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Impact of accessibility barriers on the mood of blind, low-vision and sighted users

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Abstract

Two versions of a website, a non-accessible site (NA-website) and an accessible site (A-website), were tested by 13 participants who were: a) blind users, b) low-vision users and c) users without identified disabilities. The mood of the users and their interaction efficiency, effectiveness and satisfaction were recorded as they encountered several web content accessibility barriers. Results show which elements were the major causes of frustration to each user group, and how blind users displayed less criticism than expected to the barriers.

Keywords: accessibility, blind users, low vision users, mood user, user test.

1. Introduction

Despite legal accessibility requirements, a significant number of websites currently still present many accessibility barriers and people with disabilities often have a hard time or no opportunity to use them. The World

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Report on Disability [29] estimates that between 15% and 19% of the population has some type of disability problem. This is a substantial consumer segment that should not be ignored.

Moreover, when many developers think of an accessible website, they think of a perceivable, operable system with easy access for people with a sensory, motor or cognitive disability. However, they forget the side benefits of accessibility and how this improves usability for every user. Taking this into account**,** web content usability [13] and accessibility [10] deserve special attention and collaboration in order to improve the quality of websites.

This article evaluates the mood of a group of users while they interact with two parallel websites (A-website, an accessible website, and NA-website, a non-accessible website). Both websites had similar content but opposite characteristics of accessibility (one being full of accessibility barriers, and the other being correct). The final objective of the evaluation is to collect experiential information from users with disabilities, and communicate this information empathically to non-technical web content authors, such as Web 2.0 users who do not usually have a great deal of knowledge about web accessibility [20]. The complete research is divided into four phases, each involving the same websites being evaluated by users with different disabilities: cognitive (phase 1), impaired sight (phase 2), motor (phase3) and impaired hearing (phase 4). This document shows the results of phase 2 involving users with visual impairments.

2. Related work

Disabled users interact with websites in different ways [27] and it is necessary to analyse their particular features in order to understand which access barriers have more impact in each case. Usually, web accessibility is gauged using the success criteria of the Web Content Accessibility Guidelines (hereinafter, WCAG) [4][6], published by the World Wide Web Consortium, and now accepted as ISO standard: ISO/IEC 40500:2012 [14]. Alternatively, accessibility is supposed to comply with reasonably equivalent regulations that are adopted by every country [2].

However, WCAG guidelines are primarily a legal instrument and compliance with them does not guarantee real website accessibility in all cases, as several authors have pointed out [7], [9] and [22]. For example, in the opinion of some authors [21], only 50.4% of problems encountered by blind users were covered by WCAG 2.0 success criteria. Consequently, although WCAG guidelines provide an important starting point, user testing is richer and more informative [11], [3].

Previous research has evaluated the frustration and errors made by users without disabilities [15] and blind users [16], [17] on websites and desktop applications. Other research derives the needs of users with disabilities from user tests results [21], [12] and [28]. However, there are few studies focusing on the analysis of mood while confronting barriers in web browsing.

An accessibility barrier is any condition that makes it difficult for people to achieve a goal while they are using the website with the use of specific assistive technology [1]. In contrast to barriers, good accessibility improves efficiency and the autonomous operation of users with cognitive disabilities [19], and of users with any kind of disability. Accessibility of content and user agents increases people's self-determination and autonomy, two key aspects in their welfare and quality of life [24], [26].

3. Study context

A-site[1] and NA-site[2] were developed and published in the Wordpress content management system. Both websites had parallel content and were organized into 4 pages related to tourist information: city, monuments,

[1] A-site: http://193.144.12.82/accesibilidad/wpB
[2] NA-site: http://193.144.12.82/accesibilidad/wpA