



Comparative Study of Accessibility of University Websites

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Abstract: The Web is a structure interconnected like a spider's net, an uncountable gathering of documents and additional resources interconnected via hyperlinks. The World Wide Web is the platform that permits one to navigate the internet using various browsers such as Google Chrome, Internet Explorer, and Mozilla Firefox. University websites provide a flexible and efficient way of retrieving students' information and communicating with faculty and students, and the primary issue throughout the student life cycle. Website design is often driven by its application and accessibility from the standpoint of university students. The purpose of the comparative study is to analyse the accessibility of the IT learning centre and Technological University (Toungoo) websites. The Hypertext Markup Language (HTML), Cascading Style Sheets (CSS), JavaScript and MySQL query languages are applied to the two education websites.

Keywords: Browsers, Comparative study, Education websites, Hyperlinks, World Wide Web.

I. INTRODUCTION

The transformation of technologies has enabled the improvement of the education industry with the production of websites. A website is a collection of several web pages that can be accessed publicly and are affiliated with the same domain name that displays the static content. Most websites are used for information or marketing purposes. It can be developed and handled by different entities such as individuals, departments, companies, groups, or organisations to fulfil different requirements. The website is composed of all publicly available websites and has limited interactivity beyond displaying content, such as sharing a post to social media. These websites deliver a standard experience to every visitor. Firstly, the web pages are created with the Hypertext Markup Language (HTML). Whenever a web page is written in HTML, the whole of the web page is contained between the opening `<html>` and closing `</html>` tags. There are two main parts to the page: the `<head>` element inside the `<html>` element, is often referred to as the head of the page; this contains information about the page. It also contains a title and a description of the page, or instructions on where a browser can find CSS rules that explain how the document should look. It consists of the opening `<head>` tag, the closing `</head>` tag, and everything in between the `<body>` element: often referred to as the body of the page, this contains the information you actually see in the main browser window.

Secondly, when the user starts to build any website, create a good directory structure that can withstand growth; it's surprising how a small website can quickly grow and contain many more files than initially imagined. It's helpful to learn some of the terms that are used in describing directory structures and the relationships between directories. The three types of directories are described as follows: the root directory is the main directory that holds the whole of your web site, it is called `exampleNewsSite.com`. A subdirectory is a directory that is within another directory. Here, `Film` is a subdirectory of `Entertainment`. A parent directory is a directory that contains another directory. Here, `entertainment` is the parent directory of `arts`, `film`, `music`, and `television`.

The style of the web pages, including the colours and size of fonts, the width and colours of lines, can be designed by using the Cascading Style Sheet (CSS). The cascading style sheets specification works by allowing the user to specify rules that say how the content of elements within the document should appear. The background of the page is a cream colour, the contents of all `<p>` elements should be displayed in grey using the Arial typeface, and the six types of header such as `<h1>`, `<h2>`, `<h3>`, `<h4>`, `<h5>` and `<h6>` elements should be applied in red using the Times New Roman typeface.

II. RELATED WORK

F. Gazzawe reported the investigation of user references when using an e-learning application designed for e-learners in two phases. These two phases include the experiment of the application of two different interfaces, such as a mobile



application and a web application. This experiment provides a significant contribution towards supporting understanding of potentials and limitations for both web and mobile applications [1].

M. Alpuente, and D. Romero presented the web page comparison by applying the HTML and CSS programming languages. Then, the author also discussed the compression process to reduce the complexity of recognizing similar structures as well as the processing time when comparing the differences between the two web pages [2].

C. Tangmanee compared the websites' visit behaviour between purchase outcomes and product categories. The author investigated the clickstream panel data to check the differences in web page viewers and the visit duration between purchase outcomes and between product categories to improve the possibility of the purchases at their online stores [3]. The author, J. Stepanek, discussed comparing the creation of web pages in terms of inner structure. The author investigated the traditional methods of HTML tree structure compared with another HTML tree structure by applying the tree algorithms by comparing the tree structure within the algorithms, implementation and testing [4].

The researcher, Q. I. Sarhan, studied to check many aspects of human being's daily activities, such as email checking, weather checking, purchase ordering, and facebook logging and to deliver the functionality of internet-based software components by applying the comparison of web applications, such as human-oriented, accessed by web browsers and web services, such as machine-oriented, accessed by services and development tools [5].

C. H. Tan, et al. expressed the appearance of comparison of the shopping websites to enhance receptive access to multiple enterprisers' product offers and permit consumers to perform a comprehensive comparison of products and prices prior to purchase. According to the principles of experimental economics, the authors examined the impact of CS websites in many markets featuring merchant characteristics and product type [6].

D. V. Pralhad, et al. surveyed the price comparison websites to compare the price of goods and services from a range of providers across several e-commerce shopping websites, to choose products for the saving of money via online [7]. The research paper is summarized as the following sections. Section 1 recollects the basics of web page descriptions such as HTML and CSS. In Section 2, the investigation and comparisons of the web pages of many researchers are displayed. Section 3 formalizes the architectural system design of the IT learning centre. Section 4 represents the simulation results of the IT learning centre and TU (Toungoo) web pages. Section 5 concludes and discusses this research and the future plan of the research. An easy way to comply with the conference paper formatting requirements is to use this document as a template and simply type your text into it.

III. ARCHITECTURAL DESIGN OF IT LEARNING CENTRE

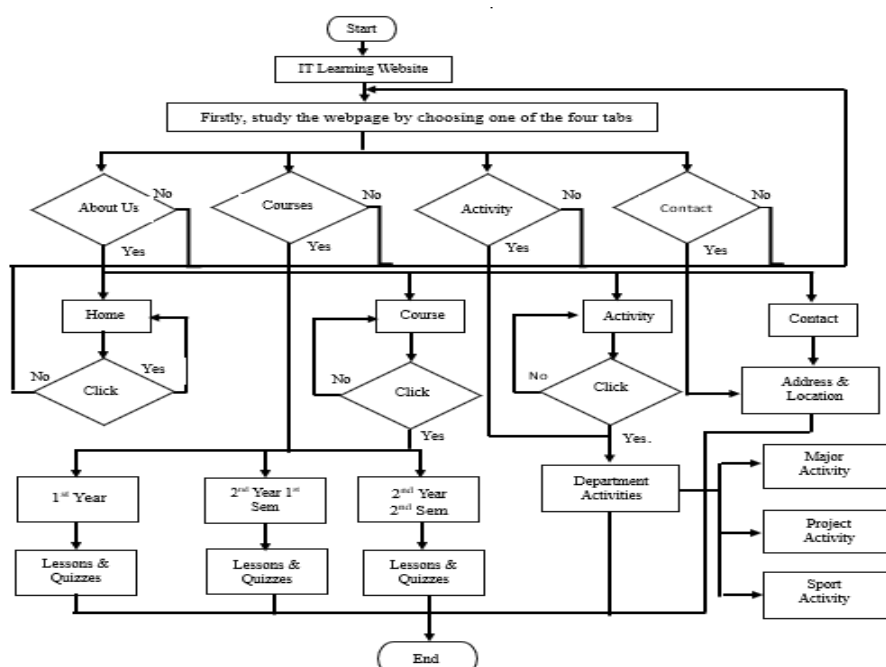


Fig. 1 System design of IT learning center



In Figure 1, firstly, the students start on the IT Learning webpage by choosing one of the four tabs “About us, academic courses, activity and contact” on the main page. If the students click the “about us” tab, they will enter the next page, including the four tabs: “home, academic years and course, activity and contact”. Secondly, the students can enter directly to the respective page by choosing three tabs; “academic years and course, activity and contact”. When the students or guests click the home tab, they will reach the main page of the IT Learning Website. In the academic years and courses tab, there are three tabs: first year (1st year), second year first semester (2nd year 1st), and second year second semester (2nd year 2nd semester). In 1st year tab, you can study Introduction to Computer Systems (ICS). In this section, the web designers describe all the chapters related to this course. In each chapter, you can learn the concepts of the basic computer system with notes, examples and respective “YouTube” links. And then you can revise back with quizzes; multiple choices, and true or false questions. In the 2nd year 1st semester, Hyper Text Markup Language (HTML), Cascading Style Sheet (CSS) and Object-Oriented Programming Using C++ (C++) can be learnt.

The designers also add the results form of the examples in the lessons section. Moreover, in the quizzes section, simple programming questions are added to practice these lessons or quizzes. In 2nd year 2nd semester, you can learn JavaScript and the next part of Object-Oriented Programming Using C++ (C++). In this course, there are two sections, the same described as above one. In the activity tab, the visitors can study the three activities such as major activity, project activity and sport Activity. In each of these activities, the related activities’ images are described. Finally, in the final tab, contact, the visitors can know more details about Technological University (Toungoo) such as the address, phone number, email, and it can also be search the location in the google map. Moreover, they can also recognize the feedback messages about our IT learning centre webpage.

III. COMPARISON OF IT LEARNING CENTRE AND TECHNOLOGICAL UNIVERSITY (TOUNGOO) WEB PAGES

A. Comparison of the Home Page of IT learning center and Technological University (Toungoo) Websites

The IT learning centre webpage is created for the IT major students to study the basics of programming languages such as HTML, CSS, JavaScript and MySQL language for creating the IT learning centre web page and to study the online courses from this web page. Technological University (Toungoo) is situated in Thetshekyawhtin Street, Thawonngal Quarter, Kaytumati Toungoo, Bago Division. The TU (Toungoo) website is created for all staff, students and other guests who visit this website for the updated news, call for journal and the updated activities.

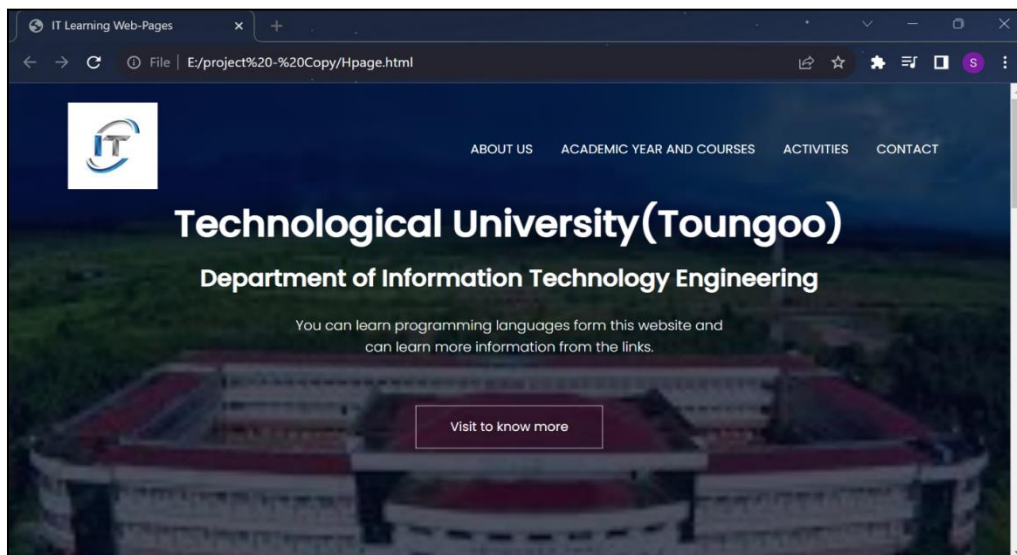


Figure .2. Home Page of IT Learning Centre

The home page of IT learning centre is described in figure.2. In this home page, the four tabs, such as “ABOUT US”, “ACADEMIC YEAR AND COURSES”, “ACTIVITIES”, “CONTACT” and one button for visiting to study more data. This frame is created by applying programming languages such as HTML, CSS, JAVASCRIPT and MYSQL. Moreover, the button “Visit to know more” is applied to study the links, the guests can study about the discipline for students in Technological University (Toungoo).



Figure .3. Home Page of Technological University (Toungoo)

The home page of Technological University (Toungoo) is described in figure 3. In this home page, the seven tabs such as “HOME”, “ABOUT US”, “ACADEMIC”, “DEPARTMENTS”, “RESEARCH”, “LMS” and “NEWS” are illustrated in figure 3. This website is created according to the owdPress, imported data using plugins, upgraded security, such as importing the white list and backup websites.

B. Description of Web Pages of IT learning centre and Technological University (Toungoo) Websites

The vision, mission and quality objectives of the Department of Information Technology Engineering in Technological University (Toungoo) are expressed in IT learning centre web page in figure 4. In this webpage, the vision describes “To produce highly qualified IT professionals who can contribute to the development and benefit of the nation”. The mission of IT department includes “By teaching continuously advancing ICT technologies through both theoretical and practical training, to nurture leaders who can contribute to national development and excel across various professional fields” and “To cultivate and produce IT engineers who are fully confident in themselves”. Then, the quality objectives of IT department represents “To achieve a student satisfaction rate of 86 % or higher” and “To ensure the professional development of teachers by providing at least three high-quality training programs per academic year”.



Figure .4. IT Learning Centre



The background history of Technological University (Toungoo) is presented in figure. 5. In this webpage, the beginning of Technical High School (Toungoo) was established on the Yangon-Mandalay highway near Kanyoe (village) in Toungoo. It was upgraded to Government Technological College on 2nd October, 1999. Then, it was upgraded into Technological University (Toungoo) on 20th January, 2007.



Figure .5. Technological University (Toungoo) Web Page

C. Comparison of the Activity Page of IT learning centre and Technological University (Toungoo) Websites

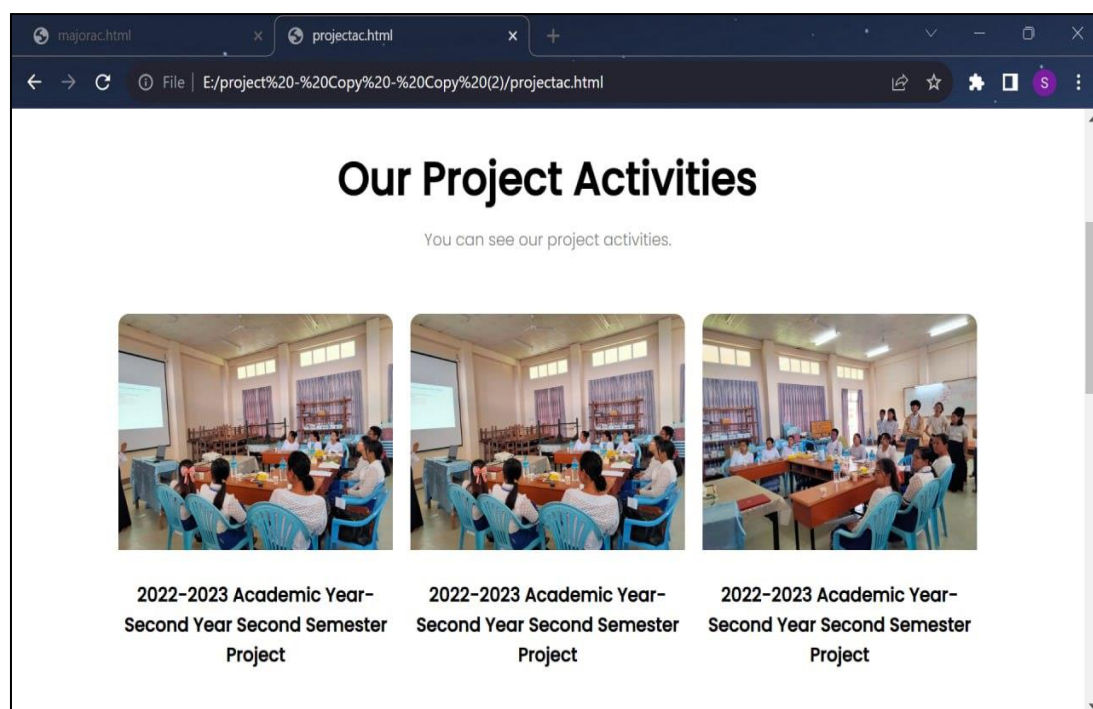


Figure .6. Activity Page of IT learning centre

The activity page of IT learning centre is represented in figure 6. The activity tab includes three portions such as the project activities, the lab activities and the sport activities. The seminars of all the students, the practical activities and the sport activities of all students in IT major are described in this tab.

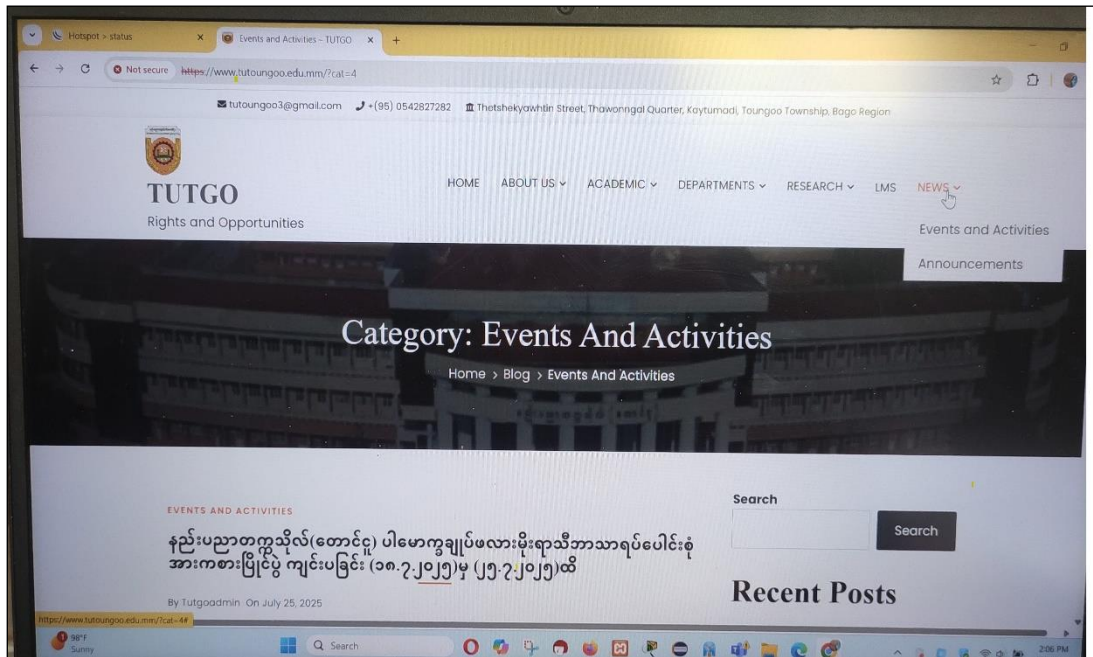


Figure .7. Activity Page of Technological University (Toungoo) Web Page

The activity page of Technological University (Toungoo) is represented in figure.7. The News tab consists of two portions: such as the event and activities and the announcements. The events and activities describe the project show, engineering science festival event, education and sport activities. The announcements tab represents the updated convocation activity, the fresher welcome of all majors and the drug prevention awareness presentation announcements.

D. Description of Education Page of IT learning centre and Technological University (Toungoo) Websites

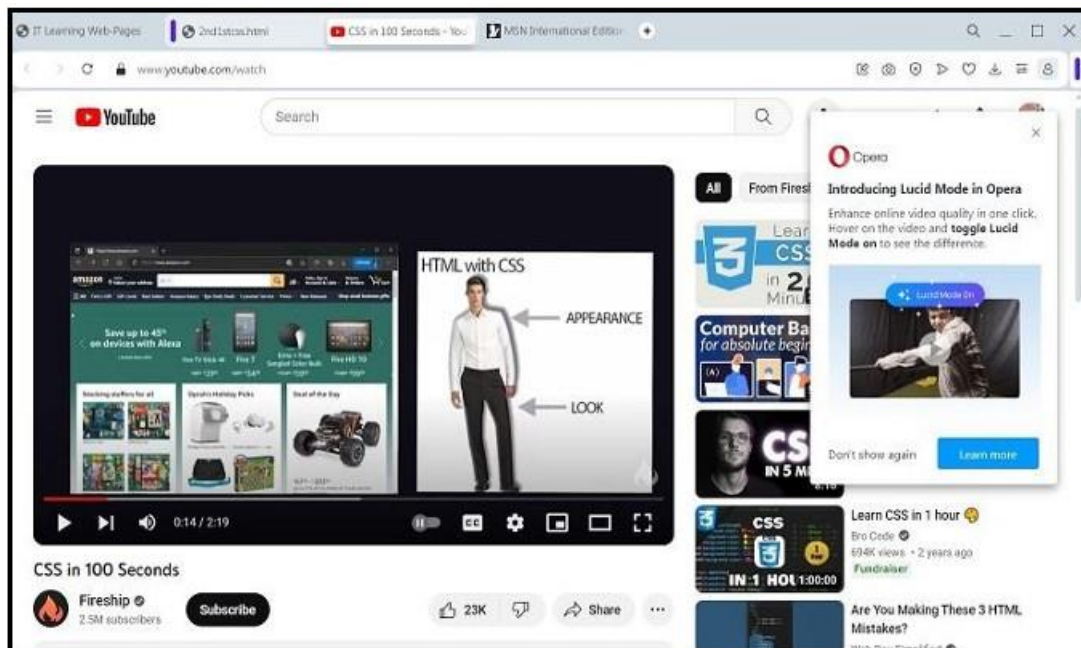


Figure .8. Technological University (Toungoo) Web Page

The education page of IT learning centre is illustrated in figure 8. In this figure, the programming languages such as C++, Java, PHP, Web and JavaScript can be studied via YouTube on this page. Therefore, the Wi-Fi is necessary for learning programming languages.

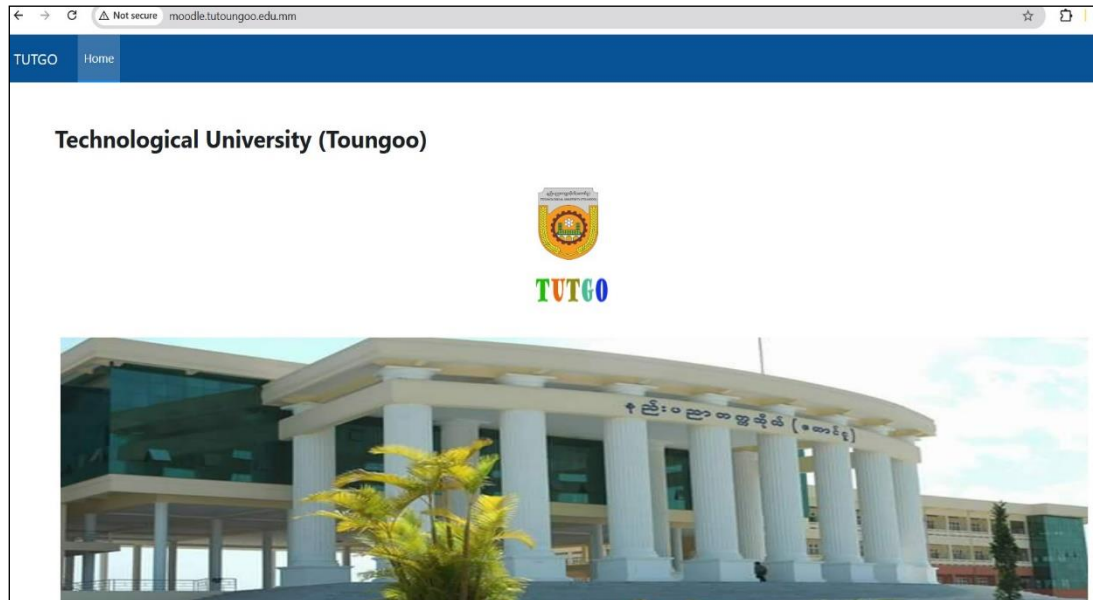


Figure .9. Technological University (Toungoo) Web Page

Among the seven tabs on the home page of TU(Toungoo), the Learning Management System (LMS) is expressed in these tabs. The academic year, the learning subjects, the names of the teachers and the courses are described in this LMS page. Moreover, the assignments, quizzes, and multiple choices questions can be uploaded in this web page.

IV. CONCLUSION

The IT learning centre in Technological University (Toungoo) is based on an accurate learning plan for each academic year and, the Technological University (Toungoo) web page is based on the updated activities of public talks, sport activities, fresher welcome and convocation activities in each academic year. This study examines the students' understanding of the effects of educational website on education effect and performance in various educational structural conditions. The purpose of this paper is to obtain the web page creation skills of colleagues, improve their knowledge of the concept of programming languages and the application of WordPress. The simulation results include the home pages, activities, education web page such as the learning management system. Moreover, the courses, activities, the ceremonies in convocation, and other information will be modernized throughout each academic year on the IT learning centre web page and the Technological University (Toungoo) web page.

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**BIOGRAPHY**

The author, **Dr. Saw Mon Yee Aung**, Ph.D (CEIT), Associate Professor, Technological University (Toungoo), Myanmar, analyses the Comparative Study of Accessibility of University Websites. The author's occupation is as demonstrator since 2008 and now Associate Professor from 2020 to present. She is interested in the programming subjects such as Java, HTML, CSS, PHP and the wireless networking fields. She studied the Teacher's Training Course (Mobile Application Training) in Jakarta and Surabaya, Indonesia. Then, she also investigated the ASEAN-INDIA Research Training Fellowship, India in 2020.