

This extended abstract is a contribution to the [Easy-to-Read on the Web Symposium](#). The contents of this paper were not developed by the W3C Web Accessibility Initiative (WAI) and do not necessarily represent the consensus view of its membership.

MIA - My Internet Assistant for successfully reading and using web content

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1. Problem Description

Many public and governmental services, regulations and information aim at people who are unemployed, have low education levels, have disabilities or are elderly. The same groups have low levels of digital skills compared to the population at large (Van Deursen en van Dijk, 2011; van Dijk, 2005), and experience problems in comprehending the digital content and applying it in realistic tasks (Van Deursen, 2010). According to studies of adult literacy, about 10% of the Dutch population has a literacy level that is insufficient to use written information to fully participate in society, realize their own goals and develop their knowledge and competences (Fouarge, Houtkoop & Van de Velde, 2011). The proportion of the Dutch population that has inadequate digital skills to fulfill ordinary daily-living tasks on the web is even much bigger (Van Deursen, 2010). That means that large parts of web content is inaccessible for people who, for reasons of cognitive or auditory disabilities, or because of inadequate schooling, lack the required written text and/or digital literacy. The problem of difficult-to-understand web content is not simply solved by making web texts easier to read (Karreman, van der Geest & Buursink, 2007).

2. Background

What defines whether users really understand web content? We assume that the level of accomplishment of understanding the web content is determined by a number of interacting factors:

- Text/content factors, such as the verbal and visual formulation of the content, the modality it is presented in (e.g. spoken text vs. written text) and support provided in actually applying the web content in a task (e.g. form-filling instructions).
- Task/context factors, such as the complexity of what needs to be accomplished with the web content, environmental factors that complicate or facilitate understanding (e.g. the presence of noise, or a helpful assistant).

- Personal characteristics of the users, such as reading and computer skills and other individual (dis-) abilities, but also the interest that the users have in understanding and applying the web content (is it important, is there an alternative way), their self-confidence and sense of control, their past experiences with the task en context, etc.

Any intervention or tool should take these interacting factors into account. We tested such an integrative tool, an avatar that supports people with low levels of (digital) literacy in understanding and applying web content.

3. Approach

Our tool, a plug-in avatar called MIA (My Internet Assistant), was developed to support people with low levels of written text literacy and digital skills in frequently occurring daily-life web tasks, like filling out a form. MIA points out the various steps in the task (e.g. the next form field to fill out), and presents step-by-step instructions in both written text and spoken text. MIA can be installed on any website and can be filled by any content provider with its own instructions and texts without any changes in the core web content.

[illustration of screen with MIA: will be added later]

We tested whether the use of MIA had the intended effect by comparing two groups of users with limited text literacy and digital skills who planned a route on the web with a widely used route planner. Their task was to plan the car route to a friend who recently had moved to another city. Twenty people used the route planner with MIA, twenty-one others undertook the task of route planning without MIA. We measured personal characteristics (with an oral questionnaire), skills, understanding and perceived ease-of use of the route planning task (observations and quantitative measures like time needed and task success) and elicited comments on the visual presentation and the texts of MIA. After the use of MIA, the intention to use the assistant again was measured, as well as task success with the installation procedure of MIA. A detailed report and full results are available in Becker (2011).

4. Challenges

We wanted to make sure that an aid to make web content easier-to-use and easier-to-read would not focus on just the text, as if it makes no difference in which task context or medium that text is presented. Therefore the avatar MIA was used, that assisted users in all aspects of the task and the content.

Effects of MIA are assessed as a black box, because we compared the group using MIA with the group not using MIA. Hence it cannot be said whether the effect was caused by for example the stepwise guidance through the task, the easy-to-read written instructions, the spoken text, or any other specific

aspect of MIA. We only have the users reports on what they found helpful. We think this testing situation is realistic, because it takes into account that text, task and personal characteristics interact in making web content easy-to-read, understand and use.

At the time of the study, MIA was a prototype that worked only with Google Chrome, which for most users was an unknown browser. The use of Google Chrome as a browser was actually not noticed by the users, who were selected for their low levels of digital literacy.

5. Outcomes

Our study proved that an integrative tool like the avatar MIA works. Users with low literacy and computer skills levels were better able to fulfill the form-filling task with MIA than without. It was demonstrated that an avatar like MIA can make web content more accessible and comprehensible for users with low written text literacy and digital skills. The support of MIA helped both at the basic level of medium-related skills (e.g. understanding that you have to click on a radio button) and at the comprehension level (e.g. understanding that you have to supply your own address to get the route planner started). Users felt that they were best helped by the spoken instructions, with the written instructions and stepwise pointing coming second and third. Both users who had used MIA as those who had not used it indicated that they would like such an assistant in the future if it were available. Users reported that they felt MIA was a reliable assistant. One participant identified with MIA as if it was a real-life person (She should not wear those shoes, a woman her age would get backaches if walking the whole day on shoes like that!).

6. Future Research

The effects of using MIA as an internet assistant is now tested with users of various literacy levels who engage in the realistic but complex task of registering for unemployment benefits with the UWV (Dutch Public Employment Agency). Test results are not yet available.

We would like to assess in future studies what the exact contribution is of the various aspects of MIA to the effect of making web content easier-to-use and easier-to-understand. Is it the spoken text, the easy-to-read written instructions, the pointing to web elements, or the combination of each? A careful causal effect analysis with larger numbers of participants would create a basis for a toolkit of means to make web content easy-to-read and easy-to-understand.

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