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Evidence-Based Web and Ageing Guidelines

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Abstract

This paper presents a set of evidence-based guidelines for designing websites for the elderly. Extensive literature review was conducted, guidelines were developed and supported by literature, and finally the guidelines were used to evaluate ten websites that have as their primary target audience the elderly.

Problems Addressed

There is a lot of past research on the topics of aging and human computer interaction by the elderly but no central collection of this information is presented in an organised way. Through this study, a structured classification of usability guidelines was created to address the area of human-computer interaction for the elderly.

When information is researched about web design, such as the best way to convey information on a website, the best way to structure the information, how to attract the visitors' attention and so on, it is common to find that these issues are addressed with a so called typical audience in mind: the more frequent users of the world wide web. One can go so far as to say that the frequent users of the World Wide Web are seen as the young generation by default.

The World Wide Web is a profitable business that capitalises on its main asset: information. People visit websites for information retrieval. The purpose is defeated if people visit a website only to be unable to obtain the required information. Sometimes the information is actually there but hidden.

Website designers have many techniques at their disposal to attract attention to content on websites. Use of colour, images, and animation are just some of the techniques that can be used. This seems logical and plausible. But the issue is that websites should be accessible by all people. This includes not only the young generation but also those with disabilities and the elderly.

One can find guidelines that can be followed to make the experience of information retrieval on websites user-friendly, but these appear as generic. It is feasible to use these generic guidelines to make websites more accessible for the elderly but they need to be more specific and be traceable to the needs of the elderly. It is important to realise that the elderly are and will continue to be a large audience that are regular users of technology.

The main themes that come to light are the fact that the population of older people appears to be increasing, Czaja (1997). And also, according to Hawthorn (2000) computing is now ubiquitous. Thus it is important to address this issue and ensure that this particular audience is catered for as well with regards to interface design.

Key Objectives

The main aim of this project was to review the areas of aging and Human computer interaction by the elderly. It can be broken down into the following sub-objectives:

- Review literature on the areas of Human computer interaction and aging.
- Have a central repository of the findings from the review.
- Establish usability criteria of websites that are used by the elderly.
- Evaluate a selection of websites designed specifically for the elderly, using the criteria established.

To meet the objectives outlined for this evaluation project, an extensive literature review on the areas of aging and human computer interaction specific for the elderly was carried out by reviewing over 100 papers on this topic.

From the review of the vast literature, a set of usability guidelines was established. These usability guidelines are specific for the use of websites by the elderly.

Finally, an evaluation was conducted on existing websites. The websites evaluated are those that have specifically been created with the elderly in mind. The established usability guidelines were used in order to carry out the heuristic evaluation.

Results-Discussion

The objective here was to establish usability criteria that should be met in order to make websites usable by the elderly. Evidence-based guidelines were used and these were applied to the relevant areas of decline that can occur in aging. There were 102 guidelines established in total with 52 being unique. The guidelines were created to address the following areas:

Vision

1. Decline in static acuity

2. Decline in dynamic acuity

3. Decline in contrast sensitivity

4. Reduction in colour sensitivity

5. Sensitivity to glare

6. Decrease in Visual Field

7. Decrease in processing of visual information

Psychomotor abilities

8. Decrease in psychomotor abilities with increase in age

Attention

9. Decline in selective attention

10. Decline in divided attention

Memory and Learning

11. Decline in memory and learning

Intelligence and Expertise

12. Decline in intellectual abilities

Each of the areas had guidelines established that could be used for designing websites for the elderly.

These guidelines were then used to evaluate ten websites that target as their primary user population the elderly.

The results showed that all the websites met over half of the guidelines. It was also demonstrated that the mean number of websites that violated the guidelines for static acuity were 3; for dynamic acuity the mean was 4; contrast sensitivity had a mean of 1; colour sensitivity was 3.5; glare sensitivity was 5; visual field was 3.5; processing visual information was 2; psychomotor skills was 3; attention was 1 and memory and learning had a mean number 1.5 websites that violated the guidelines specific to this area. The overall mean number of websites that violated guidelines was 3.01. For more details see Figure 1.

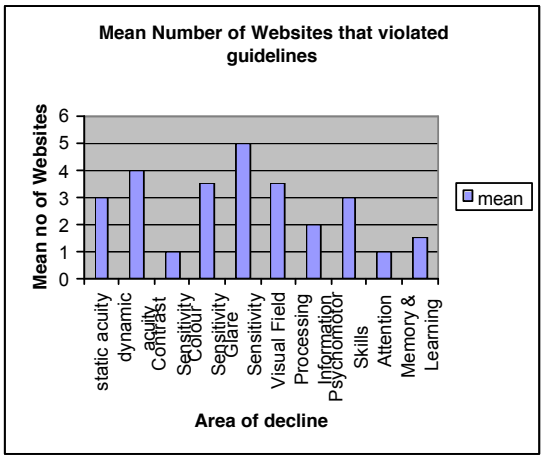

Figure 1: Mean Number of websites that violated guidelines.

As the guidelines addressed the different areas of decline, it was found that the guidelines that were most frequently violated by the websites were those to do with Vision and Psychomotor ability. This is very informative as vision is the channel that is the beginning to the processing of visual information.

Conclusions

The established guidelines provide a starting point for future studies in establishing a more manageable set of guidelines. Techniques like card-sorting are being investigated as a mechanism for grouping the different guidelines and removing any duplicates.

References

Czaja, S.J. (1997). Using Technologies to Aid the Performance of Home Tasks. Chapter 13, In Handbook of Human Factors and The Older Adults. Academic Press

Hawthorn, D, (2000) Possible implications of aging for interface designers. Interacting with Computers 12, Elsevier Science B.V, p 507-528.