CS 6750: Assignment P1

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QUESTION 1

For the topic of evaluation interface from the perspective of processor model and predictor model, I will choose Ed, the digital learning platform I use for all the OMSCS courses as the interface for studying. There are two major objectives for Ed, one is for all the students to view all the course lessons, the other is to discuss topics related to course contents. The following discussion will focus on the Ed discussion board from the perspective of student's user experience.

1.1 Processor model

Processor model views human as a sensory processor. The human processor will take the input from the interface such as text, sound and image and process it and give the output such as typing or clicking. The objective of Ed discussion is to provide students with a tool to discuss topics related to the course contents. The interface should focus on how students will access the discussion board, and how efficient they can view, edit and reply to a thread.

First question come into my mind is that what topics student want to discuss and how efficient they can access these topics. To answer this question, the interface classifies the topics into different categories such as announcements, lectures, assignments, exams and so on. Then different colors are used as signifier to help user better classify the topics from these categories. As shown in Figure 1, colors ranging from blue to purple makes it very easy for the user to process and decide what category they want to look into. The category icon using the color affords the user to efficiently identify the topic categories and mathematical calculation can be performed to determine how many seconds the user needs to click into the topics they are interested in. However, the use of different colors to signify the topics also have

CATEGORIES

🟦 Class Discussion

🟩 Announcements

🟧 Lectures

🟥 Assignments

🟪 Exam

Figure 1 — Ed platform discussion page category section.

its drawback as it will be difficult for the students who have disability to distinguish color to figure out the categories. To solve this issue, an icon such as a book or a horn can be placed beside the category of lectures and announcements. Icon is very useful to help user process what task they are looking at as icon maps the task in real life. By putting a book icon, user might know it's related to lectures and they might more easily finish the task of accessing the thread.

In the second column of the discussion page, it shows the threads users posted. The layout of the thread summary column and thread detail column is very similar to the layout of an email box. The elements such as thread title, author and time on Ed are mapping the elements of subject, sender and time in the email box. Mapping is very important in the layout and controls of a design and a good mapping can improve the efficiency and user's understanding of how to use the interface to a great extent. Ed's discussion page layout largely maps the layout in an email box and such students will process the contents very easily as they use the email every day. Opening a thread is just like opening an email for them.

Processor model shows an effective way to evaluate the interface and it's easy to test the efficiency by using some quantitative methods to calculate the time of performing certain tasks. However, it did not consider the environment and system around the user and cannot answer the question why the user choose certain ways of using the interface and what's really going on in users' mind. The next model we are going to discuss, the predictor model can answer these questions.

1.2 Predictor model

Predictor model views human as predictor with experience and are able to make decisions and action based on experience and knowledge. It's noticeable that the discussion board uses a lot of icons to help the user better understand what each button is for and what to expect after clicking the button. For example, there is a new thread button on the left up corner labelled in blue color, with a writing icon and text saying "New Thread". The design of this button assumes the user have experience of writing things and they have the knowledge of what the icon and text mean. With the experience and knowledge of what is writing and how to do writing, users may predict something related to writing when they press the button. As the button uses the signifier of "New Thread", users will further predict that they will write a new thread when they click. After clicking, they will see a new question page showing up on the right. This matches their prediction before they press the button, so they know the outcome is successful.

Another feature that I notice is the four icons beside each thread: pin, star, watch and views. As users may use the pin or star in real life scenario to pin the things or to label something as high importance, it's easy for the user to understand what the pin and star functions are used for. When they click pin, they can predict that the thread will appear in the top of the list instead of getting buried in tons of topics. Likewise, uses may predict that the thread will show in their favorite list when they star a thread. However I find the watch and view may be difficult for user to predict the outcome at first sight. Because when they click on the watch icon, there is no feedback to them. When they click the view icon, the number of views changes. I did not expect the views to change as I predict the views to be cumulative and a number for the numbers of views in this thread at the time I press the button. To improve the gulf between user's prediction and the real outcome, I suggest to add some explanations when the mouse hover the icon so that user can read and understand the functions better. For example, when they hover over the watch icon, a box will show them that watching is to receive notifications when the thread receives a new reply. Or an immediate feedback may be shown to the user such as sending an email confirming that the user is watching a thread. The clear and instant feedback and explanation may help the user to better predict the outcome of the action.

From different perspectives of processor and predictor model, we can see different designs in the Ed discussion. The processor model focuses on user's behavior as output and it regards human as a sensory processor which shows certain behavior after sensing the input signal. The predictor model focuses on what people think and why they think in that way. It's more about people's consciousness. So the improvements of predictor model mentioned above are helping user to understand the design based on their experience and knowledge and the processor model improvements help people to give the outcome in a more efficient way and make them process the signal quickly.

QUESTION 2

As a book worm, I like reading ebooks in various contexts such as when I take the bus to work, walk on the street, or before I go to bed. For the topics of interfaces in different context, I will use e-reading on interface as an example for how to do a good design in different contexts.

When the user uses the interface, he might be in different contexts and there are many parameters that can affect the efficiency of the interface. I like to read the book on app when I was taking the public transportation to work. Sometimes the bus is empty and I can take a seat and enjoy reading line by line on the app. In this scenario, I pay close attention to the contents I read and the app affords me take notes when I come across something I think really interesting. But sometimes I am not lucky enough to get a seat and I need to stand on the bus and reading on the app becomes difficult as my cognitive capacity is compromised and my body is physically unstable on the running bus. The challenge can be solved by implementing an audio book function, which may enable the user to listen to the audio books when viewing the books becomes challenging. In terms of time context, if the user is in a rush and want to finish the book before she gets off the bus, the app will need a reading speed feature so that the user can control the speed of audio books and enjoy the book according to their own speed. Finally when I get off the bus and walk on the sideway to office, the context changes from a relatively quiet environment to a noisy one. The app might be able to detect the noise level and help me adjust the audio volume. Another challenge in the walking context is the precision of physical motion. When I am in a moving status, my physical precision is usually less accurate than the still status. In this case, the design of icon and buttons of the audio book interface should be

easy enough for the user to see, recognize and press. The size, color and position of the buttons should be taken into consideration.

After a day's hard work, I go back home and lie on the bed to read the last chapter of the book I start reading on the bus. The light is dim and I feel relaxed and less focused. The app should be able to detect the time and ask the user if she likes to switch to the night reading mode which is black background with white text. The night mode maps the darkness at night and also it makes the text more readable and obvious to see when the environment is dark. And as my eyes are used to darkness in the night time, the night mode help my eyes to process the contents more effectively. As the user's cognitive capacity is not as focused as in the day time, it may be easier for the user to read if the font size can be adjusted to larger size. Also the user may be different age group and the elderly need a larger font size to help them process the text on the screen. Another thing that can be altered in interface is for user reading in different languages. To improve the readability, the app should allow the user to choose their languages or to have a translation functions and help them to translate the foreign language into their native language.

QUESTION 3

Ed discussion forum is an excellent example of how the interface carries the student across the gulf of execution and gulf of evaluation. The discussion below will be focusing on the task of posting a question to the Ed discussion.

Gulf of execution means that there are gaps between how the users know what they can do and how they figure out what to do to go to that goal. And there are four action steps involved in the process to bridge the gulf of execution: set the goal, plan the action, specify an action sequence, and perform the action sequence (Norman 2013) . First the user ask the question of what he wants to do and he sets his goal to ask a question in class. After he sets the goal, his next step is to plan the action. What are the alternatives to achieve this goal? He has several alternatives: he can ask his classmate directly, or he can ask the questions online through Ed. He chooses to ask the question on Ed and then he thinks about what he can do and what's his action sequences. He can open up a question thread and write his question on the thread and submit the thread. After deciding his action sequence, he needs to know how he can perform the above actions on the

interface. First he sees a blue colored button at the left up side corner of the page, as shown in figure 1. The button size is big enough for the user to notice in the first place. In addition, the button uses signifiers of icon and text of "New Thread", helping the user to discover and understand that the button can afford the users to a new thread. The use of mapping and signifier helps the user build a good conceptual model to start a new thread. The user clicks on the button, immediately a new thread page shows on the right side, showing his action is successful. The new thread interface is divided into title, category, thread input, and privacy selection. This layout helps the user to understand that he needs to input these four components into the thread. Only when he selects the category will the thread box appear, suggesting a successful action. Also the exclamation mark reminds the user to select the category before he types in any text. The user writes his question in the prompted thread box and selects whether he wants to be private or anonymous. In final step he sees the post button and press the button to submit the question. The actions he performed in sequence happens in a visceral and behavioral levels. The color and warning sign are visceral to the user and he can react to them without even thinking. And the button to press, the text box to write, the tab to choose are the experience users learnt in his previous experience of using the interface. Every step he takes has a feedback such as the prompted thread box, giving the user confidence and sense of control. In this way, the system helps out the user to achieve his goal of asking the question.

Gulf of evaluation consists of three components: perceive the state of the system, interpret the perception and compare the outcome. In every step of the execution, there are these three components involved. For example, when the user presses the new thread button, the system state changes to the "new thread" state, and the user will notice that the new system state just happened. Next question to ask is what the new state means and how close this mapping is from user's goal. The user understands that this is the new thread page he wants as the title shows "new question" on top and it matches his intention of starting a new thread. To fulfill his goal of submitting the question, the same gulf of evaluation process happens many times: when the user finish typing in the title, the box highlight disappears; when the user selects the category of question, the tab highlight appears; when the user types in the question, the cursor appears; when the user clicks in private box, the blue arrow appears; lastly when the user presses post button, the interfaces becomes ineditable and shows the question he just typed.

The immediate feedbacks and change of the state enable the user to perceive a new state. After posting the question, the user compares his goal of asking a question on Ed to the outcome. The goal is realized and beyond, he also added question title, category and the privacy state besides just posting a question.

QUESTION 4

Figure 2— The interface of my coffee machine.

I have a Bosch coffee machine and on its back it has a percentage meter as shown in figure 2, labeling with a start button and some percentage numbers ranging from 25 to 100. My expectation for it is to tell me the percentage of water left in the tank. When I pressed the start button, it showed light around the button and I waited for long time and there was nothing showing up. The interface failed to give immediate feedback and it's hard to interpret if the state is ok. In addition, its circle button to start coff has an ring, up side shows "+" and down shows "-", the middle circle shows nothing. When you press any button, the screen shows the same cup light. The interface fails to differentiate the feedback for different actions from user, making it difficult for the user to interpret if the system is in a right state. The user can only judge the outcome from the coffee in the cup.

My oven did a better job at bridging the gulf of evaluation. When I turn it on, it shows the preheating on the screen. It's easy for user to perceive the oven is on and to interpret it in a preheating state. When the preheating is done, the oven makes a sound signaling the new state and the preheat sign disappears. The user can easily interpret the preheat state from the sign on screen and the time they expect to wait for the preheat stage which is 10 mins 16 seconds. When the

preheat is over and it changes to heating state, user can also easily interpret from the screen that the oven is in heating state and the sound also confirms that the oven preheating state is over and heating state starts.

The second case of oven suggests the effectiveness of the right and timely feedback. To help bridge the wide gulf of evaluation on coffee machine, it should
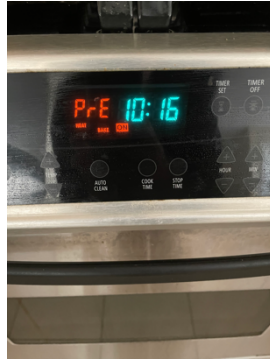

Figure 3— The interface of my oven.

give direct feedback immediately and different feedbacks for different actions. For example, when the" +" button pressed, a larger cup of coffee should show on the screen and help the user to interpret that they are pressing the large size coffee instead of small. In addition, the machine can make some sounds when it finishes making coffee. Sounds can help the user to perceive that the coffee is made. Sometimes in the middle of coffee making the water runs out and it shows a red sign showing water on the screen. But this feedback is too late, the interface should give feedback in advance on how much water is left. The oven shows a good example of showing the time left for preheating on the screen so the user knows what to expect. The coffee machine should also let user know when to refill the water to prevent that only half of cup coffee is made. The designer should consider the gulf of execution and gulf of evaluation to fully understand people's needs and expectations.

REFERENCES

1. Norman, Donald A. 2013. The Design of Everyday Things. Revised and Expanded edition. New York, New York: Basic Books.