

PALESTINIANS UNIVERSITIES' WEBSITE ACCESSIBILITY: AN INITIAL VIEW

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ABSTRACT

Universities employ the Web for many purposes, and usually the most important of which is providing services through their websites. Therefore, the universities' websites must be accessible for all users especially for disabled peoples. The United Nations (UN) Rights of Persons with Disabilities Convention encourages the information providers through the internet to make their services accessible for persons with disabilities. In this paper, we present an initial view on the Web accessibility of Palestinians universities' websites. Studying the Web accessibility of these sites helps other researchers in this area to develop exemplary model to achieve greater website accessibility for other higher education institutions' websites. To gain insight into this issue, this study select ten Palestinians universities' homepages and evaluate them using automatic evaluation tools. The evaluation was done under WCAG 2.0 Web accessibility guidelines provided by World Wide Web Consortium (W3C). The results indicated that all universities' websites show many accessibility problems that should be taken into account in order to improve these sites in the future. We believe that this study is the beginning of essential study to evaluate the universities' websites in Palestine. This study also increases the awareness of Web accessibility in this area. The next step in our project is to develop a model that can help the Web developer to improve the accessibility in the universities websites.

Keywords: *Web Accessibility, Universities website, Palestinian Universities, WCAG 2.0, Disability*

1. Introduction

Now a days, the World Wide Web (Web) is considered as one of the most important sources of information, and proper access to this network is essential for all groups in the society (Kurt 2011; Wanniarachchi & Jayathilake 2012). Many private and public organizations in the world use the Web to provide information and services to their users. Universities are one of the essential institutions that provide many services and information electronically over the Web. While the Web provides a good access level to the information and services for most users, these websites if not properly designed, a number of barriers in access to the information could arise especially for the disabled people (Ringlaben et al. 2013). According to UN Convention on the Rights of Persons with Disabilities (UNCRPD), access to information through the Web is recognized as human rights (UN 2008). In Palestine, the Palestinian Central Bureau of Statistics PCBS and the Ministry of Social Affairs MOSA conducted survey in 2011, which targets for disabled individuals. According to this survey, 2.7% of the Palestinian population has disability problems (MOSA 2011). Based on the Palestinian Ministry of Higher Education Statistical Yearbook, the number of accredited higher education institutions is 53 distributed as follows: 14 traditional universities, 1 Open University, 18 university colleges, and 20 community colleges (MoHE 2013).

The purpose of this study is to propose initial accessibility evaluation that will help in

improving the accessibility of Palestinian universities' websites. This study seeks to evaluate the accessibility of a sample consisting of ten websites of top ranking Palestinian's universities according to ranking of Webometrics website (Webometrics 2013). This study uses automatic evaluation tool to evaluate the accessibility level under WCAG 2.0 guideline. We believe that universities is the starting point to improve society. Thus, if we increase the awareness about the accessibility issue of universities websites, the awareness will be disseminated to the other public websites in the society.

2. Web and Accessibility

The Web is one of the most important sources of information and services in this era, and to guarantee the universal it must achieve the ease of access for all users. Therefore, to gain the benefits from the Web, websites must be accessible for all users without barriers (Kurt 2011). Moreover, inaccessible websites will cause discrimination between disabled and non-disabled person (Bakhsh & Mehmood 2012). Based on Web Accessibility Initiative (WAI) and according to Henry, Web accessibility can be defined as:

“Web accessibility means that people with disabilities can perceive, understand, navigate, and interact with the Web, and that they can contribute to the Web” (Henry 2005).

In addition, Henry stated that, accessibility makes websites accessible by people of all abilities and disabilities, and this is essential for equal opportunities .It allows people with disabilities to actively participate in the society (Kamoun et al. 2013). Therefore, when websites are correctly designed, developed and edited, all users can have equal access to information, services and functions.

Worldwide, many evaluation studies have been conducted on the accessibility of public websites (governmental, universities, etc...) to identify accessibility problems. Identifying these problems, will help to improve the accessibility of these websites (Kane et al. 2007). In the Arab world, there is lack of these studies and most of the accessibility evaluation studies conducted in this area focus on the government websites only.

People with disabilities use assistive tools to enable them to navigate the Web pages. For instance, visually impaired people use screen reader to verbalize the page contents. However, in order for these tools to work effectively, the Web pages must be designed and developed under accessibility guidelines (Kurt 2011; Bakhsh & Mehmood 2012).

2.1 Web Accessibility Guidelines

There are many standards and guidelines established to help the developers to build accessible Web pages and reach the accessibility requirements (Tanaka & Da Rocha 2011; Bakhsh & Mehmood 2012). Number of these guidelines are international and the others are governmental. Thus, evaluation methods are structured according to these guidelines. The most popular guidelines listed are shown in Table 1.

Table 1: Web Accessibility Standards and Guidelines Worldwide

Guideline	Country
WCAG 1.0 (Levels A, AA and AAA)	International
WCAG 2.0 (Levels A, AA and AAA)	International
Section 508	U.S.
BITV 1.0	Germany
Stanca Act	Italy
JIS X 8341-3 and X 8341-3	Japan

Accessibility guidelines aim to facilitate understanding of Web accessibility issues and encourage Web developers to make sure their websites employ these instructions. Web Accessibility Initiative (WAI) of the World Wide Web Consortium (W3C) developed Web Content Accessibility Guidelines (WCAG). It developed and moved from WCAG 0.1 version to WCAG 2.0. WCAG 2.0 is an international guideline, which has approval as ISO/IEC International Accessibility Standard (Henry 2005). In the researcher's opinion, WCAG 2.0 is the most famous and arguably the most important and WCAG 2.0 addresses the accessibility issues addressed by WCAG 1.0. This study utilizes WCAG 2.0 guidelines to evaluate the selected websites.

WCAG 2.0 consists of four main principles (perceivable, operable, understandable, and robust). These four principles are divided into twelve guidelines. Under each guideline, a series of testable Success Criteria is designed to facilitate the WCAG 2.0 accessibility conformance testing. Moreover, to reflect the importance of the success criteria, these criteria are categorized into three levels (Kamoun et al. 2013), as shown in Table 2.

Table 2: WCAG 2.0 Success Criteria Conformance Levels

Conformance Level	Symbol	Description
Basic Accessibility	A	A Web developer must fulfil this success criteria level. Otherwise, one or more groups of disabled will find it impossible to access information in the Web page. Meeting this level is a basic Web pages requirement to be accessible.
Intermediate Accessibility	AA	A Web developer should satisfy this success criteria level. Otherwise, one or more groups of disabled will find difficulty to access information in the Web page. Meeting this level will eliminate important barriers to accessing Web pages.
High Accessibility	AAA	A Web developer may address this success criteria level. Otherwise, one or more groups of disabled will find it a bit difficult to access information in the Web page. Meeting this level will improve access to Web pages.

2.2 Universities Websites Accessibility

Universities' Web pages play a central role in the activities of current and prospective

university students. Kane confirms that, inaccessible university sites may exclude people with disabilities from participation in educational, social and professional activities (Kane et al. 2007). Many studies evaluate the accessibility of universities' websites, but none has dealt with universities' websites in Palestine.

A number of studies have examined the accessibility of universities websites as summarized in Table 3. This summary indicates the increasing interest in assessing and improving Web accessibility for educational websites in different countries (Abdul Aziz et al. 2010).

Table 3: Accessibility Evaluating Studies on Educational Websites in Selected Countries

Country	Studies	Authors
Japan	Comparison of Web accessibility within Japanese educational institution websites	Okada, Arakawa & Kondo (2009)
China	On accessibility of concept, principle and model of educational Web sites design	Sun & Zhang (2009)
Malaysia	Assessing the Accessibility and Usability of Malaysia Higher Education Website	Abdul Aziz et al. (2010)
Turkey	The accessibility of university Web sites: the case of Turkish universities	Serhat Kurt (2010)
Spain	Web Accessibility on Spanish Universities	Fernández, Roig & Vicenç Soler (2010)
United States of America	A quest for website accessibility in higher previous education institutions	Harper & Dewaters (2008)
	A Web accessibility report card for top international university Web sites	Kane (2007)
	Research on Web accessibility in higher education	Thompson (2006)
	The accessibility of college & university home pages in the state of New York	DiLallo & Siegfried (2009)

According to the studies mentioned in Table 3, most universities' website have accessibility problems. Moreover, in 2007 Kane and Shulman conducted an accessibility evaluation for the top 100 universities worldwide and they conclude that many of top universities websites still have accessibility problems (Kane et al. 2007). The good news from the previous studies is that, the accessibility problems found in the universities websites are minor and can be easily repaired (Kurt 2011).

3. Methodology

This study aims to examine the current accessibility level of Palestinian universities' Web pages by conducting an accessibility evaluation on a sample of Palestinian universities' home pages. A sample of ten Palestinian universities websites has been selected from the top websites ranked by Webometrics website (Webometrics 2013). The Webometrics Ranking of World Universities provides valuable, reliable, updated, and multidimensional information about the universities performance in the world based on their Web presence and impact. The selected universities sample covered the two main areas in Palestine (West Bank and Gaza Strip). Out of the selected universities, six universities are located in West Bank and three are located in Gaza Strip. In addition, one of the selected universities is located in West Bank and Gaza Strip. In order to safeguard the privacy and information sensitivity, a code is used to name the universities instead of their real name. The results are presented as follows:

universities located in West Bank are coded from U1 to U6, and universities located in Gaza Strip are coded from U7 to U9. U10 is located in both West Bank and Gaza Strip.

The evaluation process in this study was conducted from 28 February 2014 until 15 April 2014. Since the homepage is considered as the main entrance for all websites, many of previous studies (Kane et al. 2007), (Kurt 2011), (Al-Khalifa 2012), and (Bakhsh & Mehmood 2012) only evaluated the homepages. Therefore, in this study the universities homepages of ten universities' websites are evaluated. Most of the Palestinian universities' websites are bilingual (Arabic and English) and some of these sites use three languages (Arabic, English, and French). The focus of evaluation is in the Arabic webpage only, since the Arabic language is the main language used in Palestine.

The evaluation process is based on the W3C accessibility guideline WCAG 2.0. This evaluation defines the adherence level of the Palestinian universities' websites to the latest W3C accessibility guidelines. Overall, the ten universities homepages are evaluated for WCAG 2.0 conformance by automatic evaluation tool used to determine the accessibility level A, AA, and AAA for each webpage. To conduct the evaluation, this study uses the CynthiaSays free online automatic evaluation tool (Hisoftware 2014). CynthiaSays allows users to evaluate Web pages and provides a report about the accessibility conformance level. This tool report is clear and easy to understand. The report shows the number of failed success criteria for each WCAG 2.0 conformance level (A, AA, AAA). It is worth noting, the study tested three automatic evaluation tools SortSite (Powermapper 2014), Total Validator (TotalValidator 2014), and CynthiaSays by evaluating Arabic Web pages. The test indicates that, the most reliable tools is CynthiaSays.

4. Results and Discussion

The evaluation results for Palestinian universities Web pages have shown that no Web page passed the accessibility automatic evaluation test. Table 4 shows the evaluation results for the selected universities and the number of universities that failed the success criteria. In fact, most of tested Web pages did not achieve the minimum level is level A of WCAG 2.0 conformance. This indicates that one or more groups of disabled users will find it impossible to access the information and services in the Web pages. Meeting this level is a basic accessibility requirement for Web pages((W3C) 2008).

Table 4: Selected Palestinian Universities Webpages and the Number of Failed Success Criteria in WCAG 2.0 Conformance Levels for Every University

Universities	Level A	Level AA	Level AAA
U1	4	4	7
U2	1	4	6
U3	11	3	9
U4	6	4	7
U5	7	3	6
U6	11	7	10
U7	8	3	6
U8	3	3	6
U9	18	5	15
U10	11	2	8

Average	8	3.8	8
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The Web developer must fulfil the basic Accessibility Conformance “level A”. Figure 1 shows that only the U2 failed in one level A success criteria. Therefore, it could be easy to make this website accessible at the basic level by repairing this issue. Moreover, three universities homepages failed in less than five level A success criteria; With a little effort from the developer, they could be accessible at the basic conformance level A. The worst case is for the U9, which failed in 18 success criteria at level A conformance.

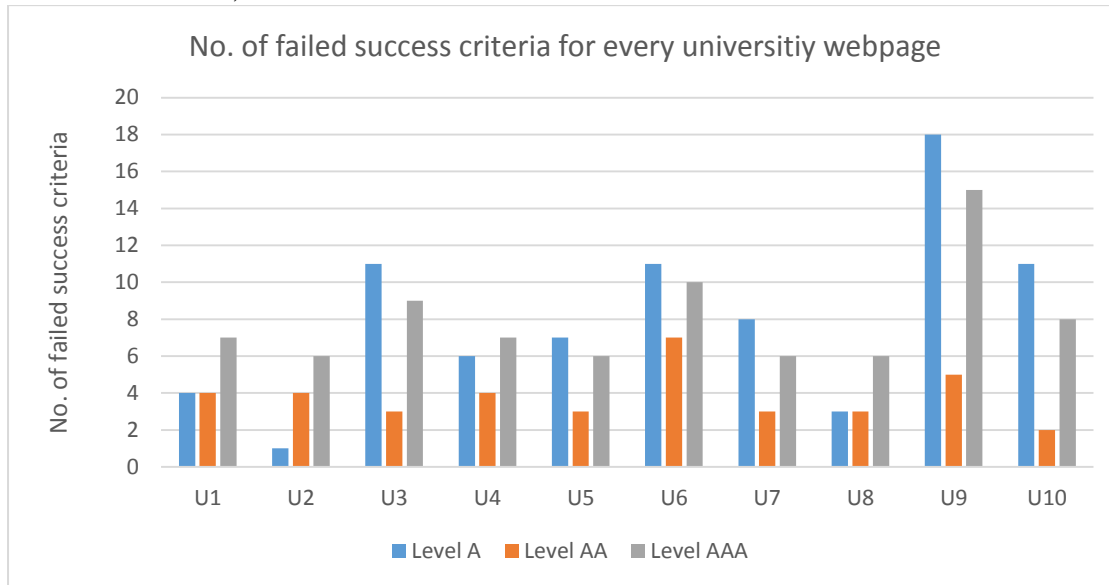


Figure 1: Evaluation Results for Selected Palestinian Universities

In general, as shown in Figure 1, the number of failed success criteria for tested universities in level A and AAA is more than the number that failed in level AA. Only U2 has the number of failed success criteria in level A less than the number that failed in level AA and AAA. To meet the basic level of WCAG 2.0 the Web pages must pass all level A success criteria. Therefore, the Web developers for these Web sites should take this issue into consideration. Comparison between the percentage of failed success criteria for universities' home page in West Bank and Gaza Strip is shown in Figure 2. This figure shows that universities located in West Bank have homepages with fewer errors than universities located in Gaza Strip in level A and AAA. On the other hand, universities located in Gaza Strip have homepages with fewer errors than universities located in West Bank in level AA.

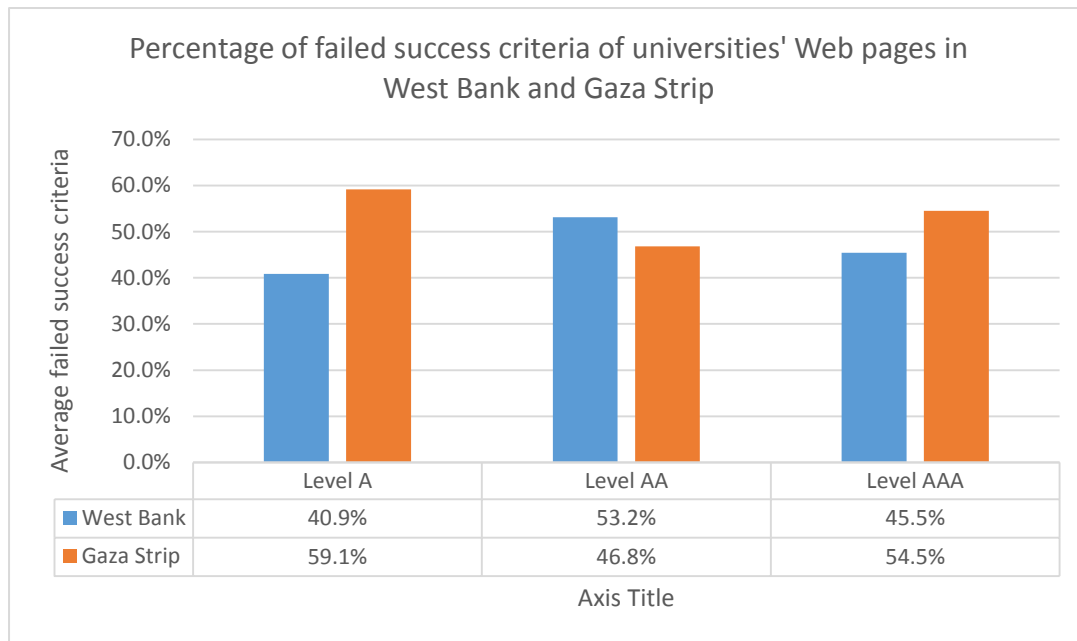


Figure 2: the two main Palestinian areas with average failed success criteria for universities Web pages

The most number of reported failed success criterion in the tested homepages is WCAG 2.0 success criterion 1.1.1, which is about providing alternative text (ALT) to convey the information of images or non-text contents. This problem will affect accessibility for the visually impaired people to the evaluated websites; therefore, this issue must be taken into consideration from the Web sites developers.

5. Conclusion

Universities use the Web to deliver information and services, and they are leading communities. In order to ensure ease of access to universities Web pages, it is important to remove the barriers that may prevent one or more groups of disabled people from getting the benefits from these sites. Therefore, this topic is important for universities Web sites to achieve the equal opportunity between all users. After United Nations Convention about the rights of persons with disabilities, Web accessibility is becoming more important for this group of people. Therefore, the Palestinian government and universities need to consider this issue to make sure every person in society, especially those with disabilities, get the rights to access websites freely without any barriers. This paper evaluated ten Palestinian universities' websites. In light of the results, Palestinian universities websites suffer from many accessibility problems in that will affect the disabled people. The results show that, none of the Palestinian universities website are accessible under the WCAG 2.0 guidelines. We believe that the results of this study will shed some light on this issue, increase the awareness about it, and motivate Web developers to give greater priority and attention to Web accessibility. A limitation of this study is that it uses the automated evaluation tools only, and the next step is to increase the credibility by evaluating these websites manually and engaging the real users in the evaluation process.

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