

A proposal for a repertory-grid study of differences in Chinese, Danish, and Indian conceptions of usability: Cultural usability?

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Abstract. This is an unrefined proposal for a study that could form part of the exploratory phase of the Cultural Usability project. The proposed study compares three cultures (Chinese, Danish, and Indian) and two stakeholder groups (users and developers) with respect to their conceptions of usability.

Introduction

The concept of usability has been debated for decades (e.g., Shackel, 1984; Hornbæk, 2006). Concomitantly, the diffusion, acceptance, and conception of technologies have been researched in, among others, the areas of diffusion of innovations (Rogers, 2003) and the technology acceptance model (Davis, 1989). However, much of this work under-recognizes that conceptions of technologies and their usability may be culture dependent. Typically, culture has not been considered at all. Recently, the importance of culture in relation to usability work has been acknowledged (e.g., Barber & Badre, 1998; Honold, 2000; Markus, 2002; Markus & Gould, 2000), and a concept of cultural usability is emerging.

The first aim of this study is to contribute to an elaboration of the cultural usability concept by investigating whether similarities and differences in people's conceptions of usability correlate with their cultural background. Cultural background is, in this study, taken to mean people's country of birth and residence.

The second aim of this study is to compare and contrast users' and developers' conceptions of usability. This is seen as interesting in its own right (see, e.g., Holcomb & Tharp, 1991) but also as a means of investigating whether the more prominent differences in people's conceptions of usability are between people from different cultures or between users and developers.

The study is currently a proposal, and further progress is dependent on participation from other people on the Cultural Usability project. To make matters concrete, the rest of this proposal is an incomplete and preliminary draft of a methodology section.

Method

To investigate the cultural aspects of usability empirically, we interviewed users and developers with three different cultural backgrounds about their conceptions of the usability of selected technologies. The interviews were based on the repertory-grid technique, which originates from Kelly's personal-construct theory (Kelly, 1955).

Participants

The participants were three groups of experienced software users and three groups of experienced software developers. Each group had eight participants. Groups were similar with respect to participants' age, gender distribution, and level of education. Further, the participants in the user groups had comparable levels of experience using software and the participants in the developer groups had comparable levels of experience developing software. The groups differed, however, with respect to participants' cultural background.

(This section should be extended with a description of the three user groups (Chinese, Danish, and Indian) and the three developer groups. Also, the section should describe how participants were selected for the study.)

Stimulus material

The stimulus material used in the repertory-grid interviews consisted of six images. Each image (see Figure 1) was colour printed on a separate sheet of paper and supplemented with a brief textual description. As an example, the upper, left image in Figure 1 was accompanied by the text "Google is a search engine for the

World Wide Web, providing access to billions of web pages by means of queries”. All six images were instances of systems in the broad class of information and communication technologies.

(This section should go on by defining the set of images. Also, we must consider how we can ensure that participants know the technologies)



Figure 1. The images used as stimulus materials in the repertory-grid interviews.

Procedure

Participants were interviewed individually. First, the study was described to the participants and the repertory-grid technique explained to them. Then, participants filled out a questionnaire with information about their background. After completing these preparatory steps, the actual repertory-grid interview was conducted. The interviewer placed three images (a so-called triad) in front of the participant and asked:

“Based on your experiences using these technologies, can you think of any way in which two of the technologies are alike and different from the third?”

The first part of the question emphasized the participant’s personal experiences of the technologies and framed these in terms of his or her use of the technologies. The last part of the question, adopted from Kearns (1992), asked the participant to define a pair of images and state how this pair differed from the third image. Apart from indicating the pair, the participant was asked to provide an explanation for it. Explanations consisted of a word or short phrase defining the pair of images and another word or short phrase defining the contrasting image. This represents the construct for that triad. Once a construct had been elicited, the interviewer wrote the words/phrases as anchor points on a five-point rating scale and asked the participant to rate each of the six images with respect to that construct. The participant was also asked to indicate which end of the rating scale was the more positive.

After creating a construct for one triad, the interviewer presented the participant with a new combination of three images. This process was repeated for all $6 \times 5 \times 4 / (3 \times 2 \times 1) = 20$ possible triads, in a randomly generated order. However, the process was aborted if the participant was unable to provide a new construct for two

successive triads. If a participant came up with multiple constructs for the same triad they were treated sequentially. After completing the last triad, the participant was asked to rank the created constructs in order of importance, as suggested by Hassenzahl and Wessler (2000). Finally, the participant was debriefed and thanked.

Participants were interviewed by a person from their own culture. Interviews were conducted in English or the participants' native language, consistent with the individual participant's preference. The words or short phrases defining the two poles of the constructs were, however, always formulated in English. The interviews lasted an average of X minutes.

Data analysis

The data analysis will probably involve:

- Qualitative analysis
- Analysis of individual people's repertory grids with RepGrid or WebGrid (see <http://repgrid.com/RepIV/>)
- Factor analysis of multiple people's grids with SPSS (see Bell, 1997)

In addition, Baber (1996) describes a lightweight approach to analysing individual people's repertory grids.

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