Chapter 2
An Inclusive Method to Support the Web Accessibility Assessment and Awareness-Raising: MIAV

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ABSTRACT

Web content should suit both a general audience and visually-impaired individuals. Therefore, Web applications should be assessed against accessibility standards as Web Content Accessibility Guidelines (WCAG) and the Brazilian e-Government Accessibility Model (eMAG). This chapter presents MIAV's development process and the obtained results. The MIAV complies with the WCAG and eMAG, combining automated and user-opinion-based assessment approaches. First, a pilot test was run to fine-tune MIAV. Next, participants were asked to identify and report several accessibility issues on IFFluminense's Portal, Q-Academico, and Moodle. They then suggested enhancements for better browsing experience. AccessMonitor was run and tested the same Web pages to generate two indicators: the average accessibility index and the percentage of nonconformities by accessibility level. Results showed that none of the evaluated applications met all the accessibility criteria. These experiments allowed IFFluminense's IT degree students to raise an awareness of the significance of Web accessibility.

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1. INTRODUCTION

The development of accessible Web applications is paramount to include people with disabilities, especially in their education and vocational training. The Internet provides new educational features that people with disabilities can benefit from supported by assistive technologies. Assistive technologies aid the visually-impaired in carrying out activities independently (Sartoretto & Bersch, 2017).

According to the United Nations report, the world's population in 2019 was estimated to total 7.7 billion (UN, 2019). Over a billion people (or about 15% of the world's population) were estimated to be living with some form of disability (WHO, 2018). In Brazil, whose population was around 200.6 million, 6.2% of people have at least one of four forms of disabilities (intellectual, physical, auditory or visual) wherein visual impairment (3.6%) is the prevailing one (IBGE, 2015). Botelho and Porciúncula (2018) highlighted the proportion of people with disabilities in Brazil's population was 23.9%, according to the first release of 2010 Census, but both values are valid and investigate different dimensions of the disability phenomenon. The National Health Survey measured disability as impediments and the 2010 Census measured disability in the broad sense that may reflect problems in functions, body structures, and activities (Botelho & Porciúncula, 2018). Regardless, the amount of people who may face learning issues is expressive.

In the 1980s, the Brazilian Constitution guaranteed school attendance to disabled people, preferably, in regular schools. After that, the Brazilian Education Guidelines and Framework Law (LDB, in Portuguese) emphasized the need for specialized support services (Brazil, 1996). LDB enforces and promotes, under conditions of equality, the exercise of primary rights and freedoms aiming at their social inclusion and citizenship (Brazil, 2015). Also, Brazil enacted the United Nations Convention on the Rights of Persons with Disabilities (CRPD) in 2009 (Brazil, 2009). CRPD's Article III outlines accessibility as a general principle. Specifically on Web accessibility, the Brazilian Law for the Inclusion of Persons with Disabilities enforces that Web site accessibility is mandatory. This law aims to promote access to information and services made available throughout the Internet to people with disabilities, in accordance with the international practices and accessibility guidelines (Brazil, 2015).

IFFluminense is a Brazilian vocational education and training school, located in upstate Rio, which trains students to work as skilled IT technicians, Information Systems Bachelors and Computer Engineers. IFFluminense's support center for students with special educational needs (NAPNEE, in Portuguese) assists all attending visually-impaired students. In this context, two problems were observed. The first problem refers to the difficulties that IFFluminense's visually-impaired students experience when performing tasks on Q-Academico (Qualidata, 2017), Moodle (Moodle, 2017) and IFFluminense's Portal (Brazil, 2018). IFFluminense's Portal publishes news on academic activities. Q-Academico provides information about students' grades and attendances. Moodle provides educational content and assignments. The second problem refers to the difficulty experienced by IFFluminense's IT students to understand the significance of Web accessibility. Although they study the Brazilian Accessibility Law and international accessibility standards, they fail to follow accessibility recommendations they are taught when doing Web-development-related assignments in course. Carter and Markel (2001) already reported a similar problem when they estimated that one percent of Web developers take accessibility into account when designing Web pages. These facts demonstrate the need for actions to build an awareness of the significance of Web accessibility.

To enforce the inclusion of people with disabilities is crucial to: (i) develop an inclusive method so visually-impaired users actively evaluate the accessibility of Web software products; and (ii) make IT