WEB-BASED APPLICATION DESIGN ON THE EFFECT OF DIGITALIZATION ON POLARIZATION AND SOCIAL INTEGRATION

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Abstract

This study aims to describe the design of a web-based application regarding the influence of digitalization on polarization and social integration. We used the design thinking method, consisting of empathizing, defining, ideating, prototyping, and testing. The study showed that in designing a web application called MPIS (Mobile Polarization and Integration Social) based on the results of an analysis of the widespread use of digital-based media which influences social interactions in generation Z. The design of this web application is well-made and can be used to check the digital literacy of generation Z, because the MPIS web application has been validated by experts and is limited and is suitable for use for limited trials and implemented in class to increase the digital literacy of students or generation Z. It is hoped that the recommendations from this research can be implemented and be useful for learning activities in the classroom in increasing digital literacy and students are able to sort out and choose what to watch or use social media wisely to shape the golden generation into good citizens.

Keywords: Literacy digital, MPIS, Polarization, Social integration, Web-based application.

1. Introduction

The rapid growth of digitalization has made digital media usage an essential part of daily life [1-5]. The development of digitalization is increasing, so the use of digital media has become an unavoidable necessity. The influence of the high use of digital media on the polarization and social integration of citizens [6-11]. Digital polarization arises from the uncontrolled use of digital media, leading to social divisions [12, 13], while social integration represents its positive impact, where information is processed wisely into constructive social actions [14]. Anticipating the negative effects of digital media is crucial, requiring digital literacy education to ensure its responsible use [15].

Previous studies on digital literacy efforts across generations [16-20], highlighting a growing focus on Generation Z [21-26]. This study aims to design a web application to help users understand digital polarization and social integration. Using the design thinking method empathizing, defining, ideating, prototyping, and testing this study introduces three key innovations: (i) a web application for Generation Z to explore social polarization and integration, (ii) digital literacy tools for responsible media use, and (iii) validated web applications for classroom learning, fostering good citizenship habits among students.

2. Literature Review

Figure 1 illustrates the web application workflow [27]. Developers design the application based on research needs and host it on a prepared server. Once deployed, the application generates a URL that user access through a web browser. When respondents interact with the web-based application, their data is automatically recorded in real time on the server.

The rapid advancement of technology has significantly impacted mental health. Many reports regarding mental health have been well-developed [28-32]. Positive effects include connectivity, access to information, and educational awareness [33-38]. However, negative impacts such as information overload, social comparison, addiction, and sleep disorders contribute to social polarization or integration. Addressing these challenges requires effective digital education, particularly for Generation Z [39]. Web applications, widely used, serve as an accessible tool for promoting mental health awareness and digital literacy [40-42].
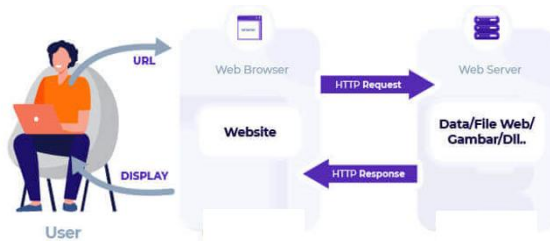
**Fig. 1. Web application workflow.**

3. Method

This study employed the design thinking method, consisting of empathizing, defining, ideating, prototyping, and testing. The empathy stage identified issues

related to uncontrolled digital media use and its social impact. This concern drove the defining stage, where ideas for a web application were formulated. In the ideation and prototyping stages, key content was developed to suit Generation Z's characteristics. Finally, the testing stage involved limited trials and expert.

4. Results and Discussion

Figure 2 illustrates the flow diagram of the MPIS web application development during the idea and prototype stages. The process begins with respondents installing and opening the app, leading to a home screen with three sections: digital literacy, social polarization, and social integration. At the final stage, respondents complete digital literacy questions. The MPIS web application helps bridge the digital divide by improving access to information and communication technology [43]. Figure 3 presents the storyline and interface of the mobile application, which consists of five sections: (i) home, featuring digital literacy content, (ii) social polarization material, (iii) social integration material, (iv) solutions to polarization and social integration impacts, and (v) digital literacy questions. Digital literacy serves as a strategy for fostering critical autonomy, helping individuals engage with media responsibly while minimizing negative effects and maximizing benefits [44]. During the testing phase, media, language, and construct experts validated the MPIS web application, confirming its suitability with recommendations for improvement. Experts suggested adding interactive visual media, such as videos illustrating digitalization issues and social polarization, and incorporating open-ended questions to encourage deeper reflection. After implementing these revisions, a limited trial was conducted with twenty Generation Z students, allowing them to install and test the application.

Table 1 presents the limited testing results. Detailed statistical analysis is explained elsewhere [45-47]. Student digital literacy scores were in the good category (score of 85). Students also provided positive feedback on the application's usability. The increase in digital literacy was classified as high based on N-Gain calculations. The media is effective, provided it undergoes revisions based on expert recommendations as part of the iterative design process [48-50]. The MPIS web application serves as a tool to assess and enhance digital literacy among Generation Z, who are the future custodians of national identity and development [39, 51, 52]. Instilling strong national character will contribute to producing responsible citizens capable of advancing the nation [53, 54].
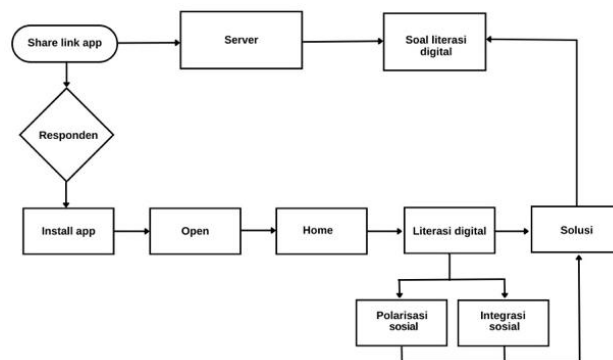
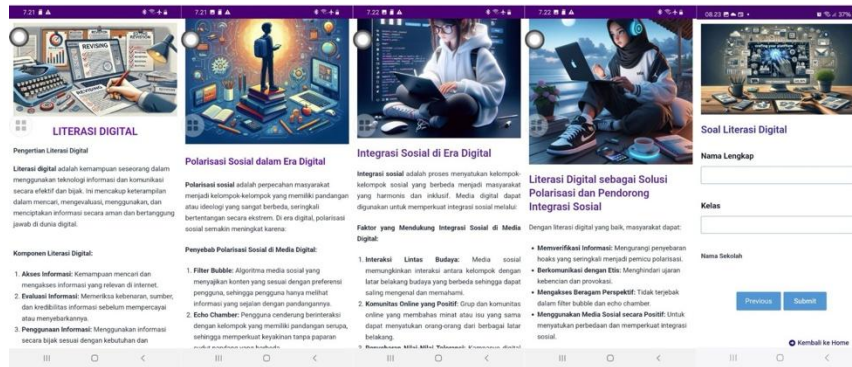**Fig. 2. Flow chart Web Application MPIS.**

Fig. 3. Display of Web App MPIS.

Table 1. Description of students' digital literacy.

Stages	N	Value			
		Min.	Max.	Mean	Std. dev.
Pre-test	32	20	50	35	10.14
Post-Test	32	80	90	85	7.20
N-gain	32	0.65	0.91	0.75	0.05

5. Conclusion

This study confirms that the MPIS web application effectively enhances digital literacy among Generation Z, particularly in understanding social polarization and integration. Developed using the design thinking approach, it was validated by experts and improved through revisions, including interactive media and open-ended discussions. Limited trials showed significant improvement in students' digital literacy skills with positive feedback. The MPIS web application serves as a valuable educational tool to bridge the digital divide and foster responsible digital citizenship for future national development.

Acknowledgments

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