Assignment M5
CS6750 Human Computer Interaction

Sunil Rao
srao374@gatech.edu

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 Pragmatics

Prototype-3 from Assignment M3 in Appendix was evaluated qualitatively using Surveys hosted on Georgia Tech's PeerSurvey platform.

- The survey was asynchronous with data collected from participants over a week's span.
- The survey link was posted on the Participant Recruitment Megathread created by Dr. Joyner on Ed.
- 25 participants responded to the survey.
- Survey broadcasted a gist of the problem statement and the intent of the design to overcome that.
- Image of the prototype wireframe, around which questions were asked in the survey, was uploaded on IMGUR and link was shared in the survey.
- All 25 participants were able to visually comprehend the prototype with ease.
- All 25 participants recorded successful completion of the survey.

1.2 Raw Results - Summary

The Survey had 16 questions in total; 13 were Choose-one option type out of which 1 was Age Group & 1 Agreement scale; 2 questions had Short Answer options. Overall, the survey had participants identifying their status as a full-time or part-time student in the OMSCS program, their age range, and their opinion on the usefulness of the priority feature on ED for contacting staff members.

1.3 Raw Results

Raw results to the survey are placed here in Appendix-I. The appendix has re-route link to route readers back to this section.

1.4 Analysis - Summary

Here is the analysis summary spread from the survey.

- Most participants – **68%** are between the ages of 18-29; **28%** between 30-39; **4%** between 40-49.
- **88%** of participants are Part-time OMSCS students who must divide their time between work & studies; **12%** are Full-time OMSCS students.
- **100%** of participants were able to successfully comprehend the design abstract, problem statement and the Prototype wireframe image.
- When shown the prototype of the priority feature for asking questions related to the course, most (**88%**) respondents found it to be either "**certainly useful**" or a "**good-to-have feature**", **8%** said "Not useful", **4%** said "Don't know".
- **98%** of respondents thought ED would be a good platform to incorporate a priority option for reaching staff for any priority questions related to the course; **2%** thought Email or other options are better.
- Most respondents (**84%**) thought the prototype indicated a good place to provide the priority option; **16%** indicated there may be other ways.
- **100%** of participants indicated the PRIORITY option was **EASY to spot**, **Easy to access on ED** and **Easy to read** how many priority attempts a student has available to them.
- The participants that thought the feature was "not useful" or "don't know/can't say," quoted that they did not know this feature's impact at this stage as their response substantiation.

- Suggestions for improving the prototype included making it clear if a post had been made a priority, posting the question widely for all students if it is generic and endorsed by the instructor, and providing more clarity on the "2 attempts available" message.

1.5 Analysis - Takeaways

Most participants seemed to agree with the problem statement and liked the interface feature. All participants indicated the legibility and accessibility of the Priority feature and number of attempts available for a student; so that means that the core functionality of this design feature was appreciated.

There were concerns on guard railing this feature to not let students over abuse Staff's limited time but seemed to like the limited number of priority questions attempts available to users. Some participants expressed concerns of how this would integrate in the existing Staff's workflow which would entail in the internal/backend workings of this feature, but the prototype was largely accepted.

1.6 Analysis – Surprising Feedback

Some students termed it as Not Useful indicating they were not agreeing with the problem statement in the first place. This could possibly be termed as surprising feedback to me in the context of bridging Online degree programs' limitations.

1.7 Prototype Changes

- Some participants suggested to have PRIORITY tick box right next to the POST button on the existing POST screen. This in fact is Prototype-1 in my proposal.
- Participants wanted the PRIORITY icon to match with the other buttons.
- There could probably be a HOVER option on the PRIORITY text to impart guidelines of its usage and what explain what LIFELINE means.

If the design feature were to materialize, I would pick Prototype-1 and enhance it with the observations above to present to the participants in the next feedback cycle.

2 PREDICTIVE EVALUATION – COGNITIVE WALKTHROUGH

Prototype-2 from Assignment M3 in Appendix-IV will be subjected to Predictive evaluation. Predictive analysis would aim to determine the efficiency and effectiveness of the Priority Highway feature by performing a Cognitive walkthrough. I chose to adopt Cognitive walkthrough instead of GOMS as indicated in M4 earlier since it easily ties the goal to the design principles that Prototype-3 employs.

2.1 Walkthrough

The cognitive walkthrough here is a step-by-step evaluation of how a user will interact with the Priority Highway feature and how they will know what to do at each stage of the process. The walkthrough focuses on how the user will perceive and interpret the interface elements and how they will make decisions about what actions to take.

STEP-1 in the cognitive walkthrough is to identify the user's goals and intentions.

- In this case, the user's goal is to get a priority response from the staff for their question. The user intends to access the Priority Highway feature to achieve this goal.

STEP-2 is to examine the interface and identify the affordances and mappings. Following is a walkthrough of user actions in this regard.

- *Access ED Course homepage*: The user will access the ED Course homepage and will be presented with various categories like "Class Discussion", "Exams", etc. The user will see a new category called "Priority Highway" on the homepage.
- *Select "Priority Highway" category option*: The user will click on the "Priority Highway" category option to proceed further. The interface will respond with a new screen that displays the number of available Priority Access attempts.
- *Display number of available Priority Access attempts*: The number of available Priority Access attempts will be displayed on the screen, which will inform the user about the number of times they can use this feature. This is an *affordance* that communicates the feature's limitations to the user.

The **mappings** here include the association between the *category* option and the *Priority Highway* feature, as well as the *association between the number of attempts and the ability to post a priority question*.

STEP-3 is where the USER posts PRIORITY question to the staff.

- *Type in the title of the priority question*: The user will type in the title of their priority question. If there are any similar questions already posted in the forums, they will be displayed for the user. This is an example of mapping, as the system is mapping the user's input to existing data to provide relevant information.
- *Display similar questions*: If there are any similar questions already posted in the forums, they will be displayed for the user. This is an example of consistency, as the user can expect the system to display similar questions if they exist.
- *Select the appropriate category*: If there are no similar questions, the user will need to select the appropriate category and post their priority question to the staff. The available categories will be displayed for the user, and they will be able to select the most appropriate one. This is an example of mapping, as the user's selection is mapped to the appropriate category.
- *Post priority question to staff*: The user will be able to post their priority question to the staff once they have selected the appropriate category. The system will provide feedback to the user to confirm that the question has been successfully posted. HERE the posting part will require the same actions as that of posting regular questions, thereby maintaining *consistency*.

Step-4 is when the user may need to check the historical priority questions that have been asked and responded to by the staff. The user will know what to do based on the visual cue of the historical questions.

- *Check historical priority questions*: The user will be able to check historical priority questions that have been asked and responded to by the staff. The interface will display a list of historical priority questions, and the user can click on any of them to view the responses.

2.2 User Knowledge

The cognitive walkthrough performed above needs to critically employ multiple aspects of users' cognition as mentioned below:

1. **Memory**:

- The user needs to remember the purpose of their question and ensure that it is related to the course material.
- Although, the ED platform supports recall to indicate any similar question as the user types, they will need to remember to check on the similar questions being listed and check if their question has already been addressed so they can avoid posting duplicate questions that have already been answered.
- The user needs to remember the steps involved in using the Priority Highway feature. This includes accessing the ED Course homepage, selecting the Priority Highway category, checking the number of available Priority Access attempts, typing in the title of their priority question, selecting the appropriate category, and checking the historical priority questions.

2. **Knowledge**:

- The user needs to have knowledge of how to access the ED Course homepage and select the Priority Highway category.
- They also need to know which category to select when posting their priority question, and how to check the historical priority questions.
- In addition, the user needs to have knowledge of the relevant subject matter related to their priority question so they can effectively communicate their question to the staff.

3. **Attention**:

- The user needs to pay attention to the information presented on the screen, such as the number of available Priority Access attempts and any similar questions displayed in the forums.
- They also need to pay attention to the category selection process to ensure they select the appropriate category for their question.
- In addition, the user needs to pay attention to the SIMILAR questions prompt listed on screen as they type their question.
- The user needs to pay attention to any error messages that may appear, indicating that they need to revise their question or provide additional information.
- The user needs to pay attention to the successful post prompt from the interface to be sure of their task completion.

- Finally, the user needs to pay attention to the response they receive from the staff to ensure that their question was answered satisfactorily.

2.3 Design Principles

The following design principles have been incorporated in the prototype selected for this evaluation.

1. *Discoverability* – The PRIORITY HIGHWAY feature is added as a category & flagged as NEW to let users know with no/minimal prior training needed.
2. *Simplicity* – The new feature abstracts the selection to hide its functionality on first pass. Just like existing categories in Ed.
3. *Affordances* – Employs buttons for pressing, Box for Ticking.
4. *Mapping* – Maps the new feature to existing categories so the user knows what happens if they select this option, viz, opening another side-window just like other categories.
5. *Perceptibility* – The feature lets users know the state of the system i.e., if questions are tagged as Priority or if they have been posted or not.
6. *Consistency* – The priority Highway is entirely consistent with how it looks, blends into Ed's visual schema and operates just like how a user would post regular questions.
7. *Equity* – It aims to target novice & expert users alike.
8. *Constraints* – It uses existing similar questions' constraints to avoid duplication. Also limits students' priority attempts by keeping a track of expenditure.
9. *Tolerance* – The feature would allow users to commit typos, select wrong categories while not compromising the functionality of the feature itself.
10. *Feedback* – The feature provides accurate feedback of users selecting priority highway, and letting users know when they post questions.

3 EVALUATION SUMMARY

3.1 Additional Need finding

I believe I achieved a good deal of critical pointers from this round of evaluation with the appointed prototypes. To refine and enhance design possibilities, additional need finding will emphasize on why certain participants did not find this feature useful or understanding what other modalities can be looked at to

overcome the problem statement. Can I identify any other design approaches using any other existing platforms on Georgia tech to gather faster responses from Staff whilst not burdening them or even aiding them with their already busy schedules? These need finding can happen via *Surveys* and *Interviews* as exercised in this cycle.

3.2 Design Alternatives

From the survey outcomes above, as indicated earlier, some users seemed to like priority highway to be incorporated as a Tick box option in the existing POST questions screen itself. This is an already existing prototype, but I may incorporate additional elements from the takeaways and present it to users to see how they like that instead of Prototype-3.

3.3 Prototypes

If we were to go with the prototype deemed acceptable by participants from the survey, I will need to incorporate elements from the outcomes to make it more consistent, improve icon legibility & color. Also incorporate HOVER features to provide guidelines to users and indicate accurate guardrails to avoid any unintended over abuse by certain sects of students identified in our data inventory.

3.4 New Evaluations

With the design alternatives and straightforward alterations to existing prototypes as mentioned above, I would follow similar *Survey execution* to evaluate qualitatively as I seemed to have had great success with this iteration and perform predictive evaluations through *Cognitive Walkthroughs* to compare results and zero-in on the design incorporation.

4 APPENDICES

4.1 Appendix-I: Survey Results

PeerSurvey Results Qualitative Survey

Back to reader

4.2 Appendix-II: Prototype 3

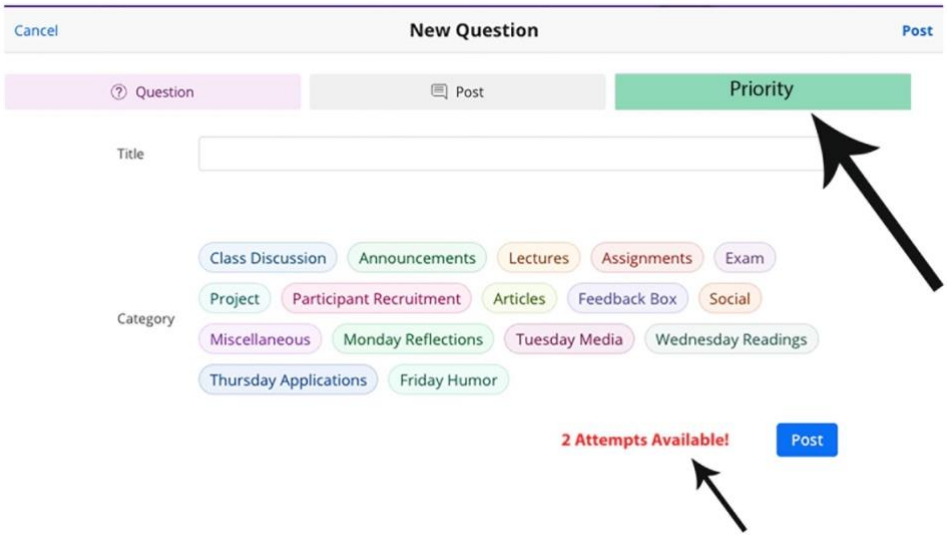

Figure 1— Prototype 3 - Priority Highway as a TAB

4.3 Appendix-III: Prototype 1

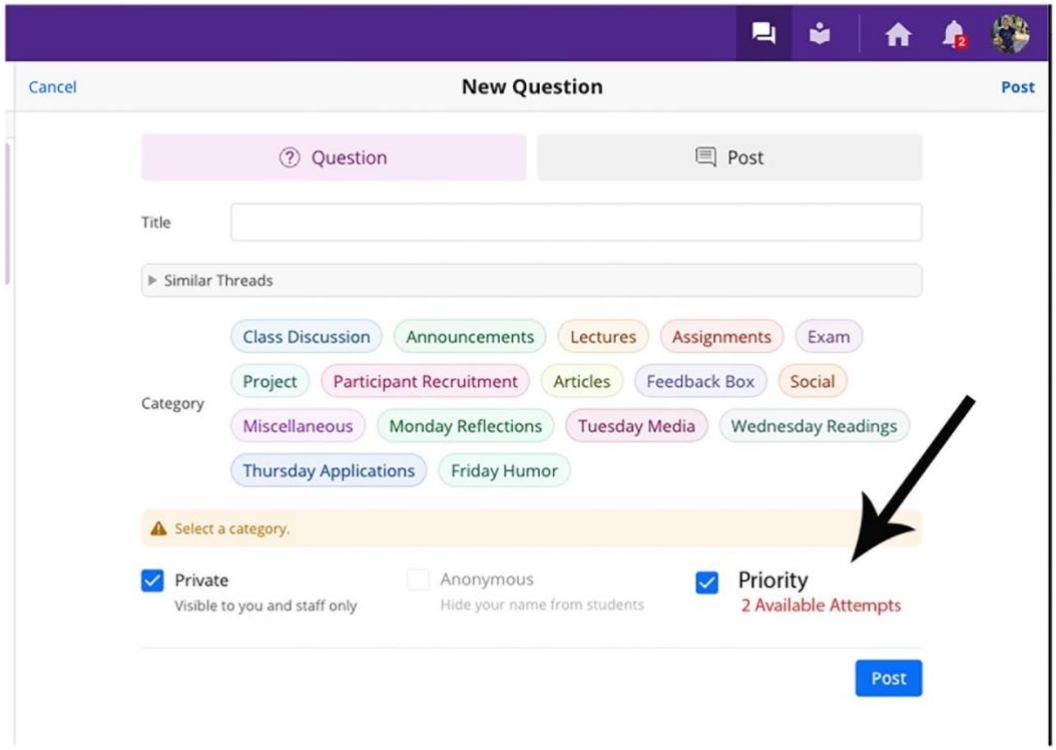

Figure 2— Prototype 1 – Priority Highway as a Tick Box

4.4 Appendix-IV: Prototype 2

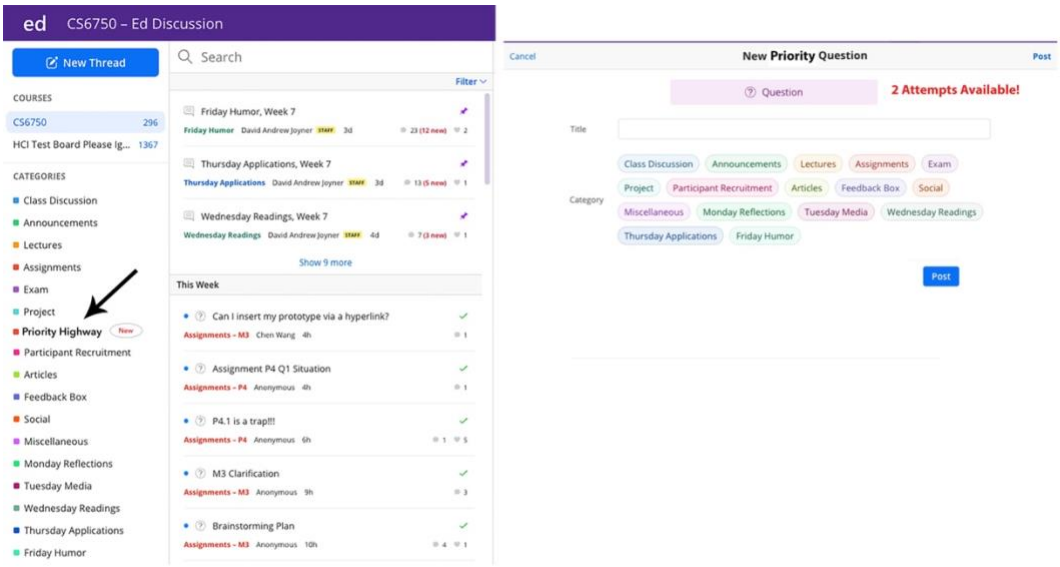

Figure 3— Prototype 2 – Priority Highway as a new category on ED

4.5 Appendix-V: 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
	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 o deliverable, working in an online education setting vi 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.

Category	**Attribute**	**Finding**
	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 o deliverable. 2) Staff needing to catch the students' attentio faster to respond to limited priority highway exercised b 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 a CRITICAL that will catch Staff's eye on their prioritizatio workflows. 2) Staff need this integrated with their existin 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.
Tasks	What are their tasks?	1) Students to post question/posts on Ed and flag an option available to signify criticality
	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