Assignment M4(CS 6750)

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***Abstract*—This assignment explores the HCI of redesigning the process of creating a powerpoint presentation slide. The identified task is for a user to create a presentation slide using Microsoft PowerPoint. This task takes place in the context of communicating information. This is a very common task which is of great importance in many domains (including teaching and business) and therefore optimizing the HCI for this task is useful. This task will be studied holistically in order to improve the HCI and thus suggest improvements to the user experience for this task.**

1.QUALITATIVE EVALUATION

The qualitative evaluation method I will use is the post-event protocol. This evaluation method will be used to evaluate the card prototype. I will select the participants from my friends and flatmates. This will include my flatmate, my cousin and my friend. All of these participants are experienced in using Microsoft powerpoint (having at least 5 years of experience) but my flatmate is not yet expert in using it and cannot use some of the features. All participants are in their 30s and are a range of genders. The evaluation will take place in my flat and I intend to record it using video so that I can understand the user's actions and how those actions may give indications about the prototype process itself.

The room will be set up so that the participant can sit at a table and easily move through the prototype. I will sit near the participant but not exactly beside them in order that they feel they have their own space. Firstly, each participant will be told that there is no wrong or right way to approach the prototype. They will be told that it is most useful if they interact with the prototype as naturally as they can, and that I would not prefer them to

respond in any particular way. The participant will be told to interact with the paper prototype as they would when using a digital interface, and to imagine that they are using this interface in context. Specifically, they will be told to flick through the set of cards and that these cards constitute a prototype of an interface to create a powerpoint slide. At the end I will ask them: 'Please walk me through what they were thinking during the prototype.' If they do not give a long or detailed answer I will prompt them by saying: 'Please could you go into more detail about this aspect of the prototype.' If they do not offer information on how they were feeling during the prototype experience then I will prompt them to give more details by saying 'Please could you tell me how you felt during this part of the prototype experience'. I will record the prototype run-through and the post-event protocol video. I will also write up the post-event protocol thoughts of the participants into a transcript so that insights can be drawn more easily from the participants' thoughts.

This evaluation method will address the data inventory because it will allow me to gain insight into the question of 'What are their needs?' Specifically it will allow me to understand their needs better because I can analyse whether the prototype that has been built accurately and closely meets their needs. It will also give me insight into the requirements (specifically the functionality aspect of the requirements.) This method will allow me to understand whether the functionality requirement of ensuring the user can leave the interface to find content on google images less might be solved using this prototype and therefore allow me to gain more insight into whether the prototype meets that requirement.

2. EMPIRICAL EVALUATION

Another possible evaluation method is to compare the card prototype and paper prototype. The dependent variable will be the speed of the task of creating a slide using the prototypes. The two treatments will be the card prototype and the paper prototype. Therefore the experimental conditions constitute comparing the reaction times for creating a powerpoint slide using

these two prototypes. This will have to involve the participant simulating using each prototype as they are not digital versions of the prototype. In other words both treatments involve the same task goal, but with different interfaces. The experimental method will be within-subjects so that each participant will try both prototypes. Since all participants will receive both treatments, the assignment will involve assigning the order of the treatments to the participants randomly. The order of the prototype that each participant does first will be randomly assigned in order that fatigue is not a lurking variable that disrupts the comparison. The participants will complete a simulated creation of a powerpoint slide and they will be timed. Therefore the data generated will be a time that they took to complete the task of creating a slide with each prototype.

The null hypothesis for this experiment is that there is no difference, on average, between the times taken to complete the paper prototype and the times taken to complete the card prototype. The alternative hypothesis is that there is a difference, on average, between times taken to complete the paper prototype. In terms of the analysis, in order to assess whether there is a statistically significant difference between the two task completion times I will carry out a student's t-test in order to compare the differences between the distributions of the times for the paper prototype and card prototype. Through this analysis I will be able to analyse whether the null hypothesis can be rejected.

A possible lurking variable could include the age of the participants. Since the participants are in the same age range it is possible that they will be faster at one of the prototypes because they have learned the skills to be faster at that prototype (or conversely they have not learned the skills to be able to navigate the alternative prototype interface as fast). Another very clear possibly lurking variable would be the fidelity of the prototype (including the quality of drawing and representation). The users may just take longer to complete the prototype that has a lower fidelity.

3. PREDICTIVE EVALUATION

The predictive evaluation I will carry out will be the cognitive walkthrough. The reason for this is that I am specifically looking at how I can improve the learnability of the task of creating a powerpoint slide using the templates feature, since this was a need that I identified through my needfinding. It was identified that users were not able to use the Templates feature, and this indirectly made the task of creating an informative slide slower. The goal of the user in this task will be to create an informative slide using the 'templates feature' within the altered MS powerpoint interface set out in textual prototype. The operators available to them will include the ability to click, the ability to move the mouse and the ability to pinch the screen. This cognitive walkthrough will involve the user completing a task that they have done before (creating a slide) but with an additional constraint which they are not used to (using the templates feature). They will walk through the process of carrying out this task. At each step the appropriate task for the position in the sequence will be predicted and their ability to overcome the gulf of evaluation and the gulf of execution will be evaluated. However, this process will evaluate how a user navigates around an interface to figure out how to accomplish the goal of creating a slide using a template. Indeed, the reason for this is to evaluate how a user will bridge the gulfs of execution and evaluation in order to complete this task using the templates feature. Thus we will be able to understand better whether the learnability aspect of the requirements outlined in the previous assignment has been addressed by this prototype.

4.PREPARING TO EXECUTE

I will choose the cognitive walkthrough and the post-event protocol (qualitative evaluation). Although I think it would be useful to carry out an empirical evaluation of the prototypes I do not think it is practicable to do so, given the fidelity level of the current prototypes. Since they are only paper, textual and card prototypes it is not appropriate to do an empirical study of the speed of completing tasks using these prototypes because they are too low-fidelity, and have different levels of fidelity. Indeed, since the level of fidelity is not controlled between the prototypes it is too high-risk that the

fidelity would be a lurking variable and the study may therefore not clearly isolate the feature we wanted to test. Ultimately, therefore, the cognitive walkthrough and the post-event protocol are more likely to allow me to evaluate the prototypes in a productive way.