

## Chapter 14

# Inclusion of Users with Special Needs in the Human-Centered Design of a Web-Portal

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### ABSTRACT

*Human-Centered Design focuses on the analysis, specification and involvement of a product's end users as driving elements in the design process. The primary research objective of the case-study presented in this paper is to illustrate that it is essential to include users with special needs into all major steps of designing a web-portal that provides services to these special users. But how can this be accomplished in the case of users with special cognitive and affective needs? Would the "classical" Human-Centered Design Process (HCD) be sufficient or would it need to be adapted and complemented with special procedures and tools? In this paper the design team shares the strategies they adopted and the experiences they gained by including users with dyslexia in the design of the LITERACY Web-Portal. Besides providing insight into the special effort and steps needed to adapt HCD for users with special needs, the paper encourages application designers to include end-users even though - or particularly because - they have needs that are special and critical for the adoption of the product.*

### INTRODUCTION

This paper discusses the process of designing a web-portal-interface that suits the needs of a special needs user group. It describes the strategies applied and experiences gathered while designing a specialized interface for users with dyslexia by applying and adapting the Human Centered Design (HCD) process. That process served as a guideline throughout the entire development phase of the "LITERACY-web-portal". In particular, the target group – dyslexic users – was included starting with the very early phases

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and continuing until project completion. This approach was chosen because the project team wanted to confirm their hypothesis that end-user inclusion is a critical success factor for any software, especially for a special needs user-group. In fact, the acceptance of any software-tool hinges on the degree to which it manages to meet the (special) needs of the primary target groups (Nielsen, 1993). Since the Human Centered Design process (ISO 9241-210:2010) emphasizes end-user inclusion, it provides an optimal resource and starting point for the goals the LITERACY-portal-design project aimed to achieve.

Before it was possible to actively and directly include any users, it was necessary to apply the initial steps of the Human Centered Design process. The first step was to analyze the future user population by studying articles, looking at existing web-applications targeted at them, and personally talking to people with dyslexia. Based on the information gathered, potential tasks that would be performed on the Literacy Portal, were extracted and described. To achieve this, three core elements of the HCD process were employed: personas, context analysis, and task analysis.

Regarding the strategy, people with dyslexia were contacted and included as soon as possible in order to get a feeling not only for their special needs but also for their special strengths. Initial contact with persons with dyslexia followed extensive literature research and preparation of key questions, so as to have knowledgeable partners in the dialogue, to be as open as possible to learn from their life stories and experiences. Following this mindset, the design team considered it most helpful to engage in semi-structured interviews with dyslexic persons in various stages of life, and to gradually focus on some of their core issues that crystallized from the interviews such as finding work, using the internet, interacting in/with educational institutions, etc. Also, very early in the process dyslexic persons were asked about their preferences for screen designs and what terms they found relevant or interesting to look for on the LITERACY portal.

Regarding the experience gathered while designing the web-interface, the paper points to issues worth specific consideration in order to share the design team's experience with interested peers, and thus makes it reusable in the community of interface designers. In a nutshell, getting in contact with users with special needs may need special provisions, contacts with counseling centers, more time than talking to "ordinary" users, and an adaptation of methods and/or tools and procedures to accommodate for the particular special needs.

This paper is structured as follows: the next section discusses the background in which this research was conducted and provisions taken to maximize end-user inclusion in all aspects of the design process. Additionally, related work and studies that influenced different aspects of the research design are mentioned. The subsequent section describes applied design strategies and how people with dyslexia were included into the design-process through individual direct and indirect means of end-user inclusion during the early stages of the Human Centered Design process. The particular experiences gathered through inclusion of dyslexic users are highlighted throughout this section. The final sections summarize the work and experiences so far and give an outlook on further work. The contribution we make is a confirmation that the inclusion of end users in early stages of web-design is essential and that it should be done regardless of whether end-users have special needs or not. Furthermore, the paper illustrates some concrete techniques and steps to include end-users with dyslexia and thus can serve as an example or inspiration on how to accomplish and exploit end-user inclusion for increased usability of a web-portal.

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