AHFE International 2023

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Accessible E-Learning Through Story-Based Participatory Design for Persons With Vision Impairments

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ABSTRACT

Electronic or online learning (e-learning) has created opportunities for education and skill development through digital technology. As society continues to build more innovations for enhancing the online learning experience, we must raise questions about who has access to e-learning. More importantly, are the digital technologies designed for e-learning, such as learning management systems (LMS), accessible for persons with disabilities? We present a case study using participatory design (PD) with blind and visually impaired (BVI) learners and K-12 teachers to design an LMS usable and accessible to BVI users. We implemented storytelling to engage our codesigners, given that visual stimuli typically used in PD may not be effective with BVI participants. Through three design workshops, we learned about the challenges faced by BVI users in online courses and collaboratively produced design and interaction features to improve accessibility in LMS platforms. This research addresses a critical need for incorporating the input of persons with disabilities into the educational technology design.

Keywords: Exemplary paper, Human systems integration, Systems engineering, Systems modeling language

INTRODUCTION

The rapid emergence of information and communication technologies (ICT) for remote education has shifted how people approach learning and skill development. While remote learning is nothing new, it has existed since the 18th century (Kentnor, 2015), it has since evolved to provide ICT for synchronous and asynchronous communication and interaction between teachers and learners and persistent access to information. This form of remote learning, called "E-learning," introduced an alternative to traditional in-classroom instruction. However, the widespread adoption of e-learning technologies rests on consumers' perceived user experience (UX).

While usability is often a criterion in evaluating online learning technology, accessibility is often not considered. As a result, persons with visual impairments may find them more challenging to use than sighted users. Research suggests that current designs of online learning platforms may not provide a fully accessible learning experience for persons with disabilities (Johnson & Ruppert, 2002). As a result, the learning gap may widen for BVI learners and negatively impact their self-efficacy in e-learning.

Huff, Earl. (2023). Accessible E-Learning through Story-Based Participatory Design for Persons with Vision Impairments. In Human-Centered Design and User Experience. Vol. 114. AHFE International.