Chapter 11
The Use of Assistive Technologies for Blind Students in Virtual Museums as a Possibility in Teaching:
Case Study – The Presence in Absence Exhibition

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ABSTRACT

Assistive technologies are characterized by resources, methods, and strategies that favor the autonomy and inclusion of people with disabilities. There has been much interest in thinking about assistive technologies in the school environment to enable students with disabilities to attend the classroom environment. However, there is also the need to think about assistive technologies that make students with disabilities have an equivalent teaching experience when in digital environments. This chapter aims to identify possibilities for implementing assistive technologies for blind students in digital exhibitions. The Presence in Absence exhibition featured a team of 23 people from different areas of knowledge and four blind consultants. They created a virtual art exhibition that aims to use assistive technologies to enable an inclusive cultural activity. As a hypothesis, it is believed that the expansion of studies in this area is a way of sharing alternatives so that people with disabilities can participate in cultural school activities that involve visits to online museums.

INTRODUCTION

Traditional assistive technologies allow people with disabilities to use a computer autonomously through the use of specific hardware and software. Assistive Technology (AT) is a new term, used to identify the entire range of resources and services that can contribute to providing or expanding functional abilities of people with disabilities and thus promoting independent living and inclusion. This definition is presented by Bersch (2006) and serves to guide the concept of assistive technology throughout this paper. This is in line with the concept of Universal Design proposed by Mace et al. (1998). Universal Design aims to develop projects that can be used by everyone: children, tall and short adults, the elderly, pregnant women, obese, people with disabilities, or with reduced mobility. It applies to products or environments, these being physical or digital. The main concept of Universal Design is that it is not necessary to develop products for a specific group of individuals but to develop them in a way that they can be used universally by anyone. "The principles could be applied to evaluate existing designs, guide the design process, and educate designers and consumers about the characteristics of more usable products and environments" (Brown et al., 2020, pp. 32).

However, software development based on Web Content Accessibility Guidelines (WCAG) has opened up new perspectives for promoting digital inclusion. The WCAG documents explain how to make web content more accessible to people with disabilities. According to Berners-Lee, director of W3C[1] and inventor of the World Wide Web, "the power of the Web is in its universality. Access for all, regardless of disability is an essential aspect" (Bassani et al., 2010). The W3C provides standards for accessibility on the web, considering that it was designed to work for all people, regardless of their hardware, software, language, culture, location, physical or mental capacity. According to data extracted from the first report on disability and development carried out in 2018 by the UN, there are one billion people with disabilities in the world, representing at least one-eighth of the world population. In this way, developing websites based on WCAG standards can lessen the impact of disability, considering that the Web has the power to remove the communication and interaction barriers that many people face in the physical world.

Bassani et al. (2010) mentions the four principles of WCAG that provide the basis for Web accessibility are:

1. perceptible: users must be able to perceive the information being presented (it cannot be invisible to all of their senses);
2. operable: users must be able to operate the interface; the interface cannot require the interaction that a user cannot perform;

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