Chapter 21
A Disability-Aware Mentality to Information Systems Design and Development

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ABSTRACT

With the proliferation of information technology devices comes a massive increase in the number of information systems that are developed to meet the demands of users. By default, designers and developers of information systems tend to design for users without disabilities. The consequences for people with disabilities are enormous. This chapter aims to propose a disability-aware approach to information systems design that advocates that stakeholders consider the needs of people with disabilities throughout development. This aim is achieved by reviewing some of the difficulties encountered by people with disabilities when interacting with information systems, proposing a disability-aware approach and examining how this could be practically implemented through e-learning design. The recommendations from 48 students with disabilities from two universities in the United Kingdom and Canada are presented. The chapter also looks at possible future research for those interested in pursuing such approach.

INTRODUCTION

Nowadays, it is difficult to imagine a world without technology. We interact with technology every day in various ways. This inevitable modern technological revolution has meant that many services are increasingly being offered online. Amongst these services e-learning, e-commerce and e-health are most common. With the drive to use technology for delivering services online, a lot of the technological developments around these areas by default have often focused on meeting the needs of people without disabilities, thus leaving people with disabilities to seek appropriate assistive technologies in order to interact with such systems. In some cases, such assistive technologies might not be compatible with these systems. There are legislations in various countries around the world necessitating that people with disabilities be included in services that are offered, by ensuring that these services are accessible

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to them; otherwise "reasonable adjustments" or "reasonable accommodation" need to be made in order to meet their needs.

A lot of the difficulties people with disabilities face when interacting with most information systems are related to the lack of consideration of the needs of people with disabilities during the development cycle. In designing technological solutions, designers and developers need to understand that disability could affect different functions related to the senses and how this happens. Such designers need to develop a new mind set when it comes to designing systems that will be used by everyone. The difficulties and failures of existing information systems towards people with disabilities have necessitated the search for a better approach for designing and developing information systems. Thus, this article aims to propose a disability-aware approach to information systems design and development in order to ensure that adequate analysis of the needs of potential users with disabilities is carried out and that their needs are incorporated into the design. It also ensures that a representative group of people are selected and involved in the design process. That way, useful feedback is obtained and cost of production is reduced as designers do not have to spend a lot of money retrofitting accessibility. By developing a disability-aware mentality to systems design, the result is an accessible and usable product.

In the following sections, the difficulties that people with disabilities face when using technology will be discussed through a review of literature. The disability-aware approach to information systems design will then be proposed. The recommendations from students with disabilities on how to design e-learning to meet their needs will then be presented after which future research will be discussed, before a conclusion of this article.

BACKGROUND

In order to set the scene for proposing a disability-aware mentality to information systems design and development, this section reviews literature relating to the difficulties that people with disabilities face while interacting with information systems, some assistive technologies for interacting with information systems and also reviews some approaches used in designing information systems.

Difficulties Encountered by People With Disabilities When Using Information Systems

It is a fact that people with disabilities are generally more disadvantaged than those without disabilities when accessing services for various reasons which could include the way the environment has been designed to accommodate their needs or how society responds to their needs in various ways. Environmental factors such as the weather, specifically during winter where there have been heavy snowfalls for instance have been barriers to people with wheelchairs accessing community services (Ripat, Brown, & Ethans, 2015). The way society is designed tends to favor people without disabilities. Thus, it is common even nowadays to see newer buildings being designed without accessibility in mind (e.g. no ramps or elevators for wheelchair access). Nevertheless, there is an increase in awareness of the needs of people with disabilities when constructing buildings, perhaps because it is mandated by disability legislations. Also, many older buildings are being adapted to meet the needs of people with disabilities, such as adding ramps for wheelchair access, including induction loops in meeting halls, controlling the lighting of buildings to suit people with light sensitivity and many other adaptations. Steyaert (2005) observed that