Class.ly: Helping Student Collaborate

Usability Test Plan

CS 3892 Human-Computer Interaction

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Trial: Time on Task

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I pledge my honor that I have neither given nor received aid on this work.

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I. Introduction

Class.ly is a application that integrates with Vanderbilt University's Your Enrollment System (YES) to increase collaboration among peers in their classes and group projects. The application implements separate interfaces for students, professors, and registrar personnel, each of which realizes several pertinent functions for each potential user group. Class.ly interfaces are designed to be simple, usable on desktop and mobile devices, and enhance collaboration by limiting the possible actions a user can take. Class.ly's main purposes are to implement instant-message style communications, as well as schedule meetups for custom groups. These common-case actions are optimized in Class.ly to make them extremely quick, simple, enjoyable, and avoid frustration among users.

Class.ly is comparable to other well-established systems such as Blackboard and Piazza. Blackboard and Piazza incorporate far more functionality than Class.ly such as content hosting and remote assignment submission. Purposefully, Class.ly does not implement these features; however, the creators were far more focused on designing for simplicity. The goal of the time on task study is to determine if this simplicity shines through in the way users interact with Class.ly and how quickly they can navigate and perform designated actions.

II. Purpose & Objectives

The purpose of this time on task study is the compare the amount of time required for users of Class.ly and comparable systems (Blackboard and Piazza) to complete comparable actions (sending a message). Participants in the study will include experienced and new users of all three available systems in order to help measure the effectiveness, intuitiveness, and ease-of-use of both new and proven systems.

The objectives of the study are as follows:

i. Identify comparative advantage of Class.ly vs. Blackboard and Piazza.
ii. Identify if users can perform Class.ly actions without guidance.
iii. Determine learning percentage of performing actions repetitively.

III. Evaluation Participants

Ideally, nine participants will take place on this time on task study. The participants will be divided equally among three groups: no experience, Blackboard users, and Blackboard and Piazza users. The reason sole Piazza users are not included is due to the prevalence of Blackboard and relative lack of use of Piazza among Vanderbilt undergraduates. Vanderbilt undergraduates are key stakeholders as the primary users of Class.ly, and thus are the first and most important group with which to perform initial usability testing.

The ideal characteristics of the Vanderbilt undergraduates should be as follows:

- Not impaired
    - Visually
    - Auditory
    - Mentally
- Varying levels of experience with Blackboard
- Varying levels of experience with Piazza
- Varying gender and year of study
- Willingness to perform in the Class.ly time on task study
- Familiarity with touchscreen mobile interfaces
    - Navigation techniques
        - Side-drawer
        - Tabs
- Familiarity with mouse-controlled desktop web-based interfaces
- Familiarity with instant-message-based communication interfaces
- Willingness and ability to provide opinions and feedback about usability
- Familiarity with standard icon symbols

IV. Test Procedures

The procedures to test the usability of Class.ly begin by isolating users and learning about their background and experience level. This initial survey will be a physical sheet of paper in medium, and will cover basic questions such as gender identity, age, major, as well as more pertinent questions such as interest in a Class.ly-type application, as well as experience using specific functionality about communication and scheduling.

From there, study participants will be asked to perform certain tasks using Class.ly, Blackboard, and Piazza. Initially, these users will only know the purpose of the systems; however, they will not be given specific direction on how to accomplish these tasks. Subsequently, they will repeat these activities several times, in order to determine learning efficiency of each system. Data will be collected on these activities using logging mechanisms built into the Class.ly prototype, as well as timing procedures for Blackboard and Piazza tests.

V. Site

The evaluation site will be isolated in a classroom such that participants are not exposed to external distractions. Lighting, ambient noise, temperature, and comfort shall be constant among users such that their abilities will not be influenced by those external factors.

VI. Experimental Design

The experiment will test usability via several independent and controlled variables, collecting data throughout the process.

Controlled Variables- Environmental factors kept constant across participants.

- Environment
    - Lighting
    - Noise
    - Comfort
- Initial Information Collection Method
- Blackboard Interface & Request
- Piazza Interface & Request
- Class.ly Interface & Request

Independent Variables- Variables that change via each participant.

- Experience with Blackboard
- Experience with Piazza
- Characteristics
    - Gender
    - Handedness
    - Age
    - Experience with Mobile
    - Experience with Desktop

Dependent Variables- Variables representing results of independent variables and experiments.

- Time required to send a message
    - Class.ly
    - Blackboard
    - Piazza
- Time required to create a meetup
    - Initially
    - Repeated

Objective Measures- Objective results of an experiment.

- Time required to send a message
- Time required to create a meetup
- Learning percentage of creating a meetup

Subjective Measures- Subjective results of an experiment.

- Likelihood to use Class.ly
- Usefulness rating of Class.ly

- Comparative ease of use between Class.ly, Blackboard, and Piazza

VII. Data Collection Methods

Sources of Data:

- Survey of general participant information
- Logging internal in the Class.ly application

Data Topics:

- Time to send a message
    - Class.ly
        - Internal logging mechanism
    - Blackboard & Piazza
        - Logging via stopwatch
- Time to create a meetup in Class.ly
    - Initially
        - Internal logging mechanism
    - Repeatedly
        - Internal logging mechanism

VIII. Data Analysis Methods

The sample size of these experiments is not large enough to apply the Central Limit Theorem; however, the data gathered from these participants can still be useful and described via averages and standard deviations among the three groups of usability testing participants.

Activities:

- Reviewing logging data to determine times to send a message.
- Reviewing logging data to determine initial time to create a task in Class.ly.
- Reviewing per-trial logging data to determine learning percentage to create a task in Class.ly.
- Determine the mean performance and standard deviation of users performing these tasks and create graphs representing their performance.

IX. Deliverables

Upon completion of the time on task study analysis, the results will yield:

- Raw timing data from logging mechanism segregated by user class
    - Class.ly
    - Blackboard
    - Piazza
- Descriptive statistics results segregated by user class
- Aggregate descriptive statistics results
- Report describing data analysis results and conclusions
    - Interpreted results to draw conclusions on usability compared to Blackboard and Piazza

X. Operational Scenarios

Send a Message on Class.ly:

The participant, without training on Class.ly, will be asked to send a message to a custom group in a specific class. This action is designed to be relatively simple, and should be completed by the user alone, without help of the evaluator.

Send a Message on Blackboard:

The participant, regardless of user class, will be asked to send a message to the entire specified class. This user be given no guidance by the evaluator, unless severe difficulty ensues. In the case that the user has no experience with Blackboard, this experiment is directly comparable with sending a message on Class.ly.

Send a Message on Piazza:

The participant, regardless of user class, will be asked to send a message to the entire specified class. This user will be given no guidance by the evaluator, unless severe difficulty ensues. In the case that the user has no experience with Piazza, this experiment is directly comparable with sending a message on Class.ly.

Create a Meetup on Class.ly I:

The participant, without training on Class.ly, will be asked to create a meetup for a specific group in a specific class. This action is designed to be relatively simple, and should be completed by the user alone, without help of the evaluator. This should be the very first time the user attempts to create a meetup using Class.ly.

Create a Meetup on Class.ly II:

The participant, having already created a meetup on Class.ly, will create another meetup for a different specified group in a different specified class. This scenario allows evaluators to collect data on improvement in users ability to perform a specific action in the application. This does not involve evaluation on Blackboard or Piazza; however, is solely meant to determine how users can continuously improve their performance.

XI. Check List

- Participation Consent Form
- Copies of Introduction Survey
- Pens to Fill Out Survey
- Room for Environment
- Mobile Device for Testing
- Desktop Interface for Testing
- Protocol
    - Welcome
    - Explanation of Proceedings
    - Consent
    - Any Questions?
    - Scenario Experiments
- Exit Survey

XII. Training Scripts

Participant Consent Form- Standard form from Vanderbilt.

Introduction Survey:

Full Name (Optional): _____

Age: _____

Year of Study: _____

Gender: Male Female Other

Academic Major(s): _____

Academic Minor(s): _____

Experience with Mobile: None Low Medium High Expert

Experience with Desktop: None Low Medium High Expert

Experience with Blackboard: None Low Medium High Expert

Experience with Piazza: None Low Medium High Expert

Do you have any visual, auditory, or mental impairments? No Yes
If yes, please explain (optional): _____

Welcome & Explanation:

"Hi <name>,

Thanks for taking the time to come meet with us today. The purpose of this testing session is to compare the user experience, quantitative and qualitative of performing specific common tasks on several systems. Over the past few weeks, we've developed an application called Class.ly. Class.ly is meant to encourage collaboration among Vanderbilt undergraduate students. The application facilitates collaboration via a simple, automatically created per-class chatroom, as well as the ability to schedule meetups to work on homework, study, etc.

Before we continue, do you have any questions? <Answer necessary questions.>

Today, we'll run through several experiments using Class.ly, Blackboard, and Piazza to compare your performance in using each of the systems, and ability to learn the system operation as we proceed.

The information we collect today will all be confidential. Please do not disclose information about your time here with your peers as it may confound our later results. Your personal identity will not be associated with the results of this study. If you feel comfortable with the proceedings, please sign the consent form in front of you.

<Signs form.>

Throughout the experimentation, you will use both a mobile device as well as a laptop with a trackpad. Before we proceed, please make sure you are comfortable.

<Adjust for comfort.>

If you feel uncomfortable or unwilling to proceed or continue, please feel free to stop participation that we may end the trial. If you have no further objections or questions, we will now begin the trial."

XIII. Updated Schedule

COMPLETE ONGOING REMOVED

Date	Class Requirements	Class.ly Requirements
9/10	Initial Project Description Documents	Initial Project Description Documents
9/14		Wireframe Prototypes (Draw.io Wireframes)
9/24	Requirements Documents	Requirement Documents App Development Begins (Ionic Framework)
10/1	Data Analysis Results, Prototyping Plan	Data Analysis Results, Prototyping Plan
10/6		Mock Data Complete (In Non-Relational Database) Back-end Prototype Complete (Database, API)
10/8		Front-end Prototype Complete (Ionic Framework, Bootstrap Style)
10/13	Prototype Demonstration	Prototype Demonstration
10/22	User Test Plan	User Test Plan
11/30	Project and Supporting Documentation	Project and Supporting Documentation
12/10	Partner Evaluation	Partner Evaluation

The documentation for CS3892 Human-Computer Interaction, as well as the source code for Class.ly is publicly available online in a Git repository. The repository can be found here: https://github.com/masiamj/CS3892-HCI-Class.ly.