



Implementation of Digital Communication Media for Teaching and Learning Processes

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Abstract. Technological advances have a broad and complex background, which involves various aspects of history, social, economic, and scientific. Like the industrial revolution that began in England bringing major changes in the way of production. The discovery of steam engines, mass production systems, and the development of manufacturing technology increases efficiency and accelerated industrial processes. Progress in science, such as the law of physics, chemistry, and biology, provides a basis for many new technologies. Computer innovations and internet technology in the middle of the 20th century, followed by internet development, have revolutionized the way people communicate, work, and access information. Changes in lifestyle and culture, such as the adoption of digital technology by the community, have influenced how technology is not accepted. Technology such as smartphones and social media has changed the way we interact and access information. Awareness of environmental problems and ethics has influenced technological development, encouraging the search for more sustainable and ethical solutions, such as renewable energy and clean technology. Since COVID-19 has hit throughout the world, the world of education has the addition of learning methodology through learning in networks (online). But before that the communication media had been done a lot through existing media and its use was very familiar in the community. Technological progress is the result of a combination of various factors and continues to develop together with the progress of knowledge and changes in the needs and challenges of society.

Keywords: Computers, Communication, Digital, Teaching and Learning, Technology

1 Introduction

The use of digital technology has changed many aspects of human life, from the way we communicate to the way we work and learn. Communication media such as social media: platforms such as Facebook, Twitter, and Instagram allow people to connect, share information, and interact globally. Instant Message Applications: Applications such as WhatsApp, Telegram, and Signal Facilitate Quick Communication through

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A. A. N. G. Sapteka et al. (eds.), *Proceedings of the International Conference on Sustainable Green Tourism*

Applied Science - Engineering Applied Science 2024 (ICoSTAS-EAS 2024), Advances in Engineering Research 249,

https://doi.org/10.2991/978-94-6463-587-4_50

Text Messages, voice calls, and videos. Likewise, in the world of online learning education: e-learning platforms such as Coursera, EDX, and Khan Academy allows access to courses and training from various online disciplines. E-Books and Digital Materials: Textbooks, Articles, and Other Learning Materials are available in digital formats, facilitating access and distribution of information. Telemedicine Health Field: Technology allows long-distance medical consultation through video calls, facilitating access to health services, especially in the region remote. Electronic Medical Records: Electronic Medical Record System (EMR) helps in the management and access to patient health information efficiently. Business and Economy E-Commerce: platforms such as Amazon, eBay, and Tokopedia allow purchases and sales of goods online, expand the market for business, and facilitate consumers. Management and Data Analysis: Digital technology helps companies collect, store, and analyze data for better decision-making. Media and entertainment streaming: streaming services such as Netflix, Spotify, and YouTube offer access to films, music, and videos according to requests. Gaming: Digital technology supports the game industry with sophisticated graphics, virtual reality (VR), and immersive play experience. Digital technology continues to develop and expand the way we interact with the world, offer innovative solutions for various challenges, and create new opportunities in almost every aspect of life. Since COVID-19 has hit throughout the world, the world of education has the addition of learning methodology through learning in networks (online). But before that the communication media had been widely carried out through existing media and their use was very familiar in the community. As is the case with WhatsApp where this media does not use much quota in using it. Existing features are also very easy to use, but lately, there are many additions of features that require devices that are adjusted to the growing version (Sumaryo & Soedjarwo, 2021).

So researchers have the idea to make learning systems online by creating communication media that resemble the features that exist on WhatsApp (Koten et al., 2022).

1.1 Formulation of The Problem

One way to facilitate students to interact with lecturers is to use existing digital communication media. The problems that arise are: a) How to create a digital communication media so that it can be used optimally?; b) What applications are used to realize the digital communication media.

1.2 Research Purposes

PHP programming language is an application that can be used with the aim of (Hidayat et al., 2019): a) General Objectives: Become an application that can speed up the process of transformation of information between students and lecturers; b) Specific Objectives: Producing Learning Material Information; c) Operational Objectives: Knowing the communication process that occurs without time, place and language constraints.

2 Methodology

2.1 Research Design

Using books, articles, and other decent sources, such as manuscripts available on the internet to support this research problem. This research design is described as follows:

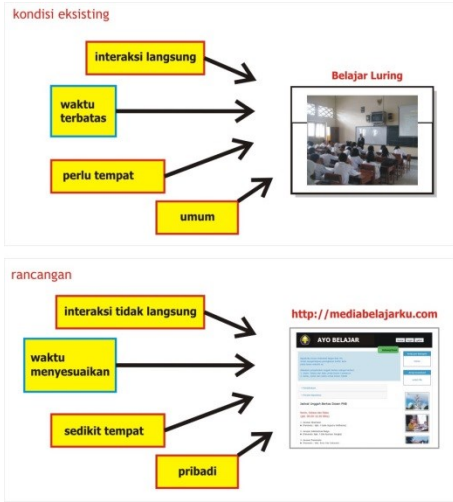


Figure 1. Design diagram block

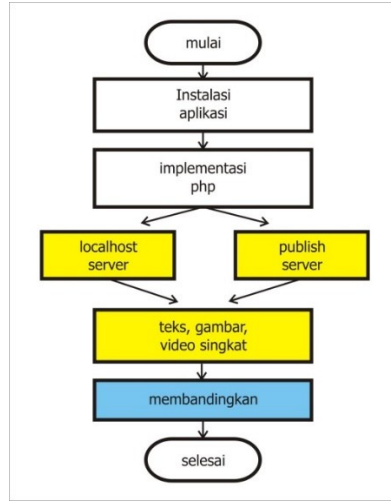


Figure 2. Flow diagram

The picture above is a research concept that can be explained with the following steps: 1. Discuss indirectly in preparation for the teaching and learning process; 2. Prepare a virtual class for the teaching and learning process; 3. Adjust the learning time; 4. Access the system that has been provided.

2.2 Flow Diagram

This study begins with preparing supporting data such as Windows systems, Word applications, Excel, PowerPoint, Photoshop, Corel Draw, Anti-Virus Applications as Resident Memory Applications, and several other applications. Digital communication systems use PHP programming languages that can be run in the Windows Explorer browser and Mozilla Firefox (Paillin & Widiatmoko, 2021).

3 Result and Discussion

3.1 Result

In this study we use the same files to get stability in measurement. This treatment is carried out on the same application by distinguishing the use of work engines in localhost and the working machine on the web server. Making an interface page using a Dreamweaver website processing application. The results were uploaded through cpanel in HTML form. The temporary website design display is static with a width of 900px and height adjusts to the condition of the device used by the user.

Table 1. Review from various angles

User interface		Content layout	
Perform	Landscape	Text	txt
Page Speed Insights	Mobile/Desktop	Picture	jpg
Layout	Responsive	Video	mp4

Processing Data

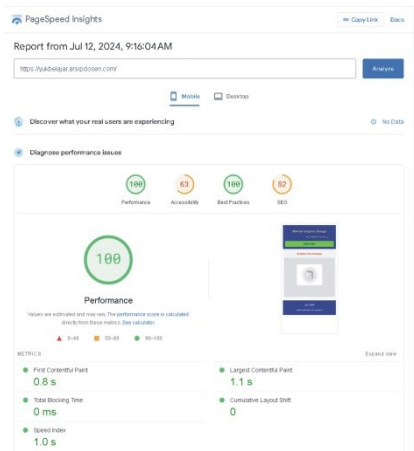


Figure 3. Mobile test

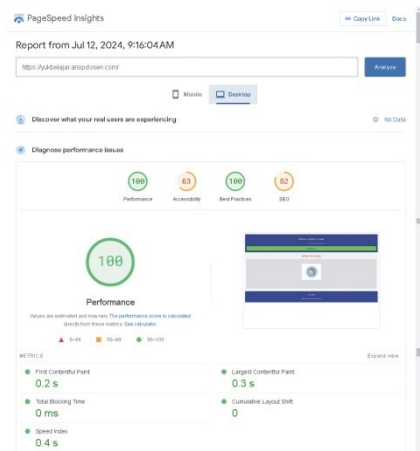


Figure 4. Desktop test

3.2 Discussion

WhatsApp that expires is caused by applications that are not updated. Using the old version of the application and outdated makes the application easily blocked by WhatsApp. Routinely, WhatsApp continues to update its application to deal with technical damage in its application. An unreachable WhatsApp application can block users to send messages (Ardiani & Pujiriyanto, 2022). The WhatsApp application

routinely updates its application to improve features, improve bugs, and add new features. Users must continue to update to get new features from WhatsApp. Starting March 1, 2024, WhatsApp can only be used on devices that run the Android 5.0 Lollipop operating system or a newer version (Rahartri, 2019). There are only two options that can be done by mobile users who are still running the operating system under Lollipop. This in our opinion is the shortcomings possessed by WhatsApp.

The test tools used are <https://pagespeed.web.dev/>. Each form of layout both mobile and desktop display has their respective performances. The performance results are 100, Accessibility 63, Best Practices 100 and SEO 82. Google Page speed Insights will provide an assessment with a scale indicator of 0-100. a) 0 - 49 shows slow website speed; b) 50-89 indicates the average website speed; c) 90 - 100 indicates the website has a fast loading.

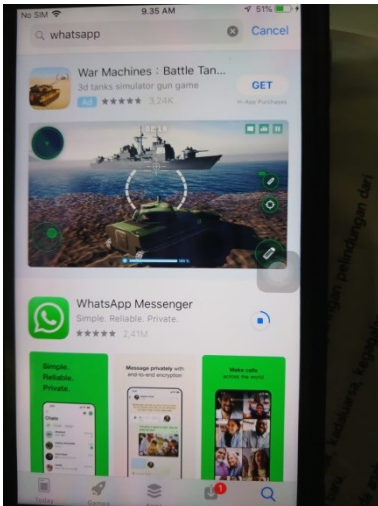


Figure 5. Update process

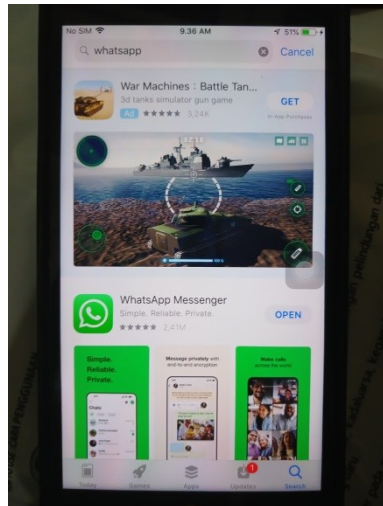


Figure 6. Ready open



Figure 7. Matrix view

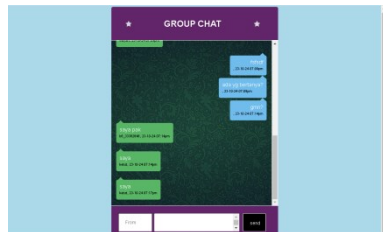


Figure 8. Action view

Transactions that occur in this system are the instructors to provide information in advance to all participants learning to enter the system (Herrington et al., 2009). The teacher will use the admin account to start, while the participants learn to follow the direction of the instructor in delivering learning material (Gibson et al., 2006). Discussions that occur using text, images, and short duration videos.

4 Conclusion

From the research we have done, it can be concluded that by way of understanding the layout, images and animations displayed as well as fast and easy database access, it will not complicate communication between teachers and learning participants who use the application (Sukarata & Widharma, 2021).

Acknowledgment

This article was written by Putu Gde Sukarata based on the results of research on the implementation of digital communication media for the teaching and learning process funded by the DIPA Politeknik Negeri Bali through the Research and Community Research Grant Program in 2024.

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