Assignment M4

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Abstract—The investigated task involves viewing videos on the Instagram app available to smartphone and tablet users. Instagram does not have a function that allows users to fast-forward, rewind, or pause video content. However, there are plenty of similar applications that do allow for this functionality. The goal is to implement a function that prevents users from missing content.

1 QUALITATIVE EVALUATION – SURVEY

1.1 Evaluation plan

Classmates will be invited to participate in a survey using PeerSurvey. The survey aims to gather users' attitudes towards the wireframe prototype developed in assignment M3. The respondents' data will be exported and organized in an excel file. Below are the survey questions and their corresponding answer types.

1.2 Survey content

Survey Title: Instagram Prototype Survey

Question 1. Please state your gender

Answers: Male, Female, Prefer not to answer

Question 2. What is your age?

Answers: Under 12, 12 - 17, 18 - 24, 25 - 34, 35 - 44, 45+

Question 3. Where do you reside?
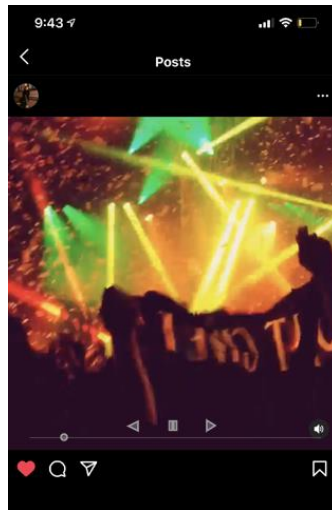
Answer: Open-ended

Question 4. Do you use Instagram?

Answer: Yes, No

Question 5: How much time do you spend per week on Instagram?

Answers: less than 1 hour, 1 - 2 hours, 3 -5 hours, 6 - 8 hours, 9+ hours, I do not use Instagram

Question 6: Please look at the attached wireframe prototype. Predict the outcome of tapping on the icons at the bottom of the video post. Please be specific.

Answer: Open-ended

Question 7: Regarding the wireframe prototype from question 7, was there uncertainty surrounding what the different icons represent?

Answer: Yes, No, Unsure

Question 8: Please elaborate on why you chose your answer for question 8.

Answer: Open-ended

Question 9: What are your likes and/or dislikes about the wireframe prototype from question 7? Please be specific.

Answer: Open-ended

1.3 Evaluation outcomes

This evaluation will address several data items and defined requirements. Questions 1,2, and 3 give information about the user, specifically their gender and their age. Question 3 also may give insight surrounding the cultural context of the task—furthermore, questions 4 and 5 address the user's habits and how familiar they are with Instagram. Question 6 is meant to gather feedback on the wireframe prototype, precisely what users predict will happen if they tap on any or all the icons. This question ties to learnability. If participants predict the correct outcomes of tapping on each button, the prototype follows the principle of consistency, which is supposed to aid in the learnability requirement. Since I am not my user, what looks obvious to me may not be obvious to others. That is why questions 7 and 8 ask participants to explain why they may or may not be uncertain about what the new icons represent. This question ties to learnability as well as functionality. If they are uncertain about what the icons represent, maybe the aesthetics and the layout are not as consistent as I thought. Furthermore, functions should be discoverable and feedforward. Finally, question 9 asks for general feedback surrounding the wireframe prototype, specifically, what the participant likes and dislikes.

2. EMPIRICAL EVALUATION – TEXTUAL PROTOTYPE

The goal of the empirical evaluation is to determine if the new functionality introduced in the textual prototype (pause, rewind, fast-forward functions) improves the usability of the interface versus the current version of Instagram.

Table 1— Null hypothesis and alternative hypothesis.

H_{Null}	Usability is the same between the original interface and the interface with added functionality.
$H_{Alternative}$	Usability is significantly different between the original interface and the interface with added functionality.

2.1 Experimental method

A between-subjects experiment will be conducted to avoid the practice or learning effect, as well as a fatigue effect (Mackenzie, 2013). Subjects will be randomly assigned to one of two groups. This can be done by assigning each subject a number and grouping the subjects into even and odd groups. Group one involves subjects using the current version of Instagram. Group two involves subjects using the interface described in the textual prototype (see appendix 6.1). The prototype used in this experiment will be of a higher fidelity. The independent variable is the interface type, original or prototype. This variable is independent of the subject's behavior. The dependent variable is the time it takes for the subjects to complete their treatments.

During the treatments, each subject will be asked to watch a two-minute tutorial on Instagram demonstrating how to create an origami figure for beginners. The video content will be identical for each subject group. Each subject will be asked to watch the video and follow the instructions. The subjects are free to pursue this task how they like; meaning, they can either watch the video first and then create their piece of origami, or they can attempt to watch the tutorial and prepare their origami simultaneously. Each subject will be timed, beginning once the tutorial starts to when they have created their origami.

The data generated from this experiment will be two lists for each group comprised of the individual subject's trial times. Below is a general example of what the results of the experiment would look like.

Table 2— Example of experiment results

Group	Average Trial Time	Standard Deviation
Group 1 (Original Interface)	X	A
Group 2 (Prototype)	Y	B

Based on the independent variable (categorical) and the type of data recorded (ratio), a student's T-test is an appropriate method to analyze the data and determine whether there is a significant difference between the two interfaces.

Recruiting subjects that have experience folding origami is one example of a lurking variable. Unintentionally recruiting an origami expert could bias the data and lead to a false positive or false negative (depending on what group they are placed in). Furthermore, the type of devices used for each treatment is a potential lurking variable. Using an older model smartphone for group 1 versus a newer model smartphone for group 2 could impact results if the older phone is slower. Similarly, using slow internet could impact the buffering speeds of the video content, resulting in longer trial times.

3. PREDICTIVE EVALUATION – COGNITIVE WALKTHROUGH

A cognitive walkthrough is the chosen method for the predictive evaluation of the card prototype developed in assignment M3 (see appendix 6.2). The user's main task in this scenario is to view content. The user also does not want to miss any content due to distractions in their environment. The user's ultimate goal is to retain all the information from the content they are viewing.

Operators available to the user include opening the Instagram app, scrolling, tapping on reels to maximize the video content, resuming the video (hitting play) if the user puts their phone down, tapping the rewind button, and tapping the fast-forward button.

Using the cognitive walkthrough method, a user will be evaluated on their ability to resume their content, rewind, and fast-forward. Most users (based on survey responses gathered earlier) are familiar with this functionality. The goal they need to accomplish is known in advance. However, this functionality is new to Instagram's interface. So, users will also be evaluated by how they navigate the new interface and accomplish their goal.

4. PREPARING TO EXECUTE

The plan outlined above for qualitative evaluation and empirical evaluation will be completed and described in assignment M5.

The plan outlined for the qualitative evaluation (survey) was chosen because it will be easy to gather classmates to participate. The plan outlined for the predictive

evaluation (cognitive walkthrough) was chosen because it does not require in-person participants and it will not require much time or a high-fidelity prototype. The empirical evaluation method will not be pursued because it would require a high-fidelity prototype that would be expensive to implement. It would also require many in-person participants, which is not feasible at this point.

5. REFERENCES

MacKenzie, I. S. (2013). Chapter 5: Designing HCI Experiments. In *Human-Computer Interaction: An empirical research perspective* (pp. 157–188).

6. APPENDICES

6.1 Textual Prototype

The second design alternative prototype involves having the Instagram app sense when the user's attention has been usurped and automatically pausing the video. This functionality will work by analyzing the user's face, like how social media filters recognize faces. When a user looks away, the video being viewed will automatically pause. A small message will appear explaining the pause that says, "Paused due to attention diversion". This design alternative can be made feedforward by including a small image (of a face-like icon that matches the movement of the user's) that conveys to the user that Instagram is aware of them and awaiting potential distractions. This face may gradually turn red if the user begins to move out of focus. Once the user is entirely out of focus, a separate red frown icon will appear. The design alternative meets the efficiency requirement because viewed content will pause almost immediately following the user's change of focus. No task is required of the user to pause the video; this task is offloaded onto the interface. As for learnability, this functionality is unlike anything experienced on similar applications. The message displayed after looking away from the interface serves as feedback that helps bridge the gulf of evaluation, thus allowing the user to learn how the interface works quicker and helping them develop an accurate mental model. Furthermore, this design alternative is feedforward. It conveys to the user that their face is being analyzed. It also indicates how well Instagram perceives the user's face using color. All in

all, this design alternative does not fulfill the learnability as well as the first prototype discussed. However, appropriate feedback and feedforward qualities will aid in learnability. As for the functionality requirement, this design alternative fulfills part of the requirement. While this design alternative pauses content for users, it does not allow for rewinding of fast-forwarding. This alternative would either need to be adjusted or used in conjunction with another alternative to fulfill the functionality requirement completely. This prototype meshes well with the audience described in the data inventory. Many survey respondents admitted to using social media apps while waiting for their takeout, at work, or while using public transportation. All in all, many users reportedly use social media in public settings where becoming distracted is more likely to occur than it is at home.

6.2 Card prototype