

Assignment M4

CS6750 Human Computer Interaction

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Abstract—OMSCS has been establishing Georgia Tech as a pioneer in Online Graduate Programs. While that already is the case, the Pandemic-era has put even more focus and importance on enabling virtual modalities of such graduate program offerings. With such a global scale and the number of students OMSCS caters to, any effort to bridge the limitations of Online Graduate programs to actual physical Graduate programs would benefit these models immensely. This discussion is a small step in that direction; introducing a feature to an already existing, tried & tested interface, “Ed”, that will enable a Priority highway for critical attention a student may need from the Professors or TA’s; which in a physical graduate program is almost straightforward.

1 QUALITATIVE EVALUATION

1.1 Selection

Prototype-3 from Assignment M3 in [Appendix-I](#) will be evaluated qualitatively using Surveys.

1.2 Procedural Information

Participants for this evaluation will be my fellow **CS6750 OMSCS students & Staff** that use ED, Georgia Tech’s online course delivery platform. The participants will be recruited through the **Participant Recruitment forum** created by Dr. Joyner for CS6750 on ED. The evaluation will take place **online**. The user will be directed to a Microsoft Forms landing page to look at the prototype created from Adobe photoshop, followed by a prompt to take a **survey**. The results for the survey will be hosted and recorded on **Microsoft Forms**.

1.3 Content

The **context** of the problem statement will be posted on Microsoft Forms' Form description to enable participants to overcome **recall bias**. This will also provide them with a good Segway into effectively answering Survey questions hosted on the same Form. The context here would be:

A new feature on ED to create a priority highway for students to enable them to reach staff should they have critical questions nearing submission deadlines that impact the quality of submission. This idea leverages ED's POST questions option to incorporate a new Limited Priority staff reach attempts tab.

Survey evaluation will happen asynchronously and hence, it would be difficult to record active data during participants' engagement. However, to gather insights into their thought process, a text area will be provided in the Microsoft Forms survey to let users express any verbiage around their thoughts when looking at this prototype. In other words, the survey will be also repurposed to allow participants to Think-Aloud as they get a first feel of the interface design.

Survey Questions will primarily aim to get as much feedback as possible from the participants.

1. *You are a Part-time or Full-time OMSCS student?*
2. *If Part-time, are you a working professional who must divide time between studies & livelihood?*
3. *Given the context of usage, how useful do you think this feature is?*
4. *Would you think ED is a good platform to incorporate Priority highway to reach Staff for any of your priority questions related to course?*
5. *Assuming yes as an answer, is this a good place to provide the Priority option?*
6. *How familiar are you in using ED?*
7. *What is the mode of your access into ED platform? Computer? Mobile phone?*
8. *How easy is it to find the Priority feature?*
9. *How accessible is the Priority Option?*
10. *How easy is it to convey how many Priority lifelines a user has?*
11. *How similar or different does this feature look integrated into how you post a question?*
12. *Do you think this feature can be effectively integrated into the Staff's workflow to catch their eye?*

13. What is your overall impression of this feature provision?

1.4 Inventory & Requirements

This evaluation would tie to the data inventory in [Appendix-IV](#) as following:

Category	Attribute	Survey Questions Tag
Users	Who are the users?	
	What are the User Types?	
	What are the types of students?	
Environment	Where are the users?	#1, #2, #6
	What is the environment?	
	What are the types of students?	
	User Expertise level?	
Context	What is the Context?	
	What else is competing for user's attention?	Survey Context, #7
	Impact of this to the interface	
Goals	What are the user goals?	
	What are they trying to accomplish?	
Needs	Right now, what do they need?	#3, #4, #5, #8, #9, #10, #11, #12, #13
	What are the physical objects?	
	What Information do they need?	

2 EMPIRICAL EVALUATION

2.1 Prototype Selection

Prototype-1 from Assignment M3 in [Appendix-II](#) will be evaluated empirically.

2.2 Conditions

What is being tested? – The 4 major aspects of this would be:

- *Users' awareness of the problem statement.*
- *Users' awareness of the solution this prototype proposes.*
- *Measure Users' ease of access to this prototype feature.*
- *Uses' gulf of execution & evaluations for them to exercise this feature.*

What is the point of comparison? – Since we do not have working prototypes, we cannot subject participants to multiple treatments to draft out effective empirical comparisons. And this assignment limits performing empirical evaluation to this one prototype. Stated differently, this empirical evaluation pits the prototype against the existing dynamics of the ED application in similar context, that of posing questions to Staff and expecting quicker responses.

2.3 Dependent Variable

The dependent variable here with absence of a working prototype will largely be Users' *Preferences*. Loosely, Users' *Accessibility Scale* will be evaluated too.

2.4 Hypotheses

Null Hypothesis - is what we assume to be true unless you can find conclusive proof for your alternative hypothesis. The null hypothesis here would be that - *Users find this Priority Tick-Box feature addition to Ed to reach Staff on priority to be ineffective.*

Alternate Hypothesis – is what we expect to prove with the prototype. The Alternate hypothesis here would be that - *Users find this Priority Tick-Box feature addition to ED to reach Staff on Priority to be novel & effective.*

2.5 Design

The experimental method used will be within-subjects. Since we are only evaluating one prototype, we are measuring whether the prototype accomplishes

what it intends to. Since the assignment requires us to focus only on one prototype, there will be no grouping either. Rather, all subjects will attempt to assess the prototype wireframe (Photoshopped ED window in our case) and metrics will be gathered based on what they think.

2.6 Method

Prototype-1, the one that is being considered for empirical evaluation, is a low-fidelity UI prototype created from Adobe Photoshop for the Tick-Box option. Hence, we will measure the following based on responses in Surveys. We will be focusing on quantifying the dependent variable which is Users' preferences.

- How many users think this prototype would help them in their Course progression.
- How many users think the tick-box option is intuitive & easy in addressing the problem statement.
- How much more time would users anticipating spending towards creating a Priority request for Staff than posting Questions as they do currently on Ed.
- How does the Tick-Box option compare to existing communication channels on ED or otherwise (such as email or discussion forums) in terms of effectiveness and efficiency.
- On a scale of 1-5, how satisfied are users with this prototype.

2.7 Lurking Variables

In the case of an empirical evaluation of an Ed tick-box option UI prototype, some potential lurking variables might include:

- User experience: The experience and familiarity of users with similar UI designs may impact their ability to use Ed tick-box option effectively.
- Education level: Users with different education levels may have different levels of comfort with the terminology used in the Prototype.
- Language skills: Users may have difficulty understanding or interpreting the language used in the Prototype.
- Age: Different age groups may have different expectations or preferences for UI design.
- Technology access: Users with different levels of access to technology or internet connectivity may have different experiences with the UI.

- User motivation: Users who are more motivated or invested in the task may have a different experience with the UI compared to those who are less motivated.

2.8 Analysis

Once the data received has been cleansed by removing any errors or inconsistencies, descriptive statistics like Mean or Standard deviation can be derived for each of the variables measured during the evaluation, such as efficiency & satisfaction in our case.

T-test could be used to determine if the mean efficiency or satisfaction score of the users is higher than what it would be with the current existing Ed or other communication channels would offer.

3 PREDICTIVE EVALUATION

3.1 Type of Analysis

Prototype-2 from Assignment M3 in [Appendix-II](#) will be subjected to Predictive evaluation through GOMS model.

3.2 Appropriate Analysis

GOMS model will be employed for the task at hand.

3.3 Task Description

The predictive evaluation task for the Ed prototype would involve simulating the interaction between a hypothetical user and the Priority Highway feature. The task would start with the user accessing the ED Course homepage and selecting the "Priority Highway" category option.

Next, the user would be presented with a screen that displays the number of available Priority Access attempts. The user would then need to type in the title of their priority question. If there are any similar questions already posted in the forums, they would be displayed for the user.

If there are no similar questions, the user would need to select the appropriate category and post their priority question to the staff. Finally, the user would need

to check the historical priority questions that have been asked and responded to by the staff.

The predictive evaluation task would aim to determine the efficiency and effectiveness of the Priority Highway feature by measuring the time taken to complete each step, the number of errors made, and the user's satisfaction with the feature.

3.4 Goals

- To determine the efficiency of the Priority Highway feature in terms of time taken to complete each step of the process.
- To determine the effectiveness of the feature in terms of the user's ability to successfully post their priority question and receive a response from the staff.
- To identify any errors made by the user during the process and to determine their frequency and severity.
- To evaluate the user's satisfaction with the feature and identify any usability issues that need to be addressed.
- To compare the performance of the Priority Highway feature with the existing methods of submitting priority questions to the staff.

3.5 Operators

- Perceiving:
 - Orient the eyes to the ED Course homepage.
 - Identify the "Priority Highway" category.
 - Click on the "Priority Highway" category.
 - Orient the eyes to the Priority Highway screen.
 - Identify the number of available Priority Access attempts.
- Reading:
 - Read and comprehend the information displayed on the Priority Highway screen.
 - Read and comprehend any similar questions displayed in forums.
- Typing:
 - Use the keyboard to type the title of the priority question.
- Selecting:

- Use the mouse to select the appropriate category for the priority question.
- Posting:
 - Use the mouse to click on the "Post" button to submit the priority question to the staff.
- Checking:
 - Use the mouse to click on the category to reveal historical priority questions asked and responded to by the staff.
 - Read and comprehend the historical priority questions and responses.
- Navigating:
 - Use the mouse to navigate between different screens and categories on the ED Course homepage.
- Interpreting:
 - Read and interpret any feedback or response from the staff.

4 PREPARING TO EXECUTE

The two prototypes I wish to select for assignment M5 are in Appendices [I](#) & [II](#). The reason is that they both retain a fairly optimal level of consistency with how new questions are posted on Ed currently and, I believe, capture intuition with other UI practices. I wish to then perform Qualitative and Predictive evaluation respectively with the methods mentioned above. Empirical analysis would be difficult to perform without a working model of the prototype made available and I may not be able to recruit enough participants to bring out sufficient statistical registers.

5 APPENDICES

5.1 Appendix-I: Prototype 3

Cancel **New Question** Post

? Question Post Priority

Title

Category

Class Discussion Announcements Lectures Assignments Exam

Project Participant Recruitment Articles Feedback Box Social

Miscellaneous Monday Reflections Tuesday Media Wednesday Readings

Thursday Applications Friday Humor

2 Attempts Available! Post

Figure 1— Prototype 3

5.2 Appendix-II: Prototype 1

Cancel **New Question** Post

? Question Post

Title

Similar Threads

Category

Class Discussion Announcements Lectures Assignments Exam

Project Participant Recruitment Articles Feedback Box Social

Miscellaneous Monday Reflections Tuesday Media Wednesday Readings

Thursday Applications Friday Humor

Select a category.

☒ Private Visible to you and staff only ☐ Anonymous Hide your name from students ☒ Priority 2 Available Attempts

Post

Figure 2— Prototype 1

5.3 Appendix-III: Prototype 2

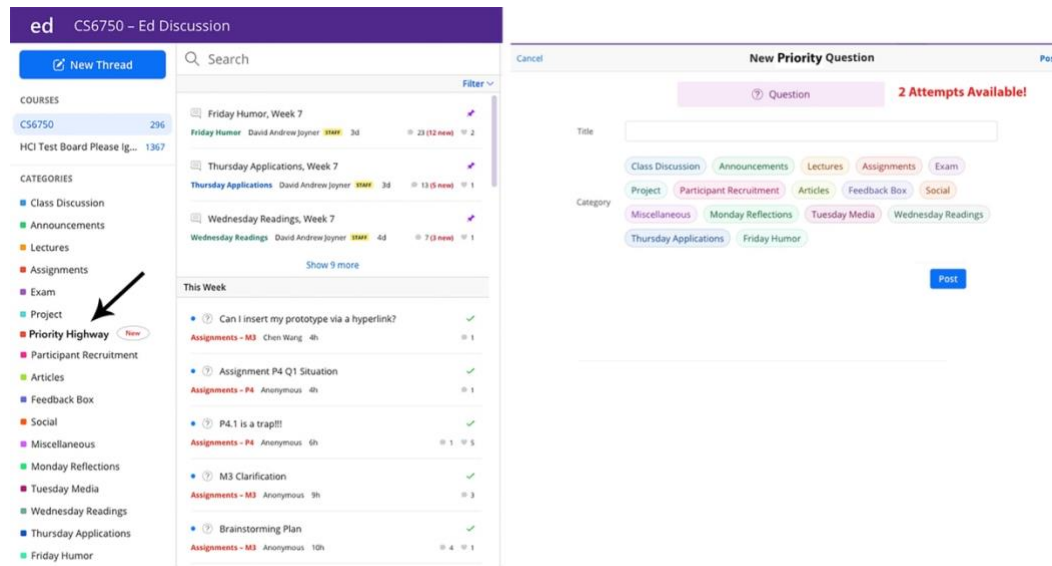


Figure 3— Prototype 2

5.4 Appendix-IV: Data Inventory from M2

Category	Attribute	Finding
Users	Who are the users?	OMSCS students are staff that use ED for HC-6750 GaTech's online course delivery platform.
	What are the User Types?	Ed is used by 2 Primary User types – 1) Students that use Ed for course Content 2) Staff that use Ed for course administering
		Secondary User type – Staff also represent Online Graduate program committee benefitting from the ease of program delivery
	What are the types of students?	Majority of students are Part-time working professionals
	User Expertise level?	Novice and Expert levels in both Student and Staff are possible
Environment	Where are the users?	OMSCS students strewn all over the world

Category	Attribute	Finding
	What is the environment?	1) Students using Ed to clarify/post questions/posts to Staff that impact the quality of their submissions within deadlines. 2) Staff who address Students' questions based off of a workflow that prioritizes their responses.
	What are the types of students?	Majority of students are Part-time working professionals
	User Expertise level?	Novice and Expert levels in both Student and Staff are possible
Context	What is the Context?	Students seeking response from Staff on ED nearing submission deadlines that may impact quality of deliverable, working in an online education setting via Laptop, Tab, Smartphone)
	What else is competing for user's attention?	General day-to-day activities like Eating, answering a phone call, pausing to stretch etc.
	Impact of this to the interface	The user's attention does not really cause any derailment in the way the interface would have been being used. The scope of the interaction with the interface is only as mentioned above in the context specification.
Goals	What are the user goals?	1) Students seeking response from Staff on ED nearing submission deadlines that may impact quality of deliverable. 2) Staff needing to catch the students' attention faster to respond to limited priority highway exercised by students
	What are they trying to accomplish?	1) Students to use a limited pass option to reach staff faster to seek critical responses relating to their submissions to meet their deadlines. 2) Staff to respond to the former, therefore, bridging the gaps that the online grad program structure alludes to.
Needs	Right now, what do they need?	1) Students need an option on ED to flag their question as CRITICAL that will catch Staff's eye on their prioritization

Category	Attribute	Finding
		workflows. 2) Staff need this integrated with their existing workflow on ED to serve students better.
	What are the physical objects?	A mechanism to update ED UI to provide a priority highway option for Students, that also keeps track of the number of chances available to reach Staff on Priority.
	What Information do they need?	Course/submissions related information from Staff
	What collaborators do they need?	Students need Ed application team to endow this feature update, staff to align with the feature availability.
	What are their tasks?	1) Students to post question/posts on Ed and flag an option available to signify criticality
Tasks	What are they doing physically, socially, cognitively?	Users are physically working on their computers using Ed interface, cognitively thinking about gathering or posting responses to questions that they are articulating