

User Interface Revision

This document is a report on the results of a usability study. The subject of the study involved the conferencing application of Canvas, a Learning Management System commonly used in academic environments.

The audience

The audience for this report are users of Canvas, who include instructors, students, and academic administrators.

The team

The usability study was conducted by a team of four colleagues. I served as the principal author of this report, which detailed the study results. I also created the interview script and participated in every phase of the project, which was conducted according to the following plan:

- Research the application and analyze its current usability
- Propose specific revisions and create a prototype of the revised user interface
- Test the revisions by observing and interviewing users as they interacted with the prototype
- Incorporate observations and suggestions then test second iteration of the prototype
- Create a report of the study results to include revisions and user responses, accompanied by recommendations for future iterations

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Canvas Conferencing Tool

User Interface Revision Project

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By Julie Hale, Lora Halstten, Yvonne Meyer, Ryan Petersen

Executive Summary

Our project goal was to make the Canvas Conferencing Tool easier to use. After evaluating the application, we decided that its users need more than procedural documentation—they need a comprehensively revised user interface (UI). In response to this, we changed the text, the graphics, the navigation, and the layout of the existing interface. We conducted two iterations of usability tests, and the results showed measurable improvement in user task completion.

Both tests were conducted in May 2013 on the University of Washington campus using students as test participants. Tests were conducted with paper prototypes showing screenshots of our revised UI. We asked participants to create a Canvas conference by pointing to links and features on the prototype. They explained their decision process aloud during the test.

Test 1 involved four participants. For each prototype screen, their ability to identify the correct links or features determined task completion. In addition to this quantitative test metric, we asked participants to provide qualitative feedback throughout the process. After Test 1, we compiled five primary usability problems and ten secondary problems, which we would address before Test 2.

Test 2 involved three participants. It allowed us to test the effectiveness of our second iteration of UI revisions. Our revisions produced measurable improvement in user task completion; most test participants, however, still experienced occasional confusion.

After conducting two usability tests, we have found that:

- Most usability problems were identified and addressed.
- Our Canvas homepage revision enables users to quickly find the Conference tool.
- While our UI revisions improved Conference tool usability, an excessive amount of features hinders the tool interface.
- To conclude our study, we recommend that the Canvas Conference Tool be further tested and revised.

Project Overview

Our team selected the Conferencing Tool for the project study because of our experience with the application. While reviewing the Conferencing Tool independently and as a team, we found various Conference features difficult to set up and use. These difficulties include the following:

- A lack of clear, intuitive, and sequential instructions for getting set up to conference
- Inconsistent user results relating to the audio function
- Ambiguity about several icons and their purpose
- Uncertainty about whether certain features were “off” or “on”

Our team began by taking screenshots of the existing user interface and analyzing the screenshots to decide how we could best represent the steps with improved graphics (e.g., screenshots revised to include screen tips and callouts) and text (e.g., action statements and brief accompanying explanations as necessary). For the purpose of our paper prototype testing, these screenshots were altered or enhanced by using a graphics tool.

We mocked up the revised steps in sequential order and allowed users to follow the steps while we observed their progress. In such cases, the needs of the user may define the requisite design improvements.

In addition to gathering data on how easily users understand the steps in the test prototype, we observed users and queried them regarding any design elements that may have been overlooked. Participants were provided with the following instructions:

- The goal is to create a Conference in Canvas.
- Throughout this test, participants will point to or “click” the links on the prototype user interface.
- Participants will be asked to “think aloud” by explaining their thought process as they “click” links and interact with the prototype user interface.
- Participants will start at the Canvas homepage, then navigate to the Conferencing Tool and enable the audio and video to create the Conference.
- Once the Conference is initiated, participants will be asked to describe the various functions and features they see on the Conferencing Tool main page.
- If the correct link is “clicked”, participants then proceed to the next screenshot; if the incorrect link is “clicked”, participants are queried as to why they made their choice. Test administrators may prompt participants only once to try “clicking” another link.

- The outcome of each step is recorded as Successful, Incomplete, or Failed. If during any one step a participant is prompted to make another choice but “clicks” an incorrect link a second time, that step is recorded as Failed.

Our project team then made additional revisions based on user feedback and performance and tested the second iteration.

Primary Problems

After reviewing the notes taken by our project team during testing along with the questionnaire responses written by participants, we ranked the top five primary problems with the user interface.

Problem #1

Test 1: Main conference page icons are unclear and include no screen tips to explain their purpose.

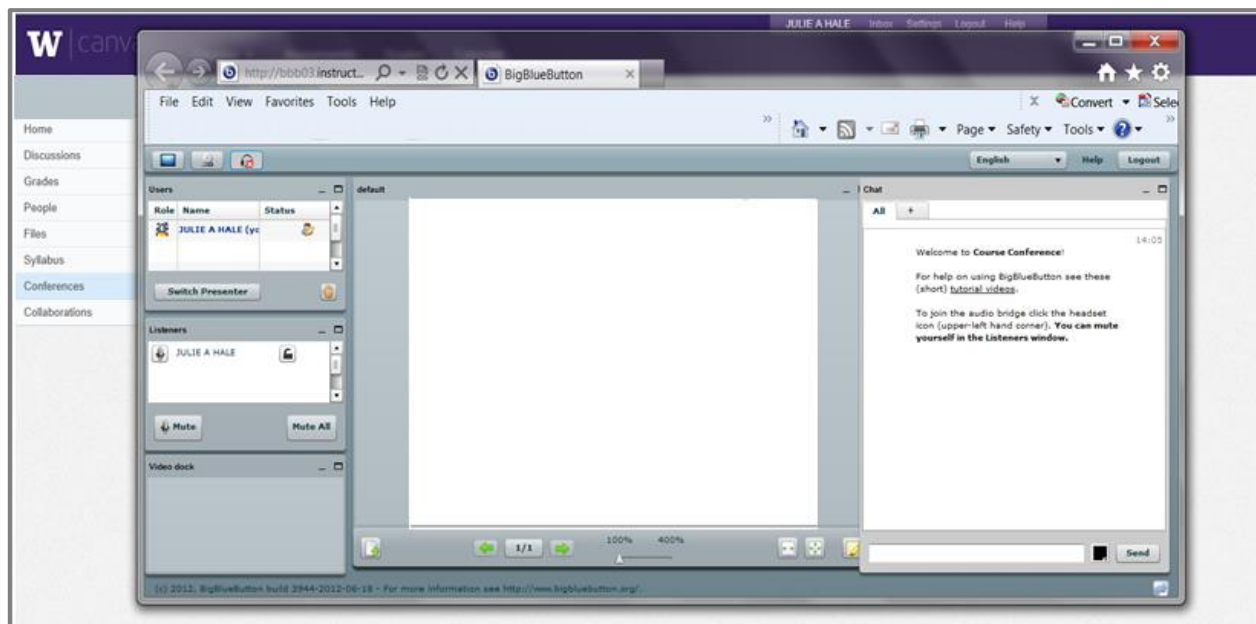


Figure 1. User interface before revision

Test 2: The revised, enlarged icons and the addition of screen tips produced noticeable improvement to their recognition by users, but not as much as expected. The revised interface is shown in Figure 2 below.

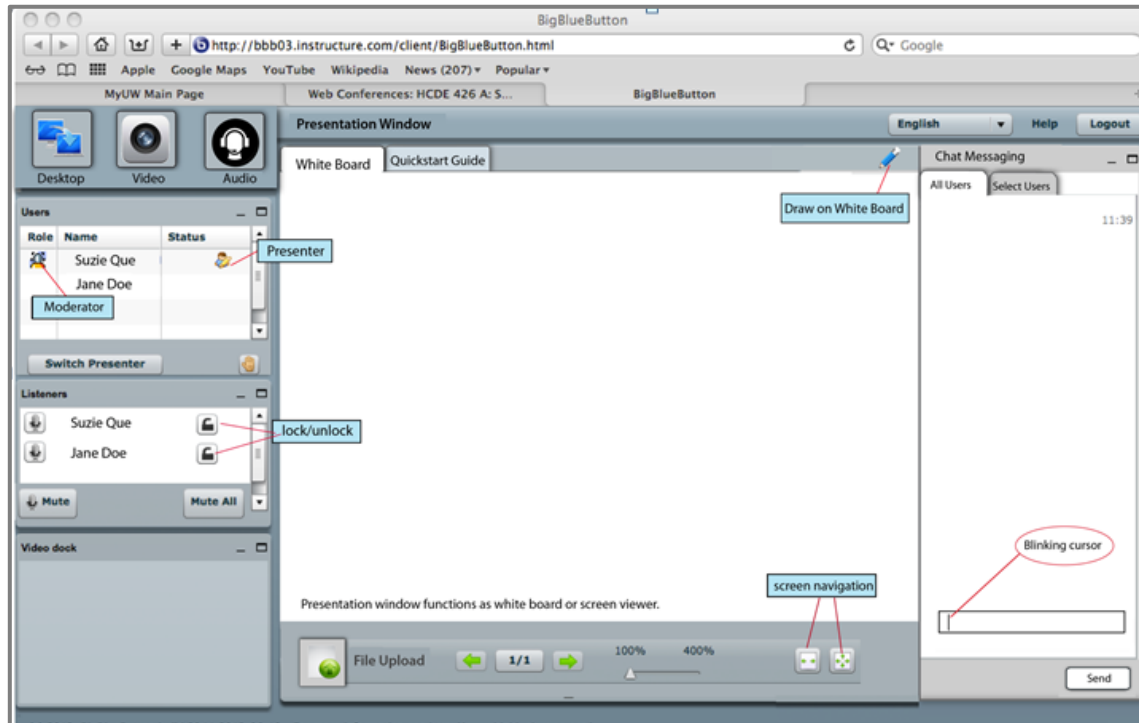


Figure 2. Revised user interface showing enlarged icons [top left], screen tips and blinking cursor

Problem #2

Test 1: Navigating to Conferences from the Canvas homepage is confusing.

Test 2: We revised the Conferences home page so that users could first locate the Conferences tab, and then select the course in which they were enrolled. Two out of three test participants were able to quickly and successfully create a conference.

Problem #3

Test 1: Whiteboard purpose and interface are not clear.

Test 2: Brief explanatory labels were added the Whiteboard, and the sequence of slides were rearranged so that the Whiteboard and Chat features were first explained by the QuickStart Guide.

In Test 2, two test participants expressed an adequate understanding of the uses of the Whiteboard feature; the third participant showed a partial understanding.

Problem #4

Test 1: Chat feature in a conferencing application seems unexpected/unnecessary to users.

Test 2: After the overall size of the Chat feature was reduced and a blinking cursor was added, two of the three test participants mentioned their expected uses for a messaging feature and demonstrated how they would use it.

Problem #5

Test 1: Adobe Flash Player pop-up, a non-Canvas window, causes user hesitation and/or suspicion.

Test 2: Conclusions drawn after Test 1 identified this problem as outside the scope of our project, so no further revisions were taken to address it.

An excerpt of observations from the research results is shown in Table 1 on page 6.

Slide 1 Canvas Home Page		Slide 2 Canvas Home Page: choose class from pop-up window	
Participant Responses	General Observations	Participant Responses	General Observations
<p>Participant #1 Looked for features from original screen and verbally stated his expectations from first test. Was informed this was a revised version. Still attempted to locate HCDE 426 tab rather than Conferences tab.</p> <p>Participant #2 Looked at page, quickly clicked “Conferences” in left sidebar.</p> <p>Participant #3 Studied entire page for 15 seconds then clicked the “Conferences” tab in left sidebar.</p>	<p>One user (P #1) repeatedly failed to navigate to the correct link to get to Conferences.</p> <p>For some users, the navigational path to find the Conferencing Tool was not intuitively apparent when they were on the Canvas dashboard page.</p>	<p>Participant #1 Stated that the tab contains courses he is taking and clicked HCDE 426.</p> <p>Participant #2 Hesitated. Looked for “search” feature for use in finding her class. Did not see/choose the class from the pop-up window in left sidebar. Verbally stated that she expected <i>Help</i> program to be available.</p> <p>Participant #3 Chose HCDE 426 tab.</p>	<p>All participants completed this task correctly.</p> <p>Some links were not readily apparent to users. When presented with blue text, users quickly identified it as a hyperlink to more information.</p>
Task Results		Task Results	
Participant #1 Failed Participant #2 Successful Participant #3 Successful		Participant #1 Successful Participant #2 Failed Participant #3 Successful	

Table 1. Excerpt of research results from Test 2.

The following section explains how secondary problems revealed by Test 1 were re-evaluated after Test 2.

Secondary Problems

Quick Start Guide is not expected to share the same window as Whiteboard. This issue was addressed by making the tabs for each window more apparent. Also, our revisions ensured that any buttons and icons associated with the Whiteboard were contextual and therefore not visible when the QuickStart Guide screen was in use.

Tabs on the main page windows are unclear. Our revisions included better contrast between active and inactive tabs. Test participants did not spontaneously offer their opinions on whether the revised tabs were more visible. However, all three responded affirmatively to follow-up questioning by the facilitator by indicating that the difference between active and inactive tabs was clearly apparent.

Uncertainty about when setup ends and the conference begins. This problem persisted even after our second iteration was implemented and tested. We have offered possible solutions in our Recommendations section.

Chat feature has confusing layout and icons. We removed a non-essential icon that controlled font options because its ambiguous appearance caused much confusion. The inclusion of a blinking cursor allowed test participants to quickly identify the field where they could type their text message.

There is too much text on Welcome to Conferences page. We greatly reduced the amount of text, resulting in a few sentences that could be read at a glance; this revision appeared to speed up the process of decision-making.

Not apparent that the conference durations can be changed by the user. This ongoing lack of recognition may be attributable to using a paper prototype, since a marquee appears around the time-selector box in the online version of this screen.

Test Audio buttons are confused with option to choose audio source. We simplified both graphics and text on the screen where users test their headset or speakers and microphone. This redesigned version was quickly read and correctly completed by two of the three test participants.

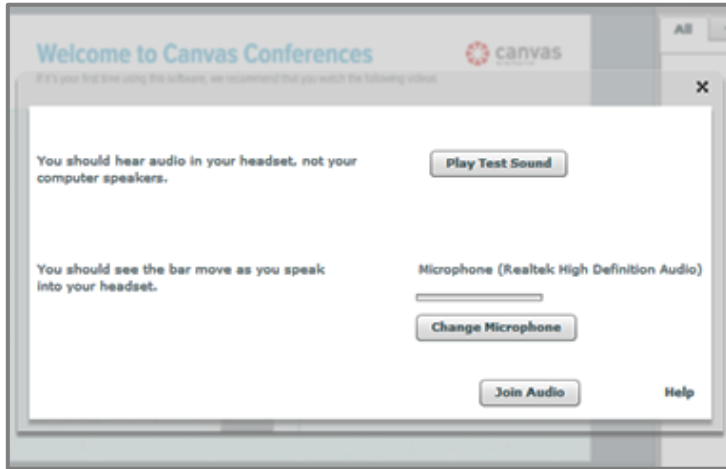


Figure 3. Screen showing Test Audio and Audio Source before revision

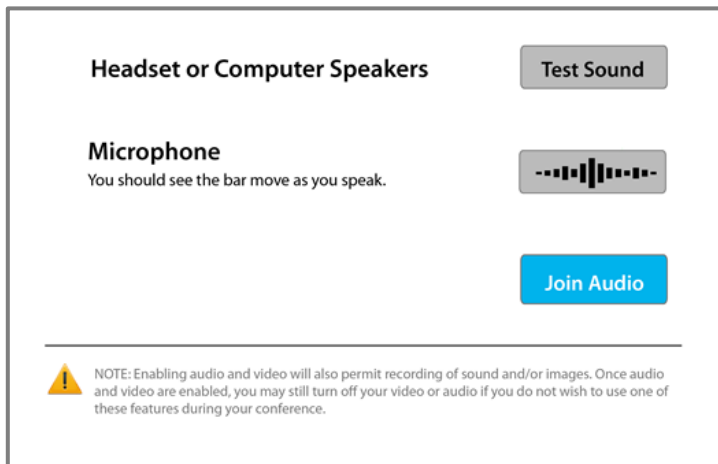


Figure 4. Screen showing Test Audio and Audio Source after revision

Audio and microphone setup is a “speed bump” screen that annoys the user. The revisions described immediately above helped modify this process as much as possible.

Conference participant list is difficult to understand. Since this was mentioned by only one test participant and the successful completion rate for this screen was high, we chose not to address this concern further.

Chat window takes up too much space. The Chat window was reduced in size. This reduction is better aligned with the proportionate importance of the feature.

Testing the Second Iteration

Our second test involved three participants and produced useful qualitative data. Two participants who had been involved in the previous test provided specific feedback on the effectiveness of our second iteration, while the one test participant who had not been involved in the initial test was able to provide fresh insight into some of the problems. Collectively, this feedback adds greatly to our own assessment of the Conferences UI. At this stage we feel that most of the usability problems have been identified and addressed. Following our results and conclusions, we have provided recommendations for additional testing that could refine the UI even further.

To keep the scope of the second test manageable, the tests consisted entirely of paper prototype interaction with the participant. While our initial tests took about 30 minutes to complete per participant, we kept the subsequent testing to approximately 15 minutes per participant and focused on user-task completion. If a user failed a specific step, we solicited their feedback on what could have enabled successful completion.

Results of Second Iteration

As in our first test, each of the three test participants responded differently to the UI. After reviewing the results obtained during our second test, we compared them to the test outcomes from the first iteration. The five primary problems that we had ranked after our first test are listed below, and the outcomes from the second test are noted immediately after each problem.

Conclusions

The following section describes the conclusions we derived from testing our second iteration. Our results demonstrated that two successive iterations resulted in a measurable improvement in the usability of the Canvas UI. Our team was able to effectively address some of the most problematic usability issues, leading to greater success in task completion for many steps in the process.

Problem #1

The icons on the Conferences main page were confusing because of their small size and the ambiguity of symbols chosen to represent them. The absence of screen tips along with the sheer number of icons and features on the Conferences page further confused users. We clarified the icons by increasing their size and by adding screen tips to icons. The verbal comments made by participants during the test, such as “I can see that I’m the Moderator in this conference”, led us to conclude that labels, improved graphics and screen tips significantly aided understanding.

Problem #2

Navigating to Conferences from the Canvas homepage was confusing because test participants could not locate the Conferencing Tool unless they first chose the “Courses” tab. Our second revision was patterned on the suggestions of test participants who expressed a preferred order for the process during Test 1: **first** they wanted to locate the Conferences tab, and **second** they preferred to select the course in which they were enrolled. When these revisions were implemented in Test 2, two out of three test participants quickly and successfully created a conference. We concluded that the third participant was exhibiting signs of learned behavior in attempting to create a conference by unsuccessfully using the same technique originally employed in Test 1.

Problem #3

The Whiteboard purpose and interface were unclear to many test participants. This was mainly because users initially saw an empty white space with no uploaded document or video in place. After we added a “Presentation Window” label above the Whiteboard to help identify its purpose along with a brief explanation of its use at the bottom of the window, our results showed that test participants exhibited more engagement with the Whiteboard and expressed greater recognition of its features.

In addition, the sequence of slides was rearranged in Test 2 so that the Whiteboard and Chat features are first explained by the QuickStart Guide. We concluded that the order in which the QuickStart Guide and the Whiteboard were presented had a marked effect on test participants’ understanding of the use of these features.

Problem #4

The Chat feature in a conferencing application was mentioned as unexpected or unnecessary by some users, who stated they would prefer verbal communication through a headset or computer microphone. However, other users had indicated that they would occasionally prefer to use the

Chat option. Based on these comments, we slightly minimized the size of the Chat screen and removed a confusing icon that controlled font size and color. We also added a blinking cursor which helped users identify where to type their messages when they used the Chat feature. During Test 2 two test participants successfully demonstrated their ability to use the Chat feature, while one participant did not comment on or engage with the feature. Based on these results and test participant comments, we concluded that the tendency to use a chat or text messaging feature was strongly driven by personal preferences and established habits.

Problem #5

During our initial usability test we found that the Adobe Flash pop-up window was perceived as malware by some users. Consequently, revision of this screen was determined to be outside the scope of this project because it is not part of the Canvas interface. In order to accurately depict the steps for creating a conference, we included a screenshot of this pop-up window in our second test session but simply informed participants that it was necessary to choose “allow” when they arrived at that screen. Suggestions for better integrating this screen into the rest of the Canvas UI are discussed in the Recommendations section.

Recommendations

Although many of our revisions produced measurable improvement in user task completion, most test participants still experienced occasional confusion or uncertainty.

One such instance involved the step immediately after test participants test their audio and microphone. At that point, test participants arrive at a screen where they can see the conference tools: QuickStart Guide, Whiteboard, Chat feature, and an assortment of buttons and icons.

However, the UI abruptly changes from an instructional format to an unguided array of choices. It is not immediately clear what test participants should do next, as there is no specific step instructing them to join the video portion of the conference. Many test participants expressed confusion about several aspects of this screen:

- How to know if they are actually in the conference, or if they are still getting set up for it
- What the “lock” icons represent
- Why a sound icon is needed, when they have already joined audio and tested their microphone and headset
- When and why it would be necessary or advisable to mute/unmute their microphone

We recommend implementing simple and explicit instructions to guide participants to the next step, accompanied by further testing and solicitation of feedback from participants.

In addition, we noted at the conclusion of Test 1 that the Adobe pop-up window appears poorly integrated into the Canvas UI. Because of its visually different appearance and the fact that the window is superimposed on a dimmed-out Canvas screen, users react with suspicion and hesitation. We recommend that Canvas developers work with Adobe to create a more seamless integration of the two interfaces, perhaps accompanied by text that explains Adobe's third-party facilitation of the process.

Our project goal was to make the Canvas Conferencing Tool easier to use. To accomplish this, we identified UI obstacles that hindered users; then we revised the UI to resolve those issues; then we tested our revisions. This multi-faceted process—identify, revise, test—was iterated multiple times. As a result, our suggested UI revisions greatly improved the usability of Canvas Conferencing. There still remains, however, the need to further revise and test the application before it can be considered a user-friendly tool.