Applying Heuristic Evaluation to improve the usability of a Patient Education and Motivation Tool

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Computer Mediated Health Education Kiosks

- Provide self-paced interactive environment to deliver educational content to individuals about their health condition.
- Used to deliver a variety of health related information such as adult breast cancer screening information, asthma education, television and media use and injury prevention.

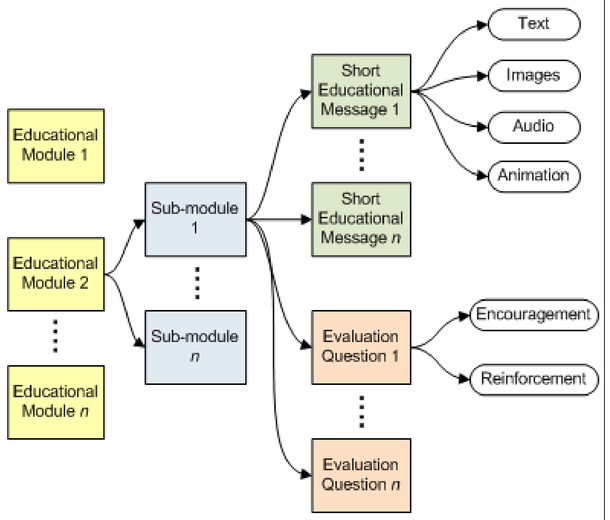
Objective

The objective of this study was to improve the usability of Patient Education and Motivation Tool (PEMT) through heuristic evaluation of the interface.

Patient Education and Motivation Tool (PEMT)

- Designed based on a variety of cognitive-behavioral theories.
- Facilitate health information messages adapted depending on psychosocial elements.
- Present health information in an interactive tailored manner considering multiple factors influencing health status and health behaviors.
- PEMT has 3 key components including screening, learning and evaluation.
- Screening component gathers information about individual demographics, knowledge and attitudes and beliefs.
- The learning component has a knowledge base of health information.
- Evaluation component gauges effectiveness of the program through a series of assessments (multiple choice questions, problem solving skills and case scenarios.)

Key elements of PEMT



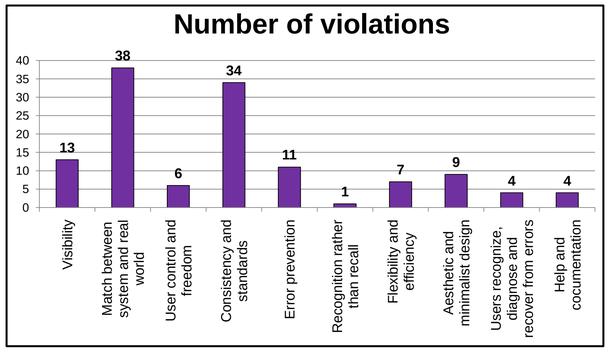
Methods

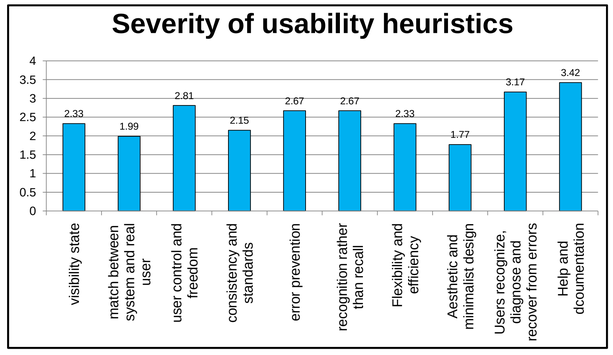
- Heuristic evaluation is an effective usability inspection method where a group of usability experts examine the user interface design according to a set of usability guidelines.
- Three usability experts reviewed the user interface of PEMT using Nielson's usability heuristics and generated a master list of heuristic violations.
- The ratings from all three experts were averaged for each identified heuristic violation on the master list.
- The issues were sorted by heuristic and ordered from most to least severe within each category based on the following scale:

0	**I don't agree that this is a usability problem at all**
1	**Cosmetic problem only: need not be fixed unless extra time is available on the project**
2	**Minor usability problem: fixing this should be given low priority**
3	**Major usability problem: important to fix, so should be given high priority**
4	**Usability catastrophe; imperative to fix this before product can be released**

Results

- A total of 127 violations were identified with an average severity of 2.5 (range 0-4).
- There were 26 major violations (average severity ≥2.5) considered to have potential of causing major consequences.
- The number of violations ranged from 1 to 38 across different categories with the maximum violations for match between system and real world.
- The average severity of the violations ranged from 1.77 to 3.42 across different categories with the maximum average severity for help and documentation.

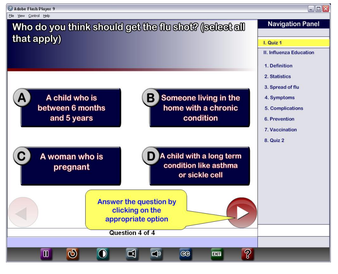




Conclusions

- The motivation to conduct this heuristic evaluation was to uncover usability violations and make the relevant changes in the user interface prototypes of PEMT in an efficient yet effective manner.
- Our study illustrates the relevance of the heuristic evaluation for identifying usability problems with computer-based health education programs.
- A substantial benefit of heuristic evaluation is that it represents significant savings in time over the duration of a complete empirical user test, both in terms of execution and generation of interface changes for implementation.

Heuristic Evaluation & Software Revision



Disclosures

The authors have no personal financial relationships with commercial interests relevant to this presentation

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