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How Accessible the University Websites in Indonesia for People with Disabilities

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Abstract Website in higher education utilized for many purposes such as providing learning resources, information, and news related to student's academic needs. For this purpose, university websites must be accessible for all users including students with disabilities. This article describes a study conducted to evaluate the accessibility of university websites for people with disabilities in Indonesia. The accessibility evaluation focused on compliance with the most recent international standards provides by The World Wide Web Consortium (W3C) called WCAG 2.0. A quantitative research would be utilized in this study using website accessibility online evaluation tools namely, Achecker. This study comprises the analysis of accessibility of 20 websites from top-ranked universities in Indonesia based on webometrics ranking. The result of this study showed that 95% of the university websites examined carried problems in conformity with WCAG 2.0 Level AAA.

Keywords: Accessibility, Disabilities, Universal Design, University Website

1. Research background

COVID-19 pandemic has impacted almost every aspect of life today, and education is no exception. Schools and universities around the globe have forced to close and shifted to online learning. Most universities in Indonesia have gone online following the COVID-19 outbreak. As reported by The Alliance of Indonesia Higher Education Organizers on March 14, 58 universities had changed their courses method by online (Ashari, 2020). Courses designed so it can be accessed by students through websites.

University websites not only provides updated information about courses, but also news related to student's academic needs and their academic progress. As learning and information resources, university websites must be accessible to all users (Kurt, 2011), including students with disabilities. As one of the groups who experience information access disadvantages, students with disabilities experiencing difficulties when accessing websites. Sachs & Schreuer (2011) stated that students with disabilities used computers and information technology less and invested more time to meet the demands of their studies.

The number of students with disabilities attending higher education in Indonesia has grown over the years. There is no official report on numbers of students with disabilities enrolled in higher education when this study is conducted, but Indonesia Ministry of Research, Technology, and Higher Education within their Educational Services Guidebook for Students with Disabilities (2018) stated that around 500 students with disabilities currently study in university across Indonesia. In 2017 itself, there are 38 students with disabilities passed the national selection of state university entrance and successfully accepted into various universities in Indonesia (Domasti, 2017). Despite the relatively small number, the needs of students with disabilities often times are not considered when designing infrastructures and services. University website as a non-physical infrastructure that enabled distance services for students amid this COVID-19 pandemic required accessible designs, especially which meet the needs of students with disabilities as a member of higher education society.

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The United Nations Convention on the Rights of Persons with Disabilities echoed the importance of accessibility of the web to promote access for persons with disabilities to new information and communication through technologies, including the Internet. Similar to this commitment, Indonesia through *Law Number 8* of *2016 of Persons with Disabilities Section 24(b)* clearly specifies that persons with disabilities shall have equal rights and opportunities to get information and communicate through media to which is easily accessed. Moreover, *The Decree of Indonesian Ministry of Research, Technology, and Higher Education Number 44 of 2015 of Higher Education National Standard Section 37 (1)* also states that Higher Education institutions should provide resources and support that can be access by students with disabilities. Thus, higher education institutions are expected to comply with these Acts to ensure equal access of digitalized information for students with disabilities.

Website accessibility refers to the degree of which website information is accessible to all people, including people with disabilities. The World Wide Web Consortium (2005) states that a website called accessible when all potential users can access web applications regardless of an individual's limitations or the context of use. Similar to this definition, Letourneau (2016) defines web accessibility to anyone using any kind of web browsing technology must be able to visit any site and get a full and complete understanding of the information and must have the full and complete ability to interact with the site if that is necessary. The goal of web accessibility is that all people have access to services and resources available on the websites regardless of any disabilities.

Accessibility could be achieved when the website are easily accessed by all users including people of disabilities. The disability of a person had affects their ability to access the Web differently. For example, students with visual impairment may use screen readers and keyboard to access the website. The compatibility of Web content with screen readers and keyboard is crucial in this case. Providing navigation that is keyboard-friendly (Alam, 2014), and providing alternative text replacing images, graphics, forms, or tables can reduce the challenges they face. Furthermore, Lazar & Jaeger (2011) stated that when it comes for persons with auditory impairments, the barriers are created by the lack of textual equivalents of audio content. Different disabilities faced different barriers when accessing inaccessible website.

A website relies on several components until it could be accessible to all users. There are some checkpoints established by The World Wide Web Consortium (W3C) called the Web Content Accessibility Guidelines (WCAG). It provides the requirements that can be used as a standard for designing or making websites that are fully accessible for all people. The latest version of this guidelines is WCAG 2.0, it consider all range of disabilities include visual impairment, auditory impairment, mobility limitations, speech impairment, cognitive limitations, and learning disabilities.

The accessibility website evaluation is necessary to ensure that all users are able to access information provides by the website. The WCAG 2.0 covers three guidelines (Level A, Level AA, and Level AAA) and provides descriptions for each level. Level A is the lowest compliant, this is the basic elements that the web should have for providing accessibility to persons with disabilities. The second one is Level AA, this is the advanced requirements that likely removed significant accessibility barriers for a wider group of users to be able to access the web content. The highest level is AAA, it ensured widest accessibility of the web among the users. It is important that universities and their respective libraries understand and attempt to apply these guidelines when offering remote e-learning services and resources (Caldwell, 2006).

Evaluating website accessibility could be done by various strategies such as: automated testing, heuristic evaluation, expert evaluation, user testing, policy analysis, or web-manager questionnaires (Youngblood, 2014). Much of the automated testing tools are available as open source to objectively identified accessibility problems such as, Achecker, Cynthia Says, TAW, and WAVE.

Considering the presented arguments, the purposes of this study are: (i) to evaluate

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how accessible the website of top-ranked universities in Indonesia for people with disabilities using Achecker as an automated tool; and (ii) to evaluate the most common accessibility problems in university websites homepages.

2. Research method

The main purpose of this study is to evaluate the accessibility of university websites for people with disabilities in terms of WCAG 2.0 established by W3C. This study comprises the analysis of accessibility of top-ranked universities in Indonesia. The selection process for universities as study participants was based on web metrics ranking for 2020 Indonesian University Ranking which can be found at http://www.webometrics.info. The sample comprised the first 20 top university websites, where the purpose is to draw sample universities for this current study not to describe the quality of the university itself. The Table.1 shows the name of selected universities and the homepage URL of each university websites this study analyzed.

Table 1. Name of Selected University and Websites

University	URLs
Universitas Indonesia	https://ui.ac.id/
Universitas Gajah Mada	http://www.ugm.ac.id/
Institut Teknologi Bandung	https://www.itb.ac.id/
Institut Teknologi Sepuluh Nopember	https://www.its.ac.id/
Universitas Sebelas Maret	https://www.uns.ac.id/
Universitas Brawijaya	https://www.ub.ac.id/
Universitas Airlangga	https://www.unair.ac.id/
Universitas Sumatera Utara	https://www.usu.ac.id/
Universitas Hasanuddin	http://www.unhas.ac.id/
Universitas Diponegoro	http://www.undip.ac.id
Universitas Jember	https://unej.ac.id/
Institut Pertanian Bogor	https://ipb.ac.id/
Universitas Andalas	https://www.unand.ac.id/
Universitas Negeri Semarang	https://unnes.ac.id/
Universitas Telkom	https://telkomuniversity.ac.id/
Universitas Pendidikan Indonesia	https://www.upi.edu/
Universitas Mataram	https://unram.ac.id/
Universitas Bina Nusantara	https://binus.ac.id/
Universitas Sriwijaya	https://unsri.ac.id/
Universitas Riau	https://unri.ac.id/

A quantitative research would be utilized in this study using accessibility online evaluation tool for collecting the data. The accessibility testing focused on compliance with the international standards namely WCAG 2.0. The study includes the analysis of the homepage of each selected universities websites and was analyzed using Achecker. This tool will be used to scan the homepage of each of the 20 university websites to find the accessibility problem. AChecker was observed to be a major tool used by many accessibility website studies, it is also an open source and free application. The Achecker evaluation process will produce three types of errors: known, likely, and potential. This study only investigates the most common issues in known problems, this are problems that have been identified with certainty as accessibility barriers and the website designer must modify their page to fix these problems. Likely problems are problems that have been identified as probable barriers, but it requires manual assessment to make a decision, while potential problems are problems that Achecker cannot identify and require a human decision.

3. Result and discussion

The accessibility evaluation data of 20 university homepage websites collected from July 1st 2020 to July 6th 2020. A certain number of accessibility problems at each university websites has detected, following are the results of web accessibility evaluation across all the homepage of university websites using Achecker.

3.1 Results

Table 2 illustrate findings from the websites of top-ranked universities in Indonesia, it shows the total number of known, likely, and potential problems on the homepages found by Achecker under Level AAA of WCAG 2.0 compliance. Of the total 14,335 detected problems on the 20 website homepages, there were 1,080 known problems (7.5%), 17 likely problems (0.1%), and 13,238 potential problems (92.3%).

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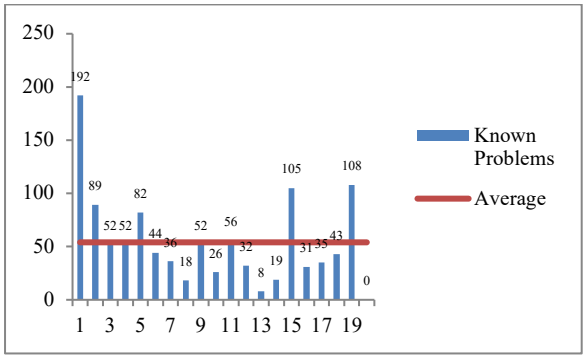
Table 2. Descriptive Statistics for Achecker Result of 20 University Websites in Indonesia

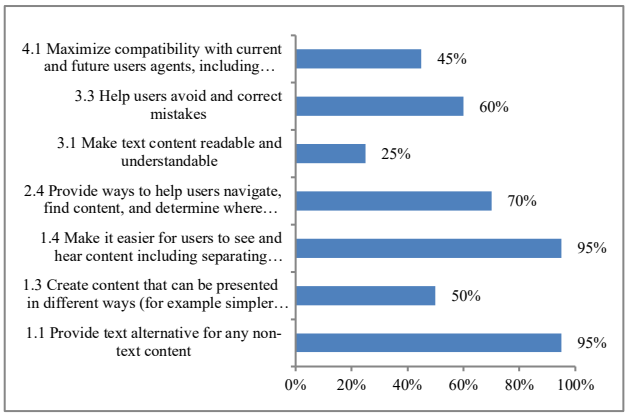
	N	Min.	Max.	Sum	Mean
Known Problems	20	0	192	1080	54.00
Likely Problems	20	0	5	17	.85
Potential Problems	20	0	1313	13238	661.9

The following Figure 1 illustrates the number of known problems detected by Achecker according to university ranking. The graph clearly shows that there is only one website that reported zero known problems, it also indicated that 95% of 20 university websites carried accessibility issues that considered as certain barriers. Moreover, there are six university websites that carried known problems above the average number.



Picture 1. Number of Known Problems by University Ranking

Figure 2 specifies the percentage of identified known problems categorized by guidelines in WCAG 2.0 Level AAA. The most common issues of websites that Achecker identified is that 95% of the total sample having issues with providing text alternative for any non-text content (Guideline 1.1), and issues with making users easier to see and hear content including separating foreground and background (Guideline 1.4). Providing ways to help users navigate, find content, and determine where they are (Guideline 2.4) also posed a problem among 70% of the websites. 60% of the websites failed to pass the Guideline 3.3 "Help users avoid and correct mistakes", where Achecker detected issues with the availability of labels or instructions when content requires user input. The next most common issues is 50% of the websites violating the Guideline 1.3 "Create content that can be presented in different ways (for example simpler layout) without losing information or structure, within this guideline the errors mainly is in the Info and Relationship (Checkpoint 1.3.1). Whilst, 45% of the websites carried issues with unique IDs attribute (Guideline 4.1), and the lowest error among those websites is that the the document within the website content cannot programmatically determined then it detected by Achecker violated Guideline 3.1 "Make text content readable and understandable".



Picture 2. Percentage of Websites which fail to meet WCAG 2.0 Level AAA categorized by Guidelines

The present study indicates that there is a high accessibility issues carried by university websites in Indonesia. The high percentage in known problems means there are barriers that certainly will limit people with disabilities in accessing the content within the website. The most common issues are the vast majority of websites failed to provide text alternative for non-text content and easier ways to see or hear content including separating the foreground and the background.

3.2 Discussion

The findings of the present study showed that the homepage of Indonesian university website are not accessible enough. 95% of the university websites homepage failed to pass an automated review of Web Content Accessibility Guidelines (WCAG) 2.0 standards. These findings is in line with Iseri, Uyar, & Ilhan (2017), the focus of their study was on evaluating the accessibility of Cyprus Islands' higher education institution websites, where the key finding of their study is that none

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of the evaluated websites achieve the web accessibility level of compliance.

The error occured in most of the websites when identified by Achecker against WCAG 2.0 Level AAA guidelines is the lack of alternative text provided by the website in order to replace the non-text context, such as image, form, and other multimedia embedded on the website. This problem should be rectify by adding appropriate ALT attributes. Students with visual or hearing impairment who has limited ability to see or hear visual and audio content facing challenges when no alternative text available. Description of an image or other embedded multimedia should appropriately conveys the meaning and content on the page, so people with disabilities will perceive and understand information the same way as other users.

Another common errors found is that the website failed to satisfy the need of users for easier way to see or hear the content. It relates to the color contrast, the contrast between the background and the foreground with text should be sharp and distinct (Solovieva & Bock, 2014). People with visually impaired will find it difficult to differentiate between the foreground from the background when the website contain insufficient contrast. The other issues with seeing the website content is the font used. WebAIM recommendation stated that web designer should limit the use of bold; italic; and all capital letters, web designer usually using these font styles to highlight important information within the text. This recommendation parallel to Santana, Oliveira, Almeida, & Baranauskas (2012), they stated that people with dyslexia find it easier to read text in regular capitalizing.

Website navigation is also one of the most common error found, it related to an organizational structure of a website, this is important to define the relationships of related content provides by a website. Important informations sometimes marked by visual cues such as heading, bold, italic font, bullets for listing items, and many more. Errors with empty heading will cause confusion to the screen reader users because they often navigate the web based on the heading, then the webmasters must provide content of the heading.

Most university websites are not design by considering the needs of students with disabilities. Yusril (2020) stated that user experience especially users with disabilities should be considered in designing the user interface. It is important that everyone who involved in designing university website to include all information regarding how to make their website accesible to all users. The lack of access to information resources for disabled students in higher education institutions could generate difficulties in their academic lives (Elaydi & Shehada, 2007). Especially amid the COVID-19 pandemic, where the teaching and learning will be focused via online.

Every person has equal rights to access information and resources. The high failure rate in the university web accessibility this study found expose a lack of consideration to include people with disabilities as part of the users. Higher education administrators, information technology development center, web developers, and e-learning staff should proactively minimize the accessibility barriers. Students with disabilities should be asked for advice and considerations in designing and evaluating the accessibility of university website.

4. Conclusion

The results of this study conclude that high percentage of website among top-ranked universities in Indonesia failed to meet the accessibility standards based on WCAG 2.0 compliance. A certain number of correction is needed to eliminate existing barriers in order to ensure all people have access to information and services provide by the university website, especially people with disabilities as part of the users.

The analysis presented above have numbers of limitations such as the used of single-automated accesibility testing. Further research shoud consider manual evaluation involving people with disabilities to confirm evaluation result by automated testing tool. Another limitation is this study only restricted on evaluating the homepages of university websites.

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Bibliography

Alam, N. H. (2014). *Web Accessibility of the Higher Education Institute Website Based on the World Wide Web Consortium and Section 508 of the Rehabilitation Act* (Doctoral Dissertation), http://scholarworks.uark.edu/etd/ 2319/, accessed at Thursday, April, 2nd 2020, 09.00 WIB.

Ashari, M. (2020). "Data: 58 Perguruan Tinggi di Indonesia Ubah Metode Belajar, Jumlah Bisa Bertambah", www.pikiran-rakyat.com/ pendidikan/amp/pr--01351622/data-58-perguruan-tinggi-di-indonesia-ubah-metode-belajar-jumlah-bisa-bertambah, accessed Friday, April, 3rd 2020, 09.00 WIB

Caldwell, R. (2006). "Web-accessibility, e-learning, and academic libraries". *International Journal of Public Information Systems, Vol. 2(1)*, Page 1—9.

Domasti, A., A. (2017). "Sebanyak 38 Pelajar Difabel Lolos SBMPTN", http://edukasi.kompas.com/read/2017/06/12/2400001/sebanyak.38.pelajar.difabel.lolos.sbmptn, accessed at Thursday, Mei, 28th 2020, 13.00 WIB.

Elaydi, H. A., & Shehada, H. (2007). "A source of inspiration: ATC for visually impaired students at the Islamic University of GAZA". *ICTA*, Vol 7, Page 178—197.

Indonesia Ministry of Research, Technology, and Higher Education. (2018). "Educational Services Guidebook for Students with Disabilities", http://pensus.belmawa/ristek dikti.go.id/?p=17, accessed at Saturday, May, 2nd 2020, 12.00 WIB.

Iseri, E.I., Uyar, K., & Ilhan, U. (2017). "The accessibility of Cyprus Islands' Higher Education Insitution Websites". *Procedia Computer Science,* Vol 120(2017), Page 967—974.

Kurt, S. (2011). "The acessibility of university web sites: the case of Turkish universities". *Universal Access in the Information Society*, Vol. *10(1)*, Page 101—110.

Lazar, J., & Jaeger, P. (2011). "Reducing Barriers to online Access for People with Disabilities". *Issues in Science and Technology,* Vol. 27(2), Page 69—82.

Letourneau, C. (2016). "Accessible web-design-A definition", http://www.starlingweb. com/ webac.htm, accessed at at Thursday, April, 2nd 2020, 14.00 WIB.

Sachs, D., & Schreuer, N. (2011). "Inclusion of Students with Disabilities in Higher Education: Performance and participation in student's experience". *Disability Studies Quarterly,* Vol.*31 (2)*.

Santana, V.F., Oliviera, R., Almeida, L.D.A., & Baranauskas, M.C.C. (2012). "Web Accessibility and People with Dyslexia: A Survey on Techniques and Guidelines". *Proceedings of the International Cross*-Disciplinary Conference on Web Accessibility, Article No.35, Page 1—9.

Solovieva, T.I., & Bock, J.M. (2014). "Monitoring for Accessibility and University Websites: Meeting the Needs of People with Disabilities". *Journal of Postsecondary Education and Disability*, Vol. 27(2), Page 113—127.

World Wide Web Consortium. (2005). "*Introduction to Web Accessibility"*, https://www.w3.org/WAI/intro/accessibility.php, accessed at Thursday, May, 28th 2020, 12.00 WIB.

Youngblood, N. E. (2014). "Revisiting Alabama state website accessibility". *Government Information Quarterly,* Vol.*31,* Page *476—487*.

Yusril, A., N. (2020). "E-Accessibility Analysis in User Experience for People with Disabilities". *Indonesian Journal of Disability Studies,* Vol. *7(1)*, Page 106—109.

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