Usability Study:
Catalyst Portfolio

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This report details the methodology, results, and recommendations of the Catalyst Portfolio usability study. This usability study was conducted by Andrea Lindeman and Jonathan Speights on May 23rd and 24th, 2005, in the Laboratory for Usability Testing and Evaluation (LUTE) at the University of Washington.

Purpose and Audience

The purpose of this usability study was to uncover the usability issues that users encounter when completing some of the primary features of Portfolio. Four of the major features of Portfolio were evaluated:

- Adding a new portfolio to a list of portfolios
- Submitting a document to an instructor
- Publishing the portfolio
- Writing feedback on a document and accessing that feedback

The participants for this usability test were selected to represent students who may by using Portfolio for the first time as part of a course requirement. Participants were recruited based on the following criteria:

- Attends the University of Washington
- Has never previously used Portfolio
- Uses a computer as part of his/her coursework at least three times a week
- Has experience using standard web interface conventions such as hyperlinks, pop-up windows, and browser controls like the "Back" button

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INTRODUCTION

This report details the methodology, results, and recommendations of the Catalyst Portfolio usability study. This usability study was conducted by Andrea Lindeman and Jonathan Speights on May 23rd and 24th, 2005, in the Laboratory for Usability Testing and Evaluation (LUTE) at the University of Washington.

Product Description

The Catalyst Portfolio tool is a Web-based resource that allows University of Washington (UW) students to produce collections of electronic documents. These "portfolios" allow students to archive and organize class assignments as part of a course requirement or showcase relevant coursework during a job search. Instructors can integrate Portfolio into the coursework by creating a portfolio for each student. Students can then use this tool to submit digital copies of their assignments and get feedback from the instructor. Students can also publish their portfolios to give their instructors and peers online access to their documents.

Goals of Usability Study

The primary goal for this study was to uncover issues that new users of Portfolio may encounter when submitting digital files to a portfolio or when publishing a portfolio for online viewing by classmates/instructors. Another goal was to determine if the interface labels used in Portfolio are easily understood by the users. Finally, we wanted to determine whether or not users think the feedback offered by the system makes their progress through the submission process clear. We wondered if users would feel that it clearly indicates success or failure once this process has been completed.

Scenarios were developed to evaluate the users' performance on the primary tasks in Portfolio. Each user completed four tasks:

- Adding a new portfolio to a list of portfolios
- Submitting a document to an instructor
- Publishing the portfolio
- Writing feedback on a document and accessing that feedback

The complete task list is located in Appendix A.

Audience Description and Study Goals

Although both students and instructors can use Portfolio, this usability test focused on only the student audience. The participants for this usability test were selected to represent students who may by using Portfolio for the first time as part of a course requirement. Participants were recruited based on the following criteria:

- Attends the University of Washington

- Has never previously used Portfolio
- Uses a computer as part of his/her coursework at least three times a week
- Has experience using standard web interface conventions such as hyperlinks, pop-up windows, and browser controls like the "Back" button

The audience for this usability test shares the following goals:

- To meet course requirements in order to succeed in a UW course.
- To have asynchronous discussions with instructors and receive feedback about coursework using efficient and non-intrusive methods.

The complete screening questionnaire is located in Appendix A.

TASK 1: LOGGING IN TO PORTFOLIO

In the first task, participants were asked to launch a web browser, navigate to the homepage for Portfolio, log in with their NetID and accept the Portfolio invitation that we had set up for them.

Issues Associated With This Task:

The following issues were encountered during Task 1 in our usability test:

- Large amount of information on each screen required users to sift through a lot of controls and text to find the function they want.
- The feedback from the system did not provide enough input for the user to recognize where he is at in the process.

Discussion of Findings:

Each participant identified the log in process as being similar to other systems they had previously used. This process is similar for all of the different Catalyst tools, which allows students to utilize prior knowledge of how the system works. However, after they were logged in, our participants had trouble finding their portfolio invitation that would allow them to add the portfolio and continue with the task. This difficulty was marked by a circuit that looped between the home page and the portfolio page. Participant 2 alternated between these pages and also followed multiple incorrect links on the portfolio page before he found the invitation. These mistakes required the participant to load and scan four extra pages.

Our participants also displayed issues maintaining situational awareness while using the tool. They frequently got lost and had to navigate through trial and error, looking for and often overlooking the specific link needed to complete the task. None of the participants used the breadcrumbs at the top of the page to find their way around. Because they were not able to maintain a sense of their location within Portfolio, they kept returning to the home page as a last resort. This page did not contain any of the information participants needed to complete the tasks, requiring them to click through to the English 131 page.

This added another superfluous step to the task and lengthened the time they needed to complete it.

> *"There's a lot of stuff on the screen, like there is with most Catalyst stuff."*
> *"I guess this is the home page."*
> *"After some searching I eventually found where to click."*

Recommendations:

We recommend that an effort be made to reduce the amount of information the user sees on the screen. The information that is shown should be immediately relevant to the primary tasks that the user will be engaged in. For example, while the tips in the right hand column are potentially useful, they offer enough text to be distracting. Instead of having these tips open by default, they could be collapsed with only a note highlighting their availability showing. This way, if the users need tips, they can access them easily without having the information clutter the screen.

We also recommend that the breadcrumbs on the top of the page be supported by distinct page headings that more clearly indicate the user's location within the tool. For example, instead of greeting the user by name on the home page (e.g. "Hello, Jonathan Speights"), the heading could be changed to make it clearer to the user that he/she is on the home page (e.g. "Jonathan Speights's Portfolio Home"). This would help reduce the need for navigation through trial and error.

TASK 2: SUBMITTING A FILE WITH PORTFOLIO

For the second task, participants were asked to use Portfolio to submit a file to the instructor. The file was provided for them on the desktop of the test computer and users were shown this file before they began the test.

Issues Associated With This Task:

The following issues were encountered during Task 2 in our usability test:

- Large amount of information on each screen required users to sift through a lot of controls and text to find the function they want.
- The sequence for properly adding documents to a Portfolio and submitting them to an instructor was unclear.
- Some of the terminology used in the Portfolio was unique to this tool and did not correlate with the language that students encounter during basic computing tasks.
- It was hard for users to intuit the differences between the "Save", "Finished" and "Submit Page" commands.
- Users found it hard to see the distinction between submitting an "artifact" to the instructor and publishing a page for online viewing by teammates/classmates.
- The feedback from the system did not provide enough input for the user to recognize where he is at in the submission process.
- The quality of the feedback made it difficult for the user to determine how the submission will affect the ability to receive feedback from the instructor.

Discussion of Findings:

In our questionnaire, four out of four participants noted that there was a lot of information on screen but it was possible to sift through. In their opinions, essential information was not immediately clear and was only discovered after making a conscious effort. It is important to note that all of your testing was done using a high speed Internet connection; therefore the consequences of a trial and error approach are reduced. This method of discovery would cause more significant problems for students who are accessing the tool using a dial-up connection.

The terminology used in Portfolio was inconsistent with the terminology used in other methods of file exchange that students are already familiar with. Portfolio uses the term "artifact" to refer to an attached document, while most e-mail systems use the term "file." All of our participants had exchanged files using email, and most of them had used web-based email for this exchange. Since students will likely be familiar with the ways that email software works, it would make sense for Portfolio to adopt these de-facto standards[1].

We believe that the participants' understanding of the e-mail model helps them overcome the confusion surrounding the fact that they do not know what an artifact is. While this is not a barrier to completing the task, it does require a higher cognitive workload for them to operate the system. This fact combined with an environment of enforced usage may have an adverse effect on a student's willingness to use the tool.

One of our users also had trouble interpreting what the difference was between the "publish" and the "submit" buttons. The system does provide users with pop-up messages when they hover over controls with the mouse; however, this feature presents two problems. First, these messages are rarely descriptive of the button's function. Second, the users scan the page so quickly that they frequently do not take the time to mouse over these controls long enough to see the messages.

One way to address the ambiguity of the terms would be to consider the nature of the task. Students typically submit documents to an instructor, but share those documents with other classmates. By more closely aligning the button labels with the tasks the user is engaged in, we may be able to reduce any confusion that may be associated with these functions.

Two of our users were unsuccessful in Task 2 because they never attached the document that they were shown on the desktop. To successfully submit an assignment, users must attach the file they want to send to the instructor. The system never warned them that a file was not attached. In fact, the system left the participants with a false sense of security, launching a pop up window that said they had successfully submitted their assignment to their instructor. In reality, no information had been submitted at all. After

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[1] Adkisson, Heidi P. *Identifying De-Facto Standards for E-Commerce Web Sites*. IEEE, February 2002

questioning Participant 3, we learned that the placement and visual treatment of the controls may have been one of the primary causes of this failure. Recovery from this issue was not possible because the system feedback was inaccurate and never informed the user of a problem.

A clear sequence of steps would allow users to clearly see where to begin a process and also allow them to monitor their progress. This kind of behavior also leverages standards seen on other web sites like online checkout systems with which the user may already be familiar. Highlighting a clear sequence of steps may also help clarify the purpose of some of the buttons in the interface. If the steps are clearly presented, then the user can use that sequence as a way to infer which control will help him/her successfully move through the process.

The alternative would be to relocate the submit button. Currently, the submit button is at the top of the page and is one of the first things users see when they scan the page. Placing this button underneath the controls to create and attach an artifact creates an implied sequence that reduces the likelihood that users would make a submission before attaching a file.

> *"I was primarily focused on the green submit button."*
> *"I don't even know what artifacts are!"*
> *"What's the difference between "Publish" and "Submit"?*

Recommendations:

The number of on-screen elements could be reduced. Users may find it convenient if only those items that are essential for their primary tasks appeared on that screen. For example, while some of the participants found the tips in the right hand column useful, this was not always the case. Collapsing this information by default reduces the amount of on-screen clutter, thus making it easier for new users to find important interface controls.

Next, we recommend that the interface labels be changed to more directly resemble those that are common in tools students already use. Instead of orienting around the unfamiliar term "artifact," the more familiar term "file" could be used.

The ambiguity in the interface controls should also be addressed. This will help reduce the need for trial and error exploration of the interface. The pop-up messages can also be changed to offer more explicit description of the button's function. This change may also reduce the need to access the help feature.

Also, the communication of a proper sequence for document submission can be improved. There are a couple different ways that this could be achieved. First, the process could be broken up into a series of distinct and numbered steps. Another option would be to relocate one of the primary interface controls, the "Submit" button, so that its position shows an implied sequence.

Finally, we recommend making changes to the system feedback that is offered when students are submitting files. The first and most important change should be a warning that a submission is being made without a file attached.

TASK 3: SHARING DIGITAL FILES USING PORTFOLIO

One of the primary benefits of Portfolio is the ability to share documents over the Internet. In Task 3, participants were asked make sure that other students in the class could view the documents they had submitted to their Portfolio and comment on them.

Issues Associated With This Task:
The following issues were encountered during Task 3 in our usability test:

- Some of the terminology used in the Portfolio is unique to this tool and did not correlate with the language that students encounter during basic computing tasks.
- Users found it hard to see the distinction between submitting an "artifact" to the instructor and publishing a page for online viewing by teammates/classmates.
- The feedback from the system did not provide enough input for the user to recognize where he/she is at in the submission process.
- The quality of the feedback made it difficult for the user to determine how the submission will affect the ability to receive feedback from the instructor.

Discussion of Findings:
Jakob Nielsen has stated that people do not read on the Web. Instead, they scan for the information that is relevant to the task they are trying to achieve. This assertion was supported by observation of the participants in our test. All of them scanned the page for relevant controls. Participant 2 even admitted to skipping over the explanatory text that would have helped him achieve task 3 much quicker and with fewer missteps along the way. This approach extended the amount of time it took to complete a task because the exploration of the numerous interface elements led the user to inappropriate screens. This confusion was may have been exacerbated by the difficulty that users had establishing situational awareness, something that was seen throughout the study.

The scanning technique may also explain why one participant thought the difference between submitting a file and publishing the portfolio was somewhat clear and two more thought it was not clear at all. The controls are explained with supplemental text that, if the participants had stopped to read it, may have clarified this issue for them. However, it seems that participants simply looked at the button labels and tried to divine their meaning independent of the additional text.

It is possible that this is a direct result of the type of user that we recruited for our test. All of our participants had two or more years of experience using the Internet and used computers in their academic work more than four times each week. It would be reasonable to assert that these users have developed techniques for learning new

applications that draw from this past experience. It would be interesting to see if users who did not have as much computer experience employed similar techniques for learning the Portfolio interface.

> *"I was looking at the links and not really paying attention to what it said."*

Recommendations:
We recommend that pages be redesigned with a lower dependency on explanatory text. By illustrating a clear sequence and choosing interface labels that are unambiguous, the need for supporting explanation can be diminished.

TASK 4: GIVING AND RECEIVING FEEDBACK USING PORTFOLIO

For the final task in our study, participants were asked to visit the published version of the Portfolio that they had just published and leave a comment on the document that they had submitted in Task 2. Then, participants were asked to find the assignment in their Portfolio and read the comment they had just left.

Issues Associated With This Task:
The following issues were encountered during Task 4 in our usability test:

- The feedback from the system did not provide enough input for the user to recognize where he/she is at in the submission process.
- The quality of the feedback made it difficult for the user to determine how the submission will affect the ability to receive feedback from the instructor.

Discussion of Findings:
It is important to note that all of our participants struggled with the process of leaving and reading feedback in one way or another. This difficulty is reflected in their assessment of how clear or not clear these processes were. Two users said the process was somewhat clear and the other two said that it was not clear at all. This is especially troublesome because the ability to send and receive feedback was one of the functions that our participants were most interested in.

Also, the separation between the Portfolio home page and the published Portfolio page was difficult for some participants to understand. We think more descriptive labels on the published version may help make the distinction between it and the Portfolio home page more immediately clear to users. For example, a header could be added to the very top of the screen that shows the name of the Portfolio that is being used and that marks it as the published/shared version. In our test, this header would read "English 131: Shared Portfolio". This could be followed by a brief sentence that explains this page's function and that also links the user back to his/her Portfolio home page.

The blurred lines between these two versions of a Portfolio page may make it difficult for users to determine where they will be able to read feedback. Adding an explanatory message of where feedback will be posted to the pop up window that confirms the submission might help resolve this issue. This will help make it clear that the message was sent to a specific destination instead of into a mysterious and unknown space. The instructional message will also indicate to the user where he/she can access feedback that has been attached to his/her Portfolio documents. This will also present an opportunity for the user to learn some of the behaviors in Portfolio.

"This is not really what I want to see. That might not be the right link after all."

Recommendations:

We recommend that more information be added to the alert that tells users they have successfully provided feedback. That window could also add a short sentence that explains where this feedback will appear. An alternative would be to display submitted feedback on the page for the published version as well as on the Portfolio home page.

We also suggest adding more descriptive labels to the published version of the page in order to make this distinction more obvious

JUSTIFICATION FOR REDESIGN

Based on our findings, there are some significant usability issues with the current version of EPost. These are issues that, in many cases, did not derail the success of our participants, but that also hindered their ability to work with the tool efficiently. If, as Dumas and Redish state, people "consider a product "easy to learn and use" in terms of the time it takes to do what they want, the number of steps they go through, and the success they have in predicting the right action to take" then Portfolio would probably rank very low in students' minds,

The fact that we expect Portfolio to be a required component of many courses at UW should also not be overlooked. Cooper states "Getting paid for using software makes users far more tolerant of its shortcomings because they have no choice, but that doesn't make it any less expensive." Cooper is referring to the use of business software but his advice is equally as important in the context of educational software. Here, the cost is pedagogical. The complexities of the Portfolio interface could dissuade students from using the tool, except when compelled to do so by an instructor. This limited adoption by students could render the investment in Portfolio development somewhat unproductive.

Finally, we would like to highlight two important facts that came out of our questionnaires. Three of the four participants stated that the ability to share and receive feedback was a valuable feature of Portfolio. The students recognized that this tool met an important need of students. However, every participant in the study said that the use of Portfolio would *not improve* his/her opinion of the course that was using it. There seems

to be a definite need for a tool that fulfills these needs, but it does not appear that Portfolio, in its current form, is meeting those needs effectively. Hackos and Redish state "success for a product usually occurs only when all the users in the process can easily and quickly accomplish their goals." Based on this criteria, a redesign of Portfolio that considers the recommendations that appear in this report, may achieve this kind of success.

We are making the following recommendations based on the results of our usability test of Catalyst Portfolio (See Table 1). In an effort to maximize the improvements to Portfolio's usability, we have listed the recommendations in order of importance/severity. The following severity scale was used as suggested by Dumas and Redish:

- Level 1: Prevents completion of a task
- Level 2: Creates significant delay and frustration
- Level 3: Has minor effect on usability
- Level 4: Subtle problem; points to future enhancement

Table 1: Recommendations to improve the usability of Portfolio, listed in order of importance/severity.

Severity	Feature	Recommendation
1	Interface labels	The labels of many of the controls could be changed to more accurately communicate their function.
1	Indication of a proper sequence	The process could be broken up into a series of distinct and numbered steps.
		The "Submit" button could be relocated so that its position shows an implied sequence.
1	System feedback	Adding system feedback that warns students of a blank submission may help prevent user error.
		Using system feedback to let users know where the comments will appear may clarify the difference between published pages and the home page.
		Or, feedback could appear on the published page and Portfolio home page.
2	On-screen content	The amount of on-screen information could be reduced.
		Interface controls could be renamed to reduce the need for explanatory text.
2	User's existing mental model	The interface labels could be changed to leverage terms that are common in tools students already use.
3	Detailed page headings	User's location could be supported by breadcrumb navigation and distinct page headings
3	Alt tags	The alt tags that appear over many links and buttons could be changed to be more descriptive of the functions they serve.

EVALUATION OF TEST PROCESS

The following is a list of items we will consider and prepare for in future studies:

Recruiting:
After creating all the materials for the test, we had some initial ideas about how many subjects would be required for our testing. Due to some unexpected results with two of our subjects, we decided that we needed to run another test. However, we did not have additional subjects chosen.

The issues involved with coordinating times within our team, finding scheduling times that were convenient for our subjects, and scheduling time when the LUTE was available all helped make the unexpected search for an additional participant somewhat stressful.

In the future, we will arrange to test more subjects than are thought to be necessary for the test we are running. This will help prepare us for unanticipated issues, like participants who do not show up or results that seem incomplete, which may arise after testing has begun.

Also, all of our subjects were experienced computer users. Each one has been using the Internet for over two years and all of them use a computer for academic work more than four times a week. Given the frequency of their internet and computer use, it would be reasonable to assume that these subjects had already developed techniques for negotiating imperfect interfaces. It would be interesting to see how less experienced users reacted.

Facilities:
We chose to run our study in the LUTE because we wanted to gain experience working in a fully equipped usability lab. Also, we felt the ability to capture video of the participants and their on-screen behaviors would be extremely useful for study of a software-based tool like Portfolio. This decision created some problems early in the early stages of our testing process.

Due to some confusion about the capabilities of the recording equipment in the lab, we embarked on a long, and ultimately futile, search for a DV cassette tape on the day of our first test. After a stressful assessment of our options and a mild interrogation of Paul Nortrom, we learned that Mini-DV cassette tapes would also work in the lab. We were able to proceed with our first test but it was later than anticipated. Further problems were avoided because our first participant was very accommodating and had a flexible schedule.

In the future, a solid understanding of the capabilities and limitations of the testing environment will help us avoid such pitfalls. Now that we have successfully completed four tests in the LUTE, we are confident in our ability to operate the equipment in the lab.

Facilitation:

We were very concerned that facilitator intervention during the test might compromise the validity of the data that we were collecting. On the one hand, this reluctance to intervene allowed us to detect an important issue with the process of submitting files to an instructor. On the other hand, our reluctance to intervene meant that we were not getting a complete sense of what the subject was experiencing/expecting during that portion of the test.

In a future study, we would consider doing more probing after a subject had completed a task in an unexpected way. While this technique helped us uncover what one of the participant's expectations were, the same probing may have led to even richer discoveries if it had been use on the other subject that experienced a similar issue.

ADMINISTRATOR CHECKLIST

Data Recorder	Technician
One Day Before:	
❑ Confirm reservation of LUTE lab ❑ Get keys for LUTE lab ❑ Call participants and confirm appt.	❑ Check digital video camera ❑ Check status of test Portfolios ❑ Distribute Portfolios to participants ❑ Confirm computers are running well
One Hour Before:	
❑ Get beverage for participant ❑ Collect test materials/questionnaires	❑ Turn on computers ❑ Log in with NetID ❑ Test video camera (record/playback)
When Participant Arrives:	
❑ Follow Admin script	❑ Begin recording with video camera ❑ Begin recording observation notes

Admin box of supplies contains:

☐ Stapler

☐ 3 Pens

☐ Stopwatch

☐ URLs for test Portfolios

☐ Bottled water

☐ Admin checklist

☐ Admin script

☐ Consent form

☐ (2) Data collection forms

☐ (1) Pre-study questionnaire

☐ Set of study task forms

☐ Post-task questionnaire

☐ Post-study questionnaire

☐ (1) Blank DV video cassette tape

Participant box contains:

☐ Gratuity

ADMINISTRATOR SCRIPT

1. Welcome and Introduction
   a. Welcome participant to study and thank him or her for coming.
   b. Introduce yourself and the other members of the team.
   c. Give participant a tour of the LUTE: show the testing room, the cameras, and the waiting area.
   d. Have participant sit down at the computer and sit next to him or her.
   e. Explain the format of the study as follows:

      "*Thank you for participating in our study. Your help will be very beneficial to us. The product you are helping us to evaluate today is called Portfolio and is a part of UW's Catalyst tools. Portfolio lets students to make collections of electronic documents for classes or job searches.*

      *Let me explain how the study will go so you know what to expect. This is a usability study, which is a study to evaluate how easy a system is to use. In this study, there are no right or wrong answers; if you encounter problems while using the system, the problems will only highlight features that other potential users might also have trouble with. As a potential user of Portfolio, **you** are the expert and I am trying to learn from you. Since we are evaluating a product, I want to assure you that we are in no way evaluating **you or your performance**, but the **product**.*

      We will begin with you filling out a consent form and brief questionnaire. Then I will explain to you the Think-Aloud protocol method that you will be using throughout this study. After the study, I will have another questionnaire for you to fill out and then we will be done. The whole thing should take less than one hour. Do you have any questions?"

2. Consent Form
   a. Give participant consent form and a pen. Pre-enter participant number on the consent form.
   b. When finished, answer any questions and take consent form and pen from participant.

3. Pre-test/Screening Questionnaire
   a. Give participant Pre-test Questionnaire and a pen. Pre-enter participant number on the questionnaire.
   b. When finished, take questionnaire and pen from participant.

4. Gratuity
   a. Give participant gratuity and thank him/her again for being there.

5. Demonstrate Think-Aloud Protocol
   a. Explain Think-Aloud Protocol as follows:

   "This study will be done using a method called Think-Aloud Protocol. All that this method means is that I'm going to ask you to say out loud everything you are thinking and doing as you complete the study. This will help me to understand your experience as you use the product to do some tasks. Note that this is not the same as offering suggestions for how the product might be improved; we will ask for this input after the tasks have been completed.

   Let me give you an example of thinking aloud while I change the time on my watch."

   b. Give an example of TAP by changing the time on your watch.
   c. Have participant practice using TAP by loading staples into a stapler. Comment on the attempt and offer suggestions on how to improve.

6. Introduce Tasks

   "This study will consist of you performing several tasks with Portfolio on this computer. I will give you a packet with one task per page. Please read through the entire page before attempting to do the task. Please let me know when you feel like you have completed the task; I will prompt you to move on to the next task. **Please remember to think aloud as you go through the tasks.** *Please do not ask me questions as you are doing the tasks; remember that there are no right or wrong ways to do the tasks. We are trying to understand the problems that potential users like you might have with Portfolio. Do you have any questions?"*

7. Give Tasks to Participant
   a. Give participant the packet of task sheets.
   b. After each task, give participant the Post-Task questionnaire and a pen.

8. Post-Test Questionnaire
   a. Give participant post-test questionnaire and a pen. Pre-enter participant number on the questionnaire.
   b. When finished, take questionnaire and pen from participant.

9. Conclusion
   a. Answer any questions about study.
   b. Thank participant profusely for coming.

CATALYST PORTFOLIO USABILITY TEST CONSENT FORM

You are invited to participate in a usability test for Portfolio, a web-based resource that allows students to produce collections of electronic documents.

We ask that you read this document and ask any questions you may have before you agree to be in the study.

This study is being conducted by two students from the University of Washington as part of a Usability Testing course.

BACKGROUND INFORMATION

The purpose of this study is to see how easy or difficult it is to navigate and use Portfolio. This study will not test your individual ability. It is designed to highlight any strengths or weaknesses in the tool itself. Your participation will help us design the best possible product for students at the University of Washington.

PROCEDURE

Before the study begins, you will complete a pre-test questionnaire. Then, you will perform the assigned tasks using Portfolio on a computer while thinking aloud. After each task, you will complete a post-task questionnaire to assess your perceptions of each task. After the study is finished, you will also complete a post-test questionnaire to assess your overall perception of Portfolio. You may be asked to explain reasons for certain choices that you make throughout the study.

The test will be videotaped. The footage from the study will only be used to evaluate the effectiveness of Portfolio and will not be distributed to anyone who is not affiliated with our team. Once our data has been collected and analyzed, the tape will be erased.

RISKS AND BENEFITS OF BEING IN THE STUDY

There are no risks associated with this study. A small gratuity will be provided.

CONFIDENTIALITY

Data received from this usability test will help to uncover issues that users encounter while using Portfolio. Your name will not be connected in any manner to the results or the product. Your input, however, will be an integral part of the design of Portfolio.

The researchers conducting this study are Andrea Lindeman and Jonathan Speights. You may ask any questions you have now.

If you have questions later, you may contact the researchers at: andrea14@u.washington.edu, speights@u.washington.edu

If you would like to speak with someone other than the researchers, you may contact our instructor via email:

Julianne Bryant: julianne.bryant@gettyimages.com

If you decide to participate, you are free to withdraw at any time without any consequences.

You will be given a copy of this form to keep for your records.

STATEMENT OF CONSENT

I have read the above information. I have asked questions and have received answers to those questions. I consent to participate in the study.

Print name_____

Signature_____ Date _____

Signature of Investigator or Person Obtaining Consent_____

Date _____

SCREENING QUESTIONNAIRE

We are recruiting participants for our usability test of Portfolio, part of the Catalyst Web Tools. The results of this study will help us make informed design decisions that will make Portfolio an even better tool for students. The following questions will help us select participants for the study. Please answer each of the questions as accurately as possible.

Testing will take place in the Laboratory for Usability Testing and Evaluation (LUTE) on the following dates and will last approximately 1 hour. Please select a date when you are available:

TBD _____   TBD _____   Either Date _____   Neither Date _____

If you are not available at any of the above times, please disregard the following questionnaire. Thanks again for your willingness to help improve tools for students at the University of Washington!

Name: _____

Home Phone: _____

Work Phone: _____

E-mail Address: _____

Are you currently a student at the University of Washington?

[ ] Yes   [ ] No

Age:

[ ] 15-17   [ ] 18-20   [ ] 21-23   [ ] 23 or above

Preferred Computing Platform (check all that apply):

[ ] Windows (98, 2000, ME, XP)

[ ] Macintosh (OS8, OS9, OSX)

[ ] Linux or Unix

Please answer the following questions about your computer experience:

1. How long have you been using the internet?

       [ ] Less than two years

       [ ] More than two years

2. Which web browser do you prefer to use?

       [ ] Internet Explorer

       [ ] Firefox

       [ ] Opera

       [ ] Safari

       [ ] Other _____

3. What is the speed of your internet connection at home?

       [ ] Dial-up (56k)

       [ ] ISDN

       [ ] DSL

       [ ] Cable Modem

       [ ] T1 or higher

4. How often do you use a computer as part of your academic work?

       [ ] Less than once a week

       [ ] 1-2 times a week

       [ ] 3-4 times a week

       [ ] Greater than 4 times a week

       [ ] I do not use a computer for academic work

5a. Have you ever used Portfolio in the past?

       [ ] Yes   [ ] No

5b. If you answered "yes" to the previous question, how frequently did you use Portfolio?

        [ ] Once

        [ ] Less than once a week

        [ ] 1-2 times a week

        [ ] 3-4 times a week

        [ ] Greater than 4 times a week

6. Have you ever had to do the initial set up of a web browser or email program?

        [ ] Yes   [ ] No

7. Have you ever exchanged digital files with a professor in order to receive feedback?

        [ ] Yes   [ ] No

8. If yes, what file exchange method did you use to exchange the digital file? (Select all that apply)

        [ ] Email client (examples: Outlook, Entourage)

        [ ] Web-based email (examples: Yahoo!, GMail)

        [ ] Removable media (examples: USB flash drive, CD-R)

        [ ] File transfer protocol (FTP)

        [ ] Other _____

Thank you for taking the time to complete our questionnaire. Your participation in this project will help us deliver the best possible Web-based tools to students at the University of Washington. We will notify you if you are selected to participate in the usability test of Portfolio. Thanks again!

PRE-TEST QUESTIONNAIRE

Name: _____

Home Phone: _____

Work Phone: _____

Are you currently a student at the University of Washington?

[ ] Yes   [ ] No

If yes, what is your academic standing?

[ ] Freshman   [ ] Sophomore   [ ] Junior   [ ] Senior   [ ] Grad Student

What is your major or intended major?

_____

Age:

[ ] 15-17   [ ] 18-20   [ ] 21-23   [ ] 23 or above

Preferred Computing Platform (check all that apply):

[ ] Windows (98, 2000, ME, XP)

[ ] Macintosh (OS8, OS9, OSX)

[ ] Linux or Unix

Please answer the following questions about your computer experience:

1. How long have you been using the internet?

[ ] Less than two years

[ ] More than two years

2. Which web browser do you prefer to use?

[ ] Internet Explorer

[ ] Firefox

[ ] Opera

[ ] Safari

[ ] Other _____

3. What is the speed of your internet connection at home?

[ ] Dial-up (56k)

[ ] ISDN

[ ] DSL

[ ] Cable Modem

[ ] T1 or higher

4. How often do you use a computer as part of your academic work?

[ ] Less than once a week

[ ] 1-2 times a week

[ ] 3-4 times a week

[ ] Greater than 4 times a week

[ ] I do not use a computer for academic work

5. If yes, which of the Catalyst tools have you used? (Check all that apply)

        [ ] Portfolio

        [ ] SimpleSite

        [ ] VirtualCase

        [ ] E-Post

        [ ] E-Submit

        [ ] Peer Review

        [ ] Quick Poll

        [ ] UMail

        [ ] WebQ Surveys

        [ ] I have not used any of the Catalyst tools

6. Have you ever had to configure the initial settings of a web browser or email program?

        [ ] Yes   [ ] No

7. Have you ever exchanged digital files with a professor in order to receive feedback?

        [ ] Yes   [ ] No

8. If yes, what file exchange method did you use to exchange the digital file? (Select all that apply)

        [ ] Email client (examples: Outlook, Entourage)

        [ ] Web-based email (examples: Yahoo!, GMail)

        [ ] Removable media (examples: USB flash drive, CD-R)

        [ ] File transfer protocol (FTP)

        [ ] Other _____

Thank you for taking the time to complete our questionnaire. Your participation in this project will help us deliver the best possible Web-based tools to students at the University of Washington. Thanks again!

PARTICIPANT TASKS

T A S K 1

This quarter you are taking English 131 as a requirement for your English major. There are four major papers in the class and at the end of the quarter you have to revise each paper and turn in a collection of all your revised assignments. Your TA wants you to use Portfolio to turn in all your assignments so that she can easily give you feedback on the papers for your revisions. She has created a Portfolio for each student in the class. You need to access the Portfolio in order to turn in your first assignment.

1. Go to the Portfolio website (http://portfolio.washington.edu) and log in using your UW Net ID.

2. Find the Portfolio for your English 131 class and add it to your list of Portfolios.

Please let the facilitator know when you have completed the task.

TASK 2

Your first assignment is due tomorrow morning before your class at 8:30. You need to turn it in to your online Portfolio for your teacher's review. You saved your assignment on the desktop of you computer as "Assignment 1."

1. Turn in your first assignment to your Portfolio.

Please let the facilitator know when you have completed the task.

T A S K 3

Part of the assignment in your class is to have your peers review your assignments. To do this, you have to make your Portfolio accessible to classmates so they can access your files and give you feedback.

1. Make sure students in your class can see assignments so they can provide you with feedback.

Please let the facilitator know when you have completed the task.

TASK 4

You will have to leave comments on your peers' papers as part of the course requirements, but you have never used this feature before so you want to try it out on your own assignment first.

1. Go to the published version of your Portfolio.

2. Comment on the document that you just turned in (Assignment 1).

3. Find the assignment in your Portfolio and read the comment that you just sent.

Please let the facilitator know when you have completed the task.

POST-TASK QUESTIONNAIRE

Task 1 Questionnaire:

Logging in and accessing the correct Portfolio

1. How easy or not easy was it to log in to Portfolio?

        [ ] Not easy

        [ ] Somewhat easy

        [ ] Easy

        [ ] Very easy

2. Was the log in process similar to other systems you had used (example: web-based email systems)?

        [ ] Very similar

        [ ] Similar

        [ ] Somewhat similar

        [ ] Not similar

3. How easy or not easy was it to find the correct Portfolio?

        [ ] Very easy

        [ ] Easy

        [ ] Somewhat easy

        [ ] Not easy

4. Which statement best represents your reaction to the Portfolio page that you saw after you logged in?

        [ ] "The amount of information on the page is overwhelming."

        [ ] "There's a lot of information but it's possible to sift through."

        [ ] "There was just the right amount of information."

        [ ] "There was too little information."

        [ ] Other _____

5. Which statement best represents how you felt about your ability to navigate the page that you saw after you logged in?

        [ ] "I didn't know where to click."

        [ ] "After some searching I eventually found where to click."

        [ ] "I immediately knew where to click."

        [ ] Other _____

6. How easy or not easy was it to use the Portfolio invite page?

        [ ] Very easy

        [ ] Easy

        [ ] Somewhat easy

        [ ] Not easy

7. How easy or not easy was it to locate the controls needed to complete this task?

        [ ] Very easy

        [ ] Easy

        [ ] Somewhat easy

        [ ] Not easy

Task 2 Questionnaire:

Using Portfolio to turn in an assignment

1. How clear or not clear did you think the process for submitting work using Portfolio was?

        [ ] Very clear

        [ ] Clear

        [ ] Somewhat clear

        [ ] Not clear

2. How easy or not easy was it to understand the terminology used for the Portfolio controls?

        [ ] Very easy

        [ ] Easy

        [ ] Somewhat easy

        [ ] Not easy

3. How clear or not clear were the functions of all the controls on the submission page?

        [ ] It was clear what every button/link did

        [ ] It was clear what most of the buttons/links did

        [ ] It was clear what a few of the buttons/links did

        [ ] It was not clear what any of the buttons/links did

4. How did you feel about the number of controls that were present on the submission page?

        [ ] There were too many to choose from

        [ ] There were just the right amount

        [ ] There were not enough to do all the things I wanted

        [ ] Other _____

5. Did the labels for these controls make it clear how the function of each button differed from others on the page?

        [ ] The labels were very clear

        [ ] Most of the labels were clear

        [ ] A few of the labels were clear

        [ ] None of the labels were clear

6. Did Portfolio make it clear whether or not you had been successful or unsuccessful?

        [ ] It was very clear

        [ ] It was mostly clear

        [ ] It was somewhat clear

        [ ] It was not clear

7. Did you ever consider using the instructions during the submission process?

        [ ] Yes   [ ] No

8. How confusing or not confusing was it to have the submission controls pop up in a separate window?

        [ ] Not confusing

        [ ] A little confusing

        [ ] Very confusing

9. How satisfied or not satisfied were you with the amount of time that was required to complete this task?

        [ ] Very satisfied

        [ ] Satisfied

        [ ] Somewhat Satisfied

        [ ] Not Satisfied

Task 3 and 4 Questionnaire:

Publishing a Portfolio and Checking Feedback

1. Was the difference between submitting a file to the instructor and making the Portfolio available to classmates clear or unclear?

        [ ] Very clear

        [ ] Clear

        [ ] Somewhat clear

        [ ] Not clear

2. How clear or not clear was the process of accessing and reading feedback?

        [ ] Very clear

        [ ] Clear

        [ ] Somewhat clear

        [ ] Not clear

POST-TEST QUESTIONNAIRE

Participant Number: _____

Date: _____

1. Working with Portfolio was…

    [ ] Very easy

    [ ] Easy

    [ ] Somewhat easy

    [ ] Not easy

2. Compared to other methods for exchanging files (example: email, CD-Rs, flash drives), Portfolio was…

    [ ] Very easy

    [ ] Easy

    [ ] Somewhat easy

    [ ] Not easy

3. Using Portfolio, how easy or not easy would it be for you to exchange digital files with your instructor?

    [ ] Very easy

    [ ] Easy

    [ ] Somewhat easy

    [ ] Not easy

4. Would an instructor's use of Portfolio as a required part of a class improve or not improve your opinion of the course?

    [ ] Significantly improve

    [ ] Improve

    [ ] Somewhat improve

    [ ] Not improve

5. What did you like most about Portfolio?

_____

_____

_____

_____

6. What did you like least about Portfolio?

_____

_____

_____

_____

Thank you again for participating in our study! Your help is very valuable to us.

DATA COLLECTION FORM

1. Can the participant log in with his/her NetID?	
a. What happens when the participant tries to log in?	
Observations:	Follow-up questions:
b. What happens when he/she tries to locate the correct Portfolio from the list?	
Observations:	Follow-up questions:
Time on task:	

2. Can the participant submit a digital file to the correct Portfolio?	
a. Does the participant recognize where he/she should begin?	
Observations:	Follow-up questions:
b. Does the participant experience any difficulty with the interface labels?	
Observations:	Follow-up questions:

c. Does the participant experience any difficulty with the number of buttons?	
Observations:	Follow-up questions:

d. Does the participant display a clear understanding of the submission process?	
Observations:	Follow-up questions:

e. Does the participant experience any problems with the use of pop-up windows?	
Observations:	Follow-up questions:
Time on task:	

3. Can the participant make his/her Portfolio accessible from the Web?

a. Does the participant understand the difference between this and submission?	
Observations:	Follow-up questions:

b. Did the participant understand how to read feedback left by others?	
Observations:	Follow-up questions:
Time on task:	

4. Can the participant leave feedback and access feedback for documents?	
a. Can the participant find the published Portfolio page?	
Observations:	Follow-up questions:

b. Is the participant able to leave feedback for the correct assignment?	
Observations:	Follow-up questions:

c. Can the participant return to the main Portfolio page?	
Observations:	Follow-up questions:

d. Can the participant find the feedback that was left for Assignment 1?	
Observations: **Time on task:**	Follow-up questions:

STUDY PROPOSAL

D A T E :   May 12, 2005

C R E A T E D   B Y :   Andrea Lindeman – andrea14@u.washington.edu
Jonathan Speights – speights@u.washington.edu

PRODUCT DESCRIPTION

The Catalyst Portfolio tool is a Web-based resource that allows University of Washington (UW) students to produce collections of electronic documents. These "portfolios" allow students to archive and organize class assignments as part of a course requirement or showcase relevant coursework during a job search. Instructors can integrate Portfolio into the coursework by creating a portfolio for each student. Students can then use this tool to submit digital copies of their assignments and get feedback from the instructor.

GOALS OF USABILITY STUDY

The primary goal for this study is to uncover issues that new users of Portfolio may encounter when submitting digital files to a portfolio or when publishing a portfolio for online viewing by classmates/instructors. Another goal is to determine if the interface labels used in Portfolio are unambiguous and easily understood by the users. Finally, we would like to determine whether or not users think the feedback offered by the system makes their progress through the submission process clear and if it clearly indicates success or failure once this process has been completed.

AUDIENCE DESCRIPTION

The audience for this usability test shares the following characteristics:

- Attends the University of Washington
- Has never previously used Portfolio, or any other process for exchanging digital documents, other than sending and receiving email
- Uses a computer as part of his/her coursework at least three times a week
- Has experience using standard web interface conventions such as hyperlinks, pop-up windows, and browser controls like the "Back" button
- Never has had to configure a browser or email client for web/email access

AUDIENCE GOALS

The audience for this usability test shares the following goals:

- To meet course requirements in order to succeed in a UW course.

- To have asynchronous discussions with instructors and receive feedback about coursework using efficient and non-intrusive methods.

RESEARCH ISSUES

We are going to conduct a usability test using think aloud protocol and also pre and post-test questionnaires. This will allow us to assess the terminology and usability issues surrounding the submission process and the process of publishing a portfolio. There are multiple issues and questions that will be tested in the study including:

1. The Submission Process
a. Can the users figure out the correct sequence for submitting digital files to a portfolio?
   - The sequence for properly adding documents to a portfolio and submitting them is lengthy and may involve a series of steps that are never presented or described.
b. Can users negotiate information that is part of the same task, but displayed in different windows?
   - In the submission process, there are multiple tasks that appear in multiple windows. Users may not be able to negotiate controls that are presented in separate windows..
c. Can users find all of the necessary controls in the windows?
   - Some of the windows require the user to scroll down to find the necessary controls and the user may not be aware of this requirement.
d. Do users rely on the instructions to use the tool, and are the instructions generalizable to the entire user base?
   - Confusion in the submission process might lead the users to use the instructions to figure out how to use the tool. Also, the instructions might differ between operating systems.

2. Interface Labels
a. Do users understand the terminology used in the Portfolio interface?
   - Portfolio uses specialized terms like "artifact" that may not be easily understood by users who are more familiar with the conventions established in other tools like email.
b. Are users able to intuit the differences between the "Save," "Finished," and "Submit Page" commands?
   - The labels for buttons that activate specific functions in the interface are semantically hard to distinguish. It may be difficult to determine what these buttons do and how that function is different from a button with a similar label.
c. Do users understand the difference between submitting an artifact to the instructor and publishing the portfolio?
   - These are discrete functions that serve very different purposes. It may be hard for students to make the distinction between artifacts that have been made available on the Web ("publishing") and those that have been submitted for approval/feedback from the instructor ("submitting").

3. System Feedback
a. Do users understand where they are in the submission process?

- Portfolio does not provide users with any clear indication of what stage they are at in the submission process. It may be hard for them to ascertain whether or not they have completed all of the steps successfully.
  b. Do users know when a document submission has been successful/unsuccessful?
    - The submission of a document is a primary goal of the users but the only element indicating success/failure is an icon, the meaning of which is not immediately clear.

RELEVANT RESEARCH

The following articles help us emphasize the importance of the issues we have addressed in the "Research Issues" section of this document:

Enforced Usage
Article One: Cooper, A. (1999). Chapter 3 – Wasting Money, In *The Inmates Are Running the Asylum*, SAMS: Indianapolis, pg. 52.

In this article, Cooper states that "Getting paid for using software makes users far more tolerant of its shortcomings because they have no choice, but that doesn't make it any less expensive…Badly designed business software makes people dislike their jobs. Their productivity suffers. Errors creep into their work, they try to cheat the software and they don't stay in their jobs very long."

Cooper recognized some of the consequences that arise when the use of software is enforced. This is intimately tied to our audience, which will be using Portfolio as a prescribed element of the coursework. Students may have a negative reaction if usability issues hinder their productivity while using Portfolio. The consequences of such a negative reaction to the tool would be a negative impression of the course that held the requirement and possibly of the educational experience provided by the University of Washington.

User Goals
Article Two: Hackos, J.T. and Redish, J.C. (1998). Chapter 5 – Making the Business Case for Site Visits. In *User and Task Analysis For Interface Design*, John Wiley and Sons: New York, pg 119.

Hackos and Redish found that "success for a product usually occurs when all the users in the process can easily and quickly accomplish their goals." We have already found areas of the Portfolio interface that seem complex and that involve a number of discrete steps. Our concern is that this complexity may lead to confusion when users try to interact with the tool.

This confusion may extend the amount of time users will have to spend to achieve a specified goal, something that is especially troublesome for time-starved students. The extra effort that is required could result in a student's reluctance or refusal to use the tool, diminishing the value of the student investing in the Portfolio's development. Measuring the time on task in our usability tests will give us an idea of how efficiently students can work with the tool to achieve their goals.

De-Facto Standards
Article Three: Adkisson, Heidi P. *Identifying De-Facto Standards for E-Commerce Web Sites*. IEEE, February 2002

In her article on de-facto standards, Heidi Adkisson addresses the importance of unpublished, but widely implemented, web design standards. The basic concept is that if users are familiar with a certain kind of behavior, then that expectation should be considered in a new design.

Our concern is that Portfolio uses specialized behaviors and terminology that users may not be familiar or comfortable with. For the purposes of our testing, we will be looking at Portfolio as a mechanism for the digital submission of feedback and assignments. The most commonly used tool for this task is email. It will be interesting to see if usability testing reveals any differences in the way users expect the tool to function and the way it actually works. Also of interest will be any preferences subjects display for more familiar conventions used in common computing tasks, such as "attaching a file" or "creating a folder."

Implementation Models
Article Four: Cooper, A. and Reimann, R. (2003). Chapter 2 – Implementation models and mental models, In *About face 2.0: The essentials of interaction design,* Wiley Publishing: Indianapolis, p. 25.

Cooper and Reimann state that "while [the implementation model] adequately reflects the infrastructure of the engineering effort, it does little to provide a coherent reflection of a user's goals."

The implementation model follows the idea that there is a button for every function, a field for every data input." This seems to be the case on the document submission page of Portfolio, where the user faces no less than 14 different interface buttons. In the case of Portfolio, the user's goal is to successfully submit digital files to an instructor and receive feedback in a similar fashion. It will be interesting to see how test subjects react to the existing tool and what effect a represented model (where many behaviors remain behind the scenes) will have on users' perceptions of Portfolio.