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UNIVERSITY OF CALIFORNIA, SAN DIEGO

Digital Student Portfolio

A Thesis submitted in partial satisfaction of the
requirements for the degree Master of Science
in
Computer Science

by

Son Dinh

Committee in charge:

Professor William B. Griswold, Chair
Professor Beth Simon, Co-Chair
Professor Michael B. Taylor

2009

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The Thesis of Son Dinh is approved, and it is acceptable in quality and form for publication on microfilm and electronically:

Co-Chair

Chair

University of California, San Diego

2009

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ABSTRACT OF THE THESIS

Digital Student Portfolio

by

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A portfolio can be seen as an organized presentation of a student's work. Recently, the assignment of digital portfolios has become popular among university faculty; and for some classes, students are required to create a webpage with the descriptions of their work. While this approach allows a student to quickly get started on building his or her portfolio, the amount of work and the complexity of building such an online portfolio can be discouraging; thus, many students do not update them beyond the scope of their current class. Furthermore, not all types of assignments can easily be presented on the web. For example, quizzes and exams are usually available only as hard copies; so students must take additional steps, such as scanning, to include them in their digital portfolios. Thus, most such web pages only include descriptions of students works or links to an html page which students have created as part of their assignments. In this paper, I will present a convenient way for students to build up their portfolio. By using the techniques outlined in this paper, students will no longer have to be experts in web design to construct a presentable digital portfolio of their class work. Instead, the class work will automatically be converted to a digital format before being returned to the students. Furthermore, I have created a Rich Internet Application that allows

students to quickly and conveniently view and manage their portfolios.

Chapter 1

Introduction

There are many advantages to having a personal portfolio. Creating a portfolio is a great way for students to demonstrate skills and knowledge that they have acquired while in college. In the short term, a portfolio can help students prepare for midterms and finals; by having their assignments organized and accessible, students will have an easier time reviewing class materials. In the longer term, an online portfolio can help students monitor their learning process by looking at their classworks. A portfolio also adds additional information about a student that is usually very difficult to show in a resume because of its compact size.

The portfolio began as an exclusively paper format but has since evolved into the digital form most often seen today. I will begin by describing some of the issues raised by paper portfolios and current digital portfolios. Then, I will introduce my own model portfolio called Digital Student Portfolio, which I hope will resolve these new issues.

1.1 Paper portfolio

A paper portfolio contains a student's significant class work, such as art work, exams, readings, programming assignments, math problems, or even essays. These paper portfolios are physical documents typically contained in a three-ring binder that allows for the insertion or removal of items [5]. For programming assignments, the

document usually consists of a notebook containing pages of program source code and sometimes combined with text-based example runs or graphics-based snapshots showing a particular moment of program execution [5]. However, one of the major issues with paper portfolios is their storage and management [3]. Storage of paper portfolios requires a lot of physical space. Especially in a university setting, space is very limited for students. Not to mention that all of the classworks can easily be lost when students have to move to different dorms or apartments throughout their college years. Eventually, managing a paper portfolio can be a considerable burden for students.

1.2 Digital Portfflio

Many of the problems with a paper portfolio can be solved by using a digital portfolio. One of the main issues that a digital portfolio helps to resolve is storage. With digital portfolio, storage is no longer an issue since there are no physical copies of the portfolio. Another advantage of the digital portfolio is that it can come in many forms. With recent advances in technology, there are numerous ways a digital portfolio can be constructed: audio, video, graphics, and text can all be seamlessly included within a digital portfolio. Digital Student Portfolio uses electronic technologies which allow portfolio developers to collect and organize artifacts in various digital formats: audio, video, graphics, and text [11].

With the kind of tools we have today, it is fairly easy to convert students' works into the digital form: for example, a student can use a word processor to type up all their work. Another important tool is the scanner. If a student does not want to type up their classwork, he or she can scan it into .pdf or .jpeg and keep the hard copy. Students can even use a cell phone or a digital camera to take a snapshot of diagrams or pictures that they drew after a group meeting, creating a new electronic version. These files take up no physical space and can remain on the student's personal computer, transferred to a USB drive, or included in an email attachment. Though tools such as word processors, scanners, and digital cameras act as a bridge from physical world to digital world, there

must still be another technology to give the portfolio a structure. Recall that cameras, scanners, etc. convert physical works into a file format. As the number of files increases, student will find it more difficult to manage these files. Over time, these files can be lost irretrievably somewhere inside the students' computers. Last but not least, these formats do not come in a presentable format for a collection. Are students going to print out all of their classworks before giving them to someone to be reviewed, or are students going to put all their classwork into a folder and start distributing them? As we have seen, word processors, scanners, and digital cameras are ways to link physical world to the digital world, but they do not help with the organization and presentation of the portfolio.

Despite these issues, there seems to be a rise in the popularity of web-based digital portfolios. They have many obvious advantages: they can be accessible from almost anywhere with an internet connection, making it extremely easy for students to view their works and even share with other people. In fact, some classes require students to create web-based portfolios of all their class work. For example, at UCSD, in CSE 3 Fluency in Information Tech, students have to design a webpage using HTML and Javascript as an assignment. Another example is in University of South Florida, where twenty-two students who enlisted in Introduction to Internet course were asked to implement an ePortfolio as a requirement for a grade in the class [7]. The ePortfolio that these students created included information such as the student's name, picture, and career objective. The ePortfolios were then used to link to students' assignments and final exam. In addition to each assignment, students were required to post a description, reflection, and a list of learning objectives to the ePortfolio in their own words. The problem with these approaches is that there is a high learning curve before students are capable of creating the web page. As a result, creating a digital portfolio is only possible for a small group of people who have taken a class or have had experience with building web applications. Furthermore, when students move on to different courses, there is not much incentive for students to go back and update the portfolio they have created. What is needed is an easier way for students to build up their portfolio. If it takes too much time to build a portfolio, we can bet that many students will not find the motivation to

do it.

Fortunately, in the last few years, school educators have put more effort into developing more convenient ways for students to create their own portfolios. One of such example is the Diagnostic Digital Portfolio (DDP) by Alverno College [4]. The Diagnostic Digital Portfolio is constructed as follows:

- Faculty designs and completes a key performance. The key performance contains template information such as description, criteria, self assessment template, and feedback that will be completed later.
- Once the key performance has been created, students will come and add their self assessment. The self assessment usually can include things such as papers, graphics, presentation, and videos.
- Then, faculty have to come back to the key performance and assign overall key performance status. Faculty will also upload their feedbacks.
- The key performance will then appear on the student's portfolio area.

DDP seems to resolve the issues of organizing and maintaining the portfolio. However, it appears that the process of creating a student portfolio is still complex. Additional efforts have to be put into this portfolio to allow this to work. In the next section, I will describe the Digital Student Portfolio that I have created for the classes at UCSD.

1.3 Digital Student Portfolio

The Digital Student Portfolio is built to give students an easier way to create their portfolio. The two goals I aim for are convenience and usefulness. I have learned from experience that if an application is too hard to use, then students probably will not use it. To allow portfolios to be a part of students' life, I have put great effort into creating an environment that allows a very interactive environment for students to create their portfolios. The emergence of affordable high speed scanners, combined with Rich

Internet Application frameworks such as Adobe Flex, allows for a very convenient and interactive environment for managing and viewing students' assignments online. The high speed scanner allows students' assignments to be scanned with minimum effort. All the instructors or TAs have to do is to put a stack of graded assignments in the scanner and all of the assignments will automatically be scanned and converted to the PDF format and become available to be uploaded to the server.

Digital Student Portfolio is a revolutionary way for students to build their class work portfolios. By the time students receive their graded assignments, they will have already been converted into a digital format. Since the Digital Student Portfolio is web based, students can access and organize their assignments almost as if they are managing files on their desktop applications. Students are no longer required to have experience in developing web application to construct a portfolio of their class work.

To demonstrate the claims mentioned above, this paper is organized as follows: Chapter 2 starts with a brief background introduction of the Digital Student Portfolio followed by a description of relevant usage scenarios. Chapter 3 describes how the experiments were planned and executed. Chapter 4 presents the data and discussion of the data. Chapter 5 presents the conclusion.

Chapter 2

Digital Student Portfolio

Digital Student Portfolio is a project that was originally used by Professor Beth Simon at UCSD as a tool to return electronic copies to students. The client interface was written in JavaServer Pages(JSP). JSP technologies provides a simplified, fast way to create web pages that display dynamically-generated content. There are many advantage of using Digital Student Portfolio to return class work. First of all, a student's class work can be returned (through email) on the same day that the assignments were graded. Second, it obviated the need to waste class time to distribute papers, giving the instructors more class time for teaching. Digital Student Portfolio has been presented in two conferences: 1) the UCSD Eureka conference, and 2) Pt. Loma Computer and Information Sciences Conference, where Digital Student Portfolio won the best poster award. That early version of Digital Student Portfolio was a web application that allowed teachers to return assignment submissions online by a process of association after the papers have been graded.

In summer 2007, a newer version of Digital Student Portfolio was implemented. One of the major enhancements was on the client side of Digital Student Portfolio, which was changed from JSP to MXML. MXML is an XML-based user interface markup language first introduced by Macromedia in March 2004. MXML is used in combination with ActionScript to develop Rich Internet Applications (RIA). The reason for turning Digital Student Portfolio into a Rich Internet Application is to allow the

users a better experience. RIA offers use-interface behaviors which are not obtainable using standard JSP. Furthermore, RIA applications tend to be much more responsive than standard JSP applications.

Another contribution that the new version of Digital Student Portfolio added is that it creates a workspace for students to view their assignments online instead of downloading their assignments through email (recall that in the previous version, student class work could only be returned to students through email - a subject of much concern when Digital Student Portfolio was first introduced to other faculty members at UCSD). With the new version of Digital Student Portfolio, faculty can have students log in to their assigned account to view the assignments. While logged on, students can do much more than just viewing their class works. They can look at the detail description of the class works, add notes to them so they they could view them later, and even use them to construct a portfolio. Below are a few scenarios that describe how Digital Student Portfolio operates.

2.1 Usage Scenarios

Bob is an experienced professor at University of California, San Diego. He has been teaching the class called "Intro to Computer Science" for a few quarters now. He heard about a new Rich Internet Application called Digital Student Portfolio that allowed him to return assignments quickly to his students without wasting class time. Bob decided to give Digital Student Portfolio a try.

2.1.1 Setting up a Class

Bob logs in to Digital Student Portfolio and begins to set up the class. Here are the steps he takes:

- Logs in to Digital Student Portfolio with his assigned username and password.
- Creates a class for Summer 2008 and names it "Intro to Computer Science".

- After creating the class, Bob notices that there is an error message that prompts him to add students to the class.
- Bob notices that there are two options to add a student to the class. One is to add an individual student through a form, and the other is to add a group of students by uploading the student roster.
- As an instructor, Bob knows that a student roster is a text file that contains information such as student PID, first name, last name, and email address.
- Bob remembers that on Tritonlink, Bob can log in and download the student roster for the classes that he is teaching.
- After Bob has found the student roster, he uploads it into Digital Student Portfolio.
- Within a couple of minutes, students in the roster are automatically added to the class.
- Bob remembers that there is a new student named Alice Walker that he has just added to the class and that she has not yet been updated into the student roster.
- Bob goes to the form to add and fill in formation such as PID, first name, last name, and email for Alice.
- After completing the form, Bob can see that Alice Walker has been added to the list of students in the class (see Figure 2.1).

Bob is pleased with using Digital Student Portfolio so far since it does not require him too much time to setup the class. The process of populating students to the class is especially useful since it gives Bob a chance learn names of each student. The process is quick and efficient.

2.1.2 Grading and Scanning Quizzes

It is the first Friday of the week, and Bob decides to give the class a quiz. The quiz is handed out, collected, and graded the same way as it has always been in the past few years. The only difference is that Bob assigns John, his head TA, to scan all the quizzes and upload them to Digital Student Portfolio. The process goes as follows:

The screenshot shows the InstaSEE web application interface. At the top, there is a navigation bar with tabs for 'Classes', 'Members', 'Association', 'Reports', 'Portfolio', 'Search', and 'Setting'. The 'Members' tab is currently selected. Below the navigation bar, there is a search box with a 'Search' button. The main content area is titled 'Student Details' and has two sub-tabs: 'General' and 'Portfolio'. The 'General' tab is active, displaying a profile for Alice Walker. To the left of the profile, there is a form for adding a member, including fields for ID, First, Last, and Email, a checkbox for 'Is TA?', a dropdown for 'Hours?' set to '10', and an 'Add Member' button. Below this form is a section for uploading a Tritonlink Roster, with 'Browse' and 'Upload Stud...' buttons, a progress bar showing 'LOADING 0%', and a checkbox for 'Distribute Students to TAs' with an 'Update Distribution' button. The profile for Alice Walker includes a photo of her standing in a field, her name 'Alice Walker', and her identifiers 'a33333333' and 'b@ucsd.edu'.

Figure 2.1: Screen shot after Alice Walker has been added to the class

- After the students have taken the quiz, they hand it in to Bobs TA.
- Around 5PM on the same Friday night, Bob and his TA meet up and they start grading the quizzes. Around 7PM, grading is complete. The TA then records all student grades.
- Bobs TA, John, takes the graded quizzes to a high speed scanner. John lines up all of the quizzes into the scanner and presses the scan button, and automatically all of the quizzes are scanned and converted into JPEG.
- John then zips all of the JPEGs together into one package called week4Quiz.zip.

- John logs in to Digital Student Portfolio and finds the quiz called "week 4 quiz". John notices that there is an option for upload the scanned quizzes. John then clicks on the upload button, and selects week4Quiz.zip to upload. After a couple of minutes, the quizzes have been uploaded.
- Around 8 PM, John sends an email to Bob indicating that the week 4 quizzes have been graded and uploaded to Digital Student Portfolio.

2.1.3 Associating Assignments

Bob receives the email from John saying that the quizzes are available online. Bob remembers that before quizzes are returned back to students, Bob has to associate students with their quizzes. The process goes as follows:

- Bob logs in to Digital Student Portfolio.
- Bob clicks on the tab called Association.
- Immediately, Bob sees a screen with two columns. The first column is a list of all students in the class. The second column is a list of all the quizzes (see Figure 2.2).
- Bob notices that the first quiz in the list is already highlighted by default.
- Bob looks at the highlighted quiz, and he can see that the quiz belonged to Alex.
- From the keyboard, Bob enter "al".
- From the column on the left, Bob notices that the student list is being filtered to include student first name, last name, or PID with prefix "al" (see Figure 2.3).
- By default, the first student in the list will also be selected. Bob sees that there is a match, so he presses enter to perform the association.
- Automatically, Alex's quiz is removed from the list of quizzes. Bob notices that the student list has returned to normal mode, displaying all students in the class.
- Bob is now familiar with the Association process, so within a few minutes, Bob will have associated the quizzes for Alex, Alice, Nathan, John, Page, Lucy, Lisa, and Michael.
- Bob wonders if the last 8 quizzes have been associated correctly, so he clicks on the

First	Last	ID
Lisa	Tien	a34845734
John	Wayne	a10000001
Nathan	Nguyen	a10000002
Alex	Tong	a10000003
Alice	Walker	a33333333
Michael	Nguyen	a43248423
Hang	Do	a43942435
Khawaja	Shams	a34245456
Jim	Hong	a34243456
Page	Lane	a54354672
Lucy	Phan	a33421239
Palo	Johnson	a12343654
Steve	Wong	a32621458

Associating 1 pages
Entries left: 8

Week 4 Quiz
CSE 15L, Spring 2008
Name: Alex
34/40
2. Agans lists 3 main reasons to "Make It Fail." What are they?
1) "See it happen" / "See it fail" ✓
2) "Fix the failure" → tell if its fixed

Week 4 Quiz
CSE 15L, Spring 2008
Name: Alice
39/40
2. Agans lists 3 main reasons to "Make It Fail." What are they?
- observing the failure rather than circumstances brings focus (long example)
- by figuring out the exact set of circumstances that cause the failure, you limit what

Week 4 Quiz
CSE 15L, Spring 2008
Name: Nathan
39/40
2. Agans lists 3 main reasons to "Make It Fail." What are they?
- So you can look at the failure
- So you can try to deduce its cause

Figure 2.2: Bob matching a student's name with his/her quizzes

"comment" button.

- A new screen appears, and this time, the screen displays students with their associated assignment.
- Bob sees the name "Alice" on the list, so he clicks on it. Immediately, Alice's quiz is presented on the screen (see Figure 2.4).
- Bob is pleased that all 8 quizzes have been associated correctly, so Bob goes back and continues to associate the rest of the quizzes.

Bob is very pleased with the process of association since it takes a lot less time than he expected. What makes Bob even happier is that now he does not have to bring the big pile of papers to class every time he needs to return the quizzes, an unnecessary hassle. Furthermore, since Bob no longer has to return quizzes during class, he has more free time for his lecture.

The screenshot shows the InstaSEE application interface. At the top, there is a navigation bar with tabs for Classes, Members, Association, Reports, Portfolio, Search, and Setting. The main content area is titled "Intro to Computer Science - Week 4 Quiz". On the left, there is a table with columns for First, Last, and ID. The table contains the following data:

First	Last	ID
Alex	Tong	a10000003
Alice	Walker	a33333333

Below the table, there are three quiz result cards. Each card displays the quiz title "Week 4 Quiz" and "CSE 15L, Spring 2008". The first card is for Alex, with a score of 34/40 and handwritten answers: "1) 'See it happens' / 'See it fail'", "2) 'Fix the failure' -> tell it its fixed". The second card is for Alice, with a score of 39/40 and handwritten answers: "observing the failure rather than circumstances brings focus (long example)", "by figuring out the exact set of circumstances that cause the failure, you know what". The third card is for Nathan, with a score of 39/40 and handwritten answers: "So you can look at the failure", "So you can try to deduce its cause".

Figure 2.3: Bob finding a matching student and his quiz

2.1.4 Student Viewing the Quizzes

Alice is a student in CSE 15L. Alice heard that her instructor uses Digital Student Portfolio to return assignments digitally. She also heard about the Digital Student Portfolio project that builds on top of Digital Student Portfolio, allowing her to view and manage all of his assignments. Alice also heard that after login to her account, she will have an option of creating a portfolio which doubles as an online resume. Seeing that this application has many potential benefits, she decides to give it a try.

- Alice logs in to the Digital Student Portfolio homepage with her assigned user name and password.
- Alice notices that there is a table with all her classes, including an Intro to Computer Science class.
- Alice clicks on the class and sees every quiz she has taken appear on the screen,

The screenshot shows the InstaSEE interface for a quiz review. On the left, a table lists students and their quiz completion times. Alice Walker's entry is highlighted. The main area shows the quiz details for 'Week 4 Quiz' with a score of 39/40 and the name 'Alice'. Handwritten notes in blue ink are present, discussing reasons for 'Make It Fail' and the dangers of stimulation in a live system.

Student	Time
Alex Tong	2008-08-28 01:22:
Alice Walker	2008-08-28 01:22:
Nathan Nguyen	2008-08-28 01:11:
John Wayne	2008-08-28 01:22:
Page Lane	2008-08-28 01:22:
Lucy Phan	2008-08-28 01:22:
Lisa Tien	2008-08-28 01:22:
Michael Nguyen	2008-08-28 01:22:

Week 4 Quiz 39/40 Name: Alice _____
 CSE 15L, Spring 2008

2. Agans lists 3 main reasons to "Make It Fail." What are they?
 - ~~observing the failure~~ — observing the failure rather than circumstances brings focus (long example)
 - by figuring out the exact set of circumstances that cause the failure, you limit what
 - to study you only what matters
 - if you can't reliably reproduce the bug, how do you know it's fixed

1. Chapter 4 encourages stimulation over stimulation except in certain circumstances. When should stimulation be preferred?
 - stimulating the bug on a live system is dangerous — i.e. can cause loss of data, business, injuries, or loss of life

Figure 2.4: Bob reviewing and commenting on Alice's quiz

including a Week 2 quiz which she took on July 4th, a Week 3 quiz which she took on July 11th, and her most recent quiz, a Week 4 quiz from last Friday.

- Alice clicks on quiz 4 and there she sees more details about her quiz. Alice notices that she can view the quiz, add notes to the quiz, and even add the quiz to her portfolio. Alice decides to explore the features one by one.
- Alice clicks on the "View Assignment" button and she notices that her quiz 4 appears on the screen. She sees that she scored 39 out 40 for this assignment.
- Alice then clicks on the tab called "Notes". She notices that there is a rich text editor for her to enter her notes. Alice enters a few key points about this assignment (see Figure 2.5).
- Satisfied with the assignment, Alice decides to add Week 4 quiz to her portfolio.
- Alice remembers that she also did quite well on her weeks 2 and 3 quizzes, so she decides to add them into her portfolio as well.

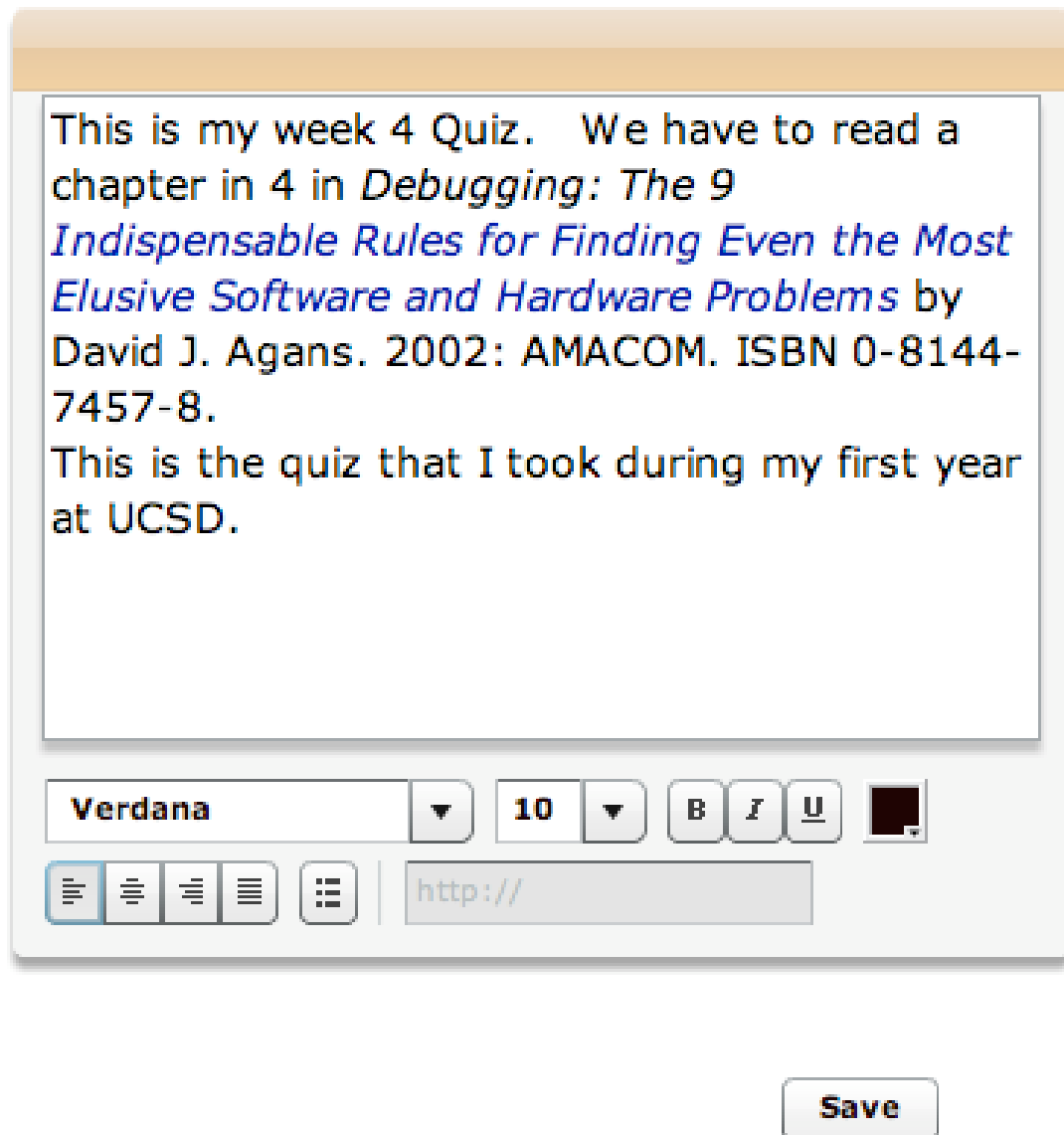


Figure 2.5: Alice adding a note to her quiz for future reference

Alice is very pleased that she got her quiz back the same day she took it. This works out fine for her since the quiz is still fresh in her mind. In previous classes that Alice had taken, by the time Alice had gotten her quiz back, she barely remembered what the quiz was about. Alice remembers that on Monday, Bob is going to hold a short discussion on the quiz. Now since Alice has her quiz back, she goes over it and makes a list of questions she wants to ask for the discussion. On Monday, Alice attends class with the list of questions that she prepared and the discussion goes very smoothly; all

of her questions are answered. Furthermore, Alice does not have to worry about storing the quiz. In the past, Alice would put the quiz into a folder, but as time goes by, it would have gotten mixed up with other class work or lost. However, now Alice is assured that this quiz is saved online and that she can always retrieve it with little effort.

2.1.5 Becoming a TA

A year has passed and now Alice decides to apply for a teaching assistantship. Alice remembers the course called "Intro to Computer Science" and decides to apply to become a TA for that class since she enjoyed it so much. She therefore writes an email to Bob to inquire about an open TA position. Even though she did well in Bob's class, Alice wonders if Bob still remembers her after more than a year has passed.

Here Alice realizes another of the benefits of the Digital Student Portfolio software. Rather than having to go to all the trouble of assembling a paper portfolio, she uses her already-posted assignments to create a portfolio digitally. Here is the sequence of steps Alice takes:

- Alice logs in to her account.
- There, Alice sees many of the classes that she has taken. One of the the courses is the "Intro to Computer Science" course.
- After clicking on class, Alice sees all of the classworks for the class.
- There, she can see the quizzes, midterm, and finals (see Figure 2.6).
- Alice decides to quickly go over her class work. This serves as a useful review.
- Whenever Alice sees class work that she is proud of, she clicks on the button called "Add to Portfolio" to add it to her new portfolio.
- After selecting all of the class work that she wants to have in her portfolio, Alice begins to decorate the portfolio.
- Alice clicks on the link called "Edit Introduction".
- There a rich text editor appears, and Alice begins to edit her portfolio introduction (see Figure 2.7).

Welcome: a3333333
Role Type: Student

Name	Term
Intro to Comput	Summer 2008
ePortfolio 101	Spring 2008
CSE 5A	Spring 2008

Term:

[Click here to view tutorial](#)

Week 2 Quiz, Week 3 Quiz, Week 4 Quiz, Week 5 Quiz, Midterm, Week 7 Quiz, Week 8 Quiz, Week 9 Quiz, Week 10 Quiz, Final Exam

Figure 2.6: Alice's class work for "Intro to Computer Science"

Please Enter Additional Information that you want to display on your portfolio

My name is Alice. Welcome to my Portfolio. Below is all of my class works for the class called "Intro to Computer Science".

Verdana 14 B I U [Color Picker] [List Icons] http://

Save Information

Figure 2.7: Rich Text Editor that allows Alice to compose the introduction of her portfolio

- Alice decides to share the portfolio that she just created with Bob, but before she can do that, she must create a unique code and URL for Bob to go to view her portfolio (see Figure 2.8).

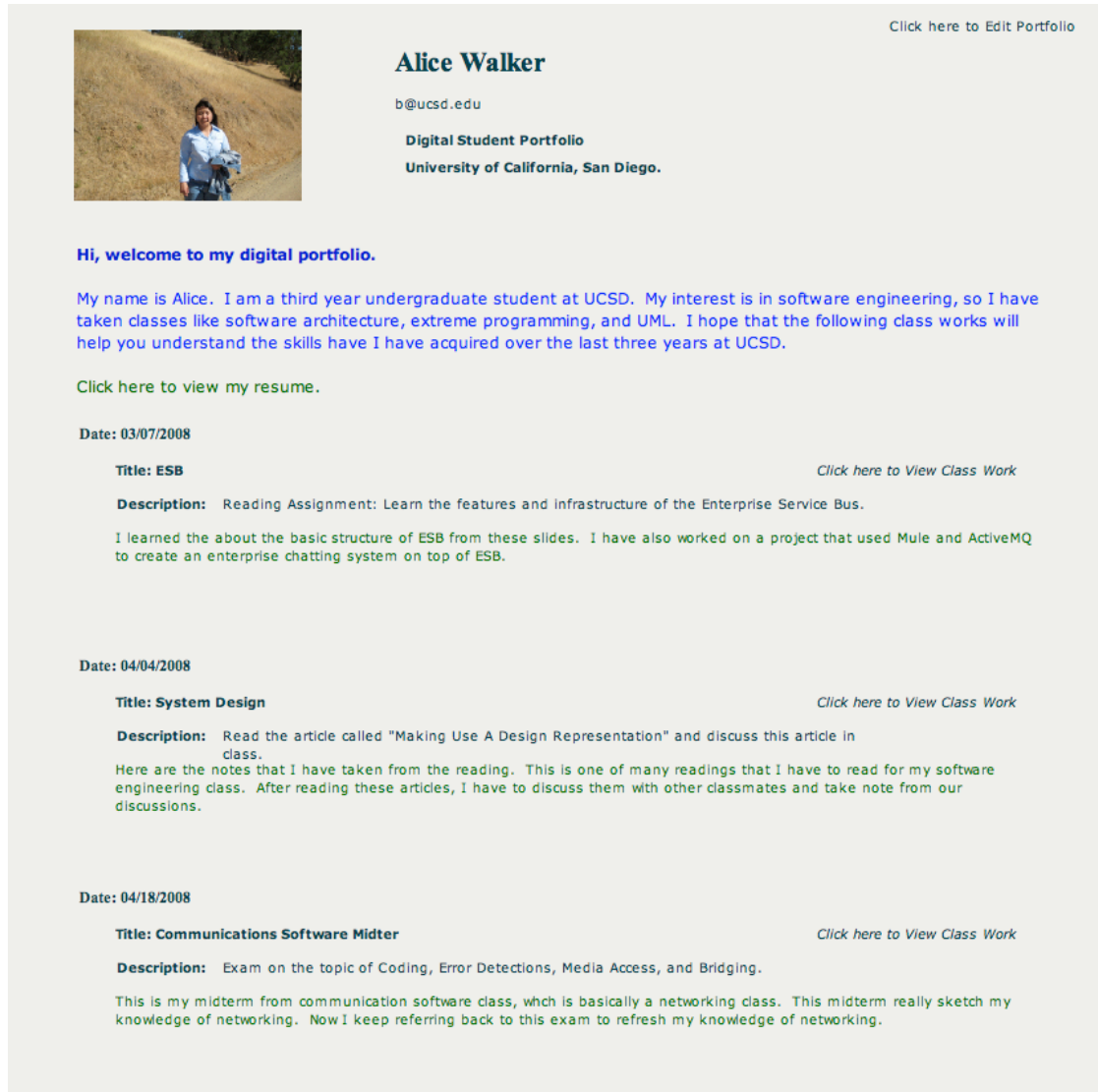
The image shows a web form with a light gray background. It contains three main elements: a text input field labeled 'Title', another text input field labeled 'Expired on' with a small calendar icon to its right, and a large, rounded rectangular button labeled 'Generate Code'.

Figure 2.8: Menu screen that allows Alice to generate a unique code/URL so that it can be viewed by Bob

Code Title	URL	Expired On	Page Hit	Web Site
teure	https://activecampus2.ucsd.edu:8445/Portfolio/Portfolio.html#jxFa2	2008-07-30	2	Visit

Figure 2.9: Table that summarizes all the code and URLs that Alice has generated. The table also gives Alice an idea of when the code expires as well as how many times it has been visited

- In the generate code form, Alice gives the code a title as well as an expiration date. Since she figures that if Bob has not seen her portfolio within two weeks, then Bob probably never will, Alice sets the expiration date to be 2 weeks from the current date.
- Alice clicks on the "Generate Code" button. From the browser, a table appears displaying all of the codes that Alice has generated. (see Figure 2.9).
- From this page, Alice can even see the code expiration and the number of times the page has been hit. This allows Alice to know if someone has been looking at her portfolio or not.



[Click here to Edit Portfolio](#)

Alice Walker
b@ucsd.edu
Digital Student Portfolio
University of California, San Diego.

Hi, welcome to my digital portfolio.

My name is Alice. I am a third year undergraduate student at UCSD. My interest is in software engineering, so I have taken classes like software architecture, extreme programming, and UML. I hope that the following class works will help you understand the skills have I have acquired over the last three years at UCSD.

[Click here to view my resume.](#)

Date: 03/07/2008

Title: ESB [Click here to View Class Work](#)

Description: Reading Assignment: Learn the features and infrastructure of the Enterprise Service Bus.
I learned the about the basic structure of ESB from these slides. I have also worked on a project that used Mule and ActiveMQ to create an enterprise chatting system on top of ESB.

Date: 04/04/2008

Title: System Design [Click here to View Class Work](#)

Description: Read the article called "Making Use A Design Representation" and discuss this article in class.
Here are the notes that I have taken from the reading. This is one of many readings that I have to read for my software engineering class. After reading these articles, I have to discuss them with other classmates and take note from our discussions.

Date: 04/18/2008

Title: Communications Software Midter [Click here to View Class Work](#)

Description: Exam on the topic of Coding, Error Detections, Media Access, and Bridging.
This is my midterm from communication software class, which is basically a networking class. This midterm really sketch my knowledge of networking. Now I keep referring back to this exam to refresh my knowledge of networking.

Figure 2.10: Screen shot of Alice's Portfolio as it is being presented to Bob after he clicked on the URL sent from Alice

- From the code information table, Alice notices that there is a link called "visit" that takes her to the portfolio page, so she clicks on the link. There she gets to view the portfolio she has just created (see Figure 2.10). About a day after Alice sent the email to Bob, Alice notices on the URLs table that her portfolio has been visited. Sure enough, within a couple of hours, Alice receives an email from Bob asking Alice to come to his office to discuss the TA position.

Chapter 3

Experiment Setup

Digital Student Portfolio is a new way for students to organize and manage their work. Chapter 1 gave a brief overview of various types of portfolios introduced from previous work and the reason why the Digital Student Portfolio was created. Chapter 2 described the implementation details and some usage scenarios for the Digital Student Portfolio. This chapter will cover how the experiment was set up. In particular, throughout this chapter, I will address the following questions:

- What are students' thoughts about accessing their class work online?
- What do students like (and don't like) about the Digital Student Portfolio?
- How do students adopt their portfolios to meet their particular needs?
- How does DSP stage (and hopefully enhance) interactions between students and recruiters (and faculty)?
- What are the instructor's thoughts about the Digital Student Portfolio?
- What comments and suggestions do students and faculty have for the Digital Student Portfolio?

In the following sections, I will first describe how participants are chosen for the experiment. Then, in the setting sections, I will describe how the Digital Student Portfolio operates in the chosen courses. Next, I will describe the two instruments (a structured survey and interview) that I used to help answer the research questions above.

The structured survey consists of straightforward questions which can be answered by a large number of students. The interviews consist of open topic discussions with students and faculty (see Appendix A2). These topics act as a guidelines for discussions with students and faculties. Through the discussion, I hoped to reveal thoughts and ideas from these participants unaddressed by the structured survey.

3.1 Participants

Student participants were chosen from CSE15L (Software Tools and Techniques Lab taught by Dana Dahlstrom), CSE 3 (Fluency/Information Technology taught by Paul Kube), and CSE 5A (Introduction to Programming taught by Susan Marx). These classes were chosen because they generated a great amount of paper work. Thus, these classes proved to be a great opportunity to introduce Digital Student Portfolio. These classes also consisted of students from a diverse set of majors - the majority of the students in these classes were not members of the computer science department. This allowed me to gather data from students with different backgrounds and did not restrict me to specific audiences.

3.2 Settings

All three classes operate differently from each other. In CSE 15L, students were given a quiz every week. In CSE 5A, student were given a quiz every two or three weeks. In CSE 3, the quiz's questions were not handed out to the students. Instead, around every two weeks, each quiz's questions were written on the board, and each student was to take out a piece of paper and write down the answer.

At the beginning of the quarter, the students in these classes were presented with a brief demo of how the application works. In addition, there was an online tutorial for students who were interested in using the application. In all three classes, students had the option of retrieving quizzes through hard copy or electronic copy. In CSE 5A, quizzes were usually given on Thursday and the hard copy of the quizzes are were

returned on the following Monday. In CSE 15L, quizzes were given on every Thursday and returned to the students the following week. In CSE 3, due to its large class size, quizzes were never returned during class time. Instead, students had to come during office hours if they wanted to get their quizzes back.

Perhaps the one thing that these three courses shared in common is that students in these classes were being introduced to Digital Student Portfolio for the first time. Despite the introduction of Digital Student Portfolio, the students' assignments were still being returned the normal way. The only difference is that electronic copies of students' class work were also made available for students, on the same day that the quizzes were graded. In fact, students would have received an email notification as soon as their quizzes were available. In CSE 5A, a student got an email notification at the end of Friday night while going online to view their quizzes instead of having to wait until the following Tuesday to view them. In CSE 15L, students also received an email on Friday to view their quizzes online instead of waiting until the following Thursday to view them. In CSE 3, due to its large class size, quizzes normally got graded only after one or two weeks. Nevertheless, students' quizzes were electronically available before students were able to come to office hours to pick up the quizzes.

3.3 Structured Survey

This survey was designed to understand how students adopted Digital Student Portfolio to meet their particular needs. It consisted of six questions to be answered quickly by participants. (To see the survey questions, see Appendix A1.) The first question was intended to survey participants' thoughts about having their classwork available online. The second question was intended to understand if participants would recommend instructors to continue using the Digital Student Portfolio - an attempt to measure the level of enthusiasm of Digital Student Portfolio participants as well as to gain insight for future development. The third question asked participants their thoughts about sharing the portfolio with other people, to check for signs that students tried to

use the application to increase the interaction between them and potential recruiters (this question was to be further extended through one-on-one interviews with students and faculty). The fourth question asked participants about their thoughts on the Digital Student Portfolio's presentation. A lot of effort has gone into the presentation to make it look appealing for student use. One of the goals of this project was to allow Digital Student Portfolio to be used in as many different ways as possible. Every student had a choice to not use the Digital Student Portfolio, since physical copies of students' work were still returned as usual. This was very different from previous studies since the usage or construction of the portfolio was part of the course requirement. I hoped to break away from that practice since it restricted students' freedom and their creativity. The challenge of this project was then to make the application as appealing for students to use as possible. With this in mind, I have constructed the Digital Student Portfolio entirely in Adobe Flash which allowed me to create a much more interactive web pages than normal HTML so that it gives students the flexibility they need to use the application and be creative. Perhaps the most important question in this survey was the fifth question, in which participants were asked about their usage scenarios. The reason this question was critical is because it tells us exactly how students have been using the Digital Student Portfolio. Finally, the survey collected all the comments and suggestions from students regarding how they like the application and how could it be improved for future versions.

This survey was designed to create a uniform list of questions and responses by a large number of audiences. The advantage of this survey is that it is very easy to divide student responses into categories. For example, in question 1, the survey asks student whether it is convenient to have their classwork available online. This question will help me to give an estimate of what percentage of students would want to access their class work on the web, since the response to this question is either a yes or no. As for the free response, it is a little harder to group responses into categories, but is still possible since there is a finite number of possible responses. For example, question 5 asked students to share one story of how they use the digital portfolio. The responses from these questions will then be recorded into a list and can be useful to compare

different ways students have been using the portfolio. We can also observe the most common ways students use the portfolio through their responses.

3.4 Interview

This survey was designed to allow open discussion with students and faculty regarding the digital portfolio. This allows students and faculty to express their thoughts about the application. (To see the interview topics, see Appendix A2.) The goal of the interview was to gain additional information not visible from the structural survey. Unlike the previous survey, in which participants communicated with a piece of paper, this interview was performed through face to face discussion. Though this method is more time consuming and hard to scale to large numbers, it has many advantages:

- **Less ambiguity:** The interviewer can clarify if something is unclear. Also, we can get more nuance from students' tone of voice.
- **More interactions:** Through live conversation, it is easier to interact with students and understand what participants are thinking.
- **Open up to new topics:** Including what has not been thought of before. In the structured survey, the questions were pre-planned and participants just answered the question. However, this survey allows the participant to even raise questions and open up interesting topics that have not been thought of before.

For the student interview, students were asked to construct a very simple portfolio. The process took about five minutes. The advantage of doing this is that students have had recent experience with creating the portfolio, so we are able to capture any thoughts students may have right away. After students had constructed a portfolio, they were asked a series of questions. There was a list of questions that to be used as a guideline, but as mentioned, this was an interview, so the conversation did not strictly follow any formula.

So far, the structured survey and the interview have served just to answer the first question: how do students adopt the portfolio to meet their particular needs? The structured survey helps us answer questions like how many students are willing to adopt the portfolio and what are the most common ways they are using it. The student interview provides a more detailed picture of how and why students adopt the portfolio (or not), and what led them to use the portfolio the way they have been using it. Thus, to answer the second question of how the portfolio stages interactions between students and recruiters, we prepared another set of face to face interviews with the faculty where some of the student works will be present to them. Through the interview, comments and feedback of students portfolio were collected. Since a quarter amount of work is not much to present, two sets of student portfolio were presented to the faculty. The first set was just a sample of what the portfolio should look like if a student has had sufficient time to create it, and the other was an actual portfolio created by a student.

3.5 Data Collection

The structural survey for the qualitative method was handed out to students of the Spring quarter of CSE15L, CSE 3, and CSE 5A. Students had about ten minutes to complete the survey. For the one on one interview, students first received an invitation email to participate . Students had a choice of either participating in the one on one interview or through a phone interview, depending on their preference. During the interview, students responses are carefully recorded. For the face to face discussion with faculty at UCSD, a number of faculty were invited to the one on one discussion. The discussions with the faculty were recorded on a voice recorder. Both the structural survey and interview were submitted to and approved by Human Research prior to the study.

Chapter 4

Studies Results and Analysis

Results from surveys that were given to students in Software Tools and Techniques Lab, Fluency/Information Technology, and Introduction to Programming at the end of Spring 2008 are presented here (see Appendix 2 for the survey). 75 students completed the surveys. The results derived from the students' answers are presented below. In addition to the survey, a number of selected students and instructors were invited to participate in one-on-one interviews. Seven students and four instructors participated in the one-on-one interview. On average, each interview took between 20 minutes to one hour. Students were verbally questioned about the process of creating the portfolio directly following their completion of the tasks. Next, the instructors were verbally interviewed about the students' portfolios.

4.1 What are students' thoughts about accessing their class work online

From the survey, 74 out of 75 students think that it is convenient to have their class work available online, while one participant disagreed. Overall, the results from both the surveys and interviews showed that students are very optimistic about having their work available online. For example, as one of the students stated during the one-on-one interview, "it saves me the trouble of going on campus to pick things up. I

prefer to just look up what I need online.” A different student from the interview stated “This is a great way for students to organize our assignments because we keep losing our assignments a lot.” This showed not only that the Digital Student Portfolio allows a more convenient way for students to access their work, but also that it is a great way for them to maintain and organize their work. Of course, the two examples mentioned above represent only some of the many benefits the Digital Student Portfolio brings to students. In up-coming sections, I will explain in more detail how students benefit from the Digital Student Portfolio by describing specific scenarios.

4.2 What students like and don’t like about the Digital Student Portfolio.

One of the challenges of developing this application was to allow students all the flexibility and tools they need to construct a portfolio. At the same time, the software was designed to have the process of creating a portfolio be as painless and as quick as possible. Therefore, it is critical to discuss what students like and do not like about the application. From both the surveys and the interviews, most of the students agreed that the application is very easy to use and that it gives them everything they need to create a presentable digital portfolio. Overall, students seemed pleased with the Digital Student Portfolio. Here are some typical examples of the students’ comments regarding the Digital Student Portfolio:

- “I like the papers and everything. The quizzes are very high details and the graphic is great.”
- “I like the portfolio because it seems more user friendly for those who aren’t as computer savvy.”
- “Easy to use. All stuff from class is already here. Just have to add it.”
- “I really like you can export the quizzes to the page. For students to even view the general idea about their stuff.”
- “It is very easy to create. Everything is clean and professional. Yes, I would defi-

nitely recommend more professor to use it.”

Here are some example of students’ comments where they encounter issues with the Digital Student Portfolio:

- “It is not too obvious how to upload pictures. Other wise it is fine.”
- “Just labeling things more clearly.”
- “Make the scan documents easier to access.”
- “I think everything is clear. The url is a little bit too long.”
- “People were confused with the button. Maybe replace with something easier to understand”

4.2.1 Portfolio’s Presentation

Overall the Digital Student Portfolio received very good comments from students regarding its presentation. Students’ comments from the survey fell into three groups: those that found this Digital Student Portfolio to be user friendly, those that found that the Digital Student Portfolio needs more improvement, and those that found the Digital Student Portfolio confusing(see Figure 4.1). Out of the 38 students who answered this question, 25 stated the application was user friendly. 11 students like the application’s presentation, but thought that the presentation needed more improvement. Finally, two students thought that the application’s presentation was confusing. Overall the students accepted the presentation of the Digital Student Portfolio. Many students made very positive comments about the interface presentation. Sample responses are presented below:

Responses that belong to the ”user friendly” group:

- “Things are easy to find and use. Nothing really that hard to find.”
- “Very clear and easy to find what I need.”
- “Simple and organized.”
- “Easily Accessible.”

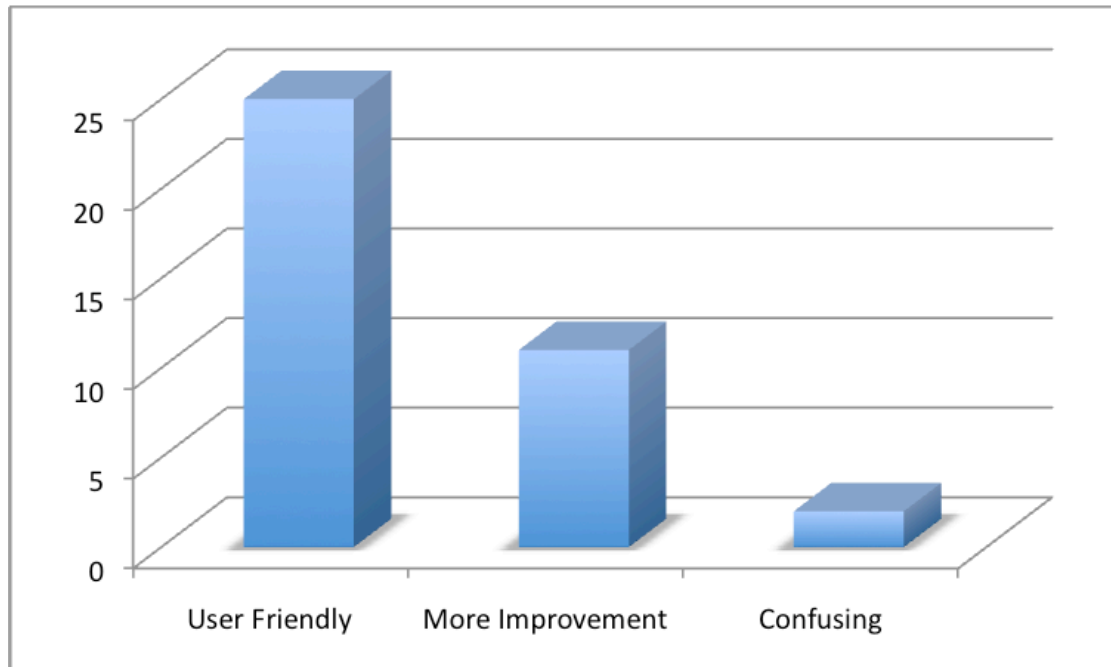


Figure 4.1: Student thought about the portfolio's presentation

- “Very user-friendly and organized.”
- “It’s an easier way to “return” work to students and it’s nice to have it all organized online.”
- “Very simple interface, well done!”

Responses that belong to the “more improvement” group:

- “I like the presentation but I think it could be a little bit more user friendly.”
- “There should be more instructions or labels for finding things. Otherwise, it looks good.”
- “The scan was ok but could look sharper. Maybe allow the pdf capabilities like lighten/darken, etc.”
- “It’s not the most user-friendly, but it’s not too difficult to use as well.”

Responses that belong to the “confusing” group:

- “A little confusing to navigate”

- “Sometimes it is difficult to log in”

4.2.2 Process of Creating a Portfolio

From the interview, following their creation of a portfolio, the students expressed surprise at how easy it was to construct a portfolio. Most explained that they were using the application to review their grades. The students stated they didn't think they could create an external portfolio to share with other people. However, after creating one, they admitted that it was easy to do. A typical response from one student was “I thought it is self explanatory. User Friendly. The GUI is very easy to understand. Overall, very easy to do. It is a very good tool in a nut-shell.” Another response from a different student was “I think this is definitely a great idea. If you are going to a job interview – Let's say I did very well in a class. This would be a major advantage. Like my database class”.

4.2.3 Auto Generation of Portfolio

In the process of constructing a portfolio, every effort was made to make the process as automated as possible. The process of creating the portfolio requires a few clicks of a button from the student. The class work is then added into their external portfolio in a presentable manner. From the interviews with students, we received overall very positive feedback on this feature. All seven interviewed students agreed that the auto generation of the portfolio was a very useful feature and that it makes creating the portfolio much easier. As one of the participant stated, “I think it is a nice feature. Especially how you export to the page”.

4.3 How students adopt portfolio to meet their particular needs

Responses from the survey are divided into four groups (see Figure 4.2). The first group is composed of students who use the application to review their classwork. The second group is composed of students who use the application to check their scores.

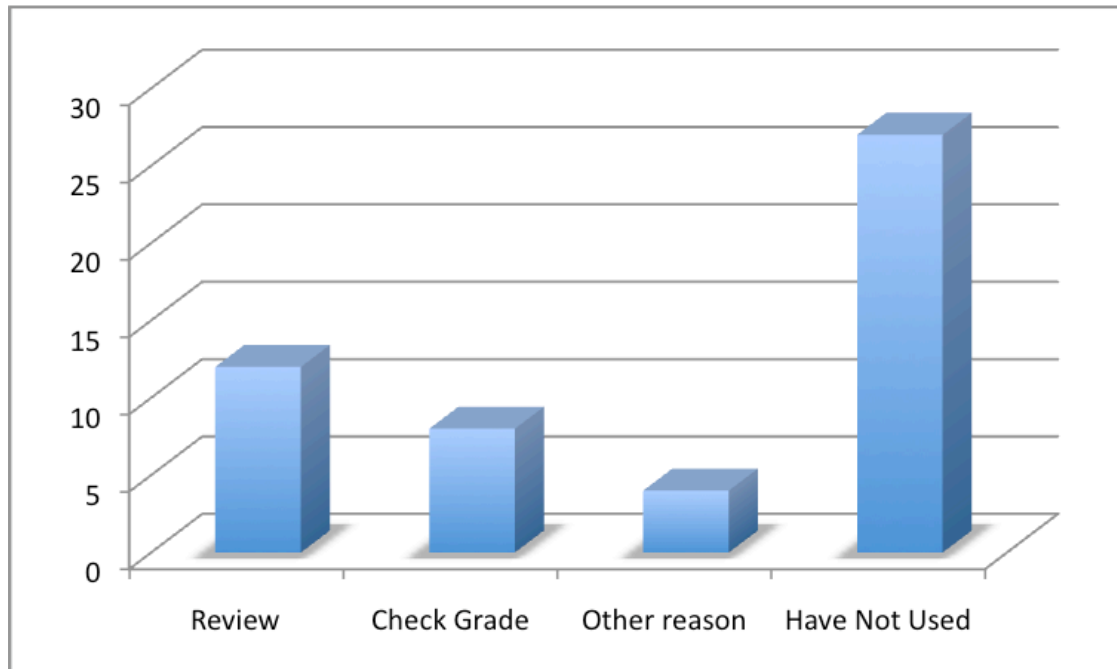


Figure 4.2: Students' usage scenarios

The third group is composed of those who use the Digital Student Portfolio for other reasons. The fourth group is composed of students who had not used the application.

Here are some the responses from students who stated they used the Digital Student Portfolio to review their class work:

- “I would use it because its an easy way to study for exams when all our assignments are in one location ... you can't lose anything either.”
- “I simply use it to see my quizzes and to reevaluate what I get wrong. It's useful for review.”
- “I used the digital portfolio to review my quiz scores/answers. I find it helpful to use as a study guide.”
- “I used it because I wanted to check what exactly I did wrong for my quizzes since the professor doesn't pass the quizzes back.”
- “I used it last night to recollect how I did on the exams. It was pretty useful.”

Here are some the responses from students who stated they used the Digital

Student Portfolio to check their grade:

- “One can check grades and prioritize ones priorities.”
- “To check my grade in the class.”
- “Just to get score quickly.”
- “I used it to check my quiz grade. It was easy and fast and I got to know my grade before the next lecture.”
- “It took a couple of clicks to figure out where the quizzes were copied into. I used it to check my grades.”

Here are some the responses from students who used the Digital Student Portfolio other than review class works or check their grades:

- “Just curious, I looked around.”
- “I have taken a look at it but haven’t actually used most of its features.”
- “Only used it to sample technology, simply because grades were made available by email also (which is faster to lookup).”
- “I have maybe looked at it once but id say its very convenient specially for those people who often lose things. It’s a great way to locate what you need fast.”

Here are some the responses from students who had not used the Digital Student Portfolio:

- “I haven’t used it because I’ve been busy with immediate school work but I hope to have time in the future.”
- “I never used it just because I didn’t pay attention to the fact that it existed.”
- “It wasn’t stressed in class so I forgot to was there.”
- “It doesn’t seem relevant - I have the course materials in paper form, so why go to the trouble of putting them online, too? This might work well for an online-only course.”
- “I haven’t used it because I don’t know much about it.”

- “Didn’t use it because grades were already on Grade Source.”
- “Didn’t use it because this class was simple enough to just get papers returned.”

From the results presented on Figure 4.2, students seem to use the Digital Student Portfolio in many ways. By reviewing their class work, students were able to see what they did wrong, check their grades, and use it as a study guide before an exam. Students also mentioned that the Digital Student Portfolio saves them time as they did not have to come to campus to pick up their work. Another advantage that was mentioned by students was that with the application, they would never lose their work. These results show that with the Digital Student Portfolio, the students can do almost everything that they do with a physical portfolio and more.

Many students used the application to check their grades. Students stated that accessing their grades has never been easier since it is available to them online through the Digital Student Portfolio. In addition, one of the students pointed out that one can use the application to “check grades and prioritize ones priorities”.

The Digital Student Portfolio allows students to do things that used to be hard with paper formats. As mentioned by one of the students, since all of the students’ work is available online and easily accessible, it becomes much easier for students to organize and prioritize. So why can’t students organize and prioritize their work with their physical class work? One possible explanation is that it requires more effort: to store their work, to maintain it, and to find their work when they want to review it. With so much work required, many students find that it is not worth it. On the other hand, the Digital Student Portfolio performs all of these tasks automatically. As a result, it allows students to exploit many good habits otherwise ignored before. In addition to how the Digital Student Portfolio gives students a more convenient way of managing their work, it changes the way class work is returned to students. As mentioned by one student, “it was easy and fast and I got to know my grade before the next lecture”.

A number of students had said that they have not used the application prior to participating in the survey and interview. The results from the surveys and interviews

indicated that the main reason that participants have not used the application was they didn't know about it. This result is understandable since the application was only announced at the beginning of each class once so it is possible that many students did not pay attention or did not come to class on that day. Also, for CSE 15L and CSE 3, physical copies of student work were still returned to them every week. The only difference is that the digital copies of students' work were returned to them through the Digital Student Portfolio in addition of the physical copies. Also, with the Digital Student Portfolio, students' work were available online the same day it was graded.

4.4 How does Digital Student Portfolio stage (and hopefully enhance) interactions between students and recruiters(faculty)?

To understand how the Digital Student Portfolio stages the interactions between students and instructors, students were asked about their thoughts on sharing their portfolio and using the portfolio for job interviews.

4.4.1 Sharing The Portfolio

Apart from personal usage, one of the goals of the application is to extend the portfolio from personal use to allow students to share it with other people. The survey showed that even though the students are optimistic about having their classwork returned digitally, most students would not consider sharing their portfolio (see Figure 4.3). 24 students expressed that they would consider sharing their portfolio with other people, while 47 students would not consider it, two responded maybe, and the remaining two had no response. This tends to show that most students would consider using the Digital Portfolio for personal use, but it does not appear from the responses that they would share it with other people.

Perhaps it might be too early for students to consider sharing the portfolio with other people, considering that the Digital Student Portfolio has only been used for one quarter. Therefore, it is understandable that students have not thought of using the

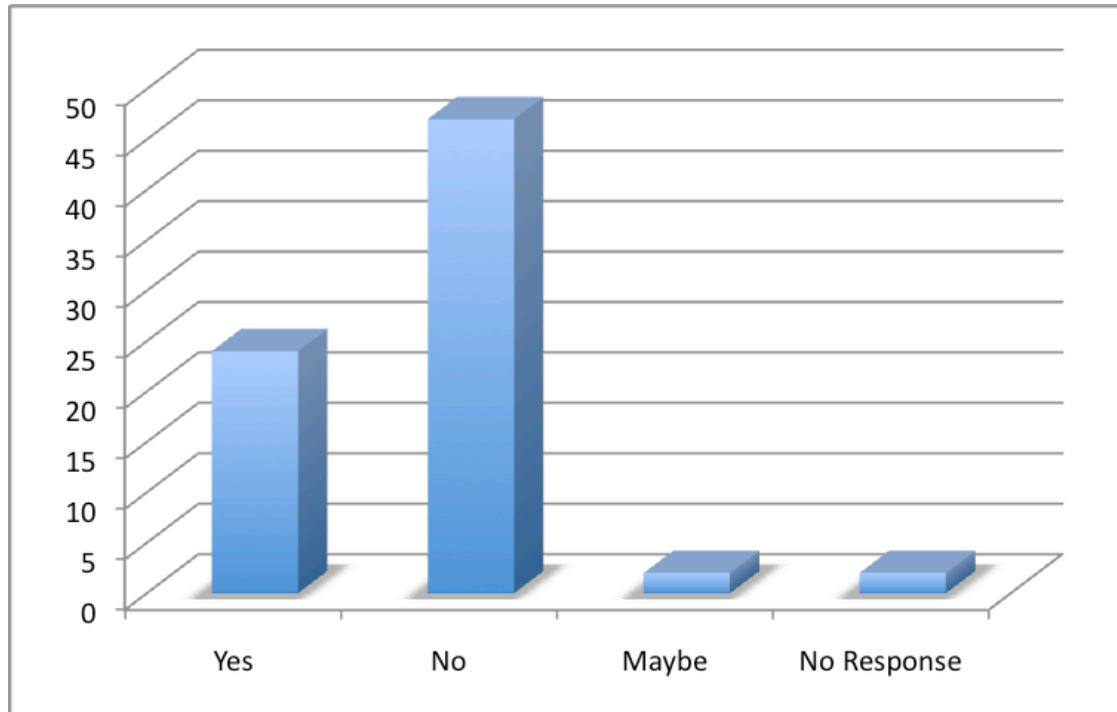


Figure 4.3: Chart displaying students' response when they were asked if they considered sharing their portfolio with others

Digital Student Portfolio to share with other people since it is not relevant to them now. However, as shown in the next section, as students were engaged in the one-on-one interview, many students revealed that they have not fully understood the application until the interview and claimed that they would love to share their external portfolio with other people.

4.4.2 Job Interview Scenario

Seven students were selected to participate in the one-on-one interview. After the students created their own external portfolio, they were asked about using their portfolio for job interviews. In the interview, the majority of students stated that prior to the interview, they thought of the Digital Student Portfolio as only a way for them to view their work online as well as a quick way for them to have their assignments back. They did not give much thought about using the external portfolio for events like a job interview. As they started to develop an understanding of the application, they started to

consider sharing the portfolio for interviews.

Here are what some students said during the interview when they were asked if they would create an external portfolio during job interviews:

- “Yes! I would, because it would be easier to save and I don't have to look for everything.”
- “I think so if it is for engineer. However, for political science major, not that useful.”
- “Yes! I think the main reason I use it is to show to employers. Another reason is to view all my assignments.”
- “I really think so. It gives me a presentable format that I can present to my future employer so they can have easy access to it.”

Another interesting point that came out of the discussion was that the students felt that the portfolio they had created gave them a professional presence on the web. They explained that they were familiar with web applications such as MySpace and Facebook. However, with the Digital Student Portfolio they feel more comfortable presenting their portfolio during job interviews as opposed to using a social network profile. As one of the participants explained, “it looks professional. It makes you feel like you are in a good environment. How the assignments are lined up and how the description are present”.

4.5 What are instructors' thoughts about the Digital Student Portfolio?

4.5.1 Instructor 1

The first instructor thought that the digital student portfolio is very useful. He provided much positive feedback about the application. To him, the application gave him a chance to learn more about his students. He said “This would be very helpful for me to look at student work for the class. I keep a database of all the assignments that students turn in, but it is not very searchable.” Even though instructors like himself

save a record of all students assignments, it is not an easy task to go back to find all the assignments from a particular student. On the other hand, the portfolio gave him the instant feedback on students class work. When asked if he would hire a former student as a TA based on their digital portfolio, this faculty member responded, “I think so. It also depends on the quality.”

4.5.2 Instructor 2

The second instructor agreed that the digital student portfolio was a great tool. The instructor seemed to be pleased with the idea that students could use the online application to organize and review their class work. However, as for using the portfolio to share work with other people, this faculty member did not seem to be too impressed with the idea. He stated “The application has good interface. The pages look very nice. I believe that this application is good for returning assignments back to the student.”

Regarding the process of hiring TAs, the instructor replied “If a student came and apply for a TA or other job, having a portfolio gives a student a slight advantage since it shows the additional effort that the student is giving.” Though his faculty member explained that he will not care too much about the content of the portfolio if a student was his former student, because then he can trace back all the student’s assignments from his database and see how student did in his class. Even though this faculty member is not thrilled with the idea of student constructing a portfolio and using it to display their accomplishments, this instructor mentioned that the application is good for personal use. He believed that it is a “great way for a student to organize their assignments and even prepare them before job interviews”. He also said that the applications “eased the effort of maintaining their assignments” and it “prevented student from losing their works”.

4.5.3 Instructor 3

From the conversation with the third instructor, it’s clear that this individual cared most about the ability of the application to return classwork quickly back to students. However, this individual did not show too much concern for the idea of students

using their class work to construct a portfolio. When asked if he would use the application when hiring a TA, he stated he would not, since hiring TA is only for a short term contract. He also stated that what he really was looking for in a TA was whether he can work together with the TA. He felt that this information would not be in the portfolio.

4.5.4 Instructor 4

This instructor thought that the ability to return classworks back quickly to students was very useful. However, he indicated that the Digital Student Portfolio would not be useful in hiring TAs since he only hires TAs that were his former students, based on how much the students impressed him while taking the class. Therefore, the Digital Student Portfolio would not be much use to this instructor since this instructor only cares about what he already knows about the students.

4.6 What comments and suggestions do students and faculty have for the Digital Student Portfolio?

Based on the comments students gave during the survey, students are very pleased with the Digital Student Portfolio. It is without doubt that the Digital Student Portfolio is a useful tool for the students. Here are some example comments and suggestion that students made about the Digital Student Portfolio:

- “Make it easier to access quiz grades.”
- “The ability to adjust the quality of the scan.”
- “You should advertise the portfolio usage more.”
- “Have tests available w/ corrections”
- “Add statistics on portfolio”
- “I think it is effective however it need a lot more work.”
- “Just make it more user friendly. Other than that, it’s great!”
- “Digital portfolio is very helpful.”
- “Post questions w/ quizzes.”

- “Make more professors use it, then I can see it being more advantageous.”

4.6.1 Future Usage

Another factor that is critical to the success of the Digital Student Portfolio is the student’s level of enthusiasm for having their class work returned digitally. Students were asked if they would encourage instructors to continue to use the Digital Student Portfolio for their future classes. The data showed that 54 out of 75 students would encourage instructors to continue to return assignments digitally while 20 answered that they did not care, and only 1 participant would discourage it(see Figure 4.4). There is a significant number of students who wished to continue using the Digital Portfolio. There can be many reasons why students answered “don’t care”. One of the possibilities is that these students might not care if their class work was returned to them or not since they did not have any intention to hold on or review it. In that case, there is little that the application could do to increase the student’s interest. Another possibility is that having their classwork returned in paper format or digital format entail the same level of efficiency. If this is the case, then there is still room to improve the application to fit students’ needs.

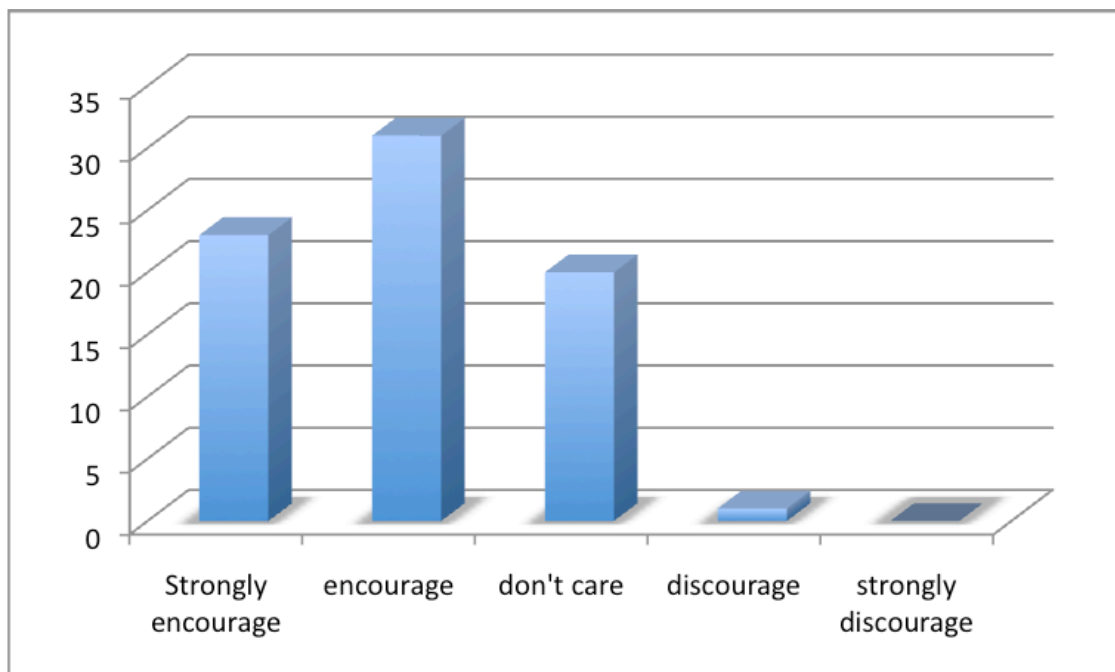


Figure 4.4: Number of students who prefer to have their assignment returned digitally

Chapter 5

Conclusions

Though personal portfolios are becoming popular among university institutions, the current process of creating and maintaining a portfolio still remains fairly time consuming and tedious. The Digital Student Portfolio was designed to simplify this process while allowing students to create formal and presentable portfolios. The Digital Student Portfolio is changing the way students' class works are being organized and distributed. The results from the studies showed that the majority of students used the Digital Student Portfolio for personal uses such as reviewing and checking their grades online. A smaller group of students went beyond personal usage by creating an external portfolio. The portfolios created did not fully reflect all students' critical work since they only consisted of data collected in one short quarter. However, we believe that as students take more courses where the Digital Student Portfolio is being used, students will have more critical work to add to the portfolio and thus the portfolios will be more presentable to faculty members and recruiters.

5.1 Contributions

5.1.1 New way for returning students' work

The Digital Student Portfolio introduced a new way for returning students' work. Instructors no longer have to waste their valuable class time to return students

assignments in paper format. With the Digital Student Portfolio, instructors can return students works at the leisure of their home or anywhere with Internet access.

5.1.2 Safe storage for students work

The Digital Student Portfolio allows student work to be kept for generations. Students works are a precious resource, but with paper format, they are too easy to get lost. However, with the Digital Student Portfolio, students works are kept safe on the server and always accessible to students.

5.1.3 More flexible and easy to use digital portfolio

Due to advances in technologies such as the high-speed scanner and Rich Internet Applications, the Digital Student Portfolio can be a seamless tool to be used by both faculty and students. With the high-speed scanners, students' physical work can be digitized in an instant. As a Rich Internet Application, the Digital Student Portfolio offers beautiful presentations of student's work. The final result is marvelous. With the Digital Student Portfolio, there is no barrier to what type of format is presentable in the portfolio. The Digital Student Portfolio opens the door to endless possibilities between the physical and digital worlds. Though the Digital Student Portfolio has been deployed for three short months during Spring 2008 at UCSD, numerous comments and feedback have been collected from both students and faculty. Digital Student Portfolio has already proven to be a great tool for students to organize and manage their work. Through the application, students have exploited many ways for the Digital Student Portfolio to serve their needs.

5.1.4 Encourages interaction between students and recruiters/faculty members

The Digital Student Portfolio is also a very promising application that stages and enhances interactions between students and recruiters. The Digital Student Portfolio has successfully removed many obstacles that prevented students from creating the

portfolio. Thus, the results collected from the surveys and interviews indicated that certain students were interested in sharing their portfolios and at the same time, some of the interviewed instructors indicated that the portfolio will help them understand students better.

5.1.5 Tool used by UCSD faculty members and students

The Digital Student Portfolio was being used by a number of UCSD faculty members. It was being used by Dana Dahlstrom for “CSE 15L: Software Tools and Techniques”, Paul Kube for “CSE 3: Fluency/Information Technology”, and Susan Max for “CSE 5: Fluency/Information Technology” during Spring 2008. It was also used by professor Beth Simon for courses such as “CSE 8A: Introduction to Computer Science” and “CSE 3:Fluency in Information Technology”. The Digital Student Portfolio is not just an application used to collect data for this study; it is a fully functional application. Though it is not completely bug free, it has matured as a real application for instructors at UCSD to organize and return grades to students.

Appendix A

Survey and Interview Questions

A.1 Structured Survey

Digital Student Portfolio Survey

1. Do you think that it is convenient to have your class work available online for your ease of access?
 - a) Yes
 - b) No
2. Would you encourage instructors to continue to return assignments digitally to student?
 - a) Strongly encourage
 - b) Encourage
 - c) Don't care
 - d) Discourage
 - e) Strongly discourage
3. Would you consider sharing your portfolio with other people?
 - a) Yes
 - b) No
4. What do you think about the presentation of the digital portfolio?
5. Can you tell one story of your use of the digital portfolio? Why would you use it? If

you haven't used it, please explain why?

6. Do you have any comments or suggestions for improving the system?

A.2 Unstructured Survey

Digital Student Portfolio Interview Questions

1. What do you think of the process of creating the portfolio?
2. Do you think the interface allows you to conveniently add and edit the assignments in your portfolio?
3. Does the interface create a flexible environment to create your portfolio?
4. Do you like to have your portfolio automatically made after you have selected your assignments as shown here?
5. What is it that you particularly like and don't like about the digital portfolio?
6. Do you think that having this Digital portfolio will be useful when you go for job interviews?
7. Do you feel that this Digital Portfolio can give you a professional presence on the web?
8. Any other comments that you have?

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