THESIS ABSTRACT

Recommendations for a Software Application Based on Individual Differences

The purpose of this research was to document individual differences while using a specific computer software application and to make recommendations for a new interface based on those differences. Differences between users account for a wide range of human factors considerations. The individual differences of concern in this research were level of computer anxiety, cognitive style, and method of problem-solving.

The research hypotheses were:

1. There is no relationship between the level of computer anxiety and cognitive style.

2. There is no relationship between the level of computer anxiety and method of problem-solving for a computer-based task.

3. There is no relationship between cognitive style and method of problem-solving for a computer-based task. Level of computer anxiety was documented using the Computer Anxiety Index (CAIN). The Myers-Briggs Type (MBTI) Indicator was used to determine cognitive style.

Level of computer anxiety was documented using the Computer Anxiety Index (CAIN). The Myers-Briggs Type (MBTI) Indicator was used to determine cognitive style. Method of problem-solving was decided using concurrent verbal protocol analysis.

Although correlations were weak, trends were present. Participants with Introversion (I), Sensing (S), Thinking (T), and Judging (J) preferences demonstrated a higher average level of computer anxiety. They also averaged higher scores on task completion and higher percentages of problem-solving time using reading methods. Conversely, participants with Extraversion (E), iNtuition (N), Feeling (F), and Perceiving (P) preferences had a lower average level of computer anxiety, averaged lower scores on the tutorial, and averaged a higher percentage of time using non-reading problem-solving methods.

The results showed that participants who used certain styles of problem-solving methods did not read the manuals provided. Instead, they clicked around the screen randomly looking for hints. In this research, persons who used these types of problem-solving had a lower success rate when completing the tutorial. Additionally, these users became frustrated and verbalized feelings of failure.

The researcher made recommendations based on the finding that participants with specific preferences read the manual less, which resulted in poorer performance on the tutorial. The recommendations were to bring small amounts of text to the computer screen. This text provides hints needed by participants who tended not to read printed manuals.

RECOMMENDATIONS

1. Only provide double-click options in the icon menu. Do not have additional options available when double-clicking in the workspace.
2. Have the cursor labeled with the selected function or option.
3. The cursor label should change color when it passes over editable screen items in the selected function.
4. Always provide a status bar, which lists the selected tool, option, or function in progress.
5. Avoid hidden interface options without a label.
6. If an object on the screen is formatted or transformed, the change should be listed in the status bar when the cursor passes over the object.
7. Icons should be presented in the order of expected use and grouped by function.
8. Icons should be easy to differentiate.
9. The "Undo" and "Delete" options should be separate from other functions and easy to recognize in any interface.
10. On-line help should be available for every software application.