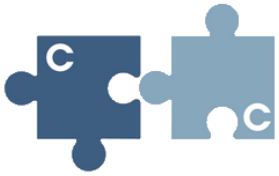

Class Connect

JAYME EATON

ROHAN KADKOL

ANNABELLE KANCHIRATHINGAL

MICHAEL MOREL

CHAMYRIA MUSE

HARON TEMAM

Test Setup

Number of Subjects

Our usability test will have a total of sixty subjects randomly sampled from undergraduate students, graduate students, and instructors all ranging from age 18 to 50.

These subjects are active students or instructors at Louisiana State University (LSU). They will be distributed across three different groups of potential users.

Group 1:

51 of these subjects will be students, 15 of which will be incoming freshmen. This provides us with a better understanding of our first-time users that have little to no prior experience using our main competitor – Moodle.

Group 2:

The remaining 36 of our 51 student subjects will be 21 undergraduate students with a year classification of two or above and 15 graduate students who are not teacher assistants.

Group 3:

The last nine subjects will be instructors and teacher assistants (TAs). They will provide valuable insights into what it's like to grade students, follow student progress, and set up a course using ClassConnect.

A summary of the intended number of subjects can be found in the following table:

Group	Subjects	# Of Subjects
1	Undergraduate (Freshmen)	15
2	Undergraduate (Non-Freshmen) + Graduate Students	21+15=36
3	Instructors and TAs	9

Exactly three of the subjects in groups one and two are international students.

Exactly three of the subjects in all groups face accessibility problems such as color blindness or difficulty in reading small text.

Exactly three of the subjects in group three are instructors or TAs with little to no prior experience with Moodle or a similar college course planning tool (newly hired instructors/TAs).

Number of Sessions

The number of sessions will total three, with sessions one and two being similar and three being unique. In all sessions, half of our subjects will be using a computer, a quarter will be using a phone and a quarter using a tablet. Each session will have five subjects from group 1, twelve subjects from group 2, and three subjects from group 3. Furthermore, each session will have one international student, one person requiring special accommodation, and one instructor/TA with little to no prior experience with ClassConnect.

Our sessions are designed in a way to be an actual representation of the Louisiana State University (LSU) college community. The experiences from LSU can then be generalized to other large-scale college communities too.

At the end of each session, the participants are asked to provide their candid feedback on ClassConnect.

Session 1

This session focuses on the participant's ability to navigate to a desired feature of ClassConnect. While the users will be asked to navigate to specific areas as defined in our key tasks, they'll also be given the freedom to locate features that they expect to be a part of a college course planning tool. The participants of this session will be provided with full training on how to use both the web and mobile versions of ClassConnect.

Session 2

The procedures for this session will be similar to those of session one. However, the participants will also be asked to perform certain actions, such as submitting an assignment or grading student work in addition to navigating to certain areas of ClassConnect. The instructors will be given nearly the same test protocol as the students but from their perspective. Ex: Student: "Find your class 'CSC 4330' to which you are enrolled" would change to "Find the class 'CSC 4330' to which you are instructing". The key point for this session is to study ClassConnect's ease of use by observing participants with no formal training.

Session 3

In session 3, the participants will be randomly assigned to two groups: group A and group B.

Group A

The participants in this group will be asked to do the same things as in Session 2, but on Moodle.

Group B

The participants in this group will receive formal training on how to use ClassConnect and will be asked to do the same things as in Session 2.

This session showcases how ClassConnect stacks up against Moodle.

Location and Room

Our subjects will be placed in room 2326 located on the 2nd floor of the PFT/ Design Building. The room will be equipped with high-quality audio recording devices and video cameras.

This room holds over 35 computers and is small enough to be an effective testing room for our needs. Each computer, phone, and tablet will have screen recording software installed that will later be used to observe the participant's interaction with ClassConnect. Regardless, our team will be close-by in the neighboring room to study the participants through the live video feed and gather information in a calm and collected state of mind.

Tools

The tools we will be using for these tests include:

Computers and Laptops

- For testing the web version of ClassConnect on larger devices
- Each of these devices should have the following browsers installed:
    - Chrome, Safari, Firefox, Opera

Phones and Tablets

- For testing the mobile version of ClassConnect
- For this usability test we are not concerned about different device manufacturers, so the phones selected will be random.
- Android Platform
    - Android 6, Android 7, Android 8, Android 8, Android 10, Android 11, Android 12
- IOS Platform
    - IOS 10, IOS 11, IOS 12, IOS 13, IOS 14, IOS 15
    - As in the case with computers, and laptops, our testing phones will be equipped with Chrome, Opera, Firefox along with the ClassConnect app. That way we can test the mobile web version of the website and the mobile app from the respective store.

Test Protocol

Training

General

Prior to testing the application, participants will be informed of their one-session commitment. Participants will be instructed on how to utilize the mobile devices, computers, and tablets given to log in and access the application. After completing a few tasks utilizing ClassConnect, participants will be asked to give their feedback through a series of carefully designed questions to gauge their understanding of the application.

In-Depth

For participants in session 1 and those belonging to Group B in session 3 we will provide the following detailed outline on how to utilize ClassConnect:

Navigating ClassConnect

- Show subjects how to login.
- Show subjects how to access a course.

Using ClassConnect Features

- Show subjects how to access grades.
- Show subjects how to access course materials (notes, lectures, zoom features).
- Show subjects how to use the chat feature.
- Show subjects how to access calendar and add tasks to calendar.
- Show subjects how use the Q&A section and how to look at responses.
- Show subjects how to switch courses.
- Show instructor/TA subjects how to grade student work.
- Show instructor/TA subjects how to follow student progress.

"Get It" Tests

The above training step teaches the test subjects how to perform basic tasks in ClassConnect. However, we do not give them any context about what ClassConnect is about.

We do this to test if a new user that uses our software can understand what ClassConnect is about and what it can do. This is essential to achieve a high retention of the first-time users of our software.

We gauge the contextual clarity of our software by asking our test subjects the following questions:

- What is ClassConnect about?
- Who do you think is the core audience?
- What is the genre of this software?
- How do you use ClassConnect to refill your Tiger Cash?
  - This is not a feature that is available with ClassConnect.
  - It is asked to confirm if users understand what our application is and what can be done with it.
- What do you think ClassConnect enables students to do?
- What do you feel ClassConnect enables instructors to do?
- What do you believe are the main features of ClassConnect?

Key Tasks

1. Enroll yourselves into the course ‘CSC 4330’ using the given class code.
2. Expand your dashboard to see a more in-depth view of courses and assignments.
3. Change the color designated to the course ‘CSC 4330’ from green to a color of your liking.
4. Find the instructor's information for the course ‘CSC 4330’.
5. Locate the syllabus for the course ‘CSC 4330’.
6. Access your grades for the course ‘CSC 4330’.
7. Upload the document ‘Test’ for the assignment ‘SRS Document’ in the course ‘CSC 4330’.
8. Take the ‘Module 3’ quiz in the course ‘CSC 4330’.
9. Navigate to the zoom link for any module from the documents page of course ‘CSC 4330’.
10. Send a message using the chat feature to a classmate from the course ‘CSC 4330’.
11. Ask a question in the Q&A section for the course and respond to another user's question.
12. Through your course dashboard, email the instructor for the course ‘CSC 4330’.
13. Access your calendar through your dashboard.
14. Add a task for the course ‘CSC 4330’ to your calendar.
15. Select the month of December in your calendar to view testables to be delivered in the future.

Data to be Collected

To gain an empirical understanding of the test subjects' performance of the key tasks, we collect the following data:

- Eye tracking
  - We will use a research paper's open-source eye tracking library, OpenFace, to track the user's gaze direction
  - We will overlay this data over the contents of the screen and plot a heat map with darker colors for areas of the screen looked at the most.
  - This will tell us which areas of the UI did the test subjects look at the most.
  - We will then place important action buttons in that position to improve ease-of-navigation.
  - Reason for collection: Place important UI elements in easy to find UI positions to speed up the key tasks' completion
- Ease of navigation measures
  - When each test subject either completes the key task or gives up trying, we ask them to rate how easy it was to complete that key task from a scale of 0-5 (0=very difficult, 5=very easy). Multiple low ratings for a key task can help us identify over-complicated features so that we can make them easier to use.
  - Reason for collection: Get *subjective* ease-of-navigation feedback from users
- Percentage of users who didn't complete a given key task
  - $\frac{number\ of\ test\ subjects\ that\ could\ not\ complete\ that\ key\ task}{number\ of\ total\ test\ subjects\ for\ that\ key\ task} \times 100$
  - This will help us understand what percentage of people failed each key task.
  - A key task with this higher percentage will indicate that many people could not complete this key task
  - We can then try to simplify the respective features.
  - Reason for collection: Identify difficult to use features and simplify them
- Average percentage of a key test spent in frustration
  - $\frac{\sum_i^n \frac{time\ frustrated_i}{time\ taken_i}}{n} \times 100$
  - where *i* goes through all test subjects, n = number of test subjects
  - A value of 20% means that a user was frustrated 20% of the time spent trying to accomplish the key task.
  - Reason for collection: Reduce time spent in frustration when completing that key task

- Number of times the test subject did a head slap or face palm
    - Usually, a head slap or face palm shows an "extremely" high frustration.
    - A higher number of head slaps or face palms on a particular test can indicate a "very" difficult task. We can then try to simplify the related features.
    - Reason for collection: Check if a key task is "very" frustrating
- Average time taken to complete each key task
    - $\frac{total\ time\ for\ that\ key\ task\ across\ all\ test\ subjects}{total\ number\ test\ subjects}$
    - A higher average time than our goal key task time of five minutes can indicate a difficult feature.
    - Reason for collection: Find time-consuming features and make them quicker to accomplish by improving on the UI relating to that key task and navigation hierarchy to reach that associated page.

Goals

Completion Rate - A completion rate of 90% is the goal for each key task in the usability test.

Time on Task - The time in minutes of a user beginning a key task to the time the user signals the completion of the task will be under five minutes.

Accuracy Rate - 90% of users must be able to complete key tasks with less than 2 false clicks.

Ease of Navigation Measure - After completing each key task, 85% of subjects will give a rating of 4 out of 5 on how simple it is to navigate to a certain feature.

Memorability Rate: After their training with ClassConnect, 3/5 users will be able to complete key tasks in under three minutes.

Accessibility: 80% of participants with disabilities should be able to complete key tasks within two minutes after their abled peers have completed key tasks.