Chapter 12
ELearning for Persons with Visual Disabilities:
Case of Low Vision

Ruth N. Wambua
The University of Nairobi, Kenya

Robert Oboko
The University of Nairobi, Kenya

ABSTRACT

This chapter discusses an eLearning platform that is usable by persons with low vision. To start with, such a platform is achieved by incorporating technological advances such as: use of text with the highest possible contrast; use of varying font size; among other customized Human Computer Interaction (HCI) effects. Moreover, use of complicated, decorative or cursive fonts should be avoided, as well as italic text and capital letters, which can be difficult for users with reading impairments. In summary, this chapter supports the fact that eLearning is possible for persons with low vision, provided that all the necessary technological advances have been considered.

INTRODUCTION

Persons of low vision refer to people who have sight problems, in that they have partial sight. Consequently such individuals experience difficulties in reading/studying either from a book print or computer screen. For some individuals, the standard size of letters on a computer screen or printed in documents are too small to read, whereas others may not distinguish one color from another. The reason for low vision according to Bjork, Ottosson & Thorsteinsdottir (2008)

could be because of clouding of the lens of the eye, which causes light that passes through the lens to the retina to be scattered. The scattered light causes images to be blurred and visual acuity to be reduced. Moreover, as one continues to age, the lens of the eye also yellows and becomes fixed and is thus unable to focus. In this case, the pupil does not dilate very well to changes in illumination, and the retina and cortex become less able to process visual information. Consequently, contrast sensitivity decreases, visual acuity drops somewhat, and vision in low light levels suffers.

Table 1. Level of visual impairment and blindness according to the World Health Organization

Level of Blindness		Definition	Implications
0	**Mild or no Visual Impairment**	Vision better than: 6/18, 3/10, 20/70	May be glasses
1	**Moderate Visual Impairment**	Vision better than: 6/60, 1/10, 20/200 Vision worse than: 6/18, 3/10, 20/70	Glasses and possible need for magnifiers on computer interface
2	**Severe Visual Impairment**	Vision better than: 3/60, 1/20, 20/400 Vision worse than: 6/60, 1/10, 20/200	Magnifiers and color contrasters for computer interfaces
3	**Blindness**	Vision better than: Can count fingers @ at 1 meter distance Vision worse than: 3/60, 1/20, 20/400	Strong magnifiers for some but mainly screen readers for computer interfaces
4	**Blindness**	Vision better than: Light perception Vision worse than: 1/60, 1/50, 5/300	Screen readers for computer interfaces
5	**Blindness**	No light perception	Screen readers for computer interfaces

On the contrary, low vision is also suffered by the young in schools and colleges.

Following the remarkable advances in technology, there is dire need for support technology which goes a long way to ensure that individuals with partial sight impairment also benefit from technological advances such as eLearning. Considering that people with low vision are still capable of using the normal standard computer keyboards and screen, improved technological advancements would ensure that they are also able to type using those keyboards and read from those screens. For example, according to Burgstahler (2012), computer-generated symbols, both text and graphics, can be enlarged on the monitor or printer, thereby allowing individuals with low vision to use standard word processing, spreadsheet, electronic mail, and other software applications. Moreover, the ability to adjust the color of the monitor or change the foreground and background colors is also of value.

This chapter discusses a technological eLearning platform for people with low vision. The level of visual impairment and blindness in this case is based on the World Health Organization document: International Statistical Classification of Diseases and Related Health Problems (World Health Organization, 2010). The details are as tabulated in Table 1: Level of visual impairment and blindness according to the world health organization

Background Research

ELearning basically refers to learning electronically. In this case, it refers to being able to acquire knowledge through reading and studying from materials that have been made accessible through a machine/computer. An education research paper by Klopfer, Osterweil, Groff & Haas (2009) discussed the need to conceptualize and experiment with new methods in education so as to be able to appreciate the dynamics of our changing world.

19 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/elearning-for-persons-with-visual-disabilities/128049

Related Content

Generation of Authentic Learning and Learners: The Conditions of Learning Underpinning Blended Learning and Online Forums
Phil Fitzsimmonsand Peter Kilgour (2018). *Online Course Management: Concepts, Methodologies, Tools, and Applications (pp. 1710-1725).*
www.irma-international.org/chapter/generation-of-authentic-learning-and-learners/199291

The Pedagogical and Technological Experiences of Science Teachers in Using the Virtual Lab to Teach Science in Rural Secondary Schools in South Africa
Brian Shambare, Clement Simujaand Theodorio Adedayo Olayinka (2022). *International Journal of Technology-Enhanced Education (pp. 1-15).*
www.irma-international.org/article/the-pedagogical-and-technological-experiences-of-science-teachers-in-using-the-virtual-lab-to-teach-science-in-rural-secondary-schools-in-south-africa/302641

Towards Implementing Computational Thinking in Problem Solving Through Mobile Application: A Preliminary Study
Mimi Malini Binti Mohmad Fuziand Wan Ahmad Jaafar Wan Yahaya (2024). *Integrating Cutting-Edge Technology Into the Classroom (pp. 312-336).*
www.irma-international.org/chapter/towards-implementing-computational-thinking-in-problem-solving-through-mobile-application/344312

Retention of Online Learners: The Importance of Support Services
Pamela A. Lemoine, Gina Sheeks, Robert E. Wallerand Michael D. Richardson (2019). *International Journal of Technology-Enabled Student Support Services (pp. 28-38).*
www.irma-international.org/article/retention-of-online-learners/244209

The Impact of Language Use and Academic Integration for International Students: A Comparative Exploration Among Three Universities in the United States and Western Switzerland
Michelle L. Amosand Rachel C. Plews (2019). *International Journal of Technology-Enabled Student Support Services (pp. 1-13).*
www.irma-international.org/article/the-impact-of-language-use-and-academic-integration-for-international-students/244207