

Methodology of Testing

The usability test involved five users from the target audience (students who represented typical website users) and took place on August 10-11, 2010. All five users were tested at the UTEC lab on the campus of IIT.

Recruitment and User Consent

After inviting users to participate in the testing, we scheduled a time slot with each of them.

On the day of testing, we read a script to those participants who came to the UTEC for testing of the website and asked them to sign a consent form to confirm their agreement for participating in the usability study. (For the forms used, please refer to the **Facilitator Script/Appendix 1** and **Consent Form /Appendix 2**).

Gathering User Profiles

Testing for Phase 1 required learning about the users through questions related to their work experience, their background in ethics, and their level of experience with the internet and with online training platforms. (For a list of complete questions, please refer to **User Profile Questions /Appendix 3**.)

User Profiles

The profiles of the five users who participated in this study are summarized below:

	User #1	User #2	User #3	User #4	User #5
Title	Grad Student	Grad Student	Research Assistant	Educational Consultant	Grad student
Teaching experience	No	Yes	No	Yes	Yes
Has included ethics considerations in research proposals?	No	No	No	Yes	No
Has included ethics in the classroom?	No	No	No	Yes	No
Has used site before?	No	No	No	No	No
Level of experience with the internet— low, medium,	High	Medium	Medium	High	Medium

	User #1	User #2	User #3	User #4	User #5
high					
Level of experience with online training platforms—low, medium, high	Medium	Medium	Low	Low	Medium
Field of study	Computer Network Security	Technical Communication	Electrical/Biomedical Engineering	History/Education	Theater/Drama/Performing Arts
Voluntary information—age bracket	15-28	29-44	15-28	29-44	29-44
Voluntary information—gender	Male	Female	Male	Male	Female

Investigation of User’s Mental Model

Methodology

After learning more about the participants, we moved to the second element of Phase I in our study of the CITI website--an exercise to investigate the user’s mental model, based on the navigation labels provided on the home page. To prepare for the exercise, participants were asked to read the “About CITI” page and were then asked to provide feedback on the content they expected to find under each link. Participants were not allowed to hover over the links. Below is a summary of the findings; in Phases 2 and 3 of this project, these findings (based on the user’s mental model) will be used to make recommendations for the re-organization of information on the site.

User's Mental Model Findings

The following findings and discussion are based on a user's mental model exercise conducted during the usability test. As a guide to the findings, the following definitions are provided:

- “Navigation Label” refers to the existing labels used for the main navigation links, for example, “Home” or “Human Subjects Research.”
- “Existing Headings” refers to the headings used on the pages linked to the main navigation, for example, “About the Collaborative Institutional Training Initiative.”
- “Existing Content” refers to the content or hyperlinks found under the existing headings, for example, the list of participating institutions and organizations.
- “Participants' Expectations” are areas of content that users expected to find under each navigation label.
- “Findings” provides a discussion of the participants' expectations vis-à-vis the first navigation label, existing headings, and existing content.

Navigation Label	Existing Headings	Existing Content	Participants' Expectations	Findings
Home	Welcome CITI Login and Registration Page	Register Login Forgot Login information	General information Link to home page Contact information FAQs Login information	For the most part, the home page matches users' expectations. The inclusion of general information on the home page, for example, “About CITI” may be good utilization of the home page real estate.
Human Subject Research	About the Collaborative Institutional Training Initiative (CITI)	List of participating institutions and organizations CITI Developer's group	Information about conducting Human Subjects Research Information about	There is a mismatch between the navigation label, the existing heading and the content.

Navigation Label	Existing Headings	Existing Content	Participants' Expectations	Findings
		CITI Advisory Committee CITI Slideshow Presentation	biomedical research Images of human subjects (people) Education about how people learn Research tools based on different subjects	This information needs to be streamlined. Users' expectations varied widely even after having read the information presented on this page.
Become a Member	CITI Human Subjects Research Educational Program Information (CITI)	CITI order form CITI RCR order form Order form in Spanish	Services for members Pay site Registration Sign up page Join/become a member	It is unclear to users if this page is relevant to student users or institutional users. A label like "Become an Institutional Member" or "Register your Institution" may be more helpful navigation labels.
International Course Site	The CITI International Research Course Site Register for the IRB training course	Registration for IRB course	Don't know what to expect For people who speak languages other than English How you would register to be a member depending on what country you are from	It is not immediately clear how the International Course Site links with registration for the Institutional Review Board (IRB). Participants varied widely on their expectations for this link. "International

Navigation Label	Existing Headings	Existing Content	Participants' Expectations	Findings
			Links to courses from different countries	Research Courses” may be a more appropriate navigation label.
HIPS Course	None	Registration	Link to HIPS course Something related to privacy Noted HIPS was referred to in the About page	Some users were able to recognize the initials RCR, HIPS from the “About CITI page” they were given to read before the exercise. Two users suggested having one tab for courses, with sub-navigation listing all the courses which CITI offers. This is an excellent recommendation which will allow more space to spell out RCR and HIPS instead of using initials. Additionally, the links to these pages should consistently give specific information about these courses and not just a registration page, as is the case of HIPS course page.
RCR Course	CITI Course in the Responsible Conduct of Research	Registration for RCR Course Directions to instructors and administrators CITI program home page	Don't know what RCR stands for Links to Responsible Conduct of Research	
Lab Animal Course	The CITI Laboratory Animal Welfare Course CITI lab animal welfare working group CITI lab animal demo Permissions for subscribers Other advantages for institutions Value Added	CITI lab animal working group Lab animal order form Knowledge base website	Link to Lab Animal Course Information about meeting regulations in lab animal research	

Navigation Label	Existing Headings	Existing Content	Participants' Expectations	Findings
	Subscription information			
Biosafety	The CITI Biosafety Course	Registration for the Biosafety course "demo" CITI Biosafety course order form	Information about biosafety course offering Does not understand what the word means.	See comments for HIPS, RCR and Lab Animal Course
FAQ	Resources	Knowledge base Contact CITI support	Questions and answers about how the courses conducted	There is a mismatch between the label "FAQ" and the heading "Resources." This needs to be addressed. Content management for this page is needed and information needs to be organized accordingly, since participants only expect to find a list of FAQs under this link.
Language	Select Language	Arabic, Chinese, English, French, Japanese, Korean, Portuguese, Russian, Spanish, Thai	Other languages options Site translated into 10 different languages	No change is recommended.

Usability Testing

Methodology

After completion of the user's mental model exercise, the usability team moved to the third element of Phase I in our study of the CITI website—a formal usability test, employing guided tasks. For this part of the testing, specific task scenarios had been prepared by the usability team, in accordance with the client's requests, in order to test for ease of usability of the website. (For a list of task scenarios for testing, please refer to the Task Scenarios/Appendix 4.) Below are the usability test findings and recommendations.

Usability Test Findings and Recommendations

This section covers the main findings that resulted from the first usability study of the CITI website. An actionable recommendation follows each finding. Additionally, a comparison of estimated time and actual time taken on each task is provided in **Appendix 5**. It is useful to note that completion of tasks is not the only marker of success, the time taken allows us to judge if users are able to work efficiently as well.

Usability Test Positive Findings

One user (a student of “computer network security”) noted that the “site works perfectly fine, functionality-wise, with no errors” (none that this user detected).

A majority of the users found the content contained in the class projects basic course “very interesting” and several expressed a desire to read this content at their leisure.

Usability Test Findings for Improvements

Some basic areas to be tested had been agreed upon in consultation with the client. Once the heuristic evaluation was completed and the team was familiar with the site, the task scenarios were created. For example, the client had expressed interest in having elements of the public pages tested and the team designed task scenario 1 (see below) to test the use of public pages. The following are the tasks presented to each participant, the findings for each task and our team's recommendations.

Task Scenario 1:

“You are a research assistant who must earn CME/CEU credits. Find the CITI Knowledge Base and do a search to find out how to apply for CME/CEU credits.”

The objective of the first task in the usability test was to involve users in browsing the public pages of CITI, without the need for login.

Finding 1 (Task 1):

A majority of users had significant trouble locating the CITI Knowledge Base. Several users devised various “work-around” strategies—one user ultimately used a Google search to locate the database and 2 users attempted to use local “find” function. One user commented, “I don’t feel like there is an area to find this [Knowledge Base] unless there was an area to search.” A user who was not successful with this first task commented “when I got to the [U Health page], I didn’t really find how I could apply for the credits. This [how to apply for CME/CEU credits] is really hard to find. So hard.”

Recommendations based on finding 1 (Task 1):

- Integrate a search engine, like Google, on the site.
- Use breadcrumbs to tell users where they are in the hierarchy.
- Provide a site map on the website.

Finding 2 (Task 1):

Only 2 users found the database using the FAQs navigation tab. Two of 5 users did not find the database at all. Additionally, a majority of users thought it was mandatory, or might be necessary, to register on site before accessing any information, including information on public pages. Some user comments: “None of the links on the top gave any clue where to go for guests and the home page says to register if I’m a new user—there doesn’t seem like any other way to go for somebody who is just a guest;” and another user: “It’s very obvious that I need to login first.”

Recommendations based on finding 2 (Task 1):

- Locate a link to CITI Knowledge Base prominently on every page.
- The label “CITI Knowledge Base” may not be universally understood as a place to find help. A main navigation label “Help” which takes the user to the Knowledge Base is an alternative.
- Leave the login prompt on the home page, but demote it, so that it is visible and accessible but not the focus of the home page. As one user stated “don’t give all that space on the home page to registration – that can be a small box on the upper right or somewhere – it’s too prominent.” See **Figure 1** for an example of login prompt placement which is accessible but not overly prominent.

Login area is accessible but not the main focus of the page.

The screenshot shows the IIT website with a red header. The main content area is divided into several sections. On the left, there is a 'Login' section with a red circle around the username and password fields. Below it are sections for 'Support Information' (troubleshooting, browser support, comments, FAQ) and 'Policies & Guidelines' (privacy statement, office services). In the center, there is a 'Banner Upgrade: July 28-August 1' notice with a photo of a woman and text explaining the system outage. On the right, there is a 'Website Conversion Project Update' section with a list of affected departments and a note about new URLs.

Task Scenario 2:

“You are a grad student enrolling in a course that will include a research project requiring that you complete a course on the CITI website. Create a new learner account and register for the “class projects basic course.” (Users were given some additional information they needed in order to complete the registration process, such as to use Halcyon University for their institution, etc.)

The objective of the second task in the usability test was to involve users in login and registration to gain access to the private environment of the website and was tested by creating a new learner account.

Finding 1 (Task 2):

A majority of users were confused by “choose only one” instruction for institution drop-down boxes in the registration process. One user commented, “it could be clearer that you are only supposed to check one,” and another said, “not clear whether I have to select any others . . . because they’re all available and parallel.”

Recommendation based on finding 1 (Task 2):

- Block access to all other options when one is selected or use a greyed-out option.

Finding 2 (Task 2):

Several users were confused by only one box being offered for selection or non-selection of “good clinical practice” in the registration process. One user commented, “there is no choice given for “good clinical practice,” although it says “choose all that apply,” and “please make your selection—unclear exactly what the checkmark means . . . typically this would offer yes or no.”

Recommendation based on finding 2 (Task 2):

- Offer two check box options that clearly indicate acceptance and rejection of the “good clinical practice” option. Additionally, the statement “choose all that apply” may lead to confusion since there is only one option available. Delete this directive.

Task Scenario 3:

You are a student who needs CME/CEU credits for a medical affiliation. Go to the page where you can apply for these credits and also indicate that you are willing to take a survey at the end of the process.

The objective of the third task in the usability test was to involve users in login and registration to gain access to the private environment of the website and was tested by applying for CME/CEU credits and indicating willingness to take a survey at the end of the process.

Finding 1 (Task 3):

A majority of users were curious about what the letters CME/CEU mean.

Recommendations based on finding 1 (Task 3):

- Adhere to the rule of thumb for clear communication: spell out all words before you use acronyms and abbreviations.
- Because of the technical nature of this site, it may be useful to have a glossary of terms available to users.

Finding 2 (Task 3):

Four out of 5 users gave no indication they saw the CME/CEU navigation tab on the bottom of pages; only one user clicked on this link.

Recommendation based on finding 2 (Task 3):

- Promote CME/CEU link to the main navigation area at the top of the page.

Finding 3 (Task 3):

Four out of 5 users were uncertain as to whether or not they had successfully applied for CME/CEU credits. One user commented, “how do I know if I’ve successfully applied? Something should have appeared to tell me.” When asked by the test facilitator if another user thought she had successfully applied for the CME/CEU credits, she responded, “I have no idea. I would say yes, because I went through the steps and then clicked submit . . . but it doesn’t . . . I don’t feel like there’s an area showing me that I’ve done that.”

Recommendations based on finding 3 (Task 3):

- Use a status indicator to let users know when a task or function is completed (see figure 2.) As one user commented when asked about the level of difficulty experienced in applying for CME/CEU credit, he responded: “I’m not sure I ever did that, so I’ll go with ‘somewhat difficult.’ ”

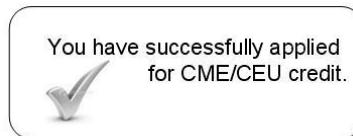


Figure 2: Example of a status indicator

- Provide clearer instructions on the process of applying for CME/CEU credit. Currently, it seems that the institution requires that you read an information page, before you can click “submit”. The purpose of the information page may not be clear to the user. You can separate this function into two tasks. First, a link to an “About CME/CEU” and second, a command option that only allows users to apply for credit. An option to indicate that a user has read the “About” page before he/she applies for CME/CEU credit can be included.
- Change the label “submit” to “apply”. This word choice may lead to less ambiguity for users as to the task they are completing. (**See figure 3**)

Submit button appears at the end of a long page

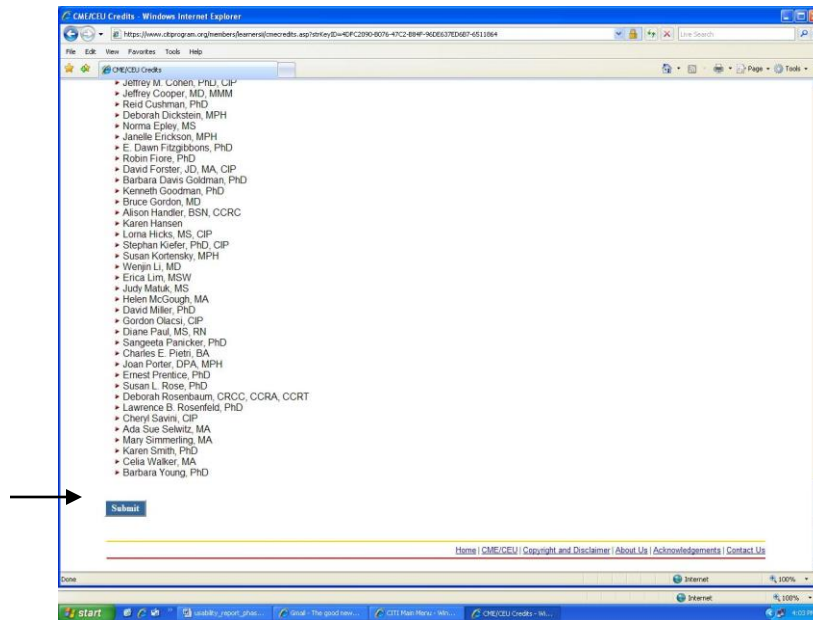


Figure 3: CME/CEU Credit Page

Task Scenario 4:

You are a student who must complete a class projects basic course and take a quiz to demonstrate that you have passed the course. View the ‘Halcyon University Instructions’ page as a guide to how you can access and complete the “class projects basic course” and the required quiz. The answers to the quiz are attached on the following page.

The objective of the fourth task in the usability test was to involve users in the process of working within the available course menu (across courses).

Finding 1 (Task 4):

A majority of users thought the words ‘Enter/Re-enter’ in red (see **figure 4**), underlined text on the basic course instructions page was a clickable link as this is a common convention used in website content. The convention is used inconsistently on the CITI site, a practice that helps create unreliable expectations for users. After several attempts to click on the red, underlined ‘enter/re-enter’ one user commented, “I can’t go anywhere.” Because the words are also part of a phrase that says, ‘The red link Enter or Re-Enter will permit you to Begin/Continue the Course’, this reinforced the illusion that the red text would take users to the course directly from this page, as several users reported in the debriefing after being tested on tasks. As one user said after fruitlessly clicking on the words ‘Enter-Re-enter’, “the red link, this is supposed to take me there and it’s not.”

3. After you submit, you will be given the opportunity to affiliate with a VA Medical Center. If you are r **Submit**.
4. The next page is the **Main Menu**. This page lists the courses you have chosen. The Main Menu & you.
 - o You may affiliate with another institution. The software will sum the requirements of both insti requirements of both institutions.
 - o You may "**Add a course or update your learner groups** " This link will take you to the enr **Group**" by providing new responses to the enrollment questions.
5. The red link (**Enter or Re-Enter**) will permit you to **Begin/Continue the Course**.
6. Please complete the **Integrity Assurance** module presented at the top. The system will allow you
7. Complete the required modules and associated quizzes.

Figure 4: Problem of misleading “link look-alike” on the “Halcyon University Instructions” page.

Recommendations based on findings 1 (task 4)

- Provide a more interactive page for users. As one user stated, “it should be both instructions and actionable; killing two birds with one stone...makes it more efficient.”
- Use screen shots in the instructions rather than actual text; this way users will know you are referring to another page on the website rather than trying to click what they perceive as links to complete the tasks.
- Consider adding a short 3-minute video clip as an alternative to written instructions.

Finding 2 (Task 4):

A majority of users hesitated over “Belmont Report” & CITI Course Introduction” on the “Required Modules” main page and were not sure this was the proper selection. The module is called “Class Projects Basic Course” until the user arrives at this page, at which point the user is offered the unfamiliar title “Belmont Report.”

Recommendation based on finding 2 (task 4)

- Use a status indicator to tell students where they are at in the module and which modules they have completed. A status indicator has been used (see **figure 5**), but not consistently within course modules.

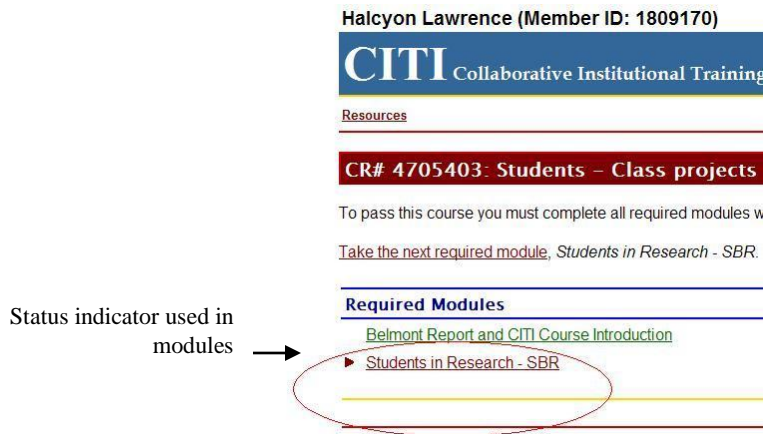


Figure 5: Status Indicator used in course modules menu

Finding 3 (Task 4):

A majority of users commented on how much text was contained on pages within this section of the site. One participant used the word “overwhelming” as she scrolled through “Students in Research” module. The same user went on to say, “you get in the middle of it and don’t know how you can get out of it . . . information is in one layer—should be ‘like a book,’ with many pages.” Another user calls a lengthy page “verbose.”

Recommendations based on finding 4 (task 4):

- These course modules were interesting to users but difficult to navigate. These module pages require organization and proper instructional design to be effective. Modules need to be broken down into pages and students should be given both recommended and required readings so that they can prioritize their study programs. (**Figure 6a and 6b** provide a visual comparison of existing layout and proposed layout)
- If a student returns to the course, there should be some indicator of what was last covered and where they resume their study rather than having to scroll through the material.

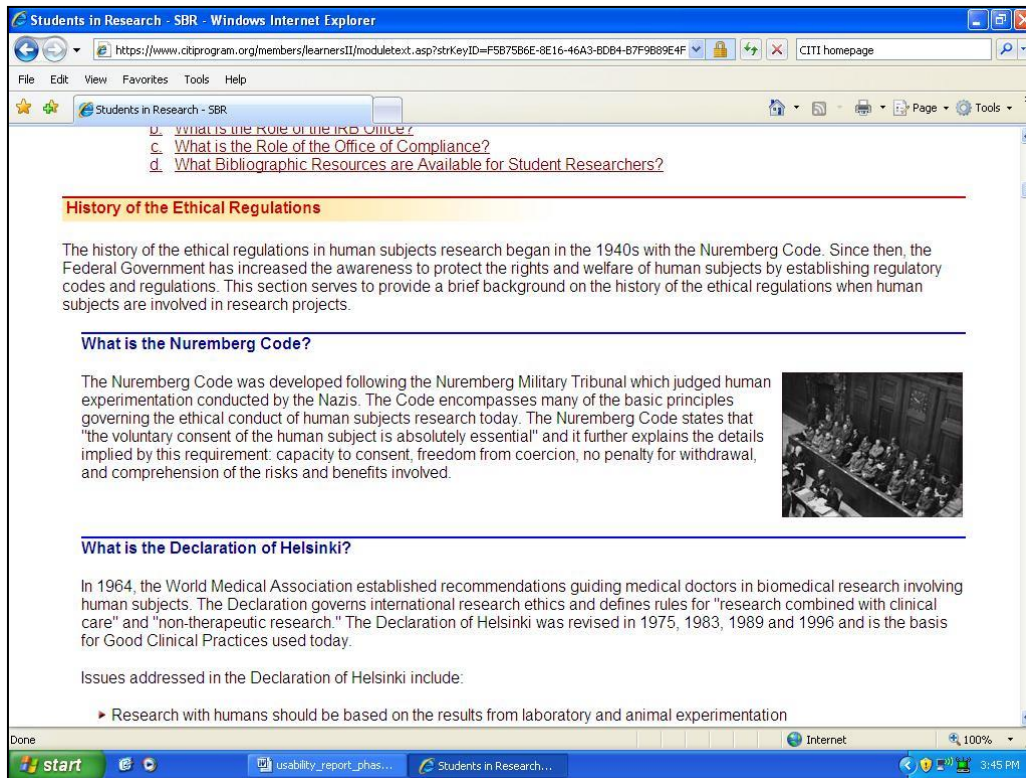


Figure 6a: Existing Content Layout

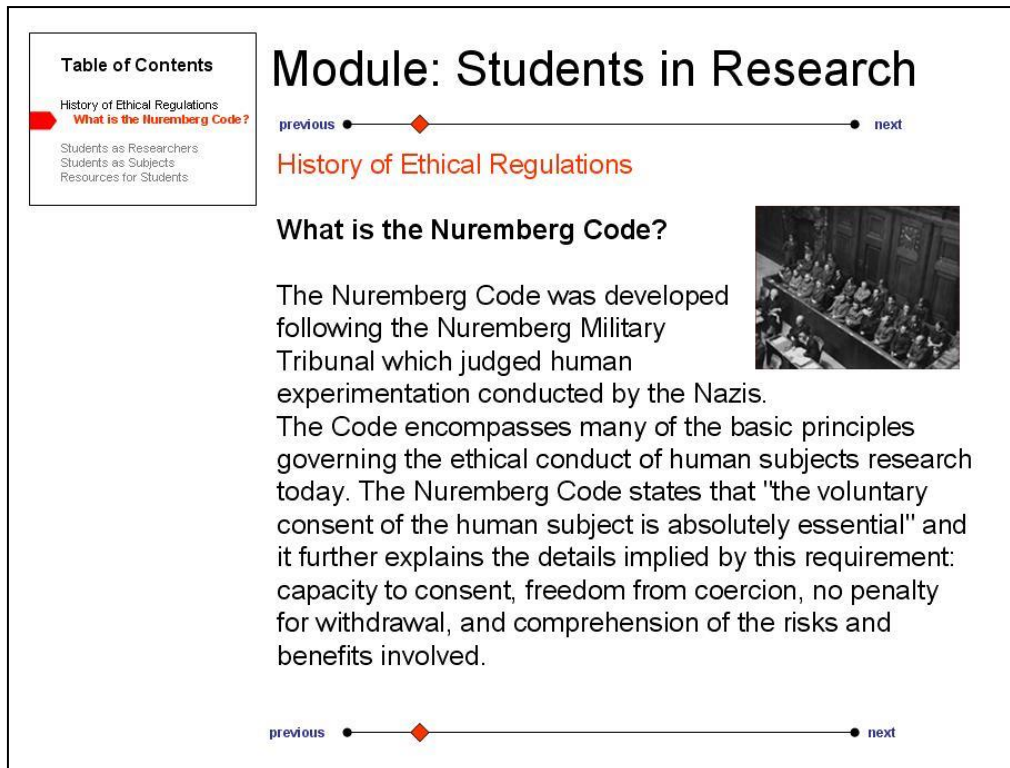


Figure 6b: sample of a re-designed module to avoid information overload

Task Scenario 5:

You have completed the class projects basic course and are required by your own university to submit proof of this achievement. Print a copy of your completion report and when you are finished, log off from the site.

The objective of the fifth and last task in the usability test was to involve users in accessing and printing a copy of completion report.

Finding 1 (Task 5):

A majority of users were confused by some element of printing the completion report. Users' comments ranged from "confirmation should have shown up automatically," to "the quiz itself should be printed as completion report," to "I have no idea where to go, to print a copy."

Recommendation based on finding 1 (Task 5):

- There are too many final reports and that may be confusing to students. To name a few, there are the "completion report" page, "modules completed for stage" page, the "course completion history" and the "archived completion reports." Provide students with a reports tab that lists all the reports they can print. Provide a short description of each report and what it offers and indicate which reports are required for their institutions.