shown in Table 4.6.

Table 4.6
Post-questionnaire results of student's attitudes towards learning

Statements	SD	Mean	Frequency & Valid percentages				
			SA	A	U	D	SD
1) I learn best in groups.	0.874	3.8974	33 (28.2%)	45 (38.5%)	33 (28.2%)	6 (5.1%)	-
2) I enjoy sharing my learning experiences with my course mates.	0.651	4.3162	48 (41%)	59 (50.4%)	9 (7.7%)	1 (0.9%)	-
3) My course mates often give me useful feedback on my work.	0.692	4.2348	43 (37.4%)	57 (49.6%)	14 (12.2%)	1 (0.9%)	-
4) I am more motivated to work on group assignments than individual assignments.	1.060	3.5812	27 (23.1%)	35 (29.9%)	37 (31.6%)	15 (12.8%)	3 (2.6%)
5) I find it useful to refer to my previously submitted assignments when working with new ones.	0.872	4.2155	52 (44.8%)	44 (37.9%)	13 (11.2%)	7 (6%)	-
6) I learn from analysing how others have done their assignments, essays, presentations etc.	0.699	4.5359	63 (53.8%)	44 (37.6%)	8 (6.8%)	2 (1.7%)	-
7) I cannot apply my work from previous courses to my present ones. *	1.025	2.3932	5 (4.3%)	11 (9.4%)	30 (25.6%)	50 (42.7%)	21 (17.9%)
8) I am open to comments given by other students.	0.587	4.333	46 (39.3%)	64 (54.7%)	7 (6%)	-	-
9) I value feedback given by my course mates.	0.589	4.4103	53 (45.3%)	60 (51.3%)	3 (2.6%)	1 (0.9%)	-
10) My course mates appreciate my feedback on their work.	0.726	4.0855	36 (30.8%)	55 (47.0%)	26 (22.2%)	-	
11) I look forward to personalised feedback from my instructor on my work.	0.705	4.3190	51 (44%)	53 (45.7%)	10 (8.6%)	2 (1.7%)	-
12) I take notes on work, skills or knowledge that I would like to improve on.	0.608	4.3590	50 (42.7%)	59 (50.4%)	8 (6.8%)	-	-
13) Learning from my past experiences is a skill that I need to learn.	0.623	4.5470	69 (59%)	45 (38.5%)	2 (1.7%)	-	1 (0.9%)
14) Writing about my learning experiences will help me understand my work better.	0.761	4.2393	50 (42.7%)	46 (39.3%)	20 (17.1%)	1 (0.9%)	-

Notes: N=118; SA =Strongly Agree; A=Agree; U=Undecided; D=Disagree; SD =Strongly Disagree;
SD=Standard Deviation.

There were 78 students (66.6%) who claimed that they learnt best in groups and a number of 63 students (53.8%) indicated they are more motivated to work on group assignments than individual assignments. However, 18 students (%) did not agree that working in group rather than individual assignments motivated them and another 37 students (31.6%) were found to be undecided on the matter. In terms of assignments, 107 students (91.4%) stated that they learn from analysing how others have done their assignments, essays and presentations and 96 students (82.7%) claimed that they found it useful to refer to their previously submitted assignments when working on new ones. While there were 71 students (60.6%) who indicated that they were able to apply their work from previous courses to their present one, 30 students (25.6%) were undecided and 16 students (13.6%) did not agree that the work they did on their previous courses could be applied to their present ones.

A total of 107 students (92.2%) claimed that they enjoyed sharing their learning experiences with their course mates and 110 students (95.6%) found that their course mates often provide them with useful feedback. The results show that 113 students (96.5%) valued the feedback they received from their course mates and 91 students (77.7%) pointed out that their course mates also appreciated receiving feedback on their work too. There were 26 students (22.2%), however, who could not decide whether their course mates valued feedback they received from them. The results also showed that 110 students (94%) were open to comments given by other students. In terms of feedback from their instructor, 104 students (89.8%) claimed that they look forward to receiving personalised feedback from their instructor on their work.

The results also revealed that 109 students (93.1%) were keen on taking notes on work, skills knowledge that they would like to improve on and 114 students (90.6%) claimed that learning from their past experiences was a skill that they needed to learn. There were also 96 students (82%) who seemed positive about being able to understand their work better through writing down their learning experiences whereas 20 students (17.1%) were uncertain about the matter.

4.2.5   Comparison of pre-questionnaire results and post-questionnaire results

A further analysis of the questionnaires involved comparing the results for the three sections in the pre- and post-questionnaires. For this purpose, a paired sample *t*-test was conducted (see Appendix J for the results of the paired sample *t*-test). For the first section concerning the students' computer competency in an online environment, the results were significant. There was a statistically significant difference in the pre-questionnaire results (*M*= 36.66, *SD*= 5.89) when compared to the results in the post-questionnaire [*M*=40.37, *SD*= 5.40, *t* = 7.31, *df* = 104, *p*< .0005]. The eta squared statistic (0.33) indicated a large effect size.

Results obtained through a paired sample *t*-test for the students' attitudes towards their use of computer technology showed that there was a statistically significant difference in the pre-questionnaire results (*M*= 91.99, *SD*= 7.52) when compared to the results of the post-questionnaire [*M*=95.96, *SD*= 9.72, *t* = 4.65, *df* = 107, *p*< .0005]. The eta squared statistic (0.16) indicated a large effect size.

The final comparison of the results of the pre- and post-questionnaires was conducted for the students' attitudes towards learning. In the paired sample *t*-test conducted, results indicated that there was a statistically significant difference in the pre-questionnaire results (*M*= 55.10, *SD*= 5.23) when compared to the results of the post-questionnaire [*M*=57.73, *SD*= 6.79, *t* = 4.01, *df* = 111, *p*< .0005]. The eta squared statistic (0.12) indicated a moderate effect size.

Further clarification concerning the extent of developing Web portfolios had affected their computer competency, their attitudes towards the use of computer technology in learning and teaching and their attitudes toward learning in an online environment are discussed in the focus group interview with students.

4.2.6 Knowledge about portfolios

The students' knowledge about portfolios was also obtained from the pre-questionnaire prior to their exposure to Web portfolios in the CALL course. For this purpose, a total of 12 questions were posed and students were required to answer by either placing a tick in relevant boxes or giving short answers.

In the first question, the students were asked about their familiarity with portfolios. A total of 33 students (25.8%) indicated their familiarity with portfolios while the other 95 students (74.2%) stated that they were not familiar with portfolios. Those who responded that they were familiar with portfolios further indicated that they were familiar with paper-based portfolios (55.9%), electronic portfolios (15.2%) and both types of portfolios (26.5%). It was found that, of the 33 students who were familiar with portfolios, 18 students (54.5%) had previously owned a portfolio. While the portfolios they owned were used for various reasons such as "an assignment for a grammar course" (E_108, Pre-questionnaire), a way "to show my understanding about a certain subject" (B_48, Pre-questionnaire) and "to save documents for future reference" (A_5, Pre-questionnaire), it was pointed out that 14 students (77.8%) had kept their portfolios and all of them found their portfolios still useful to date and five students (35.7%) continued updating information in their portfolios.

When asked about the contents of their portfolios, the students elaborated that their portfolios consisted of "my ability and performance at school which also shows my interest in future" (D_93, Pre-questionnaire), "reading materials" (A_5, Pre-questionnaire) and "information on interesting topics" (C_56, Pre-questionnaire). The students further described some of the purposes of their portfolios as "being used as a storage for a subject, things that one wants to keep as reference and evidence" (A_17, Pre-questionnaire), "to describe yourself and your abilities or knowledge" (C_66, Pre-questionnaire) and "to compile all the details in one place" (B_52, Pre-questionnaire).

Regardless of whether the students had owned a portfolio, the next question was posed to find out if the students had kept copies of their previously submitted assignments, drafts of essays, presentations and lecture notes. Of the 127 responses,

121 students (95.3%) stated that they had kept the mentioned documents and these documents were either in paper form (2.4%), electronic (56.1%) or both forms (41.5%) but there was one student who did respond to this question. Finally, the students were asked regarding their reasons for saving copies of their submitted assignments, drafts of essays, presentations and lecture notes. A total of 119 students responded to this question and it was found that 94 students (78.9%) indicated that they needed to keep these items mainly as a future reference in case they needed to refer to them again. There were also nine students (7.5%) who mentioned that these items were kept for the purpose of doing revisions.

Results pertaining to the students' knowledge about portfolios have divided students into two groups, those who were familiar with portfolios and those who were not. Although the total percentage of students who were not familiar with portfolios (74.2%) was much greater than those who were familiar (25.8%), a significant percentage of students (95.3%) had already grasped some concepts central to the development of portfolios. To illustrate, the idea of compiling artefacts from previous courses with the aim of referring to them in future is a process that was already in practice among students. In addition, the students were also in the habit of saving items in electronic formats, a process that they will be required to replicate as part of their Web portfolio development process. However, questions were raised as to whether they understood the concept of a learning portfolio and if they could appreciate the true worth of a portfolio as a learning tool. In particular, it was important to find out the perceptions of developing Web portfolios among the 95 students (74.2%) who claimed that they were not familiar with portfolio and the 19 students (57.6%) who were found to have used paper-based portfolios but have not had the experience in developing electronic ones.

4.2.7   Experiences in using Web portfolios as a learning tool

Subsequent to the students' use of Web portfolios in the CALL course, they were asked to answer questions about their experiences in using Web portfolios as a learning tool in the post-questionnaire. This section consisted of 22 questions and a 5-point Likert scale was used. The scale ranged from Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree. The total number of the students who

responded to the questions was 118. The results of the students' experiences using Web portfolios as a learning tool are presented in Table 4.7.

Table 4.7
Results of students' experiences using Web portfolios as a learning tool

Statements	SD	Mean	Frequency & Valid percentages				
			SA	A	U	D	SD
1) Developing a Web portfolio in the course did not affect the way I learnt.*	1.239	3.2797	23 (19.5%)	28 (23.7%)	25 (21.2%)	33 (28%)	9 (7.6%)
2) I plan to use my Web portfolio after I graduate to seek employment.	0.880	3.9576	40 (33.9%)	36 (30.5%)	39 (33.1%)	3 (2.5%)	-
3) The effort I have put into developing a Web portfolio is worthwhile.	0.878	4.1186	45 (38.1%)	48 (40.7%)	21 (17.8%)	2 (1.7%)	2 (1.7%)
4) I am satisfied with the work that I had done developing a Web portfolio.	0.886	4.0339	39 (33.1%)	52 (44.1%)	20 (16.9%)	6 (5.1%)	1 (0.8%)
5) Others will find my Web portfolio useful in learning more about my skills and experiences as a future teacher.	0.786	3.9237	29 (24.6%)	54 (45.8%)	32 (27.1%)	3 (2.5%)	-
6) I am satisfied with the tasks given as part of the Web portfolio development.	0.854	4.0678	41 (34.7%)	49 (41.5%)	24 (20.3%)	3 (2.5%)	1 (0.8%)
7) I am proud to share with others my Web portfolio.	0.915	4.000	39 (33.1%)	49 (41.5%)	22 (18.6%)	7 (5.9%)	1 (0.8%)
8) Developing the Web portfolio was a valuable experience.	0.682	4.4068	60 (50.8%)	47 (39.8%)	10 (8.5%)	1 (0.8%)	-
9) My Web portfolio will be useful in future courses.	0.774	4.2203	51 (43.2%)	42 (35.6%)	25 (21.2%)	-	-
10) I am aware of the advantages of owning a Web portfolio.	0.747	4.2712	50 (42.4%)	53 (44.9%)	12 (10.2%)	3 (2.5%)	-
11) My Web portfolio contains evidences of the learning I have undertaken in the course.	0.674	4.3475	52 (44.1%)	57 (48.3%)	7 (5.9%)	2 (1.7%)	-
12) My instructor should refer to my Web portfolio when assessing me as a learner.	0.981	3.8983	36 (30.5%)	46 (39.0%)	27 (22.9%)	6 (5.1%)	3 (2.5%)
13) Developing a Web portfolio was technologically challenging for me.	0.872	4.2034	49 (41.5%)	52 (44.1%)	11 (9.3%)	4 (3.4%)	2 (1.7%)
14) Developing my own Web portfolio has made me feel more competent in using computers.	0.699	4.2712	48 (40.7%)	55 (46.6%)	14 (11.9%)	1 (0.8%)	-
15) I would use a Web portfolio to develop my computer skills.	0.892	4.1525	49 (41.5%)	45 (38.1%)	18 (15.3%)	5 (4.2%)	1 (0.8%)
16) I would use a Web portfolio as a way to monitor my skills as they develop over time.	0.794	4.1356	41 (34.7%)	56 (47.5%)	18 (15.3%)	2 (1.7%)	1 (0.8%)
17) I think viewing my peers' Web portfolio would be a valuable learning experience.	0.780	4.2712	52 (44.1%)	49 (41.5%)	15 (12.7%)	1 (0.8%)	1 (0.8%)
18) I would use a Web portfolio to guide my skills development.	0.829	4.1441	45 (38.1%)	49 (41.5%)	21 (17.8%)	2 (1.7%)	1 (0.8%)
19) I would be concerned about my Web portfolio becoming a collection of "electronic worksheets".	0.879	3.8814	31 (26.3%)	50 (42.4%)	31 (26.3%)	4 (3.4%)	2 (1.7%)
20) I use my Web portfolio to learn from my mistakes.	0.867	3.9831	35 (29.7%)	53 (44.9%)	24 (20.3%)	5 (4.2%)	1 (0.8%)

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	SD	Mean	SA	A	U	D	SD
21) I plan to continue to enhance my Web portfolio for life-long learning.	0.768	4.2034	48 (40.7%)	47 (39.8%)	22 (18.6%)	1 (0.8%)	-
22) I would use my Web portfolio to guide my knowledge development.	0.802	4.1525	45 (38.1%)	49 (41.5%)	21 (17.8%)	3 (2.5%)	-

Notes: N=118; SA = Strongly Agree; A = Agree; U = Undecided; D = Disagree; SD = Strongly Disagree; *SD*=Standard Deviation; *Negatively stated items.

The results suggested that the students were not collective in their responses as to whether they found developing Web portfolios had impacted the way they learnt. Data from the 118 students showed that the number of students who found developing Web portfolio affected their learning was 42 students (35.5%) compared to 51 students (43.2%) who found that Web portfolios did not have an impact on the way they learnt. Twenty-five students were reported to be undecided when they were asked about the link between their Web portfolio development and their way of learning.

Nevertheless, a majority of students were positive about the process of developing Web portfolios. This was evident in the 76 students (76.2%) who considered that the effort they have put into developing their Web portfolios was a worthwhile one and 107 students (90.6%) regarded developing their Web portfolios as a valuable experience Additionally, 90 students (76.2%) said that they were satisfied with the tasks given as part of developing their Web portfolios as a course task in the CALL course and another 91 students (77.1%) were also satisfied with the work that they had put in completing their Web portfolios.

It was also reported that 93 students (78.8%) mentioned that they were aware of the advantages of owning a Web portfolio and that 94 students (79.6%) said that they would use their Web portfolios to guide their skills development whereas another 97 students (82.2%) expected to monitor skills as they develop over time. Another 88 students (74.5%) indicated that their Web portfolios were used as a tool to learn from their past mistakes and 94 students (79.6%) mentioned that they would use their Web portfolios to guide their knowledge development.

There were 101 students (85.5%) who pointed out that viewing Web portfolios belonging to their peers would be a valuable learning experience and 88 students (74.5%) claimed that they are proud to share their Web portfolios with others.

However, there were also 22 students (18.6%) who were undecided and eight students (6.7%) who were not willing to share their Web portfolios with others.

In terms of computer skills, 101 students (85.5%) found that developing Web portfolios was technologically challenging for them. Despite the challenge, the process of developing Web portfolios had made 103 students (87.2%) feel more competent in using computers. Ninety-four students (79.6%) further claimed that they would use Web portfolios to develop their computer skills. However, 81 students (68.6%) were concerned about their Web portfolios becoming a collection of "electronic worksheets" although 31 students (26.3%) were undecided about this matter.

The students also gave positive responses in terms of the future applications of their Web portfolios. Eighty-three students (70.3%) also mentioned that others will find their Web portfolio useful in learning more about their skills and experiences as future teachers although there were 32 students (27.1%) who seemed undecided about this matter and another three students (2.5%) who disagreed with the statement. A number of 109 students (92.3%) indicated that their Web portfolios were a projection of the learning they have undertaken in the course and 93 students (78.8%) claimed that their Web portfolios will be useful in their future courses. As such, 82 students (69.5%) claimed that their instructor should refer to their Web portfolios when assessing them as learners. However, using Web portfolios to assess learning was not agreed by eight students (6.7%) and another 27 students (22.9%) claimed that they were undecided concerning this matter.

The results also showed that 94 students (79.6%) plan to continue to enhance their Web portfolio for life-long learning and 76 students (64.4%) planned to use their Web portfolios to seek employment after they graduate. Thirty-nine students (33.1%), however, were not certain about using their Web portfolios for employment purposes and three students (2.5%) indicated that their Web portfolios will not be used for seeking employment.

4.2.8   Experiences in using Web portfolios as an assessment tool

A total of ten questions were asked requiring the students to indicate their responses. The total number of respondents for this section was 116. A summary of their responses is presented in Table 4.8.

Table 4.8
Results of students' experiences using Web portfolios as an assessment tool

Statements	*SD*	Mean	Frequency & Valid percentages				
			SA	A	U	D	SD
1) I feel that a Web portfolio is an effective way for my instructor to assess my knowledge than a written exam.	1.161	3.6293	32 (27.6%)	36 (31%)	26 (22.4%)	17 (14.7%)	5 (4.3%)
2) I would feel comfortable with Web portfolios used as an assignment in the CALL course.	1.003	3.9655	37 (31.9%)	54 (46.6%)	12 (10.3%)	10 (8.6%)	3 (2.6%)
3) I feel comfortable if a Web portfolio is used as part of the assessment of my overall performance in the TESL programme.	1.055	3.6552	28 (24.1%)	39 (33.6%)	34 (29.3%)	11 (9.5%)	4 (3.4%)
4) I would feel comfortable with a Web portfolio used as an assessment tool in all my courses.	1.044	3.6727	26 (22.4%)	46 (39.7%)	28 (24.1%)	12 (10.3%)	4 (3.4%)
5) I feel comfortable with a Web portfolio used as an assessment tool for part of my grade on the CALL course.	1.012	3.8362	29 (25%)	58 (50%)	13 (11.2%)	13 (11.2%)	3 (2.6%)
6) I am concerned that the assessment of my Web portfolio would be too subjective.	0.823	3.7069	20 (17.2%)	47 (40.5%)	46 (39.7%)	1 (0.9%)	2 (1.7%)
7) I am concerned that the assessment of my Web portfolio would be too open to errors in judgement.	0.889	3.6393	21 (18.1%)	40 (34.5%)	48 (41.4%)	5 (4.3%)	2 (1.7%)
8) I am clear of the procedures involved in assessing my Web portfolio.	0.947	3.8190	30 (25.9%)	46 (39.7%)	31 (26.7%)	7 (6%)	2 (1.7%)
9) I feel that a Web portfolio is a good way for my instructor to assess my knowledge in CALL.	0.891	3.9310	34 (29.3%)	47 (40.5%)	29 (25%)	5 (4.3%)	1 (0.9%)
10) I feel that construction a Web portfolio is an effective way to display the level of my computer competency.	0.905	4.0776	44 (37.9%)	45 (38.8%)	19 (16.4%)	8 (6.9%)	-

Notes: N=118; SA =Strongly Agree; A=Agree; U=Undecided; D=Disagree; SD =Strongly Disagree; *SD*=Standard Deviation.

In an attempt to find out the benefits and challenges of using Web portfolios as an assessment tool, the students were asked to share their experiences by indicating their responses to ten statements. As an assessment tool, 68 students (58.6%) students felt Web portfolios were a more effective way of assessing their knowledge than a

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written exam but 26 students (22.4%) were undecided and another 22 students (18.9%) did not agree that Web portfolios were more effective than written exams. In terms of using Web portfolios for instructors to access their knowledge in CALL, 81 students (69.8%) also gave positive responses although there were 29 students (25%) who were not able to decide whether they agreed or disagreed with the matter. There were 99 students (76.2%) who claimed that the construction of Web portfolios was an effective way to display their level of computer competency. However, 19 students (16.4%) were not sure about the effectiveness of using Web portfolios to display their computer skills and 8 students (6.9%) did not agree.

The results showed that 91 students (78.4%) were comfortable with Web portfolios used as an assignment in the CALL course and 87 students (75%) were also comfortable for Web portfolios to be used as an assessment for part of their grade in the CALL course. When used as part of their assessment for their overall performance in the TESL program, it was found that 67 students (57.7%) were comfortable but 15 students (12.9%) were not comfortable and another 34 students (29.3%) were undecided. It was also reported that 72 students (62%) felt comfortable with Web portfolios being used as an assessment tool in all their courses but 16 students (13.7%) indicated otherwise and 28 students (24.1%) were not certain how they felt about this matter.

While 76 students (65.5%) claimed that they were clear about the procedures involved in assessing their Web portfolios, there were 67 students (57.7%) who expressed their concern about the assessment of their Web portfolio being too subjective and another 61 students (52.5%) were concerned that the assessment of their Web portfolios would be too open to errors in judgement. In the results, it was evident that these were also two aspects of using Web portfolios as an assessment tool that the students were mostly undecided about. It was reported that 46 students (39.7%) were undecided when they were asked to indicate if they were concerned about the subjective assessment of their Web portfolios and 48 students (41.4%) also seemed undecided about their Web portfolios being too open to errors in judgement.

4.2.9   Experiences in developing Web portfolios

In order to further explore the students' experiences in developing Web portfolios, the students' personal opinions regarding the Web portfolio development process and feedback on specific Web portfolio activities were sought. The students were also asked to describe the challenges and difficulties they encountered in other to gain insight into wider issues that had affected their Web portfolio development. In addition, the students were invited to comment on the use of *Google Sites* as a Web portfolio platform and share their perspectives on issues concerning the future implementation of Web portfolios. These questions were posed in Section F, the final section of the post-questionnaire, which had a total of 29 questions.

The first two questions in the section were asked with the purpose of finding out if the students' previously owned website or webpage had any differences to the Web portfolio they developed in the course. A number of 117 students responded to the first question with 27 students (23.1%) stating that they had previously owned a website or webpage while the remaining 90 students (76.9%) did not. Three students commented that the websites that they previously owned were easier to construct and one student indicated that it was also simpler than the one he constructed using *Google Sites*. A student pointed out that the reason he found his previously owned website was because *Google Sites* had "limitations" (A_7, Post-questionnaire). However, there was another student who stated that developing a website using *Google Sites* was an easier task compared to the task he experienced developing his previous website as it was also "easy to learn by yourself" (E_120, Post-questionnaire). One student also added that his previous webpage was simpler to use but *Google Sites* had more features making it more effective in the learning process (B_40, Post-questionnaire). Three students commented that their previous website was less formal and one student said his was written in the Malay language. Two students mentioned that the content for their previous website was more personal and was "more open to topics" (A_20, Post-questionnaire).

In Question 3, the students were asked about their first impression of *Google Sites* as a Web portfolio development platform. There were 110 students who responded to this question. It was found that students gave comments that could be categorised as

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positive responses, negative responses and neutral responses. The results showed that there were 34 students (30.9%) who gave positive responses and 59 students (53.6%) who gave negative responses. Another 17 students (15.4%) gave neutral responses concerning their first impression of *Google Sites*. Some of their comments are displayed in Table 4.9.

Table 4.9
Sample comments given by the students on their first impression of Google Sites

Response category	Comments by the students
Positive responses	"They are the best platform for me to exchange ideas with my course mates and it develops my computer skills" (A_1, Post-questionnaire) "Fun, interesting and a new experience for me. I found the *Google Sites* have many tools to help me update my web portfolio" (B_35, Post-questionnaire) "It's quite helpful to help me to improve my computer skills" (C_67, Post-questionnaire) "I found it interesting to share your work with other people" (E_117, Post-questionnaire)
Negative responses	"My first impression, making a Web portfolio is quite hard" (A_15, Post-questionnaire) "It was difficult" (C_62, Post-questionnaire) "Not user friendly" (C_74, Post-questionnaire) "At first it was hard because I'm not good at using computers" (D_88, Post-questionnaire) "…it was only for bloggers" (E_109, Post-questionnaire)
Neutral responses	"I was a *Google* user thus I am quite familiar with the applications" (A_20, Post-questionnaire) "I don't know what is that at first. What is it for and how to use it. I haven't heard about it before" (A_25, Post-questionnaire) "New experience" (B_29, Post-questionnaire)

Their responses indicate that the students were quite overwhelmed when they were first introduced to *Google Sites* as a Web portfolio development platform. However, there were students who found it to be an interesting and useful tool even at the initial stages of its introduction.

Question 4 asked whether the students' opinions regarding *Google Sites* had changed after they had completed their Web portfolios. Results obtained from 118 students were found to be positive with a total of 97 students (82.2%) who stated that their initial impression of *Google Sites* had changed. For example, a student who initially found it difficult later stated that it turned out to be a fun experience (C_62, Post-

questionnaire). Ten students (8.5%) also commented that their opinion changed because they realised that developing a Web portfolio using *Google Sites* was not as difficult, hard or complicated as they initially expected once they had completed the whole Web portfolio development process. There were only 21 students (17.8%) who claimed that there had been no change in their initial opinion of *Google Sites.* One student stated that his opinion did not change because he was still trying to cope with a number of difficulties particularly in handling his portfolio (A_3, Post-questionnaire) and another student mentioned that "I still find it difficult to manage the website" (D_85, Post-questionnaire). Interestingly, there were three students (2.5%) who did not change their opinion about *Google Sites* because it did not measure up to the facilities or simplicity of a blog. One of them, who has had experience using blogs, pointed out that he could not see "the advantages and the difference between Web portfolio and blogs" (C_63, Post-questionnaire).

They were also asked to rate their competency in using *Google Sites*. For Question 5, the students' were asked to identify their competency based on four levels – Expert, Advanced, Intermediate and Beginner. The results are displayed in Table 4.10.

Table 4.10
Students' ratings of their own competency in using Google Sites

Level of competency	No. of students	Percentage
Expert	17	14.4
Advanced	29	24.6
Intermediate	**70**	**59.3**
Beginner	2	1.7
Total	118	100.0

The results obtained from 118 students indicated that, after experiencing *Google Sites* as a Web portfolio development platform, 70 students (59.3%) were able to rate themselves as intermediate users and only two students (1.7%) rated themselves as beginners. Based on the 17 students (14.4%) who claimed that they were expert users, it may be inferred that *Google Sites* is a relatively user-friendly platform and has increasing potential for its use in the development of Web portfolios.

In Questions 6, the students were asked to identify the most challenging aspects of using *Google Sites*. Some responses obtained and aspects identified as the most challenging are presented in Table 4.11.

Table 4.11
Students' responses to the most challenging aspect of using Google Sites

Aspects of *Google Sites*	Responses to the most challenging aspect
Creating and editing pages	*"Create a page and subpages"* (B_31, Post-questionnaire) *"To set up the whole page and editing it"* (E_121, Post-questionnaire) *"Arranging pages, I was confused with the function at Google Sites"* (A_21, Post-questionnaire)
Uploading documents or assignments	*"I can't upload my CALL assignment (video) I don't know what to do"* (C_59, Post-questionnaire) *"Cannot upload big size file"* (C_67) *"Put attachment to my site"* (D_94, post-questionnaire)
Presenting the layout and appearance	*"To put input into the site and decorate it"* (A_22, Post-questionnaire) *"Creating a page that attracts people"* (B_45, Post-questionnaire) *"Creating an attractive page"* (B_48, Post-questionnaire) *"I need to be creative to make my webpage become interesting"* (D_90, Post-questionnaire)
Inserting media, gadgets and *Google* applications	*"Learning how to insert gadgets inside our own Web portfolios"* (E_115, Post-questionnaire) *"The link and it is hard for us to upload the videos"* (D_102, Post-questionnaire) *"When I want to add items and songs to decorate my portfolio"* (E_114, Post-questionnaire)
Connecting to the Internet	*"The internet connection would be the main problem"* (C_71, Post-questionnaire)

	"Need to have really fast internet connection to make the process of editing and attaching smooth because when I am doing it suddenly ideas to improve will come but due to poor internet connection it cannot be done" (C_73, Post-questionnaire)

According to 31 out of 118 students (26.2%) , the most challenging aspect of using *Google Sites* as a platform for the development of their Web portfolios was inserting media elements (i.e.; graphics, video clips, MP3 songs). Another 31 students (26.2%) also indicated that presenting the webpage layout (i.e; theme, design, organisation) were found to be the most challenging task for them and creating and editing the webpages was found to be the most challenging task for a total of 29 students (24.5%). Five students (4.3%) mentioned uploading documents or assignments into *Google Sites* as the most challenging task and another five students (4.3%) also said that connecting to the Internet was a huge task for them. There were 17 students (14.4%) who provided other challenges such as having to explore *Google Sites* on their own (B_55, Post-questionnaire), putting their thoughts in to writing (A_18, Post-questionnaire) and updating information (C_63, Post-questionnaire).

In contrast, question 7 asked the students to identify the least challenging aspects of using *Google Sites*. There were a total of 115 responses obtained for this question. It was reported that the least challenging aspect of using *Google Sites* according to 27 students (23.4%) was writing up the content for the webpage. Uploading documents and assignments was stated by 21 students (18.2%) as the least challenging and for another 20 students (17.3%) it was creating and editing the website. Sixteen students (15.2%) commented that inserting media such as graphics, videos and audio was the least challenging aspect but 14 students (12.1%) stated that it was the presentation and layout of *Google Sites*. Accessing *Google Sites* was mentioned by three students (2.6%) and another three students (2.6%) stated creating an account as the least challenging aspect. Four students (3.4%) felt that all aspects of developing Web portfolios using *Google Sites* were challenging and 10 other students (8.6%) provided other comments such as "it was rather simple" (D_107, Post-questionnaire) and "by the time I have loads of experiences in developing Web portfolios, that should be an easy task" (C_80, Post-questionnaire).

Question 8 asked the students whether they required additional training in using *Google Sites*. According to the 118 respondents, 106 students (89.8%) pointed out that they needed additional training in using *Google Sites* while 12 students (10.2%) did not require additional training.

Based on the students' experiences in using *Google Sites* for the development of Web portfolios, Question 9 was posed to find out whether they would recommend *Google Sites* to other students who are interested in developing Web portfolios. The total number of students who responded to this question was 117 from which 109 students (93.2%) indicated that they would recommend *Google Sites* to other students who intend to develop Web portfolios. However, the remaining 8 students (6.8%) were not keen on recommending *Google Sites*.

Closely linked to the previous question of whether the students would recommend the use of *Google Sites* to prospective Web portfolio developers, Question 10 was posed to find out if the students knew of another Web application other than *Google Sites* that they would rather use for the development of Web portfolios. Of the 118 respondents, the results indicated that 22 students (18.6%) would rather use a different application while 16 students (13.6%) maintained that they would use *Google Sites* as a platform for their Web portfolio development. However, there were 80 students (67.8%) who pointed out that they were not familiar with other Web portfolio development platforms.

Advancing from the students' perceptions of *Google Sites*, questions regarding the students' implementation of Web portfolio tasks in the CALL course were posed. To begin, the students were asked to answer Question 11 by indicating whether their overall Web portfolio experience was a positive or negative one. Out of 118 students who responded to this question, 113 students (95.8%) indicated that their experience was a positive one, while 5 students (4.2%) who did not seem to share the same opinion confessed that their experience was a negative one.

Subsequent to asking the students to describe their overall Web portfolio experience, Question 12 asked the students about the additional effort they had taken in making sure that their Web portfolio would be better than others. The total number of

respondents for this question was 117. The results showed that 72 students (61.5%) did make an effort, while the remaining 45 students (38.5%) indicated that they did not make any additional effort.

Question 13 was posed in an attempt to find out the link between the students' development of Web portfolios and their computer skills. The students' opinions were sought to find out whether they regarded their skills in using the computer had improved as a result of developing their own Web portfolios. A total of 118 responses were obtained in which 89 students (75.4%) felt improvement in their use of computers whereas the other 29 students (24.6%) indicated that their computer skills didnot improve. For those 89 students (75.4%) who indicated that their computer skills had improved, they were further asked in Question 14 to state the other skills that they might have acquired. The results show that 48 students (53.9%) mentioned other skills alongside computer skills. For example, 13 students (11%) stated language skills in which three students specified writing skills and one student stated reading skills. There were also seven students (5.9%) who mentioned that their communication skills were improved where one student (0.8%) specified communication with the instructor and another referred to the communication with course mates. Feedback skills were also mentioned by two students (1.6%). For example, one student (0.8%) stated that aside from computer skills, he acquired skills of "giving feedback and good comments on other's works also accepting and evaluating comments from others to us" (B_30, Post-questionnaire). One student (0.8%) mentioned movie-making and another student stated photo-editing as a skill acquired. A student (0.8%) also indicated that he acquired critical thinking skills. Besides the 48 students (40.6%) who mentioned that they have gained other skills aside from computer skills, the remaining 41 students (46.1%) claimed that they did not acquire other skills.

Considering that *Google Sites* was a relatively new Web application to the students, some of them may have found technical difficulties when using *Google Sites* to develop their Web portfolios. Question 15 was posed to find out if such technical difficulties occurred including examples of technical difficulties they encountered. The total number of respondents to this question was 117 from which 78 students (66.7%) responded that they encountered technical difficulties when completing their

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Web portfolios. In contrast, 39 students (33.3%) did not experience any technical difficulties. There were six students (5.1%) who blamed poor Internet connection at their residential college as the cause of their technical difficulties. This was because the poor Internet connection often hampered them from completing their task of uploading files and saving their edited Web portfolios. They also experienced challenges in uploading files, particularly those that exceeded the 20MB limit imposed by *Google Sites*. The followings are some feedback comments obtained from the students:

> *"The wifi connection here in UPSI is unbearable since it took half of my life span just to connect to the internet"* (A_20, Post-questionnaire)

> *"It's hard to upload my e-book & mini documentary which I use movie maker. I can't overcome it. Maybe the wifi is very slow here in college"* (B_30, Post-questionnaire)

> *"I can't upload my video since it is too big in size (more than 20 MB) so I cut the video into parts and finally I can upload the parts"* (D_91, Post-questionnaire)

The students also voiced out their frustration concerning the poor Internet connection a number of times during informal conversations outside lecture hours. In trying to cope with their technical difficulties, 20 students (17%) were found to seek help from their course mates, five students (4,2%) claimed they asked help from the lecturer and 13 students (11.1%) stated that they asked help from both their course mates and lecturer. There were also three students (2.5%) who explored the Internet for assistance or sought help from the *Google Sites* Help Center. Two students (1.7%) added that they obtained help from both their course mates and the Internet and two students (1.7%) claimed that they solved their own technical problems themselves without stating any other details. Included are some of the students' responses:

> *"I was able to overcome all difficulties by asking my friends and trying again and again until I get what I want"* (A_22, Post-questionnaire)

> *"Consult my course mates and lecturer"* (B_40, Post-questionnaire)

> *"Overcome some of them. Because I asked my course mates and explore through the Internet"* (C_77, Post-questionnaire)

"I was able to overcome it with my friend help and Google help"
(B_44, Post-questionnaire)

Question 16 was asked to find out the students' opinions regarding the clarity of tasks in the *Web Portfolio Task Sheet* (Appendix F). Of 116 students who responded to the question, 108 students (93.1%) regarded the Web portfolio tasks as clear while 8 students (6.9%) found difficulty in understanding the specified tasks. Although a majority of the students were in agreement that the tasks given were clear, there were some areas that needed more attention. For example, two students (1.7%) stated the research task to be rather unclear because "we were not clear what research was referred to" (A_8, Post-questionnaire) and "because it is similar to teaching materials" (D_88, Post-questionnaire).

In addition to the clarity of Web portfolio tasks, the students' Web portfolio experiences could be further explored by taking into account their perceptions of the Web portfolio tasks that were assigned to them. Specifically, Question 17 was posed instructing the students to identify the level of difficulty of each task. There were in total ten Web portfolio tasks as specified in the Web Portfolio Task Sheet distributed to the students. In an effort to determine the level of difficulty of each of those tasks, the students were instructed to rate the tasks using a rating scale that ranged between 10 as the Most difficult task and 1 as the Least difficult task. The results are presented in Table 4.12.

Table 4.12

Students' responses to the level of difficulty of Web portfolio tasks

	Level of Difficulty of Web Portfolio Tasks										
	Least difficult ← → Most difficult										
Tasks	1	2	3	4	5	6	7	8	9	10	N
Home	50 (48.1%)	21 (20.2%)	9 (8.7%)	6 (5.8%)	5 (4.8%)	-	1 (1%)	4 (3.8%)	1 (1%)	7 (6.7%)	104
Personal profile	7 (9.1%)	34 (44.2%)	19 (24.7%)	5 (6.5%)	3 (3.9%)	-	4 (5.2%)	2 (2.6%)	2 (2.6%)	1 (1.3%)	77
Academic profile	2 (2.7%)	7 (9.6%)	31 (42.5%)	17 (23.3%)	4 (5.5%)	5 (6.8%)	4 (5.5%)	1 (1.4%)	1 (1.4%)	1 (1.4%)	73
Assignment	1 (1.1%)	1 (1.1%)	4 (4.6%)	21 (24.1%)	20 (23%)	9 (10.3%)	5 (5.7%)	6 (6.9%)	6 (6.9%)	14 (16.1%)	87
Research	1 (1.2%)	-	1 (1.2%)	1 (1.2%)	11 (13.4%)	16 (19.5%)	11 (13.4%)	8 (9.8%)	12 (14.6%)	21 (25.6%)	82
Teaching materials	-	2 (2.7%)	1 (1.3%)	3 (4%)	5 (6.7%)	13 (17.3%)	12 (16%)	12 (16%)	12 (16%)	15 (20%)	75
Reflection	1 (1.4%)	-	3 (4.1%)	8 (11%)	9 (12.3%)	7 (9.6%)	21 (28.8%)	12 (16.4%)	9 (12.3%)	3 (4.1%)	73
Future learning goals	1 (1.5%)	2 (2.9%)	4 (5.9%)	4 (5.9%)	13 (19.1%)	12 (17.6%)	7 (10.3%)	10 (14.7%)	5 (7.4%)	10 (14.7%)	68
Resources	2 (3.2%)	5 (7.9%)	1 (1.6%)	2 (3.2%)	5 (7.9%)	8 (12.7%)	6 (9.5%)	9 (14.3%)	15 (23.8%)	10 (15.9%)	63
Contact details	31 (44.3%)	10 (14.3%)	4 (5.7%)	6 (8.6%)	10 (14.3%)	2 (2.9%)	3 (4.3%)	4 (5.7%)	-	-	70

Note: N= Number of respondents.

The objective of the first Web portfolio task was for the students to introduce their Web portfolio while giving an overview of the purpose and content presented in the Web portfolio. In order to complete the task, the students had to create an interesting welcome page that reflected their personality and interests. This page was referred to as a 'Home' page for their Web portfolio. Of the 104 responses, 50 students (48.1%) rated this task as the least difficult task and 7 students (6.7%) rated this task as the most difficult task.

The next task to complete was a 'Personal Profile' page. In order to complete this task, the students were instructed to provide a written description of themselves in approximately 100 words. The objective of the task was to allow the students to share their personal information with others. A total of 77 students responded to this question and the results showed that the students regarded this task as among the least difficult to complete with 34 students (44.2%) rating it 2 followed closely by 19 students (24.7%) who rated it 3. Only one student (1.3%) found this task to be the most difficult with a rating of 10.

Besides their personal profile, the students were also instructed to complete an 'Academic Profile' page. For this purpose, the students were encouraged to include a brief overview of their academic accomplishment including the awards or transcripts that they have acquired throughout their student life. Responses were gathered from 73 students in which 31 students (42.5%) rated this task 3 suggesting that this was a fairly easy task to complete. Only one student (1.4%) rated this task as the most difficult.

The 'Assignments' page refers to a page designed to include a variety of the students' assignments from the CALL course and other courses. The students' task was to create links to specific assignments that were in progress and that they had completed. The results from 87 students who responded showed that the task of completing the assignment page was found to be one of the most difficult tasks to complete. The results show that 14 students (16.1%) found this task the most difficult to complete. Almost half of the students found the task to be rather easy as 21 students (24.1%) rated the task as 4 and another 20 students (23%) rated the task as 5.

The students were also instructed to complete a page entitled 'Research' whereby they had to include details about their area of interest. They were encouraged to explore areas that were related to the use of computers in second language learning in particular. The task required the students to identify an area in the use of computers for second language learning that they were interested in. Following this, they had to create at least five links to information that were relevant to the area of their choice. For example, they could include links to articles, webpages and e-books. Supplying a brief discussion on the particular area of interest with a complete list of references was also part of the task. The research page was found to be one of the most difficult pages to complete according to the 21 (25.6%) out of 82 students who rated the task to be the most difficult and only 1 student (1.2%) rated the task 1. A significant number of 16 students (19.5%) students also found the task to be rather difficult and gave the task a rating of 6.

Another task that the students found difficult to complete was the task requiring them to complete a page labelled 'Teaching materials or work samples'. In order to

complete the page, the students had to compile different types of teaching materials. A brief overview of each item was also included. The students' ratings for the difficulty level of the task were mostly within the range of 6 to 10. Out of 75 respondents, 15 students (20%) stated that the task was the most challenging for them. Only two students (2.7%) found the task to be the least difficult task to complete.

There were three objectives of instructing the students to complete a 'Reflection' page. The first was to have them share their personal experiences with the use of computers for second language learning. It was followed by having them share their personal reflections on the development of their Web portfolios and, finally, for them to share commentaries on the progress and completion of assignments. From 73 students who rated the 'Reflections' page, 21 students (28.8%) rated the task as 7, suggesting that the task was rather difficult for them to complete. Only one student (1.4%) perceived the task to be the least difficult to complete.

The following task the students had to complete was one that required them to describe their future learning goals. The students were asked some questions in an effort to guide them in clarifying their future learning goals. This task was rated 5 by 13 out of 68 students (19.1%). Only one student (1.5%) rated this task as the least difficult while ten students (14.7%) pointed out that this task was the most difficult task.

The 'Resources' page was one that required the students to provide links to different types of resources they had found to be relevant and interesting in helping them understand the use of computers for second language learning including CALL. They were also encouraged to create links to resources that would assist them in their development of Web portfolios. Of the 63 responses obtained, 15 students (23.8%) rated the task 9, as one of the most difficult tasks to complete. Two students (3.2%) indicated that they found the task to be the least difficult one to complete.

The final page the students had to complete as part of their Web portfolio task was a page entitled 'Contact details'. The students were asked to include their contact

information and their e-mail addresses. Of the 70 students who responded, 31 students (44.3%) indicated that this task was the least difficult.

Of all ten Web portfolio tasks the students had to complete in the CALL course, the results suggest that there were three tasks the students found most difficult to complete. These tasks refer to the creation of the 'Research' page, 'Teaching materials and work samples' page and 'Assignment' page. The results also show that the creation of the 'Home' page, 'Contact details' page and 'Personal profile' page was found to be the least difficult task for the students to complete as part of developing their Web portfolios.

The post-questionnaire was also designed to retrieve the frequency of the students' Web portfolio work. In Question 18, the students were asked to indicate how frequently they worked on their Web portfolios based on the options given. Table 4.13 presents their responses to the question.

Table 4.13
Time students spent working on their Web portfolios

		Frequency	Percent	Valid Percent
Valid	Only during lecture hours	14	11.9	12.2
	About an hour everyday	16	13.6	13.9
	More than one hour every day	18	15.3	15.7
	About a few hours a week	57	48.3	49.6
	Others	10	8.5	8.7
	Total	115	97.5	100.0
Missing	System*	3	2.5	
Total		118	100.0	

Note: N=115; * No responses.

A total of 115 students responded to the question. The results show that 57 students (49.6%) worked on Web portfolios for a few hours a week. Eighteen students (15.7%) spent more than an hour every day and another 16 students (13.9%) spent about an hour each day to complete work on their Web portfolios. The number of students who worked on their Web portfolios only during lecture hours was 14

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(12.2%) and the remaining 10 students (8.7%) stated that they worked at other than the given options.

In relation to finding out how much time the students spent on developing their Web portfolios, Question 19 was posed in an attempt to probe further into the different aspects of the students' Web portfolio they spent most time on. Identified were fifteen types of activities that the students were likely to have performed while being engaged with the construction of their Web portfolio. The students were instructed to tick the box that corresponds to the activity that they have spent most time performing. They also had an option of selecting more than one activity from the given list and including other activities that took up most of their time during their Web portfolio development process. Table 4.14 illustrates the results.

Table 4.14
Web portfolio activities students spent most time on

No.	Web portfolio activities undertaken by students	Total number of students who spent most of their time completing these activities
1)	Registering for a site	22
2)	Creating the Web portfolio site layout	37
3)	Editing the Web portfolio site layout	**65**
4)	Arranging items in the Web portfolio	43
5)	Creating pages	19
6)	Editing pages	**66**
7)	Uploading materials	**53**
8)	Inserting text	19
9)	Editing text	23
10)	Inserting pictures	21
11)	Editing pictures	23
12)	Inserting sounds	23
13)	Editing sounds	16
14)	Inserting videos	36
15)	Editing videos	17

Note: N= 118.

The results shown in Table 4.14 indicate that the students spent most time on editing pages, editing side layout and uploading materials. Other activities such as editing sounds and videos were kept to the minimum. The type of activities the students claimed they spent most time on appears to be consistent with the activities that the researcher frequently observed the students were involved in during the data collection period.

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When the students were first introduced to *Google Sites* as a Web portfolio development platform, they had the option of using a blank template or a readily available *Google Sites* template. In Question 20, the students had to indicate which type of template they had selected for the development of their Web portfolio. Illustrated in the results of 118 responses, 62 students (52.5%) opted to use the readily available template and 56 students (47.5%) chose the blank template. Minimal differences in the percentage of the students selecting the readily available template over the blank template may suggest that any difficulty or obstacles the students encountered during their Web portfolio development was unlikely to be caused by the selection of template they made.

One important purpose of creating Web portfolios was to allow the students to share and learn from viewing each other's work. In order to find out whether the students have taken advantage of this aspect of their Web portfolios, Question 21 asked if they viewed Web portfolios developed by others during their own Web portfolio development process. These students were also asked to describe the nature of activities they performed and the lesson they might have learnt from viewing Web portfolios belonging to others. The results indicated that, of the 118 respondents, 100 students (84.7%) claimed to have viewed others' Web portfolios.

Question 22 was asked to determine the activity that was carried out by the students while viewing others' Web portfolios. The results show that of 100 students who claimed to have viewed others' Web portfolios, 13 students (13%) were interested only to see what others did, 82 students (82%) viewed to improve their own Web portfolios and 5 students (5%) viewed others' Web portfolios. On the other hand, 18 students (15.3%) did not participate in viewing others' Web portfolios.

Question 23 was posed to find out if they were able to learn more about their course mates after viewing their Web portfolios. A total of 99 responses were gathered from which 92 students (92.9%) responded that they learnt more about their course mates but seven students (7.1 %) responded otherwise. The results indicate that the students took advantage of Web portfolios as an avenue for them to project their identities most probably because, as part of the Web portfolio task, the students were required to include their personal profile, academic profile, completed assignments and

reflections. This may also be part of the justification for why they spent additional time outside the lecture hours to work on their Web portfolios. In Question 24, the students were also asked to use their experiences of developing Web portfolios in the CALL course in order to describe the characteristics of a 'good' Web portfolio. A total of 115 responses were obtained for this question. Some sample responses from the students are presented in Table 4.15.

Table 4.15
Students' perceptions of a 'good' Web portfolio

Sample quotations of students' description of a 'good' Web portfolio	Students consider a Web portfolio 'good' based on the following aspects:
Combination of the media, no spelling error, good combination of colors, not text heavy. (A_7, Post-questionnaire)	**Content** is interesting and informative. Includes both academic and personal profile. Organisation of content is an important feature of an attractive Web portfolio.
Have music and useful information to refer, the whole webpage is nice and clean (B_35, Post-questionnaire)	Has links to relevant resources and attachments should be downloadable.
It must have good colors and suit with the theme, extra things like videos, pictures and glittery text increase the interest. (B_52, Post-questionnaire)	**Language** is simple and error-free It is not text-heavy.
Have interesting yet lengthy text, using minimal animation and graphics, must choose a theme and colors so that the webpage will not be too crowded. (D_86, Post-questionnaire)	**Presentation** is attractive. Applies a suitable theme and appropriate font types, colors and graphics. Elements included are organised appropriately.
Interesting, attractive easy to use/navigate and informative. (D_91, Post-questionnaire)	**Technology** such as widgets and animation are used purposefully. Effective use of graphics, audio or videos.
Have very nice background, information are complete, many tools are used. (D_100, Post-questionnaire)	
Interesting, provided with good resources, have work and attachments that can be downloaded. (E_115, Post-questionnaire)	
Easy to digest, no audio. (E_120, Post-questionnaire)	

There were four aspects identified as content, language, presentation and technology that the students took into consideration when describing a 'good' Web portfolio. In terms of content, 82 out of 115 students (71.3%) used words such as 'interesting', 'complete', 'clear', 'academic' and 'full' when describing the type of information

belonging to a good Web portfolio. The other aspect of a good Web portfolio seemed to be the presentation of the Web portfolios in which 36 students (33.3%) stated organisation, layout, theme and color are the elements in the presentation that good Web portfolios display. There were only two students (1.7%) who were specific in their comments about the language used in a Web portfolio. They pointed out that a good Web portfolio used "simple sentences and words" (C_72, Post-questionnaire) and had "no spelling errors" (A_7, Post-questionnaire). Fifteen students (13%) were found to have made references to the use of technology as a characteristic of a good Web portfolio. While their responses indicated that music, games and videos were favorable, one student (0.8%) found it unfavorable to include background music in the Web portfolios as he found it to be annoying (A_12, Post-questionnaire), another student (0.8%) was against using "hard-rock kind of music" (B_34, Post-questionnaire) and one student (0.8%) emphasised the use of "minimal animation and graphic" as characteristics of a good Web portfolio (D_87, Post-questionnaire).

In addition to describing what they regarded as a 'good' Web portfolio, the students were then asked in Question 25 to make some suggestions on how the Web portfolio development process can be improved. There were 22 students (20.3%) out of a total of 108 responses obtained for this question who pointed out that they needed more practice using their Web portfolios, 14 students (12.9%) stated that the process can be improved by viewing Web portfolios belonging to others and 12 students (11.1%) commented that they needed more guidance from the lecturer. Eight students (7.4%) stated that the development process can be improved by asking for help and getting feedback from others. There were also nine students (8.3%) who felt that learning more about Web portfolios will allow them to improve their Web portfolio development process and interestingly, six students (5.5%) mentioned that they needed to do more research on Web portfolios. Another 12 students (11.1%) said that the Web portfolios that they developed can be improved in terms of their presentation and content while three other students indicated that the process can be improved by their knowledge of using media elements in their Web portfolios. Additional time for the development of Web portfolios was mentioned by three students (2.7%) and better Internet connection was also mentioned by another three students (2.7%). Some of their sample responses are given in Table 4.16.

Table 4.16

Students' suggestions on the improvement of the Web portfolio development process

Suggestions	Sample quotations
1) More practice	*"Spending time and explore to improve"* (B_34, Post-questionnaire) *"Always work on it and always use new features by exploring the web portfolio"* (D_91, Post-questionnaire) *"Always work on it and always use new features by exploring the web portfolio"* (D_91, Post-questionnaire)
2) Learning more by viewing others	*"Learn from others web portfolio can improve our own portfolio"* (C_56, Post-questionnaire) *"By keeping it and sharing it with friends and keep it as a personal project not just an assignment"* (A_12, Post-questionnaire) "*Viewing example of good web portfolio*" (A_13, Post-questionnaire)
3) More guidance from the lecturer	*"Lecturer should teach us how to develop / improved it don't just leave us hanging around and discover it by ourselves. Its take time"* (B_28, Post-questionnaire) *"Guidance from expert (lecturer) for more navigation tool that we can apply"* (B_37, Post-questionnaire) *"Honestly, I think lecturer should provide students with more information"* (B_52, Post-questionnaire) *"Complete instructions should be given"* (D_98, Post-questionnaire)
4) Asking and getting feedback	*"Ask comments from lecturers and course mates"* (C_65, Post-questionnaire) *"By seeking lecturer's help and also friend's feedback on the Web portfolio"* (B_32, Post-questionnaire)
5) Learning about Web portfolios	*"By make a study about the web"* (D_94, Post-questionnaire) *"By attending courses on web portfolio"* (A_23, Post-questionnaire) *"More learning, have a lot of references and creativity"* (A_3, Post-questionnaire)
6) Researching about Web portfolios	*"Do lots of research, constantly update portfolio"* (C_72, Post-questionnaire) *"Research before starting a web portfolio"* (E_124, Post-questionnaire) *"Do some research about it since it can help us gaining knowledge about it"* (E_125, Post-questionnaire)
7) Improving presentation and content	*"Choosing the right background that will not make our web portfolio that crowded"* (D_87, Post-questionnaire)

	"Organized things more nicely" (D_93, Post-questionnaire)
	"Improve with lots of descriptions to work" (C_77, Post-questionnaire)
8) Using media elements	*"By inserting more useful links and videos"* (D_89, Post-questionnaire)
9) Allocating more development time	*"Longer time to prepare for the web site"* (D_85, Post-questionnaire)
10) Improving the Internet connection	*"The most important thing is to have a proper connection with the internet. We cannot do anything if there is no line connected or the line is bad"* (A_17, Post-questionnaire)

Question 26 was posed to gain feedback from the students regarding the best time to be introduced to Web portfolios. Respondents were given six options. It should be noted that the students were introduced to Web portfolios in the middle of the semester as requested by the course coordinator, although they were informed about having to develop a Web portfolio for the CALL course when the course commenced. The results are illustrated in Table 4.17.

Table 4.17
Students' opinions on the best time for Web portfolios to be introduced

Time to introduce Web portfolios	Frequency	Percent	Valid Percent	Cumulative Percent
At the beginning of semester 1	**72**	61.0	**61.0**	61.0
At the end of their TESL programme	3	2.5	2.5	63.6
The semester before their teaching practice	1	.8	.8	64.4
At semester 2 when they take up the CALL course	**33**	28.0	**28.0**	92.4
At semester 3 when they have taken up the CALL course	8	6.8	6.8	99.2
Others	1	.8	.8	64.4
Total	118	100.0	100.0	100.0

Note: N= 118

According to the feedback from 118 respondents, there were two most significant times the students regarded as the best time for Web portfolios to be introduced. There were 72 students (61%) who stated that Web portfolios should be introduced at the beginning of Semester One and another 33 students (28%) were of the opinion that Web portfolios be introduced when they take up the CALL course in Semester Two. Only one student (0.8%) responded that they should be introduced to Web portfolios other than at the times mentioned. Their responses also suggested that there was a considerable level of awareness in the students that developing Web

portfolios at the very beginning of their training as future pre-service ESL teachers was likely to be more beneficial to them.

In relation to the best time for introducing Web portfolios, Question 27 was posed to find out if completing the CALL course was a prerequisite to the development of Web portfolios. Of the 117 respondents, 68 students (58%) viewed enrolment in the CALL course as important for them to develop Web portfolios while the other 49 students (41.9%) felt otherwise. The students' responses suggest that the students valued formal training in the use of computers prior to developing Web portfolios. It is assumed that there may be aspects in the development of Web portfolios that were rather challenging convincing them that the enrolment in the CALL course was necessary for future development of Web portfolios within this context.

In order to determine the extent of the students' use of Web portfolios, Question 28 was posed to find out whether they were interested in pursuing their Web portfolio work in the following semester. Of 117 students who responded to this question, 102 students (87.2%) gave a positive answer and the remaining 15 students (12.8%) gave a negative answer. The results suggested that the introduction of Web portfolios as part of the CALL course coursework did have a strong influence on the students. Their continued interest in wanting to use their Web portfolios in the following semester implies that the development of Web portfolios had a positive impact on students.

The final question in the post-questionnaire asked the students to share their opinions and to give some personal feedback regarding their Web portfolios use and development process. Forty-five out of 108 students (41.6%) who responded to this question indicated that developing Web portfolios was a positive learning experience for them. The students stated "it is very useful for students to enhance their knowledge while doing an assignment" (E_119, Post-questionnaire), "it's a good start to try something new and explore more things on how to develop learning skills" (E_117, Post-questionnaire), and "helps us to introduce, talk, write about ourselves for people to know us better and share our assignments/documents" (B_34, Post-questionnaire). Another 10 students (9.2%) pointed out that the development of Web portfolios encouraged them to learn better. For example, they said that "it

makes me learn more" (E_122, Post-questionnaire), "we can monitor our studies, our progress while studying in TESL program, share it with fellow course mates" (D_107, Post-questionnaire), and "we can always recall our previous works and improve on it" (A_11, Post-questionnaire). There were nine students (8.3%) who mentioned developing Web portfolios had helped them improve on their computer competencies. The students highlighted that "this kind of development is really good and it improved my computer skills. Up till now, I still could not believe that I manage to have my own Web portfolio" (B_52, Post-questionnaire), "it was really interesting, honestly my computer skills has increased" (B_47, Post-questionnaire), and "it is a very good activity that can be done by students to improve the computer skills and it can also be used by them to share with others the knowledge they have" (E_108, Post-questionnaire). Two students (1.8%) were found to have developed their language skills as a result of developing Web portfolios. They mentioned that Web portfolios are "an interesting and brilliant way to learning language through computers. It is interactive in a sense that we can leave comments to each other to help us improve" (C_74, Post-questionnaire) and Web portfolios "improve my English and also other peoples' English language when they view my portfolio" (B_35, Post-questionnaire).

There were also students who expressed some concerns about the use of Web portfolios. Time was one aspect that four students (3.7%) referred to in their responses. They stated that the development process should have started at the beginning of the semester so that the students will have more development time (B_40, Post-questionnaire; D_83, Post-questionnaire), one student said that more time is needed for the students to explore the use of Web portfolios (A_14, Post-questionnaire) and a lot of time is needed to improve their Web portfolios (B_29, Post-questionnaire). There were nine students (8.3%) who included ways of improving the Web portfolio development process in their responses. For example, one student mentioned that more explanations need to be given to the students (C_59, Post-questionnaire) and another student suggested using "a simpler Web tool" (D_103, Post-questionnaire). Finally, one student (0.9%) elaborated that computer skills were an important consideration when developing Web portfolios as he emphasised "the development of Web portfolios brings advantages to students. However, students are not exposed to sufficient computer skills needed in developing

a Web portfolio. They are also not given clear instructions like what to put in teaching materials and resources" (B_42, Post-questionnaire).

Clearly, the introduction of Web portfolios in the CALL course had a significant impact on the students. The experiences they conveyed throughout their Web portfolio development process indicate that there is room for improving the process of developing Web portfolio and the Web portfolio as a product of the CALL course. While it was evident that some of the students found developing Web portfolios a challenging process, many of them had changed their perceptions at the end of the course. One student said, "At first I find difficulties using *Google Sites*. However, when I take my time explore the *Google,* it actually easy to do" (A_5, Post-questionnaire). From the analysis of the questionnaires, it is anticipated that the biggest challenge yet for the students is not in completing the Web portfolios tasks but to ensure that their Web portfolios are being maintained and "viewed often" (C_75, Post-questionnaire).

Owning and maintaining Web portfolios demanded a huge commitment from the students. In the same way that they develop new skills and grow as an individual, their Web portfolios will need to be continuously enhanced to reflect who they become at various points in time. The students, however, completed their Web portfolio task in the CALL course on a positive note and their experiences can best be summarised with the following quotation: "I learn a lot in developing one and I'm looking forward to make it more interesting" (C_76, Post-questionnaire).

4.2.10 Summary of questionnaire results

A summary of the results from the questionnaires are presented in Table 4.18. The table illustrates the key areas covered in both the pre- and post-questionnaires.

Table 4.18
Summary of questionnaire results

Key areas	Questionnaire results
Students' computer competency in an	• Most students were competent computer users. They were already familiar with the Web and its

online environment	• Students seem to display more confidence in carrying out all the ten tasks listed after they had experience developing Web portfolios.
	• More students were found to have explored the use of Web authoring tools and had published materials online.
	• There was also an increase in the percentage of students who perceived themselves as experts in managing computer-mediated communications.
Students' attitude towards the use of computer technology in learning and teaching	• Students were positive about using computer technology in learning and teaching.
	• A huge percentage of students regard computer skills as something that can be learnt.
	• Their perception regarding the use of computers to communicate with their instructor seemed to be more positive after having experience developing Web portfolios.
Students' attitude towards learning	• Students showed a positive attitude towards learning.
	• In particular, they did not have any strong objections to working in groups and learning from others.
	• They were also positive about sharing learning experiences with others and opening up to feedback that are given by others.
Students' knowledge about portfolios (prior to the introduction of Web portfolios)	• Most students do not have experience in developing a portfolio.
	• Nevertheless, but they were already performing certain activities that were fundamental to keeping a portfolio.
Students' experiences in using Web portfolios as a learning tool	• Students have put in more than the required time to complete their Web portfolios.
	• Many students mentioned time as well as Internet connection to be a great concern to them.
	• They seem to need more guidance and experience in using their Web portfolios, particularly in using their Web portfolio to reflect back on their learning experiences.
Students' experiences in using Web portfolios as an assessment tool	• Students were still unsure of the role of Web portfolios as an assessment tool.
	• However, they were keen on using Web portfolios in the assessment of their work in the CALL course.
Students' experiences in developing Web portfolios	• Students felt that they required more guidance and time to properly develop their Web portfolios.
	• They also needed more practice in using Web portfolios in order to fully understand how Web portfolios can be used as a learning and assessment tool.
	• Although there were some challenges in using *Google*

Sites as a platform for their Web portfolio development, most students found their way to overcome them.
- However, there were some Web portfolio tasks that students found a high degree of difficulty in completing.

4.3 Results from interviews

The students' Web portfolio experiences in the CALL course were drawn from two perspectives of the students and the course lecturer. Through the focus group interviews with the students and the semi-structured interview with the course lecturer, the participants shared their experiences throughout the seven-week Web portfolio development period. Initial analysis of the interview data resulted in the identification of four broad categories: process, product, technology and assessment. Individual themes within each category have been further identified and data for each category have been discussed separately. As a guide for the analysis, brief descriptions of each category are presented in Table 4.19.

Table 4.19
Description of major categories from interview analysis

Category	Description
Process	Statements that give descriptions of students' experiences of the processes involved in the development of Web portfolios
Product	Statements that give explanations of the way Web portfolios were used as a tool in the CALL course
Technology	Statements that give examples of the computer skills and online applications students used when developing their Web portfolios
Assessment	Statements related to matters surrounding the assessment of Web portfolios

4.3.1 Process

Statements that give descriptions of the students' experiences of the processes involved in the development of Web portfolios were categorised as Process. There are three main discussions in this category: firstly, the students view their Web portfolio development process as a new learning experience; secondly, when developing their Web portfolios the students emphasised the value of working in collaboration and, subsequently, this has led to the practice of giving feedback among them; and finally, the students regarded their Web portfolio development as a personal reflective process encouraging them to reflect back on their past learning whilst improving their present learning.

4.3.1.1 New learning experiences

The use of Web portfolios was regarded as a new learning experience by 17 out of 25 students who participated in the focus group interview. They claimed that developing a Web portfolio is "quite fantastic for me because I never experienced such things before" (S1, FG_7), "since this was my first time doing Web portfolio so I don't know that there are facilities like this in Internet that help us" (S3, FG_4), "Same with me I think it's a whole new experience for me because I used to read other webs, other people webs but I never did something like this so I think it's a new interesting thing for me" (S2, FG_3). Although developing a web site was never introduced as part of the CALL course content, the students were familiarised with the use of resources and materials on the Web. They were also using various Web applications to complete some of their CALL assignments. Having to learn to develop a Web portfolio was essentially new to most of them, including those who were already regular developers of blogs and websites. One of them stated she had difficulty understanding "the word Web portfolio itself" and further explained that "I have a blog and I have developed a few websites before but this one is more difficult than those two" (S4, FG_1).

During the Web portfolio development workshops, the students were introduced to portfolios in general and various aspects of their applications. When the researcher asked the students to describe portfolios, some of the students recalled their prior

experience of using portfolios in an assignment in their writing class that they took in the previous semester. They referred to portfolios as drafts of essays being compiled into a file. In order to help the students visualise other ways of presenting portfolios, a paper-based portfolio was shown as the first example. Subsequently, a few versions of electronic portfolios were presented including the Web-based one that the students were to develop.

From that point onwards, the students were slowly beginning to understand the idea of using portfolios as they began to give examples of materials that can be included as evidence or artefacts of their learning. With the purpose of consolidating their understanding of the portfolio concept, they were given a worksheet to complete before they attended the next workshop session in the following week. In the worksheet, the students were asked to review main points about developing a portfolio and share their answers with the whole class.

The second Web portfolio development workshop, which was held a week later, started with a detailed explanation of tasks. The students were to refer to the Web portfolio development checklist (Appendix E) and the Web portfolio task sheet (Appendix F) to discuss the finer points regarding their Web portfolio development. In preparation to begin their Web portfolio development process, the students were previously instructed to bring along their USB drives containing graphic files, Word documents, PowerPoint presentation slides, *MP3* files and so on. In this workshop session, they were introduced to *Google Sites* as a Web portfolio development platform. By the end of the workshop, the students were all successful at registering for a site and some of them had even begun setting up their profile page.

Prior to developing their own Web portfolios, the students had a free-hand at exploring various ways portfolios could be presented using *Google Sites* through samples provided. One of the questions they raised in the workshop was about setting up a *Google Sites* account and designating an appropriate name for their Web portfolio site. Excitement was clearly observed in the workshop as the students began to log-in to *Google Sites* to immediately start developing pages and using various tools to present their pages. The course lecturer also reported that the students were very eager to begin their Web portfolio journey because they began asking her

questions such as "how to insert pictures, how to put in videos things like that, mainly how the technical side, how to put things inside" during the workshop sessions.

Aside from the excitement and anticipation of learning something new, there were students who appeared overwhelmed by the introduction of Web portfolios. This was clearly expressed by one of the students in one of the focus group interviews:

> *"OK, I think it…it is very adventure because this I never have any experience to do Web portfolio so at first it seems like so hard for me but after I make have a research I ask from my friends to help me then I think the is very adventure for me having or to have my own portfolio."* (S5, FG_2)

Being introduced to Web portfolios for the first time has clearly caused some feelings of uneasiness among the students. Their feelings of uneasiness may have been intensified as the development of Web portfolios required them to learn new skills that some of the students were not familiar with. One student found having to deal with something new really taxing. She expressed her great concern in the following excerpt:

> *"Oh I think it's difficult because actually I am someone who is not into computer. I mean I know how to use a computer but I do not use it to do something like this. So, when I was first asked to do a Web portfolio it came to me as a shocked actually I went home and I had sleeping difficulties thinking about it."* (S4, FG_2)

The course lecturer also expressed some concerns related to the development of Web portfolios as a new learning experience. She commented that "I thought it's going to be very easy, I thought it was like my e-forum portfolios. I thought it would be exciting but there were some problems with the students" (CL). She then explained that the students approached her as they were rather unclear about the purpose of developing Web portfolios especially because developing Web portfolios was not included in their initial course outline. Furthermore, she pointed out that the students were anxious about having an additional assignment to do on top of their huge work load. The course lecturer commented as follows:

> *"OK, it was a learning process, it exciting of course at first it was difficult and then it got exciting because the students started to put things inside them. Some of them were really interested but some of them were not because maybe they had lots of other work to do".* (CL)

In addition to the huge commitment from the students to complete all the Web portfolio tasks assigned to them, there was a certain level of complexity involved in the process of developing a Web portfolio. In particular, the students were required to learn new computer skills such as editing videos, using RSS feeds and authoring webpages. They also had to grasp the concept of a learning portfolio that demanded them to make their learning process visible. Although collecting and managing artefacts as evidence of the present and past learning were in practice a time consuming activity, the students mentioned that they found the experience a worthwhile one. One student shared the experience in completing her Web portfolio during the interview in the excerpt below:

> *"...what I can remember is I enjoyed that night of sleep, that sleepless night because we Get to like looking back our past, writing our experience, and then viewing our pictures uploading them, and listening to some music because we did put some music into our Web portfolio."* (S1, FG_3)

Another aspect of the students' new learning experience was that they had become more aware of issues related to the use of the Internet such as authorship, privacy and security as they themselves become authors and publishers over the Internet. One student pointed out that "notes are alright to me" (S2, FG_7) but reservations were observed when the students discussed the sharing of some other parts of their work in their Web portfolio with others. In particular, they argued that sharing their assignments with others encouraged plagiarism. This is illustrated in the excerpt taken from one of the interviews:

S2, FG_7   : *But talking about the uploading, actually when I check through the task sheet given, I quite reluctant at first, until now also I reluctant thats why I didn't upload my assignments because I think to upload the notes are all right but to upload our assignment I think it's a bit not very, to me its not very something not very nice. Because...*

S3, FG_7   : *Yeah*

S2, FG_7   : *we are trying to avoid plagiarism all this while so I think to give out our assignment just post it like this whereby we have just allow anybody that can visit our portfolio to download our stuff, I think its*

not very very good *in nature to me. I'm not, not that I'm very secretive or very stingy person, just that I think in academic wise, I think…*

S3, FG_7   : *Yeah*

Although the students may already have been familiar with the culture of sharing personal information over the Internet, especially through their popular use of blogs and various social networking sites, it was indeed a new experience for them to share their academic work with others. The students' assignments, which were once a collection of private documents that were only shared with their lecturers, could be publically shared with their other course mates.

The students were then confronted with issues implicating the ownership and the trustworthiness of other parties. This process was not familiar to many of them but it was clear that the students' levels of awareness were increasingly growing. The following excerpt is an example where students communicated their concern.

S1, FG_3   : *For me I, I put the link as they can view my website unless they have the link and it's not for everyone and then, because I think it is OK to be shared with everyone but then when we upload our assignments, it can be viewed and downloaded so maybe as my, one of a friend were like asking me, aren't you afraid that your friends are going to*

S2, FG_3   : *download and*

S1, FG_3   : *copy and paste all your assignments and everything, then I was like 'oh yeah really, why didn't I think about that!' But, after all its been done so I think it's OK because we are all future teachers to be so hopefully they won't do such things.*

Having to learn to use *Google Sites* as a Web portfolio development platform was also a new learning experience for the students. It was noted that *Google Sites* was indeed something new to all the students who participated in this study even for those who had blogs and developed websites before. One student also emphasized that he was particularly impressed by *Google Sites* or "new technology" (S2, FG_4) that clearly motivated him to explore its applications further and ultimately made him regard the CALL course as more interesting. Another student also agreed that he was attracted to the feature of *Google Sites* that allowed him to "put everything inside it and we can share everything with others" (S1, FG_4).

Aside from all the excitement with regard to using a new online application, there was evidence that learning to use *Google Sites* presented some challenges to the

students. Some of the difficulties that were reported by them were related to their unfamiliarity with the use of *Google Sites* and were mostly overcome in the weeks after they developed their Web portfolios. One student shared her experience of using *Google Sites*:

> "…*like finding the settings, like figure out the way, like they have different when you edit a page, when you start a new page you have different like webpage, cabinet, file cabinet and, and understanding those, understanding those is, is a bit difficult.*" (S4, FG_1).

4.3.1.2 Collaboration and feedback

One distinctive feature of *Google Sites* as a platform for the students' Web portfolio development was in its potential to allow collaboration and feedback. They could decide to openly share their Web portfolio links with the public or to specifically designate individuals. They were also able to integrate comment boxes into any of their Web portfolio pages for others to leave comments. However, some of the students did not know that they could leave written comments or feedback on each others' Web portfolios by enabling the comment box feature in *Google Sites*, as remarked by one student saying, "They cannot write on it right?" (S1, FG_3). Her course mate in the same focus group interview quickly indicated that it was possible to insert comments by adding a box at the bottom (S2, FG_3). Although the other students interviewed claimed that they did not fully explore this *Google Sites* feature when completing their Web portfolios, they pointed out that collaboration and feedback did take place.

There were six students who recalled having participated in collaborative activities during the course of developing their Web portfolios. One occasion was when they collaborated to familiarize themselves with the use of *Google Sites* and to enhance the presentation of their Web portfolios. The interview data showed that the students helped each other to get started with their Web portfolios by sharing samples of their Webpages and brainstorming for ideas to make their Web portfolio interesting. It was reported that the students found collaborating in this manner effective in helping them to find their feet with something that was relatively new to them. One student

mentioned, "Because after that a few of my classmates share with me their Web portfolios so from there I can learn how to do the page or something like that, so from there I learn lots of things."(S5, FG_2). They also claimed that "it gives us ideas so it does help us" (S2, FG_1). Reported in the interviews were also instances whereby the students sought each other's help when they needed technical assistance. In particular, help was sought to upload one of their assignments into their Web portfolios as the assignment was a video documentary that required them to do some further editing (F5, FG_2).

After successfully developing their Web portfolios, the students found that working together to improve their end product was a worthwhile effort. For example, a student revealed that she had learnt a lot from sharing her Web portfolio with her other friends. She explained that "we exchange passwords so that we could learn from each other" (S2, FG_2). Once their Web portfolios were completed, it also became a common practice among the students to exchange feedback. The students emphasized that collaborating and exchanging feedback among themselves were beneficial as "they can leave comments and they can also criticize all our works and all our assignments and we can, from there we can improve our assignments since we can communicate online with our friends and our lecturers" (S3, FG_4). Furthermore, the students found comments and ideas from other course mates "encouraged me to do my CALL assignments better" (S2, FG_4). Verbal comments were found to be the one most commonly exchanged among them. This is illustrated in the following excerpt:

S2, FG_2	: *I think comments for us would be as in how to improve like our friends would tell us like, OK, I have this on my page, perhaps you should add it because it is also in the list provided that we just help each other out not really comment like oh yours is…*
S5, FG_2	: *officially comments about our Web portfolio. Just about how to improve our Web portfolio during the process to make it done.*
Researcher	: *hmm, alright. OK, that means you did not leave any comment in the Web portfolio?*
All	: *No.*
Researcher	: *You have the comment.*
S4, FG_2	: *Yea.*
Researcher	: *Section, right?*
S1, FG_2	: *Just verbal comment.*

There were also instances where feedback was given in written form. Unfortunately, they were either in the CALL course discussion forum or the student's Web portfolios as mentioned by the CALL course lecturer, "I think so far I did not see any". However, three students specifically mentioned that, since *Facebook* was a very popular platform, they frequently used it as a medium to communicate with others, including obtaining feedback on their work such as the Web portfolio. There were claims that "we shared the (Web portfolio) links in *Facebook*" and continued giving feedback on their Web portfolios via their *Facebook* accounts (S3, FG_6). As described by another student:

> *"umm..for me yes, I had, I had both verbal and writing because verbal of course when I'm doing it in class, I will ask my friends what I should put and all, ask help from them. They will tell me what to do and all that's verbal and then, actually I am sharing my links through the Facebook and then form the links they view my works, my Web portfolio and then they comment there, they say that this is you shouldn't do like this, this is great, this is bad, yeah they comment it there."* (S2, FG_4)

The students in the other focus group interviews also mentioned that they received feedback through their *Facebook* accounts. This is illustrated in the following excerpt:

S3, FG_5   : *Yes. We send messages but, but, not inside the Web portfolio, we have Facebook so we just chatting there.*
Researcher   : *You link, you link your Web portfolio to your Facebook?*
S3, FG_5   : *Yeah, some…*
S2, FG_5   : *Some of us…*
Researcher   : *Can you tell me a little bit more about that…*
S3, FG_5   : *hmm, I don't really know because I, I do not link my Web portfolio there but some they gossip there, so we can view it.*
Researcher   : *Ohh OK. They post it at, on their Web, ops sorry, Facebook.*
S1, FG_5   : *And you can add it, add them.*
S3, FG_5   : *Add them and we can comments there via Facebook, still via Facebook.*
Researcher   : *I see.*
S4, FG_5   : *In return they add us back…*

Facebook may have been the students' preferred way of exchanging feedback as they already had an established network of individuals they valued. According to the course lecturer, another factor in why the students opted to use *Facebook* was because "they feel that they are being watched" (CL). She further elaborated, "The

lecturer is there to give marks then they don't feel, they don't feel kind of a personal avenue for them. If let's say the *Facebook* it is kind of personal to them, it is very informal, they can say anything nobody will like deduct marks or nobody is going to judge them of what they are saying" (CL). There was also a student (S1, FG_7) who remarked, "They will keep on posting on *Facebook*. This one, oh this guy, he is doing best go and go check it, his site." As the students encouraged each other to post comments in their *Facebook* accounts, efforts being made to promote the CALL course discussion forum to obtain useful insights into various types of feedback that were exchanged among the students did not yield any results. The researcher even requested to be added as a *Facebook* 'friend' but towards the end of the data collection period, it was found that only five students responded. However, there were no longer discussions about Web portfolios in the *Facebook* pages belonging to these students.

In addition to giving feedback on the overall presentation and content of the students' Web portfolios, feedback was also given in terms of language. For example, one of the students mentioned, "Chan said earlier about the grammar about maybe we can, they give opinion about how it looks like so we can change it" (S2, FG_3). Another student also mentioned that his friends corrected "simple grammar mistakes" (S4, FG_5) and "some words that I used" (S5, FG_5). Although these students found collaborating and giving feedback useful, there were students who pointed out that they received more questions rather than comments, for example, "they didn't say 'How shall we do, how shall we improve inside it? They just keep asking can you please teach me something" (S1, FG_7). Interestingly, there were those who did not receive any feedback and seemed to be of the opinion that some students purposely refused to offer feedback. For example, one student claimed that "because its like a competition, if they do it better, they don't want others to do the better" (S3, FG_7).

4.3.1.3 Reflection

In the process of developing their Web portfolios, the students were found to have been engaged in reflection. In the interviews, a question was posed to find out what part of the Web portfolio development process the students remember most. When answering the question, the students began to recall their experiences with reference

to completing their 'Assignment page', which was one of their Web portfolio tasks. A careful analysis suggests that, when setting up their assignment page, the students also began to engage in a reflective process primarily through the action of selecting artefacts to be included in their Web portfolios. One student related her experience in the following excerpt:

S3, FG_1 : *It actually does. Because when, when I upload my assignments, once again I am reminded of all the things that I have done.*
Researcher : *aaa…*
S3, FG_1 : *and as I upload it because I did save before I upload ALL of my assignments in semester two. So I am reminded of every assignment I did and then I am even reminded of the, the assignments that I did that I think I should send in but I didn't finish it (laughs) yeah. So I just look back on it and I tried to finish it even though the assignment is already long past.*
Researcher : *Yeah, good.*
S3, FG_1 : *the due date. Yeah.*
S4, FG_1 : *And another thing is that we can, we can see others and, and compare with us, with ours and we can see that we learn less and we play more we can see the, the comparison, the differences so and then makes us think makes us think back why is their assignment is better than ours.*

The excerpt presented an example of the students' reflection on their past learning. Having to look through and make a selection of assignments they wanted to include initiated them to reflect on learning that took place as part of completing their assignments. The above excerpt also highlighted the way in which the students were further engaged in reflection by comparing their work with others' work.

In addition to looking back to select work that they were comfortable in sharing with others through their Web portfolios, it was found that there were students who also took the initiative to 'fix' their past work so that it would be better presented to others. For example, one student pointed out that "because we need to upload it from our previous assignments and we need to find the old assignments in the files and we need to fix it so it will become a little bit beautiful *lah* for the others to view and to download it" (S1, FG_4). Another student provided an example of how she benefited from developing her Web portfolio as it had helped her to reflect back on her past learning. She further shared her experience in the excerpt below:

"Well, as for me it helps in reflecting what I have learnt. For example, writing, I mean when you are doing this you are writing. I guess it leaves an impact on me. So that when I wrote something about my reflections or what is my aim in ten years on this so it start automatically it comes to mind and reflect back on what I have learnt, OK, Mr. Zain said we should have a topic sentence, so I have to put a topic sentence here and there. That is part of the learning that came back in my mind and other learnings like Madam Leela taught us how, how do we view umm other websites to get idea. And like Madam Farah, itself, you yourself encourage us to find a webpage that can encourage us or give us an idea. I mean that is part of the learning also cause we are exploring so we see other things and that's what I did that I get an idea should I write and what to do."(S1, FG_1)

The process of reflection was also enhanced by the students who put their thoughts into words in their Web portfolios in the 'Reflection' page. However, it was found that completing this task required a great effort on their part. The course lecturer confirmed that when she stated that "the reflection part was the most difficult part actually". She continued, "They could handle putting in things, their assignments and all, but the reflection part is writing on their own, something to share so they didn't write too much here in the reflection." The course lecturer also added that her students might have found it a challenge to complete the reflection page as they were not yet introduced to writing reflections and therefore most likely did not know what to share when writing the reflections. She also added that her students might not have had enough practice in writing and expressing their thoughts in words as they were only in their second semester. One student also clearly pointed out that "we have difficulties in putting our thoughts in words" (S4, FG_5) when she was specifically asked about her own reflection page.

4.3.2 Product

Statements categorised as Product give explanations of the way Web portfolios were used in the CALL course. For this category, the interview data showed that the students used their Web portfolios for a variety of purposes. The students also claimed that their Web portfolios, as a platform to showcase their personality, were useful as an online repository where they could share their resources. The students also pointed out that they valued their Web portfolio as a tool to evaluate their academic progress over time.

4.3.2.1 Showcase personality

For the students who were interviewed in the study, the construction of a Web portfolio was an opportunity for them to showcase their personality. For example, one student remarked that "through Web portfolio, that way I can express and tell more about myself as well as my academic background." (S3, FG_6). Another student also stated that the Web portfolio's personal profile page and academic profile page were really useful in learning more about their course mates. He shared some of the new information he learnt from reading his friends' Web portfolio as follows:

> *"When they put on, or they write everything about their self in their Web portfolio in their profile page so we can view and we can know them better. So somehow it can help us to know them better and also when we are looking at their academic background, we know where they come from, which school have they been study and somehow there are persons who came from matric, who came from"* (S2, FG_4).

Another group of four students were also convinced that their Web portfolio was a means of gaining recognition through publishing themselves to others over the Internet. They seem to be keen on sharing with others their background as exemplified in the excerpt below:

S3, FG_2	: *You need to have a Web portfolio, its shows you and yourself, and what are you doing now and after that*
S1, FG_2	: *background*
S3, FG_2	: *and your back ground and everything, it's a good thing if you want to introduce yourself to others.*
S4, FG_2	: *And it can even boost your creativity on building a website*
S1, FG_2	: *yeah, creativity…*
S2, FG_2	: *It's cool to have a site under your name so that you know if someone search you*
S1, FG_2	: *yeah*
S2, FG_2	: *it's not only your Facebook profile will come out (all laughs), a useful profile will appear.*

There were ten students in the interview who used their Web portfolios as a product to showcase their personality with the goal of sharing with others a little bit more of themselves. While there were students who confessed that their Web portfolios were

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used "to impress" (S1, FG_5) and to make others "be attracted" (S4, FG_5) to them, other students simply stated that they were interested in learning more about their course mates. For instance, one student asserted that "I think it's more about how we see, how we see our friends in the other way, because before this we know them as what they portray to us, but when we see them their Web portfolio, I don't know, we can see their other side" (S1, FG_5).

4.3.2.2   Online repository and shared resource

Evident in the responses obtained from the students was the way they perceived their Web portfolios as a solution to their existing problem of storing their previous and present academic work. It was noted that they considered the ability to store and retrieve files accessible over the Internet as a strong feature of their Web portfolio. As pointed out in the interviews, the students found their Web portfolios useful in terms of "uploading our work because we may use it, we may refer to it anytime we want and anywhere" (S4, FG_1). Another student also added that "it would be easier I mean for back up is one thing, you don't have to carry our works everywhere, you can access anywhere as long as you have Internet connection if u put everything online" (S1, FG_1).

The students seemed to have the idea that they would be using their Web portfolios in future and commented: "The best part, yah the best part, the most useful part I think this Web portfolio as the online storage files especially for us that going to be a teacher this is very important, we can always recall and also see what we had done in the past like our previous assignments and the links" (S3, FG_4). Their Web portfolios were also regarded as a valuable means for the students to share their resources with the expectation that they would be able to learn from viewing each other's work. They pointed out that "we can make the Web portfolio become interesting so that our friends or the others can view our Web portfolio and leave comments about it" (S1, FG_4) and "you can, your friends can access too and then you can exchange so you can see what your friends is doing and you know how to improve and if your friend sees that you have some idea that they don't and they can improve too" (S1, FG_1).

Six students who participated in the interview pointed out that they were thrilled by the file sharing feature of their Web portfolios because it made collaborating with other students much easier. This was because the files that they uploaded to their Web portfolios could be accessed by simply sharing their Web portfolio site addresses (S3, FG_1). There were also students who stressed that the ability to share files that they uploaded with others was the most important feature of their Web portfolios (S2, FG_4).

4.3.2.3 Document progress

The interview data revealed that there were five students who specifically mentioned that they viewed their Web portfolios as a product that they could use to document their academic development. One of them claimed that "to me the long term advantage is so that we can see how is our progress in learning" (S2, FG_5). This student further explained that she had plans to conduct a study and included the plan in her Web portfolio. She mentioned that by documenting the process of conducting the study in her Web portfolio, she will be able to look back in a year's time to see how far she progressed. Another student also highlighted that his Web portfolio was useful in terms of evaluating his overall progress in the future (S4, FG_5).

4.3.3 Technology

Technology refers to a category of statements that gives examples of different types of online technologies the students used and the computer skills students developed as a result of using those technologies in the development of Web portfolios. For many of them, the development of Web portfolios was "a better side of learning computers" (S2, FG_6) that had encouraged them "to learn about technologies" (S1, FG_4). Designing and presenting webpages, developing and managing Web content and using multimedia were the three areas where the students' use of technology and development of computer skills were most visible.

4.3.3.1   Webpage design and presentation

The use of *Google Sites* as a platform of the students' Web portfolios did not require the students to have any experience in webpage design and presentation skills. However, at the initial stages of their Web portfolio development, some of them were found to need more assistance than expected as they were not familiar with *Google Sites* at all as discussed in one of the focus group interviews:

S2, FG_1   : *At first I had no idea what is Google Sites I thought it was just a Google search engine so, and then when I log into, I was like what is this? So, I just click all clickable buttons and I try to explore it*
Others   : *Clickable buttons (laughs)*
S2, FG_1   : *Try to explore it like how to arrange words, how to upload images sort of things.*

Given a few hours of exploration, the students seemed to have the idea of what it took to proceed with *Google Sites*. As mentioned by the students, they needed to rely on their word processing skills to type and edit text. In addition, they also needed to have basic Web design skills to complement text, typeface and webpage background. They stated that it was important to learn this skill "because you see if we didn't match the color of the font with the background, the readers or the viewers of our Web portfolio maybe find it difficult to read the information in our Web portfolio (S3, FG_4).

Designing and presenting the webpages in their Web portfolios were among the most challenging tasks the students had to do especially since they had no formal training. One student pointed out that, besides having to think creatively to make his Web portfolio interesting, he found "the part of designing the background and also the design is for our Web portfolio the most difficult part because there's a lot of things we need to think about such as the background color and also the font color so it is the most challenging part" (S3, FG_4). The other students in the same interview group also agreed that the webpage design and presentation required "a lot of work to do and I have to choose from the what all of the stuff that they offer us to choose but then, to make it nice we have to choose it carefully" (S2, FG_4).

For other students, their concern was about the layout of the content of their Web portfolios. One example was given by a student who tackled the design and presentation of his home page by trying "to arrange it inside three different boxes pictures and then keep inserting some quotes, and then pictures with some features" (S3, FG_7). In an effort to make the pages in their Web portfolios interesting, it was apparent that the students had to rely on their skills of editing pictures in which case the pictures they used were often downloaded from the Internet, resized and saved. Interestingly, some students claimed that they used photo editing software such as *Adobe Photoshop* to edit their pictures. This was only the case with a handful of them who were more advanced users of computers.

4.3.3.2 Web content development and management

The use of *Google Sites* as a platform for the students' Web portfolio development encouraged the students to familiarise themselves with the construction of various types of webpage content and the management of the content. It was noted that the students became aware that with websites and webpages "we cannot just simply change your name, your address URL, we have to delete them and then create a new one" (S3, FG_6). This particular student also pointed out that she needed to familiarise herself with the different types of templates used to present information as webpages in *Google Sites* such as "how to change it to webpage or file cabinet and that is quite hard for me". The difficulty in managing webpages was also experienced by other students as illustrated in the following responses:

S4, FG_5   : *Yeah same goes with me because at first I create the wrong page, I choose the normal page but we supposed to take what the?*
S3, FG_5   : *File folder*
S4, FG_5   : *File cabinet*
S1, FG_5   : *Cabinet*
S4, FG_5   : *But then when I delete it, the new page didn't appear, still the old one.*

Some difficulties were also mentioned by the students who had experience developing blogs as they claimed that "like finding the setting, like figure the way, like they have different when you edit a page, when you start a new page you have different like webpage, cabinet, file cabinet and, and, understanding those,

understanding those is a bit difficult." (S4, FG_1). In this respect, the development of Web portfolios encouraged the students to rely on their existing knowledge and skills of using the Web and at the same time develop new ones. In particular, they were able to explore the diverse ways in which information can be presented on the Internet and the technology that is available to achieve them. Three other students mentioned more examples of the different types of computer skills and technologies they explored such as arranging sidebar items (S3, FG_1), editing videos (S3, FG_5) and uploading large files (S2, FG_5).

The types of Web browser used were also an issue that confronted one of the students. In this case, the student had to understand the potential and limitation of various Web browsers as she mentioned, "For me the most challenging part is that I'm using *Google chrome* and then I can't, I can't edit all the assignments, sidebar, home profile, all that" (S1, FG_2). The student managed to find her way around this problem by seeking help from the Internet "and then I searched into *Google* and I type how am I going to do with that problem. And then some of the people in the Internet reply my question as said that I should change to *Mozilla Firefox*". While becoming aware of the features of different types of Web browsers could be regarded as a computer skill, the student also displayed the skill of using the Internet as a resource for seeking help from others.

4.3.3.3 Multimedia

The development of Web portfolios also encouraged the students to become more familiar with multimedia. For example, one student described her use of multimedia elements such as graphic images and she was quoted saying, "Like if you want to draw, you can draw. And then you upload your picture. And if you don't want to draw, you want to get other pictures you can just search and download the picture and then put inside" (S1, FG_3). Eight students mentioned that they also included sound files into their Web portfolios to make them more interesting. In doing so, however, they mentioned that they encountered a few problems such as "when I was trying to do the *MP3*s, they, they got the *MP3* but there will be no sound" (S3, FG_7). The problem was later resolved with the help of a friend who pointed out that the *URL* address was incorrect.

Twelve students also mentioned that they specifically included videos in their Web portfolios. Besides creating a link to music videos in their Web portfolios, the students wanted to upload completed assignments on the use of videos into their Web portfolios. This task proved to be difficult as the students learnt that there was a limit to the size of files that could be uploaded and it resulted in some of them trying different approaches. While some of them resorted to cutting short their videos, there were others who "put the link there" (S3, FG_1) referring to the use of hyperlinks. Four students also explored the use of *YouTube*. They described their experiences in the following excerpts:

> "*to upload the video to our webpage or Web portfolio, its need to be a few steps. First of all we need to open an account with the YouTube and then we must upload it to the YouTube. But the WIFI in UPSI is quite slow so we need to wait for the video to upload fully into the YouTube because the size of the video that we have to created is not small maybe the smallest is about 1 gig and then after we had you load it into the YouTube, we must find the link in the YouTube and we must copy to our Web portfolio to put the video inside our Web portfolio*" (S1, FG_4).

> "*Because it took me a lot of trouble to do it because of the length, Google Sites only gives a maximum of 20 MB if I'm not mistaken something like that. But then my video is so long that I have to create a new YouTube account, upload my video there then after that go to insert something, insert videos and then YouTube videos then I have to put in the video from there on, then I can upload my video on to my Web portfolio*" (S4, FG_2).

In the interviews, the issue of copyright in relation to the use of videos and songs from the Internet was also addressed. After spending a lot of time selecting videos or songs to be uploaded into their Web portfolios, one student encountered difficulties in publishing the videos and songs in his Web portfolio. He related his experience in the following excerpt:

> "*There's also problem because when we uploading the video, there is a copyright issue because when we are doing our video we put inside a lot of songs and the songs is actually not ours so some of our videos have been muted because the songs that we use are copyright by others so just one of challenge there we have to do this again and again just to make sure the video we upload is OK to be watched*" (S2, FG_4).

Another student also reported that one of the challenges in learning to incorporate multimedia elements into their Web portfolios involved embedding files into their Web portfolios (S4, FG_2). The other multimedia element that was found to be used by the students was animations. A student mentioned that "I saw Pei Pei's, hers is full with colorful things like animations and cartoons" (S1, FG_1). Another student in the interview said that she was interested in exploring the use of animations and went ahead to incorporate it into her Web portfolio. However, since her first attempt at using animations, some problems were reported such as "if we just upload, upload gif. file it won't go in motion, it won't move, but have use the html, put the html" (S2, FG_1).

4.3.4 Assessment

Assessment refers to a category of statements related to matters surrounding the assessment of Web portfolios in the CALL course. The assessment of the students' Web portfolios was primarily guided by the use of a Web Portfolio Assessment Rubric (Appendix G) in which each criterion was communicated to the students prior to their development of Web portfolios. The rubric was supported by the Web Portfolio Task Sheet (Appendix F) further clarifying the tasks they needed to complete as part of their Web portfolio development process. The results of the interview suggest that the students had varied ideas of assessment. When asked about the clarity of tasks that they were to complete, the students did not indicate any problems understanding the tasks. However, in the interview, there was evidence that some students were rather uncertain that their Web portfolio assessment was primarily based on the list of tasks designed to be included in their Web portfolios. For example, even after the students submitted their Web portfolios for assessment, one student asked in the interview how her Web portfolio would be assessed (S2, FG_4) and another student wanted clarification if assessment was based solely on "our creativity of arranging and decorating the pages" (S3, FG_1). It seemed that the students viewed the Web portfolio tasks and Web portfolio assessment as two separate entities. They also related their uncertainty regarding the assessment of Web portfolios in terms of the content and marks.

4.3.4.1 Content

Three students in the interview mentioned content as an important aspect in the assessment of their Web portfolios. They indicated that they were worried that the contents of their Web portfolios were not good enough to earn them an A grade. This was illustrated in the following excerpt:

S4, FG_5	: *Yeah I'm worried if it is not good enough*
Researcher	: *Good enough in terms of?*
S4, FG_5	: *Yeah, maybe*
S3, FG_5	: *Getting A*
S4, FG_5	: *What?*
S1, FG_5	: *The content maybe*
S3, FG_5	: *The content*
S4, FG_5	: *I'm afraid what I put there is not what you want*
Researcher	: *OK*
S4, FG_5	: *What you wanted to see, I hope I put the right thing though*

However, when discussing the assessment of their Web portfolios, there were also students who have also regarded the design or *"creative side"* (S4, FG_1) of their Web portfolios synonymous the content that was to be assessed. There seem to be uncertainty between the content and presentation of their Web portfolios as evident in the following responses:

> *I have trouble to make the Web portfolio to look very colourful or very interesting for the viewers. So the thing that worries me the most is when peoples or my friends take, take a look at my Web portfolio and they will say it very boring and the same goes to the lecturer also.* (S3, FG_4)

> *Yes, for me my Web portfolio is too basic but it is full with the task. I'm not so worried of the contents of the Web portfolio but I am worried about the design because I not really a creative person to make it interesting and not really a good person to for example put the music on. So to make it interesting is a very difficult task for me. So I think maybe I will get a low mark because of the design or I don't know (laughs).* (S1, FG_4)

4.3.4.3 Marks

In the interviews, the students also expressed a notable concern over the marks allocated for their Web portfolios. For example, one student indicated, "Maybe because it's an assignment so worry about the marks" (S1, FG_3) and another student revealed that "so when I know there's assessment it's like something similar to me like hearing that there is going to be an exam for this, so, OK it's going to be assessed, you'll be mark, you'll be grade, so you need to do your best" (S1, FG_1). The students were also worried about the quality of their Web portfolio with regards to the marks they will get for the CALL course such as "because my Web portfolio I think it is so simple so maybe the marks will get affected by that" (S2, FG_6). The course lecturer also mentioned that her students were concerned over the marks allocated for their Web portfolio task. This is illustrated in the following excerpt:

> Researcher : *OK, alright. Did they have any questions regarding the assessment procedures?*
> CL : *Yes, they just wanted to know how many marks allocated for the tasks that they put in their Web portfolios.*
> Researcher : *OK, did they ask you about more details about what will be assessed, how it will be assessed, maybe…*
> CL : *No. Not exactly.*

The students were also clearly anxious about their Web portfolios as a product of the CALL course as 10 students indicated that it was their first time developing a Web portfolio. The students repeatedly stated "this was our first attempt" (S4, FG_2) and "this is our first try" (S3, FG_2) in the interviews. There was one student in particular who expressed dissatisfaction in terms of the assessment of Web portfolios. The following excerpt illustrates the reasons why the student found the assessment of Web portfolios to be unfair.

> *"Actually I think it is quite not fair to evaluate the Web portfolio because it is to me initially we were told that actually it is a very personal portfolio where we actually based on what we want. So if lecturers are, were to actually access and evaluate us, maybe they will only based on what they like. Like the features maybe they thinks although they might think this is very innovative to put this, this, this, then other people if they don't put they will consider as it's not very creative of these things. But we have to actually to us that we establish*

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we were told what we were to base it on what we want. We are not creating as in a form a competition were we need to satisfied the, the judges that is going to evaluate us. But rather we are creating for our self which we think this is suit our theme so its not…" (S2, FG_7)

This student was also upfront in wanting confirmation about marks allocated for his participation in the study. He asked the researcher "Another thing I would like to ask is that initially we were told to participate in this research, we were told that we are actually are going to be rewarded so rewarded as in terms of evaluating or will reward as in the terms as we just participate and we will get the 20 marks?" An explanation was offered to the student assuring him that the marks allocated for their Web portfolio was determined by the course lecturer and that there were no marks allocated for his participation in the study.

4.3.5   Summary of interview results

A summary of the results from the interviews is presented in Table 4.20. The table illustrates the findings from four major categories and their themes.

Table 4.20
Summary of interview results

Category	Interview results
Process	• The use of Web portfolios was regarded as a *new learning experience* by most of the students. Not only did they have to become familiar with the use of *Google Sites*, they also had to understand the concept of a portfolio. For some students, carrying out task related to their development of a Web portfolio presented a huge challenge as their skills at using Web applications were still at the infancy stages.
	• While developing their Web portfolios, it was clear that *collaboration and feedback* played an important role. The students relied on working together and exchanging feedback as a means to overcome various challenges associated with their development of Web portfolios.
	• The concept of r*eflection* was very new to the students. Although they claimed to have reflected on their past learning in the process of improving their present ones, the evidence was very scarce. There seems to be a need for students to be properly introduced to the idea of critical reflection as most students regarded reflection as merely a way to describe their past experiences.

Product	• The most popular use of the students' Web portfolios was to *showcase their personality* over the Internet. They were found to have spent most of effort in ensuring that their Web portfolio was designed to reflect their personality and to provide additional insights that are unique about them. • The students were also very keen on using their Web portfolios as an *online repository and resource* particularly because of the storage capacity and the opportunity to share resources easily with others online. • A handful of the students claimed that they used their Web portfolios to d*ocument progress* of their work and academic achievements.
Technology	• The development of Web portfolios in the CALL course had helped sharpen the students' skills in using computers and the Internet. • They have become more familiar and skilful in *webpage design and presentation*. • Through *Web content development and management*, the students' skills with online technologies were further developed. • Evidently, the students have claimed that using *multimedia* as part of their Web portfolio development process was an interesting but challenging experience. • A number of the students, however, reported that they had to face a number of technical difficulties in completing their Web portfolio tasks.
Assessment	• The students needed more clarity in terms of the way their Web portfolios were assessed. • There was uncertainty regarding the assessment of their Web portfolios between the *content* and the *presentation* of their Web portfolios. • *Marks* awarded for their Web portfolios seemed to be an issue many of the students were concerned about.

4.4 Results from the students' Web portfolios

A total number of 128 Web portfolios were developed by the students in the CALL course but only 125 Web portfolios were submitted to the course lecturer. As instructed, the students compiled printed copies of their Web portfolio pages and submitted them to the course lecturer for assessment. Prior to submission, the students also changed the privacy settings of their Web portfolios to enable the

course lecturer, the researcher and a panel of reviewers to access and view their work online. However, it was later found that during the review period that not all students successfully changed their privacy setting. As a result, out of the 125 Web portfolios, six could not be accessed by the reviewers and two could not be accessed by the researcher. Nevertheless, it should be noted that the grades provided by the reviewers and researcher were used only for the purpose of the present study and did not contribute to the students' overall grades in the CALL course. This was because the course lecturer had made the decision that she would award each student marks based on their participation in developing Web portfolios in the CALL course. All the Web portfolios site addresses that were submitted by students in this study are included in Appendix K and the detailed results according to each CALL tutorial group are presented in Appendix L.

A written report was produced by the reviewers responsible for the assessment of individual Web portfolios. The report highlighted various aspects of the Web portfolios that required more attention. In some cases, comments were provided justifying the grades awarded for the Web portfolios. While the course lecturer was initially involved in the assessment process, she was not able to provide a detailed report for individual Web portfolios due to time constraints. Nevertheless, a report of the students' overall performance in completing their Web portfolio tasks was obtained.

As mentioned in the previous chapter, the analysis of Web portfolios involved discussing the extent to which the students were able to address the items included in the Web Portfolio Assessment Rubric (Appendix G). When assessing the students' Web portfolios, the extent to which the students completed the tasks as specified in the Web Portfolio Task Sheet (Appendix F) was also taken into account. The Web portfolio assessment rubric was constructed to assess five major components related to the students' development of Web portfolios in the CALL course. These components were identified as content, task completion, presentation, reflection and language use. Four grade descriptors (A, B, C and D) were used to identify the extent to which these components were addressed.

According to the grades provided by the reviewers on their analysis of 119 Web portfolios, there were 30 students (25.2%) who obtained grade A for their Web portfolios. These students were successful in addressing all five of the components according to the criteria described in the Web portfolio assessment rubric. A number of 43 students (36.1%) were found to have obtained grade B and another 40 students (33.6%) were given grade C for their Web portfolios. Grade D was given to 6 students (5%) as they did not manage to complete most aspects of their Web portfolios. In the analysis of the students' Web portfolios by the researcher, it was found that out of the 123 students, those who obtained grade B were 68 students (55.2%), grade C were 83 students (67.4%), and grade D were 2 students (1.6%). The researcher did not give any student an A grade for their Web portfolio. Further analysis of students' development of Web portfolios based on each of the components in the Web portfolio Assessment Rubric is presented in the following section.

4.4.1 Content

For the students to obtain an A grade for their Web portfolios, the content presented in their Web portfolios had to show evidence of work consisting of a variety of topics and activities. In the analysis, it was found that "most of the students used the Web portfolios to store and share their past assignments and readings" and "a few also wrote extensively about a few topics related to CALL" (R2). One reviewer found that the contents of the students' Web portfolios were mostly completed with "useful insights and informative content that reflect the purpose of the portfolio" (R5). Contradictorily, another reviewer stated that the contents of the students' Web portfolios were very limited and "most students failed to present a strong webpage" (R4) primarily because the students only completed all their webpages at minimum requirements. Nevertheless, the course lecturer pointed out that the Web portfolios belonging to the students were encouraging as the students have potential. She also emphasized that the students need guidance in order to develop good content for their Web portfolios. There were some areas of improvement suggested by the reviewers in terms of improving the "teaching materials and research" (R5) and making use of the Web portfolios to "display their competency in using the language and communicate ideas/opinions to the web viewers" (R3).

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4.4.2   Task completion

As stated in the Web Portfolio Assessment Rubric, the second item that was taken into consideration when assessing the students' Web portfolios was task completion. With reference to the rubric, the students were expected to complete 'all Web portfolio tasks with obvious and consistent effort'. The tasks that have been set for the students have been described in detail in the Web Portfolio Task Sheet (Appendix F). According to the task sheet, there were 10 webpages that the students needed to include in their Web portfolios. While all the students were found to have completed their profile pages, the remaining pages were found to be either incomplete or not created at all. For example, at the time their Web portfolios were assessed and graded, it was found that one student (0.8%) did not create a home page, one student (0.8%) did not create an academic profile page, and two students (1.6%) did not create a contact details page. There were two students (1.6%) with an incomplete assignments page, 25 students (20.3%) with an incomplete research page, 21 students (17%) with an incomplete teaching materials and work samples page, 14 students (11.3%) with an incomplete reflections page, 19 students (15.4%) with an incomplete resource page, and eight students (6.5%) with an incomplete future learning goals page. There were also 23 students (18.6%) who did not manage to list their webpages correctly in their Web portfolios.

While the students were informed that their own names or part of their names needed to be reflected in their Web portfolio site address, there were 43 students who used pseudonyms. For example, the students named their websites as 'cokelatking90', 'sepattheronggengfish', 'apeksite', 'borntobereal', 'saya budak tesl' and 'shadowoftheday1228' which the researcher regarded as rather inappropriate labels or names for their Web portfolios. However, they were not asked to change as requesting them to do so might cause these students to abandon the Web portfolio site altogether and repeat the process of registering for a new site all over again. The course lecturer and the researcher also came to a consensus that the students' site names was a minor issue and did not want to discourage the students from completing their Web portfolios. Thus, the students were allowed to proceed using their chosen Web portfolio names.

There were two types of responses gathered from the reviewers. Out of the five reviewers, only one reviewer felt that the students did not manage to complete the Web portfolio tasks to the expected standard. She was of the opinion that there were some tasks that were incomplete "probably because the students did not see how it would benefit them in years to come" (R2). One reviewer mentioned that although the students' Web portfolios were regarded as complete, there were "no details provided for the assignments uploaded" and added that "some of the students have provided some information regarding their work but most of the descriptions are too brief" (R3). It was implied that although the students did manage to complete the tasks, the effort they have put in was only minimal. The following is an overview of the individual tasks the students were to complete for their Web portfolios:

4.4.2.1   Home page

The webpage into which the students put a lot of effort in terms of the presentation was their 'Home' page. The home page was the first task the students' were to complete and the objective this task was for the students to introduce their Web portfolio by giving an overview of the purpose and content presented in the Web portfolio. The task was described as 'Create an interesting welcome page that reflects your personality and interests'. In the review conducted by the researcher, it was found that three students (2.4%) managed to complete their homepage as required by the task set for them and they also managed to present an interesting homepage. Another 43 students (34.9%) were found to have completed the task but their homepage could be further improved in terms of additional information, language used and inclusion of graphics that were more relevant to the concept of an academic Web portfolio. There were 73 students (59.3%) who created their homepage but were found to have not completed the task satisfactorily. Some of the reasons were that they had used point form to present their ideas instead of complete sentences and also displayed some mismatch between the information and graphics presented that seemed unsuitable to the content of an academic Web portfolio. 13 students (10.5%) created a homepage that included only a picture of themselves and four students (3.2%) were found to have included only an audio and video link in their homepage. Another three students (2.4%) were also found to have included information that was

totally irrelevant to the task required. One student (0.8%) attempted to complete the homepage task but appeared to have presented similar information in her homepage, profile page and academic profile page. A sample of a student's homepage is displayed in Figure 4.1.
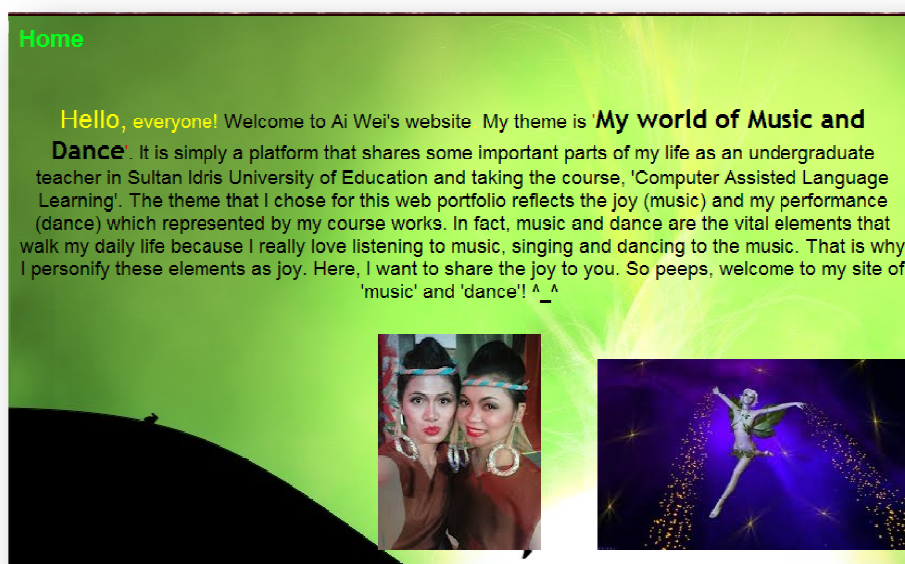
Figure 4.1   Sample of a student's homepage.
(*Source*: https://sites.google.com/site/aiweicl/home)

4.4.2.2   Personal profile page

The second task the students were instructed to develop was a personal profile page. During the Web portfolio development workshop sessions, the students were strongly encouraged to develop their personal profile page in terms of a suitable theme that best reflects their personality. The number of students who completed this task as specified was 56 (45.5%). Although 16 students (13%) did not use an essay format to describe their personal profile, they were found to have completed the task satisfactorily. Unfortunately, the task of creating a personal profile was not completed satisfactorily by 12 students (9.7%) who used short phrases and 39 students (31.7%) who used point form instead of sentences because their profile information turned out very brief and information presented was also limited. It was also found in the analysis that two students (1.6%) extended their creativity by presenting their personal profile in the form of a poem. Samples of the students' profile pages are shown in Figure 4.2 and Figure 4.3.

Figure 4.2   Sample 1 of a student's personal profile page.
(Source: https://sites.google.com/site/lailymurny6168/personal-profile)
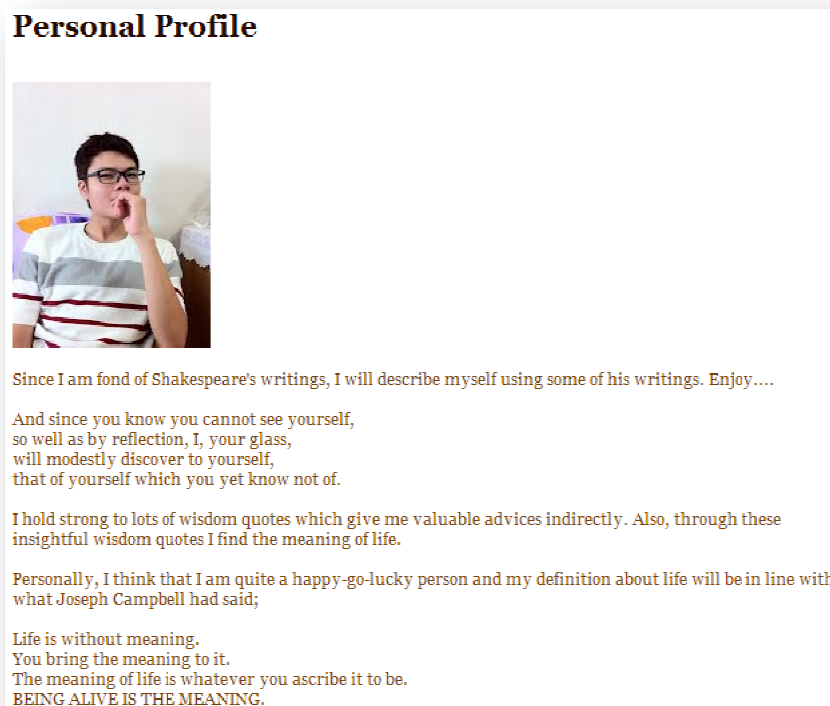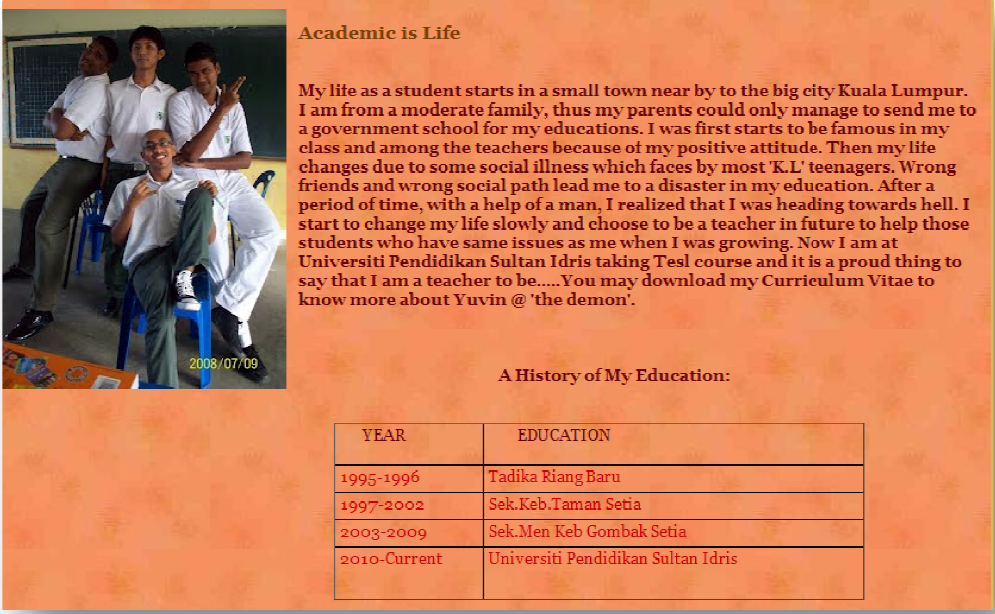
Figure 4.3   Sample 2 of a student's profile page.
(Source: https://sites.google.com/site/thoughtsbutnotall/personal-profile)

4.4.2.3 Academic profile page

The academic profile page was a page dedicated to providing some information about the students' academic background. In the analysis, it was found that the students took the opportunity to display their academic achievements chronologically and listed the various schools they attended. It was found that 12 students (9.7%) completed this task successfully by providing detailed descriptions of their academic background and a short narrative of their school life - describing their experiences as students. Four students (3.2%) included resumes in their academic profile page and three other students (2.4%) went a step further to display their school badges, pictures of them at school in addition to their resumes on this page. Thirty-four students (27.6%) did not complete this task satisfactorily as they provided information about their academic background very briefly using point form or just a few sentences. Another 69 students (56%) who presented only their list of schools were also found to have not fulfilled the requirements of this task. A sample of a student's academic profile page is presented in Figure 4.4.

Academic is Life

My life as a student starts in a small town near by to the big city Kuala Lumpur. I am from a moderate family, thus my parents could only manage to send me to a government school for my educations. I was first starts to be famous in my class and among the teachers because of my positive attitude. Then my life changes due to some social illness which faces by most 'K.L' teenagers. Wrong friends and wrong social path lead me to a disaster in my education. After a period of time, with a help of a man, I realized that I was heading towards hell. I start to change my life slowly and choose to be a teacher in future to help those students who have same issues as me when I was growing. Now I am at Universiti Pendidikan Sultan Idris taking Tesl course and it is a proud thing to say that I am a teacher to be.....You may download my Curriculum Vitae to know more about Yuvin @ 'the demon'.

A History of My Education:

YEAR	EDUCATION
1995-1996	Tadika Riang Baru
1997-2002	Sek.Keb.Taman Setia
2003-2009	Sek.Men Keb Gombak Setia
2010-Current	Universiti Pendidikan Sultan Idris

Figure 4.4   Sample of a student's academic profile page.
(*Source*: https://sites.google.com/site/yuvinkumar/home/academic-profile)

4.4.2.4   Assignments

In order to allow readers to view assignments that were in progress or were completed, the students were instructed to include a page entitled 'Assignments' in their Web portfolios. For this page the students had to create links or sub-pages to specific assignments and assign the links or name the sub pages according to their respective course codes. The students were specifically instructed to make sure they included all their assignments in the CALL course with descriptions of each assignment. They were also encouraged to include assignments from their other courses but it was not compulsory. The following excerpt shows a sample of one student's description of her assignment:

> *"This is a group assignment. We need to create a mini documentary using Windows Movie Maker. We chose environment as a theme for this documentary. The title is 'Reduce, Reuse and Recycle'. The purpose of this documentary is to gain awareness of saving our earth."*
>
> (Source: *https://sites.google.com/site/menadira/assignments*)

One student also incorporated his own reflections on the process of completing one of his assignments. The following excerpt is of a student's assignment page:

> *"The one with title 'Blood Donation' is an e-poster. Actually it's a group work. it's my first attempt doing an e-poster, so it's just a simple one. The 'bouncing ball is also my first attempt doing a mini documentary. It's an individual task. It's so simple because I really don't know what to make at that time and I'm not creative. Actually, I'm quite disappointed with my mini documentary because I know that I can do better. Maybe next time!"*
>
> (Source: *https://sites.google.com/site/misseryn90/internship-evaluation-paper*)

In the analysis of the students' assignments page, it was found that 69 students (56%) complete this task as specified by including file attachments of all their CALL assignments and providing a brief description of each assignment. Fifty-four students (43.9%) did not complete this task satisfactorily because they attached only files

containing their CALL assignments and also from other courses but did not provide any descriptions of the assignments. There were two students (1.6%) who created the assignments page but did not attempt to complete the task. The following are samples from the student's assignment page.

Figure 4.5   Sample of a student's assignment page 1.
              (Source: https://sites.google.com/site/atiliaenglishgarden/
              assignments)
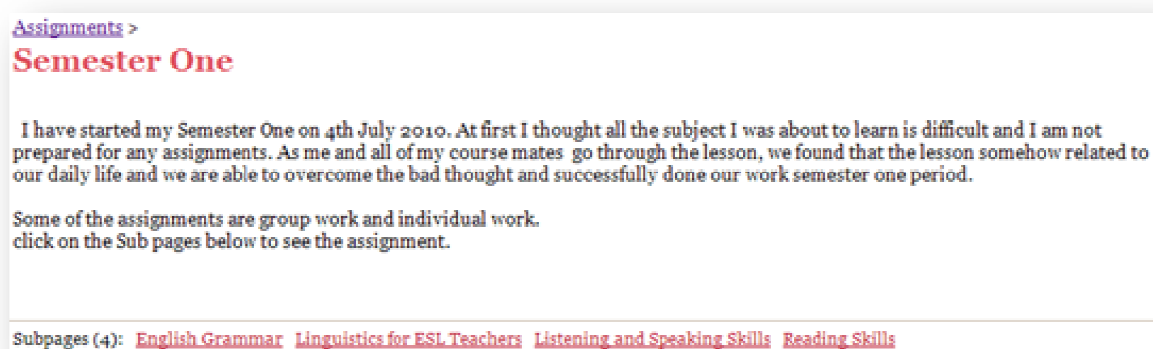
Figure 4.6   Sample of a student's assignment page 2.
              (Source: https://sites.google.com/site/atiliaenglishgarden/assignments/
              semester-one)
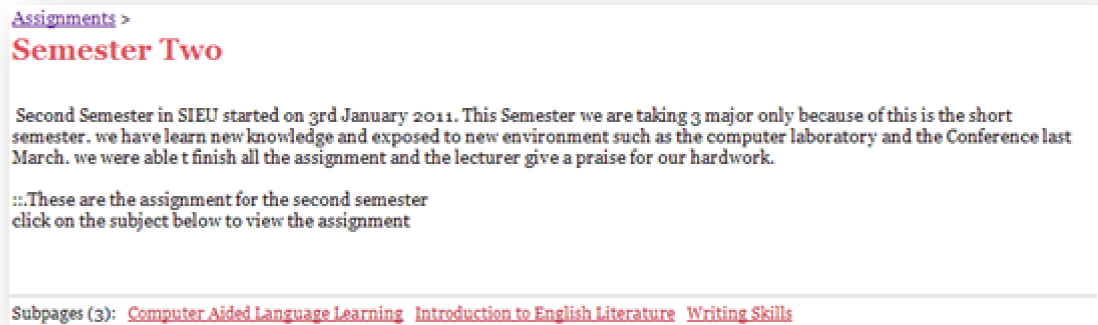
Figure 4.7   Sample of a student's assignment page 3.
(Source: https://sites.google.com/site/atiliaenglishgarden/assignments
/semester-two)
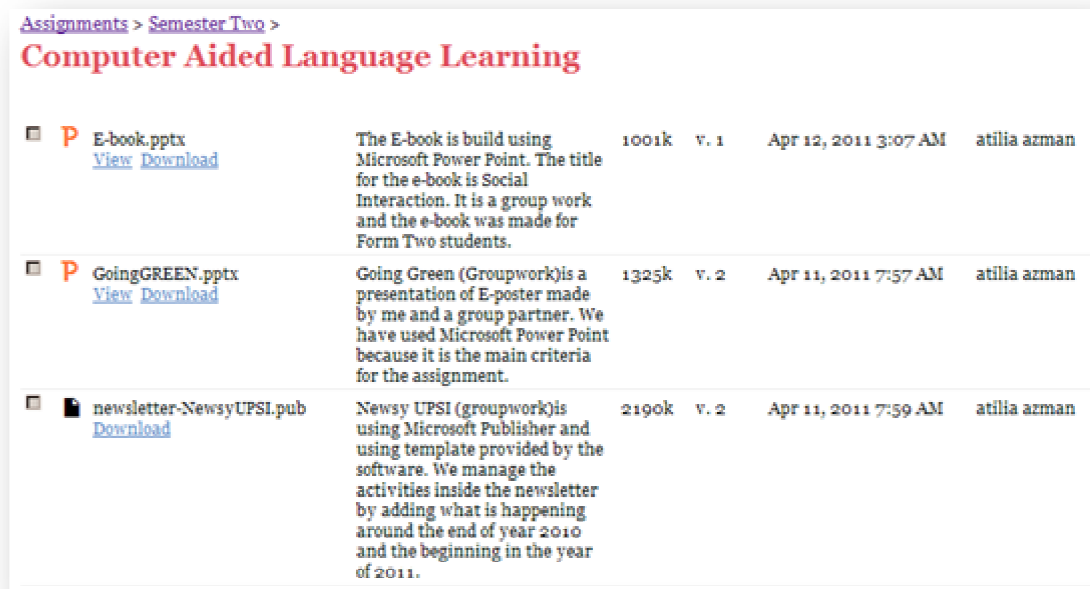
Figure 4.8   Sample of a student's assignment page 4
*(*Source: https://sites.google.com/site/atiliaenglishgarden/
assignments/semester-two/computer-aided-language-learning)

4.4.2.5   Resources

The objective of creating a resources page was to get the students to provide links to resources that were relevant to them in the use of computers in ESL. Additionally, they were also instructed to provide links to resources that were useful in developing their Web portfolios. The students had some concerns regarding the completion of the task mainly because it was difficult for them to distinguish the resources page

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and the teaching materials and work samples page. After taking time to show them examples of ESL links that they can obtain from the Internet, the students were found to be much clearer about what was expected of them. Out of the 123 Web portfolios analyzed, 19 students (15.4%) did not complete this page. However, there were 13 students (15.4%) who completed the task satisfactorily by providing captions and clear descriptions of the resources they found useful in addition to their Web addresses. A total of 86 students (69.9%) did not completely fulfill the task of developing a resources page as their resources page included only a list of Web addresses limited to only a caption or a title identifying the websites. Another five students (4%) were also found to have included links to websites but they were neither relevant to the area of computers in ESL or Web portfolio development. Figure 4.9 displays a sample of a student's resources page.
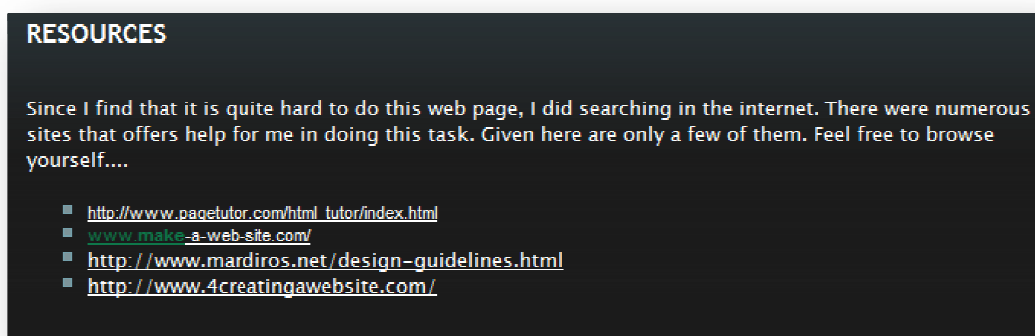
Figure 4.9   Sample of a student's resources page.
                 (Source: *https://sites.google.com/site/sakuraspringsite/resources*)

4.4.2.6 Research

The objective of the research page was for the students to provide information regarding the use of computers in second language learning. For this task, the students were instructed to find an area in the use of CALL that interests them and link information about the area of interest to their Web portfolio by using file uploads or hyperlinks. They were also instructed to include a brief discussion and a complete list of references. Feedback obtained from the students in the post-questionnaire revealed that developing the research page was one of the most difficult tasks they needed to complete. It was also a task for which the students

required further clarification from the course lecturer and researcher because they claimed that they were still unclear on how to find a 'research area' and to make a distinction between the research page, resource page and teaching materials and work samples page. It was found that only 30 students (24.3%) completed their research page according to the task specifications while another 25 students (20.3%) were reported to have no research page or claimed that they were currently not involved in any research. As a result, they presented an empty research page in their Web portfolios. There were 68 students (55.2%) who had attempted to complete their research page but they did not manage to complete the task adequately. For example, 37 students (30%) did not provide a clear description of an area in CALL that interested them but only hyperlinks concerning a general area of CALL. There were also four students (3.2%) who provided some hyperlinks to websites that were not relevant at all to CALL. A sample of a student's research page is displayed in Figure 4.10.
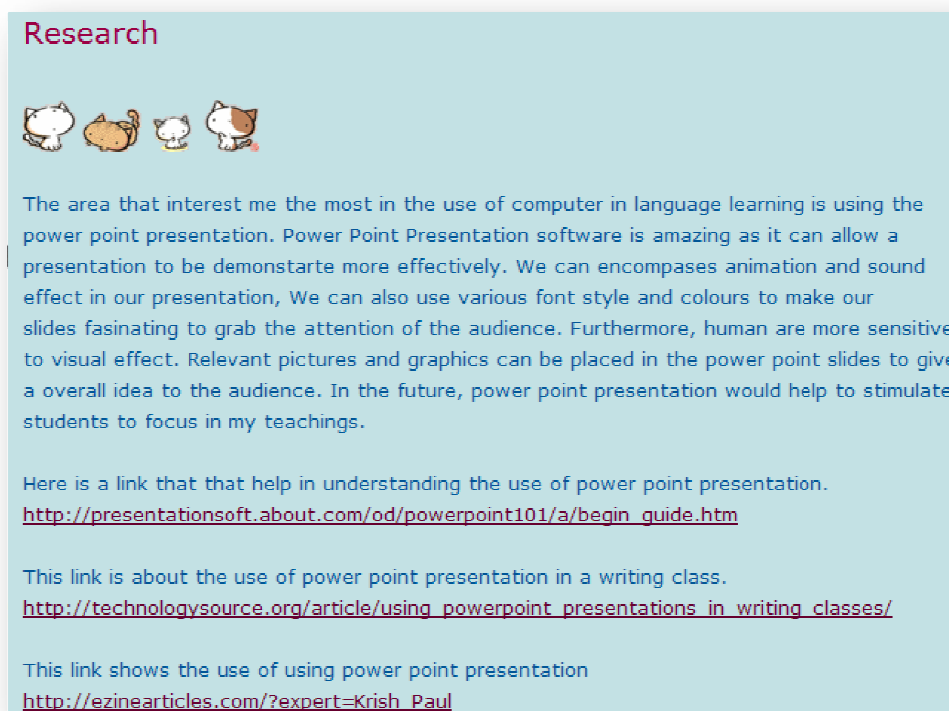
Figure 4.10   Sample of a student's research page.
(Source: https://sites.google.com/site/behweichyi/research)

4.4.2.7   Teaching materials and work samples

In this webpage, the students provided samples of their teaching materials or work samples that were completed in the CALL course and other courses by uploading it to their Web portfolios or by creating hyperlinks. Additionally, they were also instructed to provide a brief overview of each material/work attached so as to assist those who view the materials to understand its purpose and content. Since the researcher became aware that the students did not have any teaching materials because they were just in their first semester, the researcher instructed for this task to be completed by using teaching materials the students found useful from the Internet. It was sufficient if they included hyperlinks to ESL resource sites but they were still required to include brief descriptions about those sites. It was found that 31 students (25.2%) completed this task by including hyperlinks to ESL resource sites and descriptions of the teaching materials. Unfortunately, there were 71 students (57.7%) who were not able to complete this task as specified. It was found that 13 students (10.5%) provided links without any descriptions and 11 students (8.9%) only provided some descriptions without links to the teaching materials they mentioned in the webpage. There were also 31 students (25.2%) who seemed to have misunderstood the purpose of this webpage and included links to their lecture notes and another 11 students (8.9%) uploaded their assignments instead. Although the page assigned for the task was created, there 21 students (17%) who had left this page in their Web portfolio empty. The following is an example of a student who has included lecture notes as in her teaching materials and work samples page:

> *"These are teaching materials that are useful for teaching materials.*
> *This is lecture notes for CALL subject and hopefully it will help*
> *students and teachers for their lesson"*
>
> (Source: *https://sites.google.com/site/mudinez/teaching-materials-work-*
> *samples*)

A sample of a student's teaching materials and work samples page is presented in Figure 4.11.

Figure 4.11   Sample of student's teaching material and work samples page.
(Source: https://sites.google.com/site/adilashafie/teaching-materials)

4.4.2.8   Reflection

The reflection page was designed to cover three main areas: the sharing of personal experiences on the use of computers in (second) language learning; the sharing of personal reflections on the development of a Web portfolio; and the sharing of commentaries on the progress and completion of assignments. The students had to first reflect on their experiences of using computers in (second) language learning. Following this, they had to reflect on their experiences of developing a Web portfolio and finally, reflect on their experiences in completing individual assignments in the CALL course. This task was successfully completed by 18 students (14.6%). The majority of 87 students (70.7%) completed the task but it was found that their reflection page needed further improvement. For example, 19 students (15.4%) presented their reflections in point form and another 38 students (30.8%) provided reflections that were rather brief without addressing the three main areas as specified in the task. There were also 30 students (24.3%) who addressed the three areas but their reflections were found to be lacking in details. A number of 18 other students (14.6%) did not complete the task. Four students (3.2%) presented a reflection that was totally different from the specified task and another 14 students (11.3%) had

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either an empty reflection page or did not create a reflection page at all. Two samples of the students' reflection page are provided in Figure 4.12 and Figure 4.13.

Reflections

1. the uses of computers in language learning has been obvious. It has helped a lot of second language learners to learn a language in a much faster and effective ways. My own experience in using computers for my second language learning during I learn Spanish language. During Spanish class, the lecturer ask us to record our own voice and speak some Spanish and then ask us to listen to our voice recording and listen to our pronunciation and compare it to the pronunciation of a native speaker. From here, we are able to detect our error in pronouncing a word in Spanish and able to correct ourselves by listening to the correct pronunciation spoken by a native speaker in Spanish. The usage of computers here is obvious as it is used in recording a learners voice and allowing the learner to listen to their voice recording and detect any pronunciation error they had made by listening to the recording of a native speaker.

2. In completing this web-portfolio, I came across many things, that is solving problems due to unwanted technical problems and later I learn how to organize my work in a systematic way in a web-portfolio. A hard task became easier when i understood the usage of a web portfolio and how it function and works that would make your assignment arranging easier.

3. While completing individual assignments in CALL course, for example, the e-book, I learnt some computer skills and able to apply it in a useful way and later produce a rather satisfying result to be viewed by my friends and family.

Figure 4.12   Sample 1 of students' reflection page.
(Source: https://sites.google.com/site/elfredafloriadanny/reflections)

Issues	Comments
Sort ▾	Sort ▾
Experience of using computer in language learning	Using computer in language learning is a very fun process, although we might encounter some difficulties in using the computer programes because of the lack of knowledge in computer skills, but I realise that computer skill cannot be learnt by theory alone but must also accompanied by pratical.
Experience of developing a web portfolio	In my mind set, I previously found it difficult to develop a web portfolio. Fortunately, we were given a guildine to follow, and we also have lecturers to give us instruction, and friends to help us clarify our doubts regarding the webporfolio. When the web portfolio show progression, I experience an unexpected feeling of happiness in me.

Figure 4.13   Sample 2 of students' reflection page.
(Source: https://sites.google.com/site/behweichyi/reflections)

4.4.2.9   Future learning goals

The students were instructed to develop a page dedicated to sharing their future learning goals as one of their Web portfolio tasks. The task specified that the students were to describe their future learning goals concerning the use of computers in second language learning. Four questions were included as a guide for them to

complete the page: (a) What are my learning goal(s)?; (b) Where do I want to be in ten years?; (c) What do I have to do to accomplish my goal(s)?; and (d) How will my present learning be useful in achieving my future goal(s)? It was found that the students did not have any trouble completing this page as only eight students (6.5%) were found with an incomplete future learning goal page. There were 88 students (71.5%) who completed the task in great detail as specified in the task but another 27 students (21.9%) did not complete the task satisfactorily as they were found to have used point form or phrases resulting in a rather vague statement of goals. A sample of a student's future learning goals page is shown in Figure 4.14.

Figure 4.14   Sample of a student's future learning goals page.
(Source: https://sites.google.com/site/farahain002/future-learning-goals)

4.4.2.10   Contact details page

This was one of the least difficult tasks for students to complete in comparison to the other ten tasks as indicated by 31 students (43.3%) in the post-questionnaire. In order to complete this task, the students were instructed to provide information on their contact details. The minimum requirement for this task was for the students to include their email addresses. The results of the analysis showed that five students

(4%) failed to complete this task because they created only an empty contact details page and two students (1.6%) failed to create a contact details page in their Web portfolios. A majority of 116 students (94.3%) completed this task with 34 students (27.6%) having fulfilled the minimum requirement of this task by including their email addresses. The other students added links to their *Facebook* and *Skype* accounts, personal blogs and home addresses and even phone numbers. Figure 4.15 is a sample of a student's contact details page.
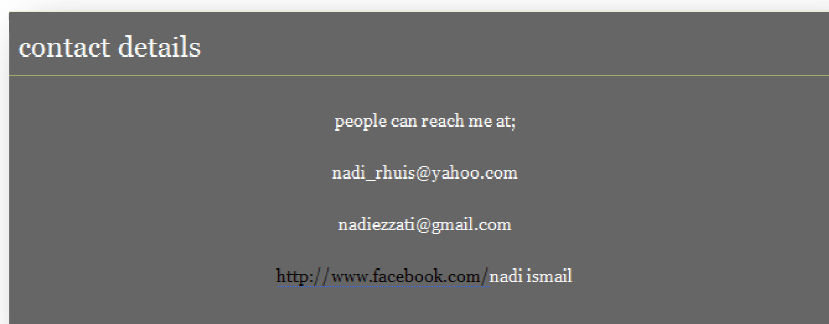
Figure 4.15   Sample of a student's contact details page.
               (Source: https://sites.google.com/site/thenadinezz/contact-details)

4.4.3 Presentation

The presentation of the Web portfolios is another important criterion in the assessment of the student's Web portfolios in which the students' Web portfolios had to display an effective use of text, graphics and media elements. In terms of the presentation, one reviewer found several problematic areas in the students' Web portfolios. Her comments are presented in the following excerpt:

> *"Most of the students did not grasp the tips of presenting work. For example, they used bright colours as background and light colours for texts, which makes it very difficult to read. Some also selected fonts which are inappropriate in the sense that it makes the portfolio less academic-like. All students are able to upload assignments, photos and customized background. Some templates chosen are not suitable because of the empty space on left and right of the webpage. Students should choose template that enables them to maximize the space of the webpage. Apart from photos, some students successfully embedded song, games and video on their portfolio. However, some are irrelevant to education and are more to their hobbies. I am not sure if this is appropriate. Maybe the students could put captions describing*

these videos, songs and games to make them relevant to the portfolio." (R2)

Clearly, more guidance is needed in terms of the overall layout and design of the students' webpages before the students are able to produce well-presented Web portfolios. It should be noted, however, that the students did not have formal training in Web design and thus, have completed the presentation of their Web portfolios using their own creativity.

When viewing the presentation of the student's Web portfolios, one reviewer commented that the students had varying levels of computer competency. Although the students were "very techno savvy that they managed to demonstrate effective way in handling the technology" (R5), there were "only a few managed to produce an interesting layout suitable to their age and purpose of the webpage" (R4). It was also pointed out that the students were not successful in using suitable wallpapers in their Web portfolios as it was mentioned by one reviewer that "some of the wallpapers are for an inappropriate age and very immature" (R4). It seemed that the students were able to use various texts, graphics and media elements but they required additional training in using them effectively. The course lecturer also pointed out that "some are good whilst some needed more effort" (CL).

It was expected that in developing a Web portfolio, the students could project a clear and effective display of competency in handling appropriate tools and technologies, in particular, the applications and media elements that were supported by *Google Sites*. The course lecturer was keen on using *Google Sites* as she found it suitable for beginners and it had features that were user-friendly. In terms of the way the students applied technology in their Web portfolios using *Google Sites*, there were evidences that the students explored various computer applications in their Web portfolios. For example, they included multimedia elements such as audio, video and animation. However, their use of these media elements appeared to be limited because they were mainly featured as 'decorative' elements. When asked, one of the students who embedded audio files on every page of her Web portfolio claimed that she did it simply because she could.

The reviewers commented that the students seemed to focus a lot on uploading various file types (R2) but there was very limited use of other features of *Google Sites* for "knowledge sharing through communication or collaboration" (R1). Another reviewer also gave a similar comment in the following excerpt:

> *"This platform provides opportunity for students to share their learning experiences and should be utilized fully to achieve the objectives stated in the course undergone. However, the students who were required to use this application had failed to explore the various features provided. In the advance of ICT, it is of upmost importance that future teachers make use of ICT not only in their process of learning but to enable them to utilize this knowledge and skill in their interaction with students"* (R3).

From other responses gathered from the reviewers, it was clear that the students managed to explore various types of computer applications when developing their Web portfolios. The main concern was about whether the students' competency of handling appropriate tools and technologies was purposeful and effective. As stressed by the course lecturer, her students were only beginners at using *Google Sites* and as such she anticipated that more practice and experience were certainly needed for them to produce a better end product.

In the researcher's review of the students' Web portfolios, it was found that in addition to having their pictures inserted on their profile page, the students have also included music, videos, animations, and gadgets that they thought would help highlight their personality and interests in their Web portfolios. In the analysis, the researcher not only found that all the students included pictures of themselves, but also 23 students (18.6%) included videos, 37 students (30%) included music, and 14 students (11.3%) included animations, and 21 students (17%) included *Google Sites* gadgets in their Web portfolio pages. Interestingly, it seemed that all the media elements included in the students' Web portfolios were for entertainment purposes except for five students (21.7%) who used the video clips to show examples of their previous assignment and one student (4.3%) who actually made a video for the purpose of giving the audience of his Web portfolio a glimpse into his personal background. In terms of animation, the students were found to have limited themselves to including either animated glitter texts or animated objects and animals. There was also a limited range of gadgets that were included by the students; for

example, calendar, alarm clock, countdown, games and virtual pets. However, not all students were successful in including the media elements as it was found that the music belonging to 12 out of 37 students (32.4%) could not be played. There were also video clips belonging to 3 out of 23 students (21.4%) that could not be played due to copyright and privacy issues and the gadget included by one out of 21 students (4.7%) could not function properly.

4.4.4 Reflection

The fourth aspect that was included in the assessment of the students' Web portfolios is their ability to write reflections. In the rubrics, it was specified that the students' reflections should display well-written commentaries that projected a clear image of the student as a reflective learner. In the feedback provided regarding the students' reflections, only one of the reviewers had positive comments as stated in the following excerpt:

> "*Most of the students reflected their experience in learning CALL. They also discussed the challenges faced in creating web portfolio and the solutions taken. They managed to connect what they have learnt in creating web portfolio with their previous experience in learning English. Some also make associations with the knowledge gained from their Diploma of TESL. Some students did not write any entry for reflection*" (R2).

The other reviewers, however, were in the opinion that the students were not able to successfully project themselves as a reflective learner as the quality of reflection produced by the students "were too simple" (R5) and the students wrote "a sentence or two for the sake of filling up the page" (R1). A reviewer interpreted the students' failure to express themselves well as a result of their limited language proficiency in addition to their lack of understanding of the task requirements (R3). However, their course lecturer stressed that the lack of expressiveness in their reflections was due to the uneasiness of the students to share their feelings publicly. In order to encourage the students to be more expressive, one reviewer proposed to write their reflections in paragraph form (R1). This was because there were a number of students who presented their reflections in point form making them appear too simple and lacking explanation. One reviewer also added that more elaboration on the points they mentioned on their reflection page was also necessary in order to display themselves

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as a reflective learner (R4). The comment on the students' lack of elaboration in their reflections was also emphasised by another reviewer in the following excerpt:

> "*Students merely write a sentence or two for the sake of filling up the page of 'Reflections' but they are not actually reflecting on their experiences. They should be expressive when comes to reflections. For instance, share their problems that they have faced, discuss the possible solutions and to what extend do all these learning have taught the student to perform better in future. Only a handful of students have wrote the reflections quite well.*" (R1)

The course lecturer also pointed out that she found the students' reflections as not very encouraging and that was probably because the students were uncomfortable with sharing their feelings. The course lecturer's comments were also consistent with the feedback by another reviewer who stated that the students' reflections were low in quality and she personally found that they had some reservations about expressing their feelings (R3).

In terms of their reflections, one reviewer pointed out that "most of the reflections were too simple while some of them provided well reflected comments" (R5). Their reflections were also done on a surface level without sharing some of their problems, discussing possible solutions to their problems or highlighting what they learned from their experiences (R1). The course lecturer explained that the lack of depth in the students' reflections was because the students have not been introduced to doing reflections as they were in their first semester. As such, it was found that their reflections concern recalling their past experiences and sharing of feelings about certain aspects of their assignments. As an example, the following is a sample of a student's reflection that was obtained from her Web portfolio:

> "*Honestly speaking, I like CALL. This course somehow enables me to benefit the uses of computer in more educating and interesting ways. I still remember that my first assignment required me to do an animation using the Microsoft PowerPoint application. It was fun! There're lot of things I never actually care while using the computer before apart from doing my own interest. Nevertheless, it changes now. Progressing from day to days, my knowledge concerning the CALL course increases. I've created a web portfolio using the Google site and with the aids of my lecturer, I've learn a lot in developing a web portfolio...*"

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In order to facilitate the writing of reflections, the students were instructed to include comment boxes in their Web portfolios. It was intended that the researcher, course lecturer and students would be able to post comments that were helpful in encouraging the students to become not only more reflective but also enable them to gain a better insight into the work that they have shared with others. However, in the analysis, it was found that although only eight students (6.5%) failed to include comment boxes in their Web portfolios, the researcher could comment on the Web portfolios belonging to only 10 students (8.1%) while the remaining 103 students (83.7%) did not manage the setting of their page so as to enable anyone to post comments. Only two students (1.6%) were found to have given permission to selected individuals to post comments in their Web portfolios.

4.4.5   Language use

The issue of language use was proposed to be included in the Web portfolio assessment rubric by the course lecturer. The rationale for including language as one of the components for assessment was that the English language was the medium of instruction in the CALL course. Additionally, appropriate use of the English language was highly expected in all aspects of their assignments across all courses in the TESL program. It was determined that the language used in the students' Web portfolios should be free of spelling, grammar and punctuation errors for it to be considered as an A grade.

The language the students used in their Web portfolios was mostly informal (R5) and a majority of students used 'Internet slang' (R2) which was regarded as inappropriate considering that their Web portfolio was an academic assignment. On some occasions it was difficult to understand the content of the students' Web portfolios due to the use of both Internet slang and "sms" language (R3). Another reviewer (R4) was also of the opinion that it was difficult for her to assess the students' language as the Web portfolios showed that the students did not really provide enough text for her to adequately assess their language use.

Comments were also given on the use of punctuation. One reviewer elaborated that "while icons such as XOXO can be accepted, many also did not look at the capital letters, spelling and punctuation marks" (R2). In addition, the students focused too much on trying to be creative by using fancy font styles without adhering to the requirements of an academic assignment (R3). In the Web portfolio analysis, it was also found that one student used inappropriate language such as 'stalker' to refer to readers of his Web portfolio and another student used 'demon' to refer to himself. The course lecturer, however, indicated that she was satisfied with the students' use of language most probably because she was more aware of their level of proficiency. Nevertheless, she stressed that there was "room for improvement" (CL).

4.4.6 Summary of Web portfolio analysis

A summary of the analysis of the students' Web portfolios is presented in Table 4.21. The table displays the five components of the Web portfolio analysis and their corresponding results.

Table 4.21
Summary of Students' Web Portfolio Analysis

Component of analysis	Students' Web portfolio analysis
Content	• The reviewers were divided in their opinions on the content of the students' Web portfolio. The reviewers pointed out that while the students' Web portfolios showed evidence of work consisting of a variety of topics and activities, their work was completed based only on the minimum requirements of the task. Nevertheless, their efforts showed potential. For the students to be able to improve on their Web portfolios, the reviewers suggested for more guidance to be given on tasks such as developing the 'Teaching materials and work samples' page and the 'Research' page.
Task completion	• It was found that the students addressed the ten tasks that were assigned to them in varying degrees. • There were incomplete pages and also pages that the students failed to create. However, all the students completed their profile page. The three pages that most of the students did not complete were the research page (20.3%), the teaching materials and work samples page (17%), and the reflection page (11.3%). • It was also found that some students have named their Web

	portfolio sites with pseudonyms and inappropriate labels. However, this matter was set aside in order to not discourage the students from completing their Web portfolios.
	• Of the ten Web portfolios tasks that were assigned to the students, it was found that the task that most students completed satisfactorily according to the task specified were the contact details page (94.3%), future learning goals page (71.5%), assignments page (56%), personal profile page (45.5%), teaching materials and work samples page (25.2%), research page (24.3%), resources page (15.4%), reflection page (14.6%), academic profile page (9.7%), and homepage (2.4%).
Presentation	• There was evidence of the use of a variety of texts and media elements in the students' Web portfolios. However, the reviewers found that the students did not manage to use the graphics and media elements effectively. • While they were able to display a range of media applications, the reviewers felt that guidance is needed to guide the students' selection of media so that they would be able to use the graphics and media elements purposefully in their Web portfolios, instead of merely integrating them as 'decorations' .
Reflection	• The students' were not successful in projecting themselves as a reflective learner mainly because they did not effectively express themselves. It may have been attributed to the students' language competency and limited exposure to the skills of writing reflections. • The reflections that were provided by the students were generally found to be too simple and brief. • The students have used point form and short sentences that did not allow them much room for elaborating on points or issues.
Language use	• There was evidence that the students have used a combination of formal and informal language in the content of their Web portfolios. • The results also provided evidence that the students used inappropriate words in the content of their Web portfolios.

4.6   Summary

This study explored the students' experiences in using Web portfolios as a learning and assessment tool in the CALL course where multiple data sources were used to capture the student's unique experiences. From the analysis of questionnaires, the findings revealed that the students' experiences in developing Web portfolios were generally a positive and beneficial one. The analysis of data from interviews pertaining to the students' experiences in developing Web portfolios showed that there were improvements in terms of the students' knowledge as well as the skills of using computers in an online environment when the results of the pre- and post-questionnaires were compared. The findings also revealed that the students seemed to have benefited from having to learn new computer skills and improving on their existing ones while they develop their Web portfolios. They also had positive perceptions of the use of Web portfolios as a valuable learning and assessment tool in the CALL course.

Data from the focus group interviews with students suggested that the students valued the process of developing Web portfolios as a new learning experience for them. They found that process of developing Web portfolios was one that encouraged them to collaborate and to exchange feedback regarding the content and presentation of their Web portfolios. Since the students were still very new to the concept of reflection, there were minimal evidences on how their reflections have helped them to think critically on improving their present work. However, the students seemed to have placed high value in the practical aspects of owning a Web portfolio evident in the way they have used their Web portfolios as a product to showcase their personality and an online repository and resource. In terms of technology use, the students' perceptions of *Google Sites* as a platform for developing their Web portfolios were more positive after they have began using their Web portfolios compared to their perception when they were first introduced to the platform. The findings also showed that some aspects of the Web portfolio development process was technically challenging for the students. Nevertheless, the experience has helped the students be more familiar with a range of online tools. With regards to the use of Web portfolios as an assessment tool, it was found that

more clarity is needed in the way the students are assessed as they were still unsure of what is expected when they develop Web portfolios in the CALL course.

Data from the Web portfolio analysis revealed that there seems to be mixed opinions in the feedback obtained from the panel of reviewers concerning the students' Web portfolios. The content of the students' Web portfolios showed potential but more guidance in the way content as well as the presentation of the students' Web portfolios are needed tasks by the students. The analysis of Web portfolios showed that most of the students completed the Web portfolio tasks assigned to them. Unfortunately, some Web portfolios were still under developed because they were completed with minimum effort. While there were evidences of a variety of texts and media elements in the students' Web portfolios, the reviewers pointed out that they were not always appropriately used. It was also found that reflection was one aspect in the students' Web portfolio that seem to need most improvements as most of them did not complete their reflections satisfactorily. There were also comments made in terms of the language used in the students' Web portfolios as being informal and inappropriate. A discussion of the major findings of the study will be presented in the following chapter with a view to answering the research questions addressed in this study.

CHAPTER 5

DISCUSSION

5.1   Overview

This chapter brings together the quantitative and qualitative results of the study to answer the research questions of the study and to "develop a more robust and meaningful picture of the research problem" (Ivankova, Creswell, & Stick, 2006, p. 14). Thus, key findings of the study as evidenced from the questionnaires, interviews and Web portfolios are discussed by directly addressing and concurrently answering the research questions. The discussion is augmented by citing relevant literature and previous studies. Additional findings are also discussed at the end of the chapter.

5.2   Impact of the use of Web portfolios on the students' computer competency

5.2.1   General computer competency in an online environment

It was found that developing Web portfolios offered the students opportunities to enhance their computer competency as well as to learn new skills confirming findings that were reported by previous studies (Farrell, 2008; Lin, 2008; Thang et al., 2012; Wetzel & Strudler, 2006). The analysis of data from the pre- and post-questionnaires indicates that the students' perceptions of their own level of computer competency improved in all of the ten tasks that were listed in the pre- and post-questionnaires. These ten tasks are tasks that they were likely to complete while being online such as using search engines, Web 2.0 tools, Web authoring tools and so on. Evident in the results of the analysis of the questionnaires, the students indicated improvements in their competency in carrying out the ten tasks listed. In particular, there were some students who considered themselves as experts in using desktop tools, managing CMC, printing documents from the Web and publishing materials on the Web. Prior to the introduction of Web portfolios, there was a small percentage of students (5.6%) who reported that they were inexperienced when it came to using Web 2.0 tools. There were also students (24.4%) who were inexperienced using Web

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authoring tools. Since the students' introduction to *Google Sites*, all the students in this study had experience using at least one type of Web 2.0 tool. However, there was still a small percentage of students (10.8%) who claimed that they have not gained any experience using Web authoring tools. The tasks that most of the students were comfortable carrying out in an online environment were using a search engine, saving documents from the Web and printing documents from the Web.

Although the students' have perceived that there is an increase in their computer competency in most of the tasks listed in the pre- and post-questionnaires, it was revealed that the task on which most students were found to have significantly improved after they were introduced to the use of Web portfolio was using desktop tools. Through a comparison of the results in the pre- and post-questionnaires, it was found that the percentage of students who perceived themselves as experts increased from 6.3 percent to 23.5 percent for this task. The results seem to suggest that despite having to work online while completing their Web portfolios, the computer skills that the students most gained were still limited. These findings were similar to a study by Son, Robb and Charismiadji (2011) who found that the group of Indonesian teachers involved in their study reported a generally high self-evaluation of basic computing skills but their "frequency of using computer applications is very limited to a few types of applications such as word processing" (p. 34). However, they argued that self-rated competency may not be the most reliable way of determining actual computer competence suggesting that other approaches have to be employed for gauging students' level of computer competency. In the case of the present study, the students' computer competency may also be evident in the range of skills that they used when developing their Web portfolios using *Google Sites*.

5.2.2   Skills gained from using *Google Sites*

There were additional questions in the post-questionnaire designed to obtain other aspects of the students' computer use. In particular, the students were asked to provide information about the computer skills they have gained from using *Google Sites*. In terms of using their Web portfolios as a learning tool, many students (85.5%) claimed that developing Web portfolios was technologically challenging for them, however, developing their own Web portfolios had made most of them feel

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more competent in using computers. There were many students (75.4%) who indicated that they experienced improvements in their computer skills. The students (79.6%) further added that they would use Web portfolios to further improve their computer skills.

The focus group interviews provided support pertaining to the specific computer skills that the students' gained through their experiences of developing their Web portfolios using *Google Sites*. It was also found that in developing their Web portfolios using *Google Sites*, the students became familiar with new skills particularly in relation to creating and editing webpages, Web designing and presentation, Web content development and using multimedia. In the course of learning these new skills, the students seemed to have been encouraged to further improve on their knowledge of the technologies available on the Internet. One student has used the phrase 'a better side of learning to use computers' (S2, FG_6) suggesting that learning to use *Google Sites* has indeed given students opportunities to explore a wide range of online technologies that are still unfamiliar to them. This seems to suggest that the students have gained a stronger knowledge and skills base as a result of developing Web portfolios. In this respect, the new learning experiences that came hand in hand with learning to develop Web portfolios using *Google Sites* was an effective way for the students to learn about technology and to integrate technology into their present practices.

However, the study found that many of the students had begun their Web portfolio journey with mixed feelings evident from the three categories of responses gathered in the post-questionnaire: positive responses, negative responses and neutral responses. A total of 82.2 percent of the students in this study claimed that they were more optimistic regarding the benefits of using *Google Sites* only after they had submitted their Web portfolios. This was mainly because they had become familiar with *Google Sites* and had started to exchange feedback with others on their completed Web portfolios. Similar findings were also reported in a study by Lopez and Rodgriguez-Illera (2009) where their participants' perceptions of using digital course portfolios were positive only at the beginning the second month of its use up till the end of their study. Positive views regarding *Google Sites* that were evident at the end of the development process imply that despite the challenge of having to

learn new skills, *Google Sites* was a suitable platform for the development of Web portfolios in the CALL course and its use should be further explored. One area in particular is the training that is provided when *Google Sites* are used.

As seen in the present study, although more than half of the students (59.3%) self-rated their level of competency in using *Google Sites* as intermediate, most of them (89.8%) indicated that they needed more training. This was probably due to certain problematic areas of their Web portfolios development using *Google Sites*. For example, in the post-questionnaire, the students mentioned that they faced a variety of challenges in at least five general areas of *Google Sites*: creating and editing pages, uploading documents, presenting the layout and appearance of webpages, and inserting media elements. A total of 66.7% of the students pointed out that they encountered technical difficulties in developing their Web portfolios and a small percentage of students (5.1%) mentioned that some of these challenges were related to the poor Internet connection at their residential colleges where they completed most of their Web portfolio work. The poor Internet connection made some of them give up uploading their work on to their Web portfolios.

Considering that the students were not given any other formal training except the introductory workshops on *Google Sites* at the beginning of the study, their use of *Google Sites* as a platform for their Web portfolio development was mostly on their own effort or self-exploration. As a result, some students revealed in the interviews that they encountered several challenges in using *Google Sites*. However, the students indicated that they received frequent help from their peers and that they preferred to search for help from the *Google Sites Help* site. Since the students had pointed out that that they mostly worked on their Web portfolios with their peers at their residential colleges, it became very practical for them to ask help from their peers. Collaborating to solve each other's technical problems associated to the use of *Google Sites* suggests that the platform selected did not demand students to learn computer skills that were beyond their capacity. It further implies that some of the students were already beginning to gain confidence in their competency in using the computers through continuously improving on their Web portfolios allowing them to provide assistance to others.

5.3   Effectiveness of Web portfolios to ESL teachers' learning and development

5.3.1   Reflection

Many researchers (e.g., Avraamidou & Zembal-Saul, 2002; Barrett, 2007; Papadima-Sophocleous, 2011; Yancey, 2009; Zubizarreta, 2004) have endorsed that reflection is one of the key elements to effective portfolio practices. Reflection has also been identified as an important component for facilitating deep learning. Their studies show that, through reflective practices, students will not only be able to identify problematic areas but also to transform "gaps in learning into potential opportunities for improvement" (Zubizaretta, 2008, p. 3). This study has shown evidence that developing Web portfolios is beneficial as it presents rich opportunities for the development of reflective activities that can help enhance students' learning and assessment in the CALL course. The students were encouraged to produce written reflections in a designated 'Reflection page' of their Web portfolio. Although close to thirty-percent of the students found that the task was one of the most difficult ones they had to complete, there was only a small percentage of students (11.3%) who did not complete their 'Reflection' page. Despite encountering difficulties writing reflection, most of them actually made the attempt to complete their reflections. In the analysis of the students' Web portfolios, it was also found that there were some of the students who proceeded to include reflections in other pages in their Web portfolios. To illustrate, one student included reflections accompanying his 'Assignment' page and presenting links to his other assignments. This can be regarded as an indication that the students were beginning to grasp the use of reflection, and were keen on including reflections as a way to improve their learning.

In addition to the reflections written on the 'Reflection' and 'Assignment' pages, this study has found that the students were involved in reflection during their process of selecting artefacts to be included in their Web portfolios. In the interview, a student highlighted that selecting work to be included as part of her Web portfolio encouraged her to revisit her past assignments in order to produce better assignments in future.   Another example of reflection was noted by a student who took the opportunity to improve on her work after viewing samples of work done that were

shared by others in their Web portfolios. Unfortunately it was discovered in the analysis of their Web portfolios that the students required further improvements in writing their reflections. This was because the reflections belonging to a majority of students (70.7%) were lacking in details. In addition, some of them have also failed to produce well-written reflections as a result of using point forms or brief sentences.

As future CALL practitioners, it is pertinent for students to develop skills of reflection as they will greatly benefit from them in their future careers as ESL teachers. Reflective skills are a process that requires structured practice (Zubizaretta, 2008) and demands time and training (Hampel & Stickler, 2005; Lin, 2008). Although it was clear that students in this study have begun to engage themselves in reflection through their development of Web portfolios, the course lecturer pointed out that the 'Reflection' page was a task that many of her students found challenging. She explained that the students were not certain what to write and that their efforts seemed constrained due to the limited timeframe. This was because at the time when the study was conducted, the students were only in their second semester and thus, did not have enough practice in writing reflections but also in the skills of writing in general. It was also emphasised by the course lecturer that the students were also not familiar with the practice of sharing their feelings openly with others suggesting that more practice is needed for students to become fully engaged with the fundamental requirements of a portfolio approach to learning and assessment.

Findings pertaining to the complexity of fostering reflective practices that were found in the present study are not uncommon as reflection has also been pointed to be a challenging area in other studies investigating the use of e-portfolios. Writing reflections do not come naturally to students when they develop e-portfolios as found in the study by Kamarul and Mahbub Aksan (2012) who reported that some students in their study lacked the ability to use reflection as a tool to critically improve on their learning. Doig et al. (2006) further pointed out in their study the importance of addressing skills of writing reflection prior to introducing technical skills associated to the development of e-portfolios illustrating that reflection is a skill that can be developed if introduced appropriately.

5.3.2 Collaboration

This study showed that one of the activities that the students experienced while developing their Web portfolios was collaborating in learning to use *Google Sites*. The students indicated in the post-questionnaire that they enjoyed working in groups and that they had no objections about sharing their learning experiences with others. In the interviews, the students also pointed out that they not only collaborated in solving technical problems that were associated to the use of *Google Sites* but also exchanged feedback on the overall presentation of each other's Web portfolio. Previous studies (e.g., Fahey, Lawrence, & Paratore, 2007; Lin, 2008) have also found that peer support was crucial when dealing with technical problems associated with the development of e-portfolios. As illustrated in this study, working collaboratively was an activity that took place naturally as they began to develop their Web portfolios. They were clear that they shared a common goal to submit their Web portfolios and they were also driven to find ways to improve their overall presentation of their Web portfolios. Despite the restrictions in terms of time, this study has found that an online learning community was beginning to take shape as a result of the collaborative efforts of the students in completing their Web portfolios.

5.3.3 Sharing resources

As soon as the students began using their Web portfolios and became more familiar with the use of *Google Sites*, they claimed that the online repository was one of the most beneficial aspects of their Web portfolios. They valued it because it allowed them to easily share resources, including their assignments. While studies have pointed out that the value in using e-portfolios has to be more than practical reasons, the present study asserts that the practical aspects of using Web portfolio is one that will be valued by students if they are expected to continue using them in future.

The present study found that the sharing of resources and assignments eventually encouraged the students to give feedback on each other's work. Giving feedback to each other became a practice among the students in order to improve on their own work. As indicated in the post-questionnaire, more than 60 percent of the students

received feedback from their peers and more than 80 percent stated that they valued their feedback they received from their peers. The role of their instructor, however, was still important as indicated by the majority of students who looked forward to personalized feedback from their instructor. Unfortunately, having to provide personalized feedback to individual students is a great task for teachers as highlighted in the study by Siu (2013) where teachers view providing feedback as an added burden on their part. Although the challenge of providing feedback to students was not a problem faced by the course lecturer in this study, the students in this study may have benefited more from feedback given by their lecturer because the feedback they have received from their peers where found to be more focused on the presentation and layout of their Web portfolios, instead of the development of content or the selection of artefacts.

The study has also found that one main consequence of sharing their work with others is the threat of plagiarism. Plagiarism has been identified as a serious concern as it affects the quality of e-portfolios produced by students (Muhammad Kamarul Kabilan & Mahbub Aksan Khan, 2012). While there were no cases of plagiarism reported in this study, the issue was raised by a student who was reluctant to share his work with others due to his fear of plagiarism. Concerns over plagiarism stemming from the sharing of each other's work suggest that the students still require training to familiarise themselves to the concept of owning a portfolio. There is also a strong reason to increase the students' awareness of a 'portfolio culture' whereby there has to be shared understanding and respect for each other's work and personal artefacts.

5.3.4   Online professional profile

The students in this study perceived one of the benefits of having a Web portfolio to be comparable to having a *Facebook* account. This seems to be an aspect of the present study that is unique compared to other studies on the use of e-portfolios that have been reported in the literature. One of the reasons the students associated their Web portfolio development to *Facebook* may have been because they have used both their Web portfolios and *Facebook* accounts as a platform for them to share their personal information and also project their personalities. They not only made links to

their *Facebook* in their Web portfolios, but also used their *Facebook* group as a medium to discuss matters concerning their Web portfolios. In their attempt to make their Web portfolio more personalized and socially appealing, the students have taken great care in the presentation and layout of their Web portfolios. Interestingly, their efforts were much appreciated by the course lecturer who indicated in the interview that she learnt more about her students through their Web portfolio profile pages. As it turned out in the analysis of Web portfolios, the students made a lot of effort and invested most of their Web portfolio development time in constructing their profile pages. In particular, they showed a great interest in making their profile pages because they were able to customise the layout and presentation of the pages themselves using *Google Sites* tools. Although their fascination with *Facebook* motivated them to complete their Web portfolios, it may have also distracted them from the true value of owning a Web portfolio. It was evident from their interview responses that some of them still appeared uncertain about the criteria by which their Web portfolios will be accessed at the end of the course.

Even though building an online professional profile was not the a main aspect in the development of Web portfolios, it was apparent that the students were more focused on the technical aspects of using *Google Sites* in completing their profile pages instead of being engaged with other aspects of their completed Web portfolios such as reflection and collaboration. Although they were instructed to show off their creativity in developing their profile page, they may have placed too much focus on the design and presentation of their profile page instead of giving equal attention to the contents. Woodward and Nanlohy (2004) have stressed that the novelty of using technology may naturally distract students from the real purpose of portfolios. Nevertheless, the students' motivation to use technology and their determination to explore various online tools as a way of customizing their Web portfolios as a professional profile is a strength of this study. This is because being able to use and technology was one of the main impetus for exploring the use of Web portfolios. However, the views held by Woodward and Nanlohy (2004) are not completely dismissed as there are also strong reasons for striking a balance between content and technology use when Web portfolios are used as coursework in a CALL course.

5.4   Factors facilitating and hindering Web portfolio development in a CALL course

5.4.1   Time factor

Time has been identified as an important consideration in many studies concerning the use of portfolios. For instance, it has been pointed out that, due to the complex processes involved in developing electronic portfolios, a lot of time is needed not only from students in the development process but also from lecturers in the assessment process (Martyn, 2007; Muhamad Kamarul Kabilan & Mahbub Aksan Khan, 2012; Siu, 2013; Strudler & Wetzel, 2006). When the students were asked to provide information pertaining to the number of hours they spent working on their Web portfolios, most of them (49.6%) indicated that they spent about a few hours a week on their Web portfolios. They also claimed that they spent their time for editing webpages, editing site layout and arranging items in their Web portfolios. There were also other Web portfolio activities that the students completed that required them to be online such as uploading of files and updating information. Considering that these activities are those that required them to be online and logged-in to *Google Sites*, the poor Internet connection can partly be blamed for being one of the reasons why the students found developing Web portfolios was a time-consuming activity. They explained that the poor Internet connection prevented them from completing these activities smoothly. Often, it was also the poor Internet connection that caused the students much frustration and deterred some of them from further improving their Web portfolios.

The timeframe for conducting this study was limited to approximately eight weeks. Within a short period of the time, it was rather difficult to fully involve students in all of the key stages in portfolio development such as providing feedback and facilitating reflection on the content in their Web portfolios. There were students who pointed out that they requested more time to develop their Web portfolios and to practise them in the CALL course. One of the main consequences of the limited time was also the quality of the students' Web portfolios. In the analysis of the Web portfolios, it was apparent that there were a number of students who were not

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successful in completing all aspects of their Web portfolios and there were also students who experienced difficulties in understanding the requirements of the selected Web portfolio tasks. The timing of the introduction of Web portfolios that took place in the middle of the semester may have also influenced the students' perceptions of the overall usefulness of Web portfolios by making them seem like an afterthought rather than a core part of the CALL course.

5.4.2 Web portfolio assessment issues

Although the students were generally positive about the use of Web portfolios as an assessment tool in the CALL course, they highlighted several concerns. A major concern related to the assessment of the students' Web portfolios was the need for clarification to be given to the students in terms of how their Web portfolios were assessed. More than fifty-percent of the students expressed their concern about the assessment of their Web portfolio being too subjective and too open to errors in judgement even though a Web Portfolio Assessment Rubric was used. The students seemed to be uncertain whether the assessment of their Web portfolios was conducted on their Web portfolio content or presentation. There were also some students whose main concern was only for the marks they would obtain upon completing their Web portfolios.

When discussing the assessment of the Web portfolios, the students also voiced their concerns in terms of the creativity they were expected to display in the layout and presentation of their Web portfolios. Some students also pointed out in the interviews that they were anxious about the assessment of their Web portfolios because they were uncertain if their work was comparable to that of other students who seemed to have been more creative in their Web portfolio presentation and layout. They disclosed that other students had included media elements and attractive webpages. While this has encouraged them to put in more effort in completing their own Web portfolios, their concern was that they lacked the computer skills to come up with impressive Web portfolios. The students in the study conducted by Hung and Huang (2010) also mentioned similar concerns regarding the varied levels of creativity and computer skills that were thought to have influenced their grades when their e-portfolios were assessed.

5.4.3   Issues related to Web portfolio tasks

The value of an individual student's Web portfolio is highly dependent on the content placed in the Web portfolio itself. In this study, the range of content was prescribed and communicated to the students through tasks that they needed to complete. The students were assessed based on their completion of the tasks to determine how far they used their Web portfolios to exhibit their knowledge and skills in the CALL course. There were ten tasks that were assigned to the students. Each of the tasks represented individual webpages that the students were required to include in their Web portfolios. In the responses obtained from the post-questionnaires, the students indicated that the tasks assigned in the Web Portfolio Task Sheet were clear. However, they seemed to experience some difficulties in distinguishing the task of developing a research page and the teaching materials and work samples page and stated that these two pages were the most difficult pages for them to complete in addition to the assignment page. Upon closer examination in the Web portfolios submitted by students, it was also found that the research and teaching materials and work samples were also the two pages that were mostly incomplete.

With regards to the research page, the results seem to indicate two possibilities why the students did not manage to complete this page satisfactorily. Firstly, the students were first year students who were still new to the idea of conducting research. When they were asked to produce a page that reflected an area of CALL that interested them, they were not able to complete the task up to the researcher's expectations. Another possibility may be that, within the limited time frame for their Web portfolio development, the students were not completely clear about the area of CALL that they wanted to explore.

In terms of the teaching materials and work samples page, the students may have found it a challenge to complete this page because they have not produced any teaching materials yet. Although the students were informed earlier on that they should include links to teaching materials and work samples that are relevant to

CALL or the area of TESL from the Internet, some students were found to have placed their assignments in this page instead. In the analysis of their Web portfolios, it was also discovered that there were students who misunderstood the teaching materials and work samples page as a page for them to link CALL lecture notes. Based on the students' feedback and their completion of the Web portfolio tasks, it was clear that, when designing tasks for the students, the students seemed to require not only clear descriptions of the tasks but also exemplars to further clarify the requirements of each task.

In the post-questionnaire, the students stated that they spent most of their time on developing their home page and personal profile page. However, in the analysis of their Web portfolios, it was found that only 2.4 percent of the students' home page and 45.5 percent of their personal profile page were completed within the specified requirements of the tasks. The results suggest that despite investing a lot of time to develop their home page and personal profile, they did not completely address the task requirements. One possible explanation for the students spending time on developing these pages but failing to complete the task satisfactorily is that these students were more focused on customizing the pages in order to project their interests and personality.

From the perspective of Ring, Weaver, and Jones (2008), it is critical that students are given the opportunity to personalize their e-portfolios as it contributes to their motivation to continue to maintain and work on them in future. However, when given the opportunity, the students may become overwhelmed by technology and end up focusing more on the appearance of their portfolios rather than the content itself as found in Tosh et al.'s (2005) study. This was clearly the case in this study as the students showed more emphasis on the 'cosmetics' or appearance of the home page and personal profile page rather than the actual content specified in the Web portfolio task. While the emphasis on the presentation of Web portfolios have encouraged the students to sharpen their computer skills and to deepen their knowledge and skills of using technology, a balance has to be achieved between the technology used and the development of content for Web portfolios to be truly a valuable tool for learning and assessment.

5.5 Other findings

A total of 13 students (11%) who responded to the post-questionnaire indicated that they had gained improvements in terms of language skills as a result of developing their Web portfolios. Specific language skills such as writing and reading were mentioned by some of these students. The improvement of writing skills was also reported in other studies (e.g., Baturay & Dologlu, 2010; Ozturk & Cecen, 2007). Besides language skills, some students (5.9%) also claimed that they acquired communication skills. A closer examination revealed that the students actively exchanged feedback on the technical as well as the presentation aspects of their Web portfolios with others requiring them to use appropriate language to communicate with their peers when giving comments. Communication skills were also important to them as they needed to get help from their peers when encountering difficulties in developing their Web portfolios. In a similar way, Thang et al. (2012) found communication skills as one of the skills that students gained as a result of their participation in the development of electronic portfolios.

There seem to be some evidence in this study suggesting that the students' perceptions of the worth of their Web portfolios were strongly influenced by their use of *Facebook*, a social networking service. When the students pointed out that they had focused on projecting their personality in their Web portfolios, some students mentioned that they wanted their Web portfolios to have similarities to their *Facebook* profiles. They had also wanted their Web portfolios to have share inherent functionalities to their *Facebook*, such as the status updates, online profile and posting features. While it may not be possible at this point of time for their Web portfolios that were developed using *Google Sites* to share similar characteristics to *Facebook*, these findings imply two possible issues concerning the use of Web portfolios that may need to be addressed in the future. Firstly, Web portfolios need to have an added social dimension similar to those experienced by students when they use *Facebook*. And secondly, future application of Web portfolios need to take into consideration the type of popular or familiar technology that students currently experience not only because they will be much more motivated to develop Web

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portfolios for that reason, but because they will be more inclined to use and maintain their Web portfolios when they can integrate their present technological skills with their new ones.

In the interviews, the students were preoccupied with the file repository facility that is an inbuilt feature of *Google Sites*. It should be pointed out that at the time when Web portfolios were introduced to them they were unaware of any personal file storage or hosting facilities on the Web. Many students were recently affected by a campus-wide virus attack that increased their awareness of having their files stored in a secured and easily accessible location. As a result, they were very keen to utilise the file hosting feature of *Google Sites* and to a certain extent had placed a strong value on their Web portfolios for this reason.

5.6   Summary

This chapter has discussed some of the complexities and factors contributing to the usefulness of the development of Web portfolios as a learning and assessment tool. The chapter draws on the students' as well as the course lecturer's perspectives in order to investigate the value of Web portfolios as course work in the CALL course. Findings of the study indicate that the use of Web portfolios as a learning and assessment tool had positive impact on the computer competency of the students. They also suggest that the use of Web portfolios was beneficial in the learning and development of future CALL practitioners. Despite challenges such as time limitation, assessment issues and uncertainty regarding the expectations of Web portfolio tasks, the use of *Google Sites* as a platform for Web portfolio development has facilitated the development of Web portfolios as a useful learning and assessment tool.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

6.1 Overview

This chapter addresses the research questions and provides the conclusions drawn from the findings of this study. Several limitations of the study are also discussed to highlight the challenges and constraints that were involved in the process of conducting this study. Included in this chapter are the implications of findings and recommendations for future Web portfolio use as a learning and assessment tool in similar contexts. The chapter moves to propose some possible directions for future research and ends with the researcher's personal reflections.

6.2 Research questions addressed

The focus of the study was to explore the potential of using Web portfolios as a learning and assessment tool among pre-service ESL teachers. The pre-service teachers, who were undergraduate students enrolled in a CALL course offered at a Malaysian university, participated in the development of Web portfolios as part of their course work requirements. Since it was their first introduction to Web portfolios, it should be noted that the results yielded in this study may partly be due to the students' lack of experience and unfamiliarity with Web portfolios. As presented in Chapter 4, it was discovered that the students' responses to the use of Web portfolios were generally positive although there were some aspects in the Web portfolio development process that were challenging and required further attention. In the following section, the discussion of key findings is presented based on the three research questions posed.

Research question 1
What impact does the use of Web portfolios in the training of pre-service ESL teachers have in relation to trainees' computer competency?

This question relates closely to data that was obtained from the pre- and post-questionnaires and the interviews with the students. The students claimed that their self-perceived computer competency based on ten specific online tasks was considerably higher than the ones that they indicated before their use of Web portfolios. Although, the impact of the use of Web portfolios on their computer competency is a positive one, it is not possible to establish a direct relationship between the students' use of Web portfolios and their computer competency in the ten tasks because their exposure to various other computer applications took place while they were enrolled in the CALL course. Nevertheless, many students claimed that their computer competency had been further enhanced through the completion of the Web portfolio tasks assigned to them. In addition, the use of *Google Sites* as a platform for the development of their Web portfolios has also encouraged them to strengthen their knowledge and skills base in using technology. Despite some challenges that were reported in using unfamiliar online tools, the students maintained optimism that the obstacles they encountered in learning something new benefited them because they managed to acquire new computer skills.

Research question 2
How effective are Web portfolios in providing evidence of pre-service ESL teachers' learning and development as future CALL practitioners?

The Web portfolio was conceptualised as a product, process and technology. In terms of a product, the Web portfolio contains evidences of the learning that the students gained in their 14 weeks of enrolment in the CALL course. Their Web portfolios displayed a range of webpages that they developed as part of their Web portfolio task including their CALL assignments and past assignments from other courses. However, as reported in the analysis of Web portfolios, there are some aspects of the students' Web portfolio that were either not completed or were completed with minimal effort. In this respect, the Web portfolios may appear as a product that is still inadequate in providing a complete picture of the students' learning and development as future CALL practitioners. In spite of this, taking into consideration the time allocated for the overall development of Web portfolios, it was evident that the students had taken up most of their development time to learn how to use *Google Sites* leaving them with insufficient time to become fully engaged with their Web

portfolios. As such, reflection, as an important component in any portfolio work, was not fully explored.

When viewed as a process, the Web portfolios opened up avenues for the students to work collaboratively. During the development of their Web portfolios, they viewed each others' Web portfolios in order to improve their own work, share resources, exchange feedback and learn new computer skills from each other. At the same time, the process of developing Web portfolios had benefited them as individual learners. This was because there were evidences that whole process was an effective way of facilitating autonomy and self-directed learning among the students that are valuable characteristics of future CALL practitioners.

With regards to the Web portfolio as a technology, it was evident that the students were challenged to learn new computer skills and improve on their existing ones. Through the development of Web portfolios, the students claimed to have become more confident about learning new computer applications and to hold very positive opinions about using technology in their future classrooms. Although not all of the students were successful in completing their Web portfolios, those who did used their Web portfolios to display a range of skills that they acquired. In this respect, the introduction of Web portfolios as a learning and assessment tool in the CALL course had a positive impact on future CALL practitioners. However, upon acknowledging that computer technology is a fast-developing area, it is imperative that these students should be given the opportunity not only to develop their Web portfolios in the CALL course but also to continuously maintain and improve their Web portfolios as a medium for professional development as pre-service ESL teachers.

Research question 3
What factors facilitate and hinder the development of Web portfolios as a learning and assessment tool in the CALL course?

One of the main factors identified as facilitating the development of Web portfolios was the use of *Google Sites* as a development platform. Although there were recurring problems related to the Internet connection, the platform was one that could accommodate both students with limited computer competency and students with

high computer competency. Although there were obvious difficulties in learning how to use *Google Sites* at the beginning of the study, the availability of tutorials and support pages on the Internet had allowed the students to be independent and find their own solutions. Another factor that facilitated the development of Web portfolios was the students' encouraging attitude towards learning and the use of computer technology in teaching. The majority of students enjoyed working in groups and valued sharing their work with others. As a result, collaborating to complete their Web portfolio work came naturally for them. It was also through collaboration with others that they practised exchanging feedback that clearly enriched their Web portfolio learning experience.

The major hindrance in the development of the students' Web portfolios was time. A restriction in time affected the students from the beginning of their Web portfolio development process to the end. Time for the development of Web portfolios needs to take into account students' training and their use of Web portfolios. As seen in this study, the limited time prevented the students from exploring different facets of their Web portfolios. Due to the limitation in time, feedback on individual Web portfolios could not be provided by the lecturer. Inadequate time also prevented the course lecturer from participating in the overall assessment of the students' Web portfolios. Instead, a panel of reviewers had to be recruited to carry out the assessment. While the reviewers were able to provide different perspectives concerning the quality of the students' Web portfolios, the issue of reliability of their assessment may be in question as the reviewer's feedback on the students' Web portfolios were solely based on the Web Portfolio Assessment Rubrics. It would have been more beneficial for the course lecturer herself to participate in the assessment of students' Web portfolios as she may have been able to provide a useful insight into areas that can be further improved in terms of the tasks and content of their Web portfolios. In the case of the present study, Web portfolios were introduced towards the middle of the semester. By that time, the students had already been assigned a series of assignment. The situation would have been different if Web portfolios were introduced at the beginning of the semester and if all other assignments were designed for inclusion into the Web portfolios. In short, for their future application as a learning and assessment tool, Web portfolios need to be integrated with the design of the CALL

course, and must not be regarded as a supplementary assignment requiring additional time invested for its execution.

Facilitating the development of written reflections is another significant challenge in this study. As exemplified in the results of this study, the students were unable to produce good reflections mainly because they were not aware of how to write them. As a result, their written reflections were either too brief or presented in point form making it nearly impossible for their reflections to be used as an indicator of their growth and learning in the course. Although writing effective reflections was seen as one of the factors that hindered the development of Web portfolios, it is an area that can be improved through time and practice.

6.3   Conclusions

The results of the study provide some evidence of potential benefits of developing Web portfolios among pre-service ESL teachers in a CALL course. They highlighted different factors impacting the use of Web portfolios as a learning tool and an assessment tool from the perspectives of both the students and the course lecturer. From these findings four main conclusions are derived. The first conclusion relates to the use of Web portfolios as a learning tool. Although there were challenges in using Web portfolios, including the students' need for more training in the use of Web portfolios and their weakness in providing effective reflections, the process of developing Web portfolios as a learning tool is viewed as a worthwhile experience for the students. Besides acquiring new computer skills through learning to use *Google Sites*, the students have claimed that their learning experiences have been enriched by collaborating and viewing works of others. The development of Web portfolios has indeed created a milieu for the students to discover one way of learning that could help them to further improve on their online computer competency. Having said that, the benefits gained by the students in this study need to be considered in light that the development of Web portfolios was a new learning tool to them. As with any new tool, its novelty will soon cease. In the case of Web portfolio use, once students have become familiar with the processes involved in its creation, sustaining the students' motivation to further develop their Web portfolios for long-term use is a critical area to be addressed. For that reason, developing Web

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portfolios must be viewed as more than a tool to facilitate the student's learning of computer skills but as a transferable tool applicable in courses other than CALL. Discussed in this study are primary issues arising from a process to initiate the development of Web portfolios within the specified context. There are certainly much larger issues affecting their implementation such as faculty perceptions and curriculum design that demands further exploration.

The second conclusion involves the use of Web portfolios as an assessment tool. Web portfolios were introduced as an assessment tool in the CALL course because of their potential to capture the range of computer skills that students often fail to exhibit in other forms of assessment (e.g., traditional paper-based exams). However, a persisting concern has emerged in terms of the practicality of adopting Web portfolios as an assessment of their learning in the CALL course. This is because it is still unclear whether Web portfolios would be a wise choice given the complex processes involved in providing feedback and in grading large numbers of individual Web portfolios. The reliance on Internet connection when assessing Web portfolios may also deter them from being adopted within a context where there are still intermittent problems concerning Internet connectivity. As mentioned in the literature on portfolio use, the assessment of portfolios is a controversial area that requires careful consideration. Clearly time required for assessing Web portfolios has been identified as huge challenge confronting the present study. However, time invested in assessing Web portfolios is one of the many issues surrounding assessment. The use of rubrics, for example, is certainly an area that needs to be revisited in future Web portfolios.

The third conclusion is formulated based on the reactions of students to the fundamental concepts of the portfolio approach to learning. There seems to be a reasonable amount of clarity required in familiarising the students to the idea of using a portfolio. Although some students have generally used portfolios in their previous courses, there are huge differences between paper-based portfolios and Web-based ones that require them to reconceptualise their existing idea of a portfolio. While that may be the case for students with experience in the use of portfolios, those students without any experience in using portfolios are at risk of developing Web portfolios that one would describe as a multimedia container.

Evidently, from the lessons learnt in this study, further clarification in terms of the physical form and functions of Web portfolios is needed. Setting standards for the type of content and evidences included as artefacts seems to be a step further towards the effective implementation of Web portfolios.

The final conclusion concerns the use of technology in learning and teaching that is an ongoing emphasis in the field of second language teacher education in Malaysia. As illustrated in Chapter One, the main impetus for exploring the potentials of using Web portfolios as a learning and assessment tool in the training of ESL pre-service teachers was an idea arising from the need to prepare future ESL teachers to use technology in their future classrooms. It was intended that Web portfolios could provide the stimulus for the infusion of technology at the teacher training level where the need for future teachers to familiarise themselves with the affordances of the Internet is critical. In this study it was evident that the processes involved in the development of Web portfolios acted as a scaffold for the student's use of technology. A question that may be worth addressing next is 'How many of those students will continue to use their Web portfolios?' Although this study is not able to provide an answer to that question at this point of time, the researcher remains positive that there is a promising future for the use of Web portfolios in this context. Because the technology that drives Web portfolios is one that is fast-developing, future Web portfolios development processes must reflect the need to accommodate new emerging technologies. It is by doing so that Web portfolios can remain as a dynamic tool and useful for continuous professional development. Exemplified in this study was the strong influence of popular online social networking applications such as *Facebook* that has encouraged the students in this study to pursue work on their Web portfolios. These students belong to a generation that perceives technology as a trend as much as it is a necessity to them as future teachers. That being said, it may become detrimental to the prospect of using Web portfolios if no such allowances are made for the inclusion of current and future technological trends as part of their development process.

6.4 Limitations

In designing and conducting this study, two limitations were identified. The first limitation of the study relates to time allocated for this study. There were limitations due to the inherent restrictions of the sponsors for this study allowing time for data collection to be restricted to a maximum of three months and data could only be collected within one semester. The approved time frame for data collection was 14 weeks, in which two weeks were allocated for conducting introductory workshops. It was further reduced due to course syllabus requirements and designated university holidays making the research site accessible by the researcher for only seven weeks instead of 14 weeks. This has resulted in shortcomings affecting the quality of the students' Web portfolios. As a consequence of the rushed effort, the students had to submit their Web portfolios at the end of the data collection period at the expense of some sections being under developed. The brief time frame for data collection may have also restricted the students' engagement with the learning and assessment aspects of Web portfolio use on the CALL course. The researcher recognized that a more extensive timeline may have been needed to effectively capture more detailed aspects of learning and assessment through Web portfolio use. Nevertheless, the researcher acknowledges that that there are other significant findings related to the use of Web portfolio as an innovative tool that may not have been affected by the time factor.

The second limitation concerns the involvement of the researcher. The researcher was involved in carrying out workshop sessions, participating in face-to-face and online discussions and conducting the interviews. The researcher's presence as an active participant might have influenced how the participants responded to the questions posed during the face-to-face meetings, in the questionnaires, and through the online forums and interviews. The researcher, however, viewed establishing rapport with the participants as an important step towards getting them to share their true experiences in developing their Web portfolios. In addition, the researcher's presence during some lecture hours gave participants an opportunity for them to ask questions and to get technical assistance from the researcher.

6.5 Implications of findings

This study has found that the use of Web portfolios is beneficial as a versatile tool that encapsulates the learning and development of pre-service teachers within a CALL course. From these findings, it is evident that there are several implications that may impact on practice and research concerning the use of Web portfolios in the training of future ESL teachers in Malaysia and other similar contexts. The implications are outlined below.

1) The implementation of Web portfolios would require both students and lecturers to change their mind sets of how learning and assessment take form. This is because the use of Web portfolios will demand a shift from conventional ways of learning that is teacher-centered to a more student-centered one. At a course level, this shift would involve modifications be made to the course design and assessment procedure so that it would align well with the Web portfolio approach that views learning as a developmental process as opposed to summative one.

2) This study has explored the use of *Google Sites* as a platform for the development of Web portfolios and found several benefits as well as limitations pertaining to its use. The findings further suggests that the development of Web portfolios would require students and also lecturers to have prerequisite skills in the use of online tools and technologies, the prospect of making Web portfolios an integral part of student learning and assessment will require these prerequisite skills be met. In these terms, it clear that for Web portfolios be further explored, more training and technical support in the use of *Google Sites* or any other Web-based platform are needed.

3) The findings imply that student readiness is an important aspect that needs to be addressed because they still have a high degree of unfamiliarity with the Web portfolio concept of learning and assessment. Mixed responses about the effectiveness of using Web portfolios as a learning and assessment tool also suggest that Web portfolios are still considered as a novel tool that require familiarization. As pointed out by the students in this study, Web portfolios need to be introduced to them at the beginning of their training and their use

to be integrated within other courses and not as a standalone assignment on a specific course.

4) On a larger scale, the recent policy advocating the uptake and development of school-based assessments in primary and secondary education in Malaysia can be regarded as a positive step forward in the pursuit of making Web portfolios as an approach to learning and assessment in all levels of education. However, due to the technical infrastructure, personalized feedback, language and reflection skills that are demanded by students when developing Web portfolios, it may seem that this approach to learning and assessment may be more suitable in university setting where students are more mature and are able to take on more responsibility for their own learning. By the same token, assessment procedures will also need to be revisited to include a more qualitative evaluation of student learning within higher education as this form of assessment is still limited in Malaysia and other similar exam-oriented contexts.

5) One important finding in this study relates to the issue of time that poses many challenges and barriers to the development of Web portfolios. In view of the huge time investment required to effectively implement Web portfolios, strong implications are placed at the faculty and institution level to consider the possibility of introducing Web portfolios as an exit requirement or accreditation purposes of future teachers. They may also be adopted to increase employability among future teachers as being practiced in other countries that have more mature implementation and development procedures for Web-based portfolios.

6.6   Recommendations

Based on the aforementioned conclusions, the following recommendations are made as a way to improve the development of Web portfolios as a learning and assessment tool by pre-service ESL teachers in similar contexts. First, preparation is required prior to introducing students to Web portfolios. In this study, it was found that some of the challenges the students encountered while developing their Web portfolios could be overcome by designing clear tasks at the beginning of their Web portfolio work. The students faced some difficulties in completing their Web portfolio tasks

because they were not thoroughly clear about the requirements of the tasks. Parallel to designing tasks that are clear to students, rubrics that are used to assess students' performance in accomplishing the tasks can be designed and developed collaboratively with the students so as to encourage a sense of ownership when they pursue their Web portfolio work. Ownership of their own Web portfolios is also important as it can encourage sustained use and maintenance of individual Web portfolios beyond the duration of a course.

Second, proper introduction and adequate training are also necessary at the beginning stages of Web portfolio development. As evidenced in this study, further training and additional time were needed for the students to become familiar with *Google Sites*. As such, there is a necessity to consider time in terms of developing the Web portfolios followed by time for practising using them. In relation to the practice of using Web portfolios, it would be necessary for skills of reflection to be overtly taught and continuously encouraged not only because reflection is a key component of a portfolio, but also because the students will be able to see greater benefits of using their Web portfolios when they have the skills to reflect back on their learning. Depending on the main goals of the course, platform selection for the development of a Web portfolio is also a crucial issue that should be addressed at the initial stages of any Web portfolio work. A wide range of computer and technology skills are involved in the development of Web portfolios. As cautioned by portfolio practitioners, computer and technology skills may pose a great challenge for students and they may not appreciate the whole process if they are expected to experience a steep learning curve when developing their portfolios.

Third, it is recommended that students should be given ample opportunities to receive feedback on their work not only from their peers but also from their course lecturer when they develop their Web portfolios. The students in this study greatly benefited from collaborating with their peers throughout their Web portfolio development process. One setback was that feedback that they received was not included in their Web portfolios but shared and published in *Facebook* because they were concerned 'about being watched' by the lecturer and wanted an avenue where they could freely express their opinions. As a result, the type of feedback including the quality of feedback the students received from each other could not be

documented. Another setback was that the course lecturer was not able to provide consistent and personalized feedback to all students during the process of their Web portfolio development process. This was primarily due to the large number of students who participated in the development of Web portfolios. It implies that future Web portfolio initiatives must place course lecturers in a position where they are able to play an active role in providing feedback (on technical as well as content) of their students' Web portfolios and consider the ratio between lecturers and students carefully.

6.7   Further research

There exist some key areas where the development of Web portfolios may require further investigation. In terms of technology use, it would be interesting to take a closer look at *Google Sites* as a platform for the development of Web portfolios, one aspect of which would involve further exploring the way *Google Sites* can be beneficial in supporting an online community. As evident in the present study, the students have incidentally formed an online learning community when they collaborated to exchange feedback on the presentation and content of their Web portfolios. Unfortunately, it was not possible to encourage the students' involvement due to two main reasons. The first reason relates to the time stipulated for this study that restricted their participation and the second reason concerns the students' digression to *Facebook* as a complementary platform to *Google Sites*. Further research in using other available website creation tools that can be found online is also encouraged. This is in order to gain insights into the unique characteristics of individual platforms that will impact on the quality of Web portfolios developed. In particular, there is a need to carefully consider a platform for Web portfolio development that incorporates the affordances of social networking technologies due to its popularity and ease of use. By the same token, there is also a strong reason to consider the integration of Web portfolio platforms into existing learning management systems such as the ones that have been reported by studies in international contexts.

Further studies within the area of Web portfolios may also involve broadening the research scope enabling course-wide and faculty-wide initiatives that are presently

not carried out in the context of this study. In the literature reviewed on the use of portfolios in Malaysia, it was apparent that all the studies conducted were carried out at the course-level and were primarily case studies that were explanatory in nature (e.g., Raja Nor Safinas et al., 2012; Thang et al., 2012). While this study is not precluded from similar objectives, it is timely that large-scale studies are conducted to investigate their benefits and challenges. Longitudinal studies are also called for as another possible direction is to investigate the benefits that individual students gain from maintaining their Web portfolios over time. These studies are deemed necessary to further discover the impact of Web portfolios use on the development of other skills. For example, the present study has highlighted the importance of developing communication and language skills as fundamental skills when developing portfolios. Both these skills have been identified in the portfolio literature as skills that may contribute to the overall quality of students' reflection that is the critical element of any portfolio initiative.

6.8   Personal reflections

Advancement in technology will further enhance and transform the way portfolios are developed, presented and used. Although it is beyond the scope of this study to present a trajectory of future applications and practices of Web portfolios, the study was able to recommend factors and describe conditions that should be taken into account for improving their use in similar contexts. In light that the idea of using Web portfolios as a learning and assessment tool has not been fully taken up in the context of this study, a study of this nature will open up an avenue for exploration by other researchers. As with any other research project, it is a personal goal of the researcher to provide a range of significant outcomes that can be used to directly improve the professional development and practices of future ESL teachers. Considering that the study was able to reach a point whereby the majority of the students' Web portfolios were completed within the limited timeframe of the study, the findings of the study has strengthened the researcher's views that Web portfolios are worthwhile investments. Hence, the use and implementation of Web portfolios should not be sidetracked by concerns, which can be resolved through proper introduction, training and guidance.

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QUESTIONNAIRE
USING WEB PORTFOLIOS TO TRAIN TEACHERS ONLINE

PURPOSE:
The purpose of this questionnaire is to obtain information regarding ESL students' computer competency in online environments and their attitude towards the use of computer technology in learning and teaching. It also intends to find out students' background knowledge regarding the use of portfolios in education. All data collected in this questionnaire will be used for research purposes only. Individual responses will remain strictly anonymous. Thank you for taking the time to complete this survey.

INSTRUCTIONS:
1) This questionnaire consists of FIVE (5) sections. Please answer ALL sections.
2) Use a pen or pencil to write your answers.
3) Return the completed questionnaire to your instructor or research representative.

THE CONTENTS OF THIS FORM ARE ABSOLUTELY CONFIDENTIAL. INFORMATION IDENTIFYING THE RESPONDENT WILL NOT BE DISCLOSED UNDER ANY CIRCUMSTANCES.

Please forward your enquiries about this study to:
Name of researcher   : Farah Natchiar Mohd Khaja
Contact details   : fnatchiar@gmail.com
                                   +6012-2298295

Section A: Computer competency in an online environment	Level of competency				
Put a tick ☑ to indicate your level of competency in performing the following tasks. Use the following scale: **5** = Expert, **4** = Advanced, **3** = Intermediate, **2** = Beginner & **1** = No experience.	**5**	**4**	**3**	**2**	**1**
1) Using common desktop tools (Word, PowerPoint, Publisher, Excel, etc.).					
2) Using a Web browser (Internet Explorer, Mozilla Firefox, Netscape Navigator etc.) to find specific information on the Web.					
3) Using a search engine (Google, Yahoo, MSN, etc.).					
4) Using Web 2.0 tools (Blogs, Wikis, Google sites, etc.).					
5) Using Web authoring tools (Dreamweaver, Front Page, Flash, etc.).					
6) Downloading materials (text, image, audio, video, software, online applications) from the Web.					
7) Managing computer-mediated communication (instant messages, email, chat, online forums, discussion boards, etc.).					
8) Printing documents (text, image, audio, video)from the Web.					
9) Saving documents (text, image, audio, video) from the Web.					
10) Publishing materials (text, image, audio, video) on the Web.					

Section B: Attitude towards the use of computer technology in learning and teaching	Scale				
Put a tick ☑ for each statement below to show that you : **5 = Strongly agree, 4 = Agree, 3 = Undecided, 2 = Disagree &** **1 = Strongly disagree**. There are no right or wrong answers.	**5**	**4**	**3**	**2**	**1**
1) I enjoy using computers.					
2) I understand the limitations of using computers.					
3) Computers make learning a lot easier.					
4) I enjoy exploring what computers can do.					
5) I cannot imagine working without a computer.					
6) I wish to know more about computers.					
7) Content of most subjects/courses can be learnt much easily with computers.					
8) I enjoy trying out new computer applications.					
9) I learn better when my instructor uses a computer.					
10) My ability to use a computer will affect my grades.					
11) Learning becomes more flexible with the use of computers.					
12) I am motivated to learn a course that integrates the use of computers.					
13) I would like to experience computer-based tests in my current and future courses.					
14) There are aspects of using the computer for learning that worries me.					

		5	4	3	2	1
15)	The use of computers sometimes makes my learning difficult.					
16)	I have to know how to use a computer to maintain social relationships.					
17)	I communicate best with my instructor when I use the computer (email, chat, bulletin boards etc.)					
18)	My ability in using computers for learning has tremendously improved in the last few years.					
19)	Computer skills can be learnt.					
20)	The ability to use a computer can best be improved when it is formally taught.					
21)	Hands-on experience is compulsory when learning to use the computer.					
22)	The Web is important tool for future teachers.					
23)	My experiences in using computer technology on the course were a positive one.					

Section C: Attitude towards learning Put a tick ☑ for each statement below to show that you : **5 = Strongly agree, 4 = Agree, 3 = Undecided, 2 = Disagree &** **1 = Strongly disagree**. There are no right or wrong answers.	Scale				
	5	**4**	**3**	**2**	**1**
1) I learn best in groups.					
2) I enjoy sharing my learning experiences with my course mates.					
3) My course mates often give me useful feedback on my work.					
4) I am more motivated to work on group assignments than individual assignments.					
5) I find it useful to refer to my previously submitted assignments when working on new ones.					
6) I learn from analysing how others have done their assignments, essays, presentations etc.					
7) I cannot apply my work from previous courses to my present ones.					
8) I am open to comments given by other students.					
9) I value feedback given by my course mates.					
10) My course mates appreciate my feedback on their work.					
11) I look forward to personalised feedback from my instructor on my work.					
12) I take notes on work, skills or knowledge that I would like to improve on.					
13) Learning from my past experiences is a skill that I need to learn.					
14) Writing about my learning experiences will help me understand my work better.					

Section D: Knowledge about portfolios.
Please tick ☑ and complete the following details.

1) Are you familiar with portfolios?
☐ Yes
☐ No (If NO, please proceed to question no. 10)

2) Which type of portfolio are you familiar with? (You may answer more than one)
☐ Paper-based portfolios
☐ Electronic portfolios

3) Do you personally own a portfolio / portfolios?
☐ Yes
☐ No (If NO, please proceed to question no. 9)

4) What was the main purpose(s) of your portfolio(s)?

5) Do you still have your portfolio(s)?
☐ Yes
☐ No (If NO, please proceed to question no. 8)

6) Is/Are your portfolio(s) still useful to you?
☐ Yes
☐ No

7) Are you still updating information in your portfolio(s)?
☐ Yes
☐ No

8) What can one expect to find in your portfolio(s)?

9) In your own words, describe the purpose of a portfolio.

10) Do you keep copies of previously submitted assignments, drafts of essays, presentations, and lecture notes?
☐ Yes
☐ No (If NO, please proceed to Section 5)

11) What form do you keep the above items?
☐ Paper
☐ Electronic (softcopy in disks, thumb drives, computer hard drive, external hard drive, scanned documents etc.)
☐ Both

12) What are your reason(s) for keeping the above item(s)?

Section E: Personal details.
Please tick ☑ and complete the following details.

1) Gender
   ☐ Male
   ☐ Female

2) Semester
   ☐ Four
   ☐ Five
   ☐ Six

3) Student Card No.: _____

4) Teaching experience
   ☐ None
   ☐ Primary school
   ☐ Secondary school
   ☐ College
   ☐ Others - please state: _____

5) Minor subject, please state:_____

6) MUET result:
   ☐ Band 1
   ☐ Band 2
   ☐ Band 3
   ☐ Band 4
   ☐ Band 5
   ☐ Band 6

7) Have you ever enrolled in any computer literacy courses?
   ☐ Yes
   ☐ No
   If yes, please complete the name(s) of the course(s), duration and year enrolled.

   _____

End of Questions
Your co-operation is greatly appreciated.

<div align="center">

QUESTIONNAIRE

USING WEB PORTFOLIOS TO TRAIN TEACHERS ONLINE

</div>

PURPOSE:

The purpose of this questionnaire is to obtain information regarding ESL students' computer competency in online environments and their attitude towards the use of computer technology in learning and teaching. It also intends to explore students' experiences of using Web portfolios as a learning tool. All data collected in this questionnaire will be used for research purposes only. Individual responses will remain strictly anonymous. Thank you for taking the time to complete this survey.

INSTRUCTIONS:

1) This questionnaire consists of SIX (6) sections. Sections A, B, C, D, E, & F. Please answer ALL sections.
2) Use a pen or pencil to write your answers.
3) Return the completed questionnaire to your instructor or research representative.

THE CONTENTS OF THIS FORM ARE ABSOLUTELY CONFIDENTIAL. INFORMATION IDENTIFYING THE RESPONDENT WILL NOT BE DISCLOSED UNDER ANY CIRCUMSTANCES.

Please forward your enquiries about this study to:

Name of researcher   : Farah Natchiar Mohd Khaja

Contact details   : fnatchiar@gmail.com , farahwebportfolio@gmail.com

Section A: Computer competency in an online environment Put a tick ☑ to indicate your level of competency in performing the following tasks. Use the following scale: **5** = Expert, **4** = Advanced, **3** = Intermediate, **2** = Beginner & **1** = No experience.	Level of competency				
	5	**4**	**3**	**2**	**1**
11) Using common desktop tools (Word, PowerPoint, Publisher, Excel, etc.).					
12) Using a Web browser (Internet Explorer, Mozilla Firefox, Netscape Navigator etc.) to find specific information on the Web.					
13) Using a search engine (Google, Yahoo, MSN, etc.).					
14) Using Web 2.0 tools (Blogs, Wikis, Google sites, etc.).					
15) Using Web authoring tools (Dreamweaver, Front Page, Flash, etc.).					
16) Downloading materials (text, image, audio, video, software, online applications) from the Web.					
17) Managing computer-mediated communication (instant messages, email, chat, online forums, discussion boards, etc.).					
18) Printing documents (text, image, audio, video)from the Web.					
19) Saving documents (text, image, audio, video) from the Web.					
20) Publishing materials (text, image, audio, video) on the Web.					

Section B: Attitude towards the use of computer technology in learning and teaching Put a tick ☑ for each statement below to show that you : **5 = Strongly agree, 4 = Agree, 3 = Undecided, 2 = Disagree &** **1 = Strongly disagree**. There are no right or wrong answers.	Scale				
	5	**4**	**3**	**2**	**1**
24) I enjoy using computers.					
25) I understand the limitations of using computers.					
26) Computers make learning a lot easier.					
27) I enjoy exploring what computers can do.					
28) I cannot imagine working without a computer.					
29) I wish to know more about computers.					
30) Content of most subjects/courses can be learnt much easily with computers.					
31) I enjoy trying out new computer applications.					
32) I learn better when my instructor uses a computer.					
33) My ability to use a computer will affect my grades.					
34) Learning becomes more flexible with the use of computers.					
35) I am motivated to learn a course that integrates the use of computers.					
36) I would like to experience computer-based tests in my current and future courses.					
37) There are aspects of using the computer for learning that worries me.					
38) The use of computers sometimes makes my learning					

		5	4	3	2	1
	difficult.					
39)	I have to know how to use a computer to maintain social relationships.					
40)	I communicate best with my instructor when I use the computer (email, chat, bulletin boards etc.)					
41)	My ability in using computers for learning has tremendously improved in the last few years.					
42)	Computer skills can be learnt.					
43)	The ability to use a computer can best be improved when it is formally taught.					
44)	Hands-on experience is compulsory when learning to use the computer.					
45)	The Web is important tool for future teachers.					
46)	My experiences in using computer technology on the course were a positive one.					

Section C: Attitude towards learning Put a tick ☑ for each statement below to show that you : **5 = Strongly agree, 4 = Agree, 3 = Undecided, 2 = Disagree &** **1 = Strongly disagree**. There are no right or wrong answers.		Scale				
		5	**4**	**3**	**2**	**1**
15)	I learn best in groups.					
16)	I enjoy sharing my learning experiences with my course mates.					
17)	My course mates often give me useful feedback on my work.					
18)	I am more motivated to work on group assignments than individual assignments.					
19)	I find it useful to refer to my previously submitted assignments when working on new ones.					
20)	I learn from analysing how others have done their assignments, essays, presentations etc.					
21)	I cannot apply my work from previous courses to my present ones.					
22)	I am open to comments given by other students.					
23)	I value feedback given by my course mates.					
24)	My course mates appreciate my feedback on their work.					
25)	I look forward to personalised feedback from my instructor on my work.					
26)	I take notes on work, skills or knowledge that I would like to improve on.					
27)	Learning from my past experiences is a skill that I need to learn.					
28)	Writing about my learning experiences will help me understand my work better.					

Section D: Experiences in using Web portfolios as a learning tool		Scale				
Put a tick ☑ for each statement below to show that you : **5 = Strongly agree, 4 = Agree, 3 = Undecided, 2 = Disagree &** **1 = Strongly disagree**. There are no right or wrong answers.		**5**	**4**	**3**	**2**	**1**
1)	Developing a Web portfolio in the course did not affect the way l learnt.					
2)	I plan to use my Web portfolio after I graduate to seek employment.					
3)	The effort I have put into developing a Web portfolio is worthwhile.					
4)	I am satisfied with the work that I had done developing a Web portfolio.					
5)	Others will find my Web portfolio useful in learning more about my skills and experiences as a future teacher.					
6)	I am satisfied with the tasks given as part of the Web portfolio development.					
7)	I am proud to share with others my Web portfolio.					
8)	Developing the Web portfolio was a valuable experience.					
9)	My Web portfolio will be useful in future courses.					
10)	I am aware of the advantages of owning a Web portfolio.					
11)	My Web portfolio contains evidences of the learning I have undertaken on the course.					
12)	My instructor should refer to my Web portfolio when assessing me as a learner.					
13)	Developing a Web portfolio was technologically challenging for me.					
14)	Developing my own Web portfolio has made me feel more competent in using computers.					
15)	I would use a Web portfolio to develop my computer skills.					
16)	I would use a Web portfolio as a way to monitor my skills as they develop over time.					
17)	I think viewing my peers' Web portfolio would be a valuable learning experience.					
18)	I would use a Web portfolio to guide my skills development.					
19)	I would be concerned about my Web portfolio becoming a collection of "electronic worksheets".					
20)	I use my Web portfolio to learn from my mistakes.					
21)	I plan to continue to enhance my Web portfolio for life-long learning.					
22)	I would use my Web portfolio to guide my knowledge development.					

Section E: Experiences in using Web portfolios as an assessment tool Put a tick ☑ for each statement below to show that you : **5 = Strongly agree, 4 = Agree, 3 = Undecided, 2 = Disagree & 1 = Strongly disagree**. There are no right or wrong answers.	Scale				
	5	**4**	**3**	**2**	**1**
1) I feel that a Web portfolio is an effective way for my instructor to assess my knowledge than a written exam.					
2) I would feel comfortable with Web portfolios used as an assignment on the CALL course.					
3) I feel comfortable if a Web portfolio is used as part of the assessment of my overall performance in the TESL programme.					
4) I would feel comfortable with a Web portfolio used as an assessment tool in all my courses.					
5) I feel comfortable with a Web portfolio used as an assessment tool for part of my grade on the CALL course.					
6) I am concerned that the assessment of my Web portfolio would be too subjective.					
7) I am concerned that the assessment of my Web portfolio would be too open to errors in judgement.					
8) I am clear of the procedures involved in assessing my Web portfolio.					
9) I feel that a Web portfolio is a good way for my instructor to assess my knowledge in CALL.					
10) I feel that construction a Web portfolio is an effective way to display the level of my computer competency.					

Section F: Experiences in developing a Web portfolio.
Please tick ☑ and complete the following details.

1) Do you have your personal website/page prior to attending the CALL course?
☐ Yes
☐ No (If NO, please proceed to Question #3)

2) How different is your personal webpage to the one you have developed on the CALL course?

3) What is your first impression of *Google Sites* and a Web portfolio development platform? Please state.

4) Has your impression of Google Sites as a platform for Web portfolio development changed after you have completed your Web portfolio?
☐ Yes
☐ No
Why do you say so?

5) How would you rate your competency in using *Google Sites*?
☐ Expert
☐ Advanced

☐ Intermediate
☐ Beginner

6) What was the **most** challenging aspect of using *Google Sites*?

7) What was the **least** challenging aspect of using *Google Sites*?

8) Do you need more training in using *Google Sites*?
    ☐ Yes
    ☐ No
    Why do you say so?

9) Would you recommend *Google Sites* to others interested in developing a Web portfolio?
    ☐ Yes
    ☐ No
    Why do you say so?

10) Besides Google Sites, is there another Web application that you would rather use?
    ☐ Yes
    ☐ No
    ☐ I am not familiar with others.
    If yes, why do you say so?

11) How would you describe your **overall** experience in developing a Web portfolio?
    ☐ Positive
    ☐ Negative
    Why do you say so?

12) Did you make any extra effort in making sure that your Web portfolio would be better than other students' Web portfolios?
    ☐ Yes
    ☐ No
    If yes, what were they?

13) Do you agree that in developing your own Web portfolio, your skills at using the computer have improved?
    ☐ Yes
    ☐ No (If NO, please proceed to question #15)
    If yes, what particular computer skills are you referring to?

14) Besides computer skills, did the development of a Web portfolio help you acquire other skills?
    ☐ Yes
    ☐ No
    If yes, what are they?

15) Did you face any technical difficulties while completing your Web portfolio?
    ☐ Yes
    ☐ No
    If yes, were you able to overcome those difficulties? How?

16) Are the tasks listed in the *Web Portfolio Task Sheet* clear?
  ☐ Yes
  ☐ No
  If NO, why do you say so? (Which task in particular?)

17) Please rate the difficulty level of each Web portfolio tasks by indicating:
  10 *as the **Most difficult task*** and **1** *as the **Least difficult task.***
  ☐ Home
  ☐ Personal Profile
  ☐ Academic Profile
  ☐ Assignments
  ☐ Research
  ☐ Teaching materials/Work Samples
  ☐ Reflections
  ☐ Future Learning Goals
  ☐ Resources
  ☐ Contact Details
  Which task was the most difficult? Why do you say so?

18) How often did you work on your Web portfolio?
  ☐ Only during lecture hours   ☐ About an hour every day
  ☐ More than one hour every day   ☐ About a few hours a week
  ☐ Others, please state:

19) Which aspect of your Web portfolio did you spend most time working on?
  (You may tick more than one)
  ☐ Registering for a site
  ☐ Creating the Web portfolio site layout
  ☐ Editing the Web portfolio site layout
  ☐ Arranging items in the Web portfolio
  ☐ Creating pages
  ☐ Editing pages
  ☐ Uploading materials
  ☐ Inserting text
  ☐ Editing text
  ☐ Inserting pictures
  ☐ Editing pictures
  ☐ Inserting sounds
  ☐ Editing sounds
  ☐ Inserting videos
  ☐ Editing videos
  Others, please state:

20) Which of the following did you use to develop your Web portfolio?
  ☐ A blank *Google Sites* template
  ☐ A readily available template in *Google Sites*
  Why have you made this choice? Please explain.

21) Did you view Web portfolios developed by others?
  ☐ Yes
  ☐ No (If NO, please proceed to question #24)

22) When viewing other Web portfolios, what did you do?
  ☐ Only view to see what others have done

☐ View to improve on my own development
☐ View and leave comments
☐ Others, please state:

23) Were you able to learn more about your course mates (more than you already know) after viewing his or her Web portfolio?
☐ Yes
☐ No

24) In your opinion, what are the characteristics of a 'good' Web portfolio?

25) Based on your experience, how can the Web portfolio development process be improved?

26) When do you think is the best time for students to be introduced to Web portfolios?
☐ At the beginning of semester I
☐ At the end of their TESL programme
☐ The semester before their teaching practice
☐ At semester 2 when they take up the CALL course
☐ At semester 3 after they have taken up the CALL course
☐ Others, please state:

27) Do you think students *who have not* completed *the CALL course* will be able to produce Web portfolios?
☐ Yes
☐ No
Why do you say so?

28) Are you looking forward to using your Web portfolio in the next semester?
☐ Yes
☐ No
Why do you say so?

29) Please provide some feedback regarding the use and/or development of Web portfolios.

30) Student Card No.: D201010 _____

End of Questions
Your co-operation is greatly appreciated.

Appendix C
Initial interview questions: Focus group interviews with students

The focus group interview will take approximately one hour and will be audio recorded. The interview will generally be guided by the listed topic categories and questions. Selected Web portfolios will also be used as a stimulus in this interview and participants will be encouraged to explain, elaborate and give examples of specific areas.

A: Experience in developing Web portfolios

1) What words would you use to describe your experience in developing a Web portfolio?

2) What do you remember most about the process of developing a Web portfolio?

3) At what stage did you find most challenging? Why?

4) What do you think is the most useful aspect of owning a Web portfolio? Please elaborate.

B: Web portfolios as a Learning Tool

1) Did developing the portfolio encourage you to think about your learning? In what way?

2) Do you feel that is necessary to share each other's Web portfolios in order to improve your own learning?

3) Do you think developing a Web portfolio an independent or collaborative effort?

4) From your observation, which aspect of the Web portfolio do students put most emphasis on? Why is this so? Is this also true for you?

5) In your opinion, what are the advantages of owning a Web-based portfolio rather than a paper-based one?

6) Did you receive any feedback on your Web portfolio? Who provided you with the feedback? What was the feedback on? Was the feedback useful?

C: Web Portfolios as an Assessment Tool

1) Do you have any concerns about your Web portfolio being assessed? In what way?

2) Do you have any other comments on the assessment of Web portfolios in the course?

D: Future directions

1) How would you use your Web portfolio from this stage onwards?

2) Would you recommend other students to develop Web portfolios?

3) Are there any final words that you would like to share regarding the overall Web portfolio development process?

Appendix D
Initial interview questions: Semi-structure interviews with the course lecturer

The interview will take approximately one hour and will be audio recorded. The interview will generally be guided by the listed topic categories and questions. The participant will be encouraged to explain, elaborate and give examples of specific areas.

Teaching and Learning Process

1) What is your first impression regarding the use of Web portfolios on the CALL course?

2) Please describe your experience in using Web portfolios in the CALL course.

3) What do you think was the most challenging aspect of implementing Web portfolios in the CALL course? (For example, designing the portfolio tasks, teaching the related computer skills, assessing the Web portfolio, etc.). Why do you say so?

4) How effective was developing Web portfolios in meeting the course objectives?

5) Were you satisfied with the training given on the use of Web portfolios to students? To yourself, as a course coordinator?

6) What were common questions students asked you, or recurring questions student had regarding the development of Web portfolios in the course?

7) Would you agree that the Web portfolio consolidated the knowledge and skills that students were to acquire from the course? Why do you say so?

8) Would you continue to use Web portfolios in the CALL course? If yes, how would you personally introduce Web portfolios in future?

Assessment of Web portfolios

1) How do you think your students have performed the Web portfolio tasks?

2) Do you think your students clearly understood the purpose of developing Web portfolios?

3) Did they have any questions regarding the assessment procedures? What were they?

4) What sort of improvements would you recommend in terms of Web portfolio assessment?

5) Please share your personal experience reviewing/assessing the student's Web portfolios. How did you conduct the review? What words would you use to describe the overall procedure?

6) Please comment on the use of the Web portfolio Assessment Rubric. What was your experience like in using the rubric?

7) Do you have any suggestions on how the rubrics can be improved?

Reflection

1) How effective do you think the Web portfolios were in assisting reflection?

2) Do you see any improvements in the quality of reflections students made?

3) Were the students' reflections more evident in their Web portfolios or in the online forums/discussions? Why do you say so?

Future directions

1) In your opinion, do you think integrating Web portfolios in the course was a worthwhile effort? Why do you say so?

2) Do you expect students to continue working on their Web portfolios? In what way?

3) What sort of improvements would you like to see in their Web portfolios? Why do you say so?

4) Will you continue to use Web portfolios as a learning and assessment tool? Why do you say so?

5) Do you have additional comments on the use of Web portfolios?

A WEB PORTFOLIO DEVELOPMENT CHECKLIST			
Student's profile Name: Matric No.: Group:			
Instructions: Put a tick ☑ in the space given to indicate the stages that you have completed. You MUST complete all stages in this checklist. This checklist is to be submitted for verification by your instructor.			
No.	**Stages**	**Description**	**Tick** ☑
1)	Registration & System Orientation	Register for new account, submit Web address and username	
2)		Complete profile in Web portfolio	
3)		Customize Web portfolio settings	
4)		Create and setup groups (add/specify users)	
5)		Complete group description and group type (optional)	
6)		Setup portfolio content layout	
7)	Practice 1	Create profile – insert profile details and picture	
9)	Practice 2	Upload and update curriculum vitae (CV)	
10)	Practice 3	Insert text	
11)	Practice 4	Upload/download files, images and videos	
12)	Practice 5	Create individual webpages	
13)	Ongoing Tasks	Upload Assignment 1	
14)		Upload Assignment 2	
15)		Upload Assignment 3	
16)		Upload Assignment 4	
17)		Update individual webpages	
18)		Share Web portfolio links	
19)		View and comment on group Web portfolios	
20)	Submission	Compile all files for submission via CD-ROM	

Verified by,

....
Name: Date:

Appendix F
Web Portfolio Task Sheet

Web Portfolio Task Sheet

Note: *The Web Portfolio Task Sheet contains items that a student MUST include in his/her Web portfolio. Read and understand the objectives of the following items carefully before you complete the tasks that correspond to each item.*

No.	Items	Objective(s)	Task
1)	**Home**	To introduce your Web portfolio by giving an overview of the purpose and content presented in the Web portfolio.	Create an interesting welcome page that reflects your personality and interests.
2)	**Personal Profile**	To provide some personal information about the owner/author of the Web portfolio.	Write a description of yourself. Length: 100 words.
3)	**Academic Profile**	To provide background information about the owner's/author's academic background.	Provide information about your academic background.
4)	**Assignments**	To allow readers to view assignments that is in progress or has been completed.	1) Create links to specific assignments that is in progress and those that you have completed. 2) Assign links to the assignments according to their course codes.
5)	**Research**	To provide information regarding the use of computers in second language learning.	1) Find an area in the use of computers for second language learning that interests you. 2) Create at least 5 links to information (articles, webpages, e-books etc.) pertaining to that area. 3) Supply a brief discussion on this particular area with a complete list of references.
6)	**Teaching Materials/ Work Samples**	To provide samples of teaching materials and work completed on the CALL course (and other courses).	1) Create links to teaching materials and work samples. 2) Provide a brief overview of each material/work attached.
7)	**Reflections**	1) To share personal experiences on the use of computers in (second) language learning. 2) To share personal reflections on the development of a Web portfolio. 3) To share commentaries on the progress and completion of assignments.	1) Reflect on your experiences on the use of computers in (second) language learning. 2) Reflect on your experiences of developing a Web portfolio. 3) Reflect on your experiences in completing individual assignments on the CALL course.
8)	**Future Learning Goals**	To share future learning goals.	Describe your future learning goals concerning the use of computers in (second) language learning. Use the following questions as a guide. a) What are my learning goal(s)? b) Where do I want to be in ten years? c) What do I have to do to accomplish my goal(s)? d) How will my present learning be useful in achieving my future goal(s)?

| 10) | Resources | 1) To provide links to resources that are relevant to the use of computers in (second) language learning.
2) To provide links to resources that are useful in developing a Web portfolio. | 1) Create links to resources that are relevant to the use of computers in (second) language learning.
2) Crete links to resources that are useful in developing a Web portfolio. |
| 11) | Contact Details | To provide contact information. | Provide an email address in your Web portfolio. |

WEB PORTFOLIO ASSESSMENT RUBRIC

	GRADE			
	A	**B**	**C**	**D**
Content	The student uses his/her Web portfolio to show evidence of work consisting of a variety of topics and activities. All evidences of artefacts/work presented are directly related to the purpose of the Web portfolio.	The student uses his/her Web portfolio to show some evidence of work consisting of a variety of topics and activities. Most evidences of artefacts/work presented are directly related to the purpose of the Web portfolio.	The student uses his/her Web portfolio to show minimal evidence of work consisting of a variety of topics and activities. Only some evidences of artefacts/work presented are directly related to the purpose of the Web portfolio.	The student's Web portfolio does not show any evidence of work. Most evidences of artefacts/work presented are unrelated to the purpose of the Web portfolio.
Task Completion	All Web portfolio tasks have been completed with obvious and consistent effort.	Most Web portfolio tasks have been completed with some obvious and consistent effort.	Some Web portfolio tasks have been completed.	Most Web portfolio tasks are incomplete.
Presentation	A clear and effective use of text, graphics and media elements in the overall presentation of the Web portfolio displaying student's competency in using appropriate tools and technologies in an online learning environment.	Some effective use of text, graphics and media elements in the overall presentation of the Web portfolio displaying the student's competency in handling appropriate tools and technologies in an online learning environment.	Minimal use of text, graphics and media elements in the overall presentation of the Web portfolio displaying the student's competency in handling some tools and technologies in an online learning environment.	Very minimal use of text, graphics and media elements in the overall presentation of the Web portfolio displaying the student's poor selection of tools and technologies in an online learning environment.
Reflective Practice	Well-written commentaries have been provided to project a clear image of a reflective learner.	Written commentaries have been provided to project a partial image of a reflective learner.	Written commentaries provided do not project an image of a reflective learner.	No written commentaries were provided.
Language Use	The student's Web portfolio is free of spelling, grammar and punctuation errors.	The student's Web portfolio has minimal spelling, grammar and punctuation errors.	The student's Web portfolio has some obvious spelling, grammar and punctuation errors.	The student's Web portfolio has many obvious spelling, grammar and punctuation errors.

Adapted and modified from Barrett (2000) and Clarke (2008)

Appendix H
Web Portfolio Review Feedback Form

Reviewer Details	
Name	
Signature	
Please provide feedback on the following:	
WEB PORTFOLIO DEVELOPMENT	
Content Presented in Student's Web Portfolios	
Tasks Required for Student's to Complete in their Web Portfolios (with reference to Web portfolio Task Sheet)	
Overall Presentation of Student's Web Portfolios (incl. layout, color, fonts, media elements etc.)	
The Quality of Reflection Presented by Students in their Web Portfolios	
Student's Language Use as Reflected in their Web Portfolios	
***Google Sites* as a Platform for Developing Web Portfolios**	
WEB PORTFOLIO ASSESSMENT	

Describe your experience as a reviewer of students' Web portfolios.	235
Describe the most challenging aspect of reviewing the Web portfolios.	
Describe your experience in using the Web portfolio assessment rubric.	
How can the rubric be improved? Why do you say so?	
What words would you use to describe the overall process of reviewing/assessing Web portfolios?	
OTHERS	
Do you agree that Web portfolios should be introduced to future ESL teachers? Why do you say so?	
What do you think are factors that will determine the effectiveness of Web portfolios as a learning tool (The use of Web portfolios to display what students have learnt, how they have learnt the subject matter or skill, how competent they are in a particular course)?	
What do you think are factors that will determine the effectiveness of Web portfolios as an assessment tool (The use of Web portfolios to assess student's competency in a	

course such as how much they have learnt, what skills they have acquired)?	
SUGGESTIONS FOR IMPROVEMENT/FUTURE STUDY	

Web Portfolio Details	
Link	**https://sites.google.com/site/**
Web Portfolio Name	
Grade **(Please circle)**	**A** **B** **C** **D**
Comments	
Content	
Task Completion	
Presentation	
Reflective Practice	
Language Use	
Others	
Suggestions for Improvement	
Reviewer Details	
Name	
Signature	

Appendix J
Results of the paired samples t-test

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	SecAPost	40.3714	105	5.40701	.52767
	SecAPre	36.6667	105	5.89274	.57507
Pair 2	SecBPost	95.9630	108	9.72512	.93580
	SecBPre	91.9907	108	7.52130	.72374
Pair 3	SecCPost	57.7321	112	6.79027	.64162
	SecCPre	55.1071	112	5.23563	.49472

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	SecAPost & SecAPre	105	.581	.000
Pair 2	SecBPost & SecBPre	108	.496	.000
Pair 3	SecCPost & SecCPre	112	.362	.000

Paired Samples Test

		Paired Differences		
		Mean	Std. Deviation	Std. Error Mean
Pair 1	SecAPost - SecAPre	3.70476	5.19046	.50654
Pair 2	SecBPost - SecBPre	3.97222	8.86393	.85293
Pair 3	SecCPost - SecCPre	2.62500	6.91405	.65332

Paired Samples Test

		Paired Differences				
		95% Confidence Interval of the Difference				
		Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	SecAPost - SecAPre	2.70028	4.70924	7.314	104	.000
Pair 2	SecBPost - SecBPre	2.28138	5.66306	4.657	107	.000
Pair 3	SecCPost - SecCPre	1.33041	3.91959	4.018	111	.000

Appendix K
Students' Web Portfolio Site Addresses

CALL GROUP A
1) https://sites.google.com/site/sayabudaktesl/
2) https://sites.google.com/site/anneanniey/home
3) https://sites.google.com/site/thenadinezz/
4) https://sites.google.com/site/schaadanna233/
5) https://sites.google.com/site/muhammadyazidrosly/
6) https://sites.google.com/site/lisaasmeralda/
7) https://sites.google.com/site/greendafodil/
8) https://sites.google.com/site/dinasmindspeak/
9) https://sites.google.com/site/unchainedcuriosity/
10) https://sites.google.com/site/budsofgreatmind/
11) https://sites.google.com/site/romieabbas/
12) https://sites.google.com/site/aininsofiakamarudin/
13) https://sites.google.com/site/hamidahtesl/
14) https://sites.google.com/site/azreenaardy/home
15) https://sites.google.com/site/kawaiimadchen/
16) https://sites.google.com/site/tulipnankudsi/
17) https://sites.google.com/site/peihuachan038259call/
18) https://sites.google.com/site/xavierchiang001/
19) https://sites.google.com/site/callassignments/
20) https://sites.google.com/site/zulaihaashiqin/
21) https://sites.google.com/site/shadowoftheday1228/
22) https://sites.google.com/site/adilashafie/
23) https://sites.google.com/site/amiraaqilla/
24) https://sites.google.com/site/farahain002/home
25) https://sites.google.com/site/shazwanishaharom/
26) https://sites.google.com/site/syahiramayadi/
27) https://sites.google.com/site/myamyraabubakar/

CALL GROUP B
1) https://sites.google.com/site/surpriseevemy/
2) https://sites.google.com/site/theteachersstorymardiana/home
3) https://sites.google.com/site/nursyuhadahomar/
4) https://sites.google.com/site/szeyi21/
5) https://sites.google.com/site/kitwaiscorner/
6) https://sites.google.com/site/thisismilinsportfolio/
7) https://sites.google.com/site/ainshakinahazmi/
8) https://sites.google.com/site/natrahbintiibrahim/
9) https://sites.google.com/site/sasikaladvendren/
10) https://sites.google.com/site/nismahatori/
11) https://sites.google.com/site/sissayusof91/home
12) https://sites.google.com/site/hazrishahreen/
13) https://sites.google.com/site/nurainroslee150391/home
14) https://sites.google.com/site/salwalatiff/
15) https://sites.google.com/site/nashfahrenheit/
16) https://sites.google.com/site/nasscorner/
17) https://sites.google.com/site/najmuddinsites/
18) https://sites.google.com/site/farhanahalim90/
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21) https://sites.google.com/site/ushalavender90/
22) https://sites.google.com/site/emmellydotty/
23) https://sites.google.com/site/shalyinslittleparadise/
24) https://sites.google.com/site/aiweicl/
25) https://sites.google.com/site/kahyeeroom/
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2) https://sites.google.com/site/callcommitment/
3) https://sites.google.com/site/ismiazhar/
4) https://sites.google.com/site/farahportfolio/
5) https://sites.google.com/site/menadira/

6) https://sites.google.com/site/ainurradzi/
7) https://sites.google.com/site/quepinq/
8) https://sites.google.com/site/purplenur91/
9) https://sites.google.com/site/faznurportfolio/
10) https://sites.google.com/site/nursyafiqahmohdjunid/
11) https://sites.google.com/site/hannahrai310/
12) https://sites.google.com/site/borntobereal/
13) https://sites.google.com/site/islahnafsah/
14) https://sites.google.com/site/nurpage91/
15) http://sites.google.com/site/bellballon3/
16) https://sites.google.com/site/imuniqueinmyownway/
17) https://sites.google.com/site/elfredafloriadanny/
18) https://sites.google.com/site/cokelatking90/?pli=1
19) https://sites.google.com/site/hitsushiroeli91/
20) https://sites.google.com/site/misseryn90/
21) https://sites.google.com/site/behweichyi/
22) https://sites.google.com/site/syarifahsyarinacam/
23) https://sites.google.com/site/evanweesiawchung/home
24) https://sites.google.com/site/bringmethevertical/
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2) https://sites.google.com/site/princeshylo/
3) https://sites.google.com/site/sitiwardah02/
4) https://sites.google.com/site/thelongawaitededition/
5) https://sites.google.com/site/zaraunikl91/
6) https://sites.google.com/site/fha10lee/home
7) https://sites.google.com/site/mysiteisnotyoursite/
8) https://sites.google.com/site/ainiteslian/
9) https://sites.google.com/site/pikahimhomosapien/home
10) https://sites.google.com/site/haniizanni32/
11) https://sites.google.com/site/elah1234/
12) https://sites.google.com/site/sepattheronggengfish/home
13) https://sites.google.com/site/atiliaenglishgarden/
14) https://sites.google.com/site/farhanaresidi/
15) https://sites.google.com/site/dedaviolet90/
16) https://sites.google.com/site/carmenandbabychuck/
17) https://sites.google.com/site/rosaqilahosman/
18) https://sites.google.com/site/fatinamiramohdyasin/
19) https://sites.google.com/site/azlinadhoulat91/
20) https://sites.google.com/site/nuriesyazz/
21) https://sites.google.com/site/chimosherlin/
22) https://sites.google.com/site/ainulmurnirah/
23) https://sites.google.com/site/evashamanidavid/
24) https://sites.google.com/site/lailymurny6168/home
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1) https://sites.google.com/site/ferranabila/
2) https://sites.google.com/site/maizatulakma23/
3) https://sites.google.com/site/yuvinkumar/
4) https://sites.google.com/site/tlsharmini/
5) https://sites.google.com/site/ainunportfolio/
6) https://sites.google.com/site/wendykulanpage/home
7) https://sites.google.com/site/pageforcall/
8) https://sites.google.com/site/santhiyaramadas/
9) https://sites.google.com/site/navithashardwork/
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11) https://sites.google.com/site/nurasyilahakma/
12) https://sites.google.com/site/expertenglishlearning/
13) https://sites.google.com/site/asfahfarhana/
14) https://sites.google.com/site/rinunaga/
15) https://sites.google.com/site/houseofassignments/
16) https://sites.google.com/site/thoughtsbutnotall/Home
17) https://sites.google.com/site/meeveevis/home

18) https://sites.google.com/site/noirtita/
19) https://sites.google.com/site/shahrilsaibon/
20) https://sites.google.com/site/tesliancorner/
21) https://sites.google.com/site/mytesliancorner/

Appendix L
Students' Web Portfolio Assessment Results

Group name	Student no.	Reviewer's grades	Researcher's grades
Group A	1	B	C
	2	B	C
	3	C	C
	4	B	B
	5	C	C
	6	C	C
	7	C	C
	8	C	-
	9	A	B
	10	C	C
	11	D	C
	12	B	C
	13	-	-
	14	C	C
	15	C	C
	16	C	B
	17	A	B
	18	A	C
	19	B	C
	20	D	C
	21	A	C
	22	B	C
	23	A	B
	24	A	B
	25	B	B
	26	B	C
	27	C	C
Group B	1	B	C
	2	C	C
	3	C	C
	4	B	B
	5	A	C
	6	C	D
	7	B	C
	8	-	-
	9	A	C
	10	C	C
	11	B	C
	12	A	C
	13	A	C
	14	-	C
	15	B	C
	16	B	B
	17	B	B
	18	C	C
	19	-	B
	20	C	C
	21	A	C
	22	A	B
	23	-	B
	24	A	B
	25	B	B
	26	A	B
	27	A	B
	28	A	B
	1	C	B

Group			
Group C	2	C	B
	3	C	B
	4	C	B
	5	C	C
	6	C	C
	7	B	C
	8	B	B
	9	A	B
	10	C	C
	11	D	C
	12	D	C
	13	C	C
	14	C	C
	15	C	C
	16	B	B
	17	C	C
	18	C	C
	19	C	C
	20	D	C
	21	B	B
	22	C	C
	23	B	B
	24	A	C
	25	-	-
	26	B	C
	27	B	C
Group D	1	D	D
	2	-	C
	3	A	C
	4	B	B
	5	A	C
	6	C	B
	7	C	C
	8	B	B
	9	C	C
	10	A	C
	11	-	C
	12	B	C
	13	A	B
	14	A	C
	15	B	C
	16	A	B
	17	B	C
	18	C	B
	19	A	C
	20	B	C
	21	A	C
	22	C	C
	23	B	B
	24	C	B
	25	A	B
Group E	1	B	C
	2	C	C
	3	B	B
	4	A	C
	5	B	C
	6	B	B
	7	B	C
	8	A	C
	9	-	C
	10	B	C
	11	B	C
	12	C	C
	13	B	C

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	14	B	-
	15	B	C
	16	C	C
	17	B	C
	18	B	C
	19	C	C
	20	B	C
	21	A	C