

HCI inspiration from experiment design

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Abstract

This report introduces two experiments which I participated as a participant. The main point is to evaluate the experience during the experiments. By generating an analysis, this article will summarize some key points in human-computer interaction design, which can be applied in web design and other user experience-focus product design.

Introduction

Research experiments which involve external participants usually need to consider human-computer interaction experience for participants. It is also believed that participants' experience not only determines the altitude of the participants, but also the data accuracy from of the experiment. To dig into this relevance, this report presents the comparison of two experiments in their human-computer interaction aspect. By analyzing the experiments, the key ideas of human-computer interaction can be extracted to guide other kinds of design, e.g. web design.

First experiment

The first experiment is the <Food, Body and Mind> by Researcher Rosemary Clifford. This study aims to to better understand the differences between healthy eating habits and pathological eating habits on explicit and implicit levels.

When participating in this experiment, the first task required me to answer whether a kind of food is good for health. The second task required me to answer whether a woman in a photo has a healthy shape. Each task has four periods. In the first two periods, I needed to choose the correct answer before I can proceed, and in the last two periods, I needed to choose the incorrect answer to proceed.

The experiment was totally online, so I was not physically involved, but the tasks that I was required to do were mechanical. The only required skills in the experiment are reading, evaluating, and pressing button. To differentiate the correct answer between the two given options was so easy that every average person with common sense can do it correctly.

In first half hour, it was fun to be always able to get correct answers, but when I was still doing the same thing in the 40th or 50th minute, I felt totally bored. I lost patience to read the given information of each question, but only wanted to randomly choose an option so I can go to the next question. The quantity of question was so many that I had to force my self to entirely focus for the last 20 minutes to finish them in time.

The strengths of this experiment:

- It nearly requires zero professional knowledge, so the education level of participants would not influence the accuracy of the result.
- The text and image are wisely chosen, so participants can easily understand.
- The control method is quite understandable. Participants only need three keys to finish this experiment.

The weaknesses of this experiment:

- Too many question. Participants probably lose their patience so they would choose undesired options just for finishing this experiment sooner.
- The aim of the experiment is not clearly classified.

Reflecting on this experiment, I think the researcher actually aims to find out how intuitively a participant can identify a healthy food or body shape, because half of the questions were totally against intuition. The overall experiment design turned out to be effective in achieving the object. The experiment conduction is clear for participants. No confusion emerged when I participated in it. The accuracy of the collected data can be considered reliable, given the accurate clarification and easy control.

Second Experiment

The second experiment is <e-reader devices evaluation>^[1] by Tom D. Gedeon, and Ujala Rampaul. This experiment aims to evaluate the usability of various e-reader devices.

Unlike the first experiment, I was asked to be an intelligent participant. I was allocated in a two-participant pair. We were given two e-readers. I was asked to try to use that device to find some specific information in section 3, paragraph 2, and the other participant was asked to record my subjective experience, then we switch roles and do it again on the other device. The task requirement was clear, so the other participant and I easily understood and began to perform. Although the procedure was simple, the key part was to compare the two devices. We needed to give a Likert scale evaluation of the experience for each device. This evaluation can be delicate, so we were required to focus.

The strengths of this experiment:

- Simple and clear requirements. Easy to understand and perform.
- Closely aim-related procedure. The result given by participants are exactly what the researchers need.
- Well-chosen participants. All participants are of similar ages, and process necessary e-device knowledge.

The weaknesses of this experiment:

- The evaluation result was not very specific. Only the overall experience mark was required.
- The task variety was limited. There was only one simple task - to navigate to section 3 paragraph 2 to find information.

This experiment was designed closely related to its purpose. By combining all the twelve sets of evaluation, the researcher could achieve a persuasive conclusion. The conduction of it was also smooth and successful, because the designed task were clearly explained in the instruction. The data collected in this experiment was reliable, because of the sample size and participant selection.

Comparison of the two experiments

In the participant-experience aspect:

The first experiment was not as good as the second one. Because of the unreasonable time devotion requirement and unclear research purpose, participant would feel impatient and disgusted.

In the research-performance aspect:

The second experiment performed better than the first one. Because of the more closely aim-related task design and the allocated scribe role, its result clearly presents the the desired data.

Over all, the second experiment is better designed in both participant experience and data collection.

Relevance to web design and development

The human-computer interaction aspect of web design can refer to the above experimental design to a large extent. In a web design activity, the developer should always refer to basic human-computer interaction principles like experiment

designer do in their design works. Based on the conclusion given in previous sections, some key guidelines of human-computer interaction design can be summarized as below:

1. Always use clear instructions. Both the two experiments successfully clarified what and how participants should do, so confusion did not appear.
2. Try not to repeat. In the first experiment, similar questions repeated for hundreds of times, which made me never want to participate in the experiment again.
3. Emphasize on the key point. Compared to hundreds of question of unknown significance, the second experiment made its point very clear - record the experience. Nothing else was required.
4. Carefully target your users. Different users (or participants) have different needs. Targeting correct users helps a lot in design decisions.

Reference

[1] Gedeon, T. D. Rampaul, U. Popular eReaders.