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COMP6780 Web Development and Design

Research-Based Web Design & Usability

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Abstract

This report aims to demonstrate how user-participation experiment is essential to web design and development by describing the participation in two experiments. Human Computer Interaction (HCI) is the study of how computers and people get interaction successfully. By the comparison of the two experiments, this report emphasizes how important the computer system developer should pay attention to the computer quality-in-use and ease-of-use.

Introduction

In an information age, technology in the large extent dominates our daily life. Both usability and user-friendliness are essential factors when considering the web design. Enhancing the user experience is not only limited via quality-in-use, but also through ease-of-use. By participating in the experiments of “attitudes about body image and eating disorders” and “attentional shifts and visual perception”, I gained empirical experience on how to design a functional, attractive and professional website. After the comparison of the two different experiments, it's easily to reflect on the important elements in HCI, such as: UI/UX design, clear web content, task simplicity, user interface features enhancement.

First Experiment

Experiment Summary

The online “attitudes about body image and eating disorders” survey aims to analyse human attitudes and behaviours in terms of eating habits and body image. This survey lasts 30 minutes and contain the single choice, essay question, and ranking question. The questionnaire has been designed to ask how much you worry about your weight and body shape and does it affect your eating habits.

Experiment Experience

I have been involved in this experiment as an intelligent participant. There are lots of questions refer to the experience of seeking help or mental health counselling for eating, weight and shape concerns. Although I haven't been through these symptoms, this experiment triggered my concern in caring and helping eating disorders. However, this experiment is bit difficult to understand and follow the questions. Lots of long sentence questions make me lost in answering them. When I finished answering one page of questions, I forgot what I have answered before.

Experiment Comments

Strengths: The questions in this experiment are highly related and designed with logical thinking. It contains different types of questions which make the experiment more integrated. For the unknown terminologies, at the bottom of the page it provides the notes to well explain the terms.

Weaknesses: Half of the question is similar, and it causes confusion to the participant. Few pages contain the long sentence questions which is hard to read and is not user-friendly. The question asked how frequently you have done something in the past four weeks (28 days) is difficult to estimate. At the top of the page, a brief instruction is provided but is overly simple.

Generally, this experiment was confusing. It is hard to estimate or judge the statements if the participant hasn't been through a similar experience. The gathered data is invalid and unreliable to process further research. In my view, the experiment has difficulty in meeting the aims that were stated in the Information Sheet.

Second Experiment

Experiment Summary

The research "attentional shifts and visual perception" aims to investigate the effects of spatial attention and transient attention on visual perception. The research lasts one hour and contain two blocks: one is to give response to a white ring whether it has a gap or not; another is to give response to the same white ring whether it has two black flickers or not. Sometimes it occurs the screen frozen, I should blink or move eyeballs to keep continue.

Experiment Experience

I have been asked to do mechanical tasks in this experiment. I put my chin on the eyetracker and look steadily at the screen. There is a camera above my forehead which can track my eye movement. This experiment is easy to understand and operate. Before each official operation, the investigator gave a small test to check if I am qualified to give any correct response. However, personally I do not enjoy this experience, because I have to be locked in a dark room for over one hour. Facing to the screen too long can raise the issue of headache, blurred vision, low concentration, and stiffness of muscles. All these side effects can bring negative impact to the experiment.

Experiment Comments

Strengths: This experiment has clear instruction and simple tasks. Investigator showed me the screenshots to explain how to run this experiment. It also checks your respond to the visual stimuli before the experiment started, because it requires you to have normal vision without wear glasses. The screen also presents clear instruction. This experiment has considered the visual fatigue that it has the breaks to rest your eyes. After the experiment, investigator gave me a Research Debriefing Sheet to demonstrate what's the principles behind this experiment and what's the gathered data use for.

Weaknesses: The experiment is running too long causing the participant indisposed. The frequency of the flickers is too high. Pressing the button under this high frequency can cause stiffness of limbs. The design of this experiment is simple but less interesting and attracting.

Overall, this experiment was well-conducted. The vast majority of the gathered data is reliable to process further research. But few might be affected by long experience in transient attention. This experiment can meet its aims eventually.

Comparison of the two Experiments

Similarities in two Experiments

Both experiments have designed based on solid principles and strong logic. They both tests the physical and physiological respond as well as user-participation in HCI. These two experiments both asked the participant respond to certain questions or stimuli based on physical and physiological experience in the experiment. However, one major issue is that they both designed not in an interesting way and less focus on the user experience during the experiment. This constraint can directly affect the experiment outcomes.

Differences in two Experiments

Based on my personal experience in these two experiments, the differences can be summarised as below:

	Experiment One	Experiment Two
Form of Participation	Online survey	Laboratory experiment
Instruction	Unclear	Clear
Design	Confusing questions	Well-conducted tasks

Complexity	Difficult	Easy
Objective	To investigate the impact of personal behaviour	To investigate the external influence on human body
Form of Questions	Single choice, essay question, and ranking question	Press button to respond to visual stimuli

Relevance of user-participation experiments to web design and development

Human is the end user that the computer systems are designed to assist. The input-output channels can help human interact with the outside objects. Basically, input in the human comes from the senses: vision, hearing, touch and movement (Dix, Finlay, Abowd, & Beale, 2004). However, input is needed from all sides, not only from appealing graphic design, but also from good usability. Correspondingly, the output should be quality-in-use and ease-of-use.

By involving in these two experiment, I realize the UI/UX design is vital to the website. For example, the Experiment One has all the plain text questions. No matter how diversity of the form of questions, an overlong plain text survey is not attractive and interactive at all. Good graphic design can offer visual aids that will create an effective channel for you to communicate with users. Graphic design is also good to target the audience who is a visual learner. Meanwhile, it can benefit the auditory, read/write and kinaesthetic learning experience. An explicit instruction can help with the understanding of the web content. Individuals who prefer the text-based input and output are more likely to adore an orderly website presentation.

A good website also should try to diminish the complexity with simplicity. The task complexity can strongly affect the performance when operating the perceived data (Valdez, et al., 2015). When participants face the assigned task with higher complexity, they will be more likely to choose worse strategies (Payne, 1976). For example, in Experiment Two, observing a white ring with gap is more difficult than observing two black flickers, thus I made more mistakes in the former task. Poor usability can hamper the human-computer interaction, such as in Experiment Two I only allow to press left arrow and right arrow that make me less productive and feel stiffness on my limbs. Learning cognitive psychology can have positive effect on the enhancement of the user interface features.

References

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