Chapter 12
Assistive Technologies in Museums for People With Visual Impairments

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ABSTRACT

Museums are important cultural places where technology, and specifically assistive technology, offers a prime opportunity for people with visual impairments to access the exhibition and the space. People with visual impairments represent a large group of the population but still experience several constraints during their museum visits. Nevertheless, there are few studies on the importance of assistive technologies in museums. This chapter aims to discuss the relevance of technology in museums and to identify guidelines to implement assistive technologies in order to improve the experience of people with visual impairments during their visits to museums. A reflection on the potential of assistive technologies for people with visual impairments and some guidelines are provided in order to promote more accessible and inclusive museums.

INTRODUCTION

It is recognised that technology has become central to many tourism stakeholders, ranging from transportation companies, accommodation and restaurants to visitor attractions, including cultural heritage and, more specifically, museums (Green et al., 2014). Cultural heritage is known to be one of the main contributors to tourism development and technology and internet tools allow heritage to be made more accessible and appealing to people, especially to people with disabilities (PwD) (ICOM, 2016; Vaz et al., 2018).

DOI: 10.4018/978-1-7998-6428-8.ch012

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People with visual impairments (PwVI) are one of the most marginalised groups and still experience several limitations to their leisure activities (Richards et al., 2010). In the museum context, some changes are being implemented by museums to ensure the participation of PwD, including PwVI, in social activities (Andrade et al., 2015; Vaz, 2020). Some researchers emphasise that assistive technology (AT), which refers to products, devices or equipment that are used to maintain, increase or improve the functional capabilities of PwD, are of major importance in achieving this aim. However, few studies approach the topic of assistive technologies in museums and PwD.

This chapter aims to discuss the relevance of technology in museums, as well as to identify guidelines to provide AT in these attractions in order to enhance the experiences of PwVI in museums. The chapter begins by exploring the concepts of disabilities and technologies to PwVI. Then, it proceeds with a discussion of different technologies that museum managers may adopt to help minimise or eliminate constraints during their visit. Some examples of museums that already adopt AT will be mentioned to show how these technologies are being implemented in museums in order to make visits to these attractions more accessible and appealing to PwVI. Finally, the chapter ends with a reflection on the potential of AT for PwVI and with the provision of some guidelines on how to adopt this kind of technology.

LITERATURE REVIEW

People With Visual Impairments

Although there is no consensus on the definition of disability and impairment, disability is "any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being" (Mandal, 2019, p. 1). Impairment is any loss or abnormality of psychological, physiological or anatomical structure or function (Mandal, 2019; Poria et al., 2009).

Disability is considered a minor issue by many people (Ochoggia, 2003; Poria et al., 2009; Shakespeare 2018, WHO,2016); however, PwD already represent 15% of the world population, which means that there are more than 1 billion PwD in the world (Shakespeare, 2018; The World Bank, 2016; WHO, 2018). Between 110 million and 190 million adults suffer from significant difficulties in functioning. Almost everyone will be affected by a disability at some point in life, temporarily or permanently. Moreover, almost everyone has a relative or friend with a disability.

There are several types of disabilities and several ways to classify disabilities (Buhalis & Darcy, 2011; Yau et al., 2004). Disabled World (2016) classified disabilities into the following subcategories: (i) mobility and physical impairments; (ii) spinal cord disability; (iii) head injuries – brain disability; (iv) vision disability; (v) hearing disability; (vi) cognitive or learning disabilities; (vii) psychological disorders; and (viii) invisible disabilities.

Visual impairment is defined as the limitation of actions and functions of the visual system (Mandal, 2019). "Visual impairment refers to a significant functional loss of vision that cannot be corrected by medication, surgical operation, or ordinary optical lenses such as spectacles" (WHO, 2016). People may have low vision if they cannot see well enough to do things like reading, driving, recognising people's faces, telling colours apart or watching television or screens clearly (National Eye Institute, 2019).

PwVI already represent a big group of the population. Two thousand people need glasses or other vision devices (WHO, 2016). According to the World Health Organization (2016), 285 million people are visually impaired while 39 million are blind and 246 million suffer from low vision. Data also show

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