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DEVELOPMENT OF A MODULE-BASED DIGITAL LITERACY COURSE LEARNING MODEL: A NEEDS-BASED APPROACH

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ABSTRACT

Rapid technological advancements in the 21st century have positioned digital literacy as a fundamental competency for academic and professional success. However, educational institutions often face challenges in implementing structured, effective, and engaging digital literacy instruction. This study addresses this gap by detailing the development of a module-based learning model for a digital literacy course. The study employed a Research and Development (R&D) methodology, employing the systematic Dick and Carey model to guide the instructional design process. The initial phase involved a thorough needs assessment to identify instructional objectives and analyze learner characteristics, using a survey with 53 respondents. The needs assessment results revealed a significant demand for a learning model with instructional materials that incorporate digital literacy skills, specifically in the form of modules featuring video tutorials. The resulting module-based model can provide a practical, adaptable, and impactful framework for fostering digital competency in education.

Keywords: Needs Analysis, Digital Literacy, Module-Based Learning, Elementary School Teacher Education

INTRODUCTION

Entering the era of Society 5.0, global life has undergone a fundamental transformation driven by advances in information and communication technology (Schwab, 2017). In this context, digital literacy has evolved to become a crucial component of 21st-century skills, essential for every individual to participate effectively in various aspects of life, including achieving academic and professional success (van Laar et al., 2017). The ability to access, evaluate, manage, and communicate information critically and ethically through digital platforms has become a primary prerequisite in navigating the modern world.

The consequences of this paradigm shift place a significant responsibility on educational institutions, particularly at the tertiary level, to equip their students with robust digital competencies. For students in Elementary School Teacher Education (PGSD) programs, this urgency is doubled, as they are prepared to become digitally competent educators for the next generation (Instefjord & Munthe, 2017). However, in reality, educational institutions often face significant challenges in designing and implementing structured and effective digital literacy instruction programs, especially given the ongoing debate over the best way to teach digital literacy to the *digital native generation* (Ng, 2012).

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This gap between competency requirements and implementation effectiveness is the starting point for this research. A learning model is needed that is not only systematic but also flexible and relevant to students' needs. Module-based learning offers a potential solution, as its organized structure allows students to learn independently and at their own pace (*self-paced learning*), which has been shown to improve learning outcomes (Suryani & Hamdu, 2021).

Therefore, this study aims to detail the needs analysis as a starting point for developing a learning model for a digital literacy course specifically designed through a needs -*based approach*. Using the Research and Development (R&D) methodology (Gall et al., 2007), which adapts the systematic instructional design model from Dick and Carey (2015), this study begins with a comprehensive needs analysis of PGSD students.

This article will detail the needs analysis conducted, with the ultimate goal of solving learning problems in the form of a practical and adaptable learning model framework, which will have an impact as an important provision for developing digital competence in the world of education.

DISCUSSION

The Urgency of Relevant Digital Literacy Learning Models in the Era of Disruption

This needs assessment is an observation conducted to observe or examine the gap between expectations and reality. This stage ensures that any learning interventions developed are truly relevant and capable of addressing existing problems. By conducting a comprehensive needs assessment, we can ensure that learning development efforts are directed efficiently and effectively, resulting in programs that are relevant, impactful, and able to equip students with crucial competencies for their future.

There are three components to the logic of needs assessment. The first component establishes a standard or goal, known as the desired state. This refers to what students should ideally achieve—the knowledge, skills, or attitudes we hope to achieve after the learning process.

The second component is task analysis, which examines specific jobs or tasks that need improvement through training, specific learning models, or specific media. The goal is to identify the skills, knowledge, and abilities (KSAs) required to perform those tasks effectively.

The third component is individual analysis, examining the student's current condition or situation. It examines what actually exists at the moment, before any learning intervention is implemented. Data collection to identify current status can be conducted through various methods, such as diagnostic tests, surveys, observations, interviews, or document analysis such as test scores or performance reports (Dick et al., 2015).

Digital literacy skills are no longer simply an option, but a necessity in an increasingly connected and digitized society. Numerous studies have highlighted how digital literacy directly impacts an individual's preparedness to face social and economic challenges (Livingstone, 2012). The term digital literacy was first introduced by Paul Gilster, who defined it as the ability to understand and use information from various sources presented via computer (Safitri, 2025).

In the context of PGSD students' digital literacy, the desired status might be their ability to creatively integrate digital tools in teaching, critically evaluate online information, and communicate ethically in digital environments, under the demands of 21st-century competencies (Voogt & Roblin, 2012).

Especially for student teachers, these *skills* are the main foundation for creating a dynamic and innovative learning environment in the classroom. They need to master not only technical competencies but also pedagogical skills to effectively integrate technology into the curriculum (Koehler & Mishra, 2009).

Traditional, lecture-centered learning models are no longer adequate for teaching dynamic skills such as digital literacy. The need for more flexible, adaptive, and practice-oriented learning models is crucial. The model proposed in this study, namely module-based learning with integrated video tutorials, addresses this need. Modules provide a clear structure and enable self-directed learning, while video tutorials provide practical demonstrations that are difficult to illustrate through text alone (Mayer, 2014).

Research methods

Research and Development (R&D) approach, adapting the Dick and Carey model. The Dick and Carey learning model is a learning model developed through a systems approach. Learning design, according to this systems approach model, has several components that will be passed through in the development process, consisting of a sequence of steps. The basic components of learning system design include analysis, design, development, implementation, and evaluation. However, this research is limited to the initial step, namely, needs analysis.

The data collection methods used in gathering initial information were a literature study and field study. The field study was conducted through a survey by distributing questionnaires on learning model needs to lecturers and students, while the literature study was carried out by collecting relevant research and sources and conducting a review of concepts in digital literacy materials as a basis for developing a learning model for digital literacy courses. The instruments used were a media needs questionnaire in the form of a Google form and an interview questionnaire. The data obtained were then analyzed using quantitative descriptive statistical data analysis techniques.

RESULTS AND DISCUSSION

Needs Analysis: The Foundation of Instructional Design

The initial stage, namely needs analysis, is a crucial step in ensuring that the product being developed is relevant to the target students. Analysis conducted on elementary school teacher education students, which revealed a preference for modules and video tutorials, aligns with other research findings demonstrating the effectiveness of using multimedia teaching materials in increasing student motivation and understanding (Moreno & Mayer, 2007). Identification was conducted to identify the gap between students' current digital literacy competencies and those required.

Currently, some PGSD students still experience difficulties in the digital literacy course, which is a compulsory subject in their study program. This course covers the use of interactive presentation software, digital copyright, utilizing online learning *platforms* for effective collaboration, and utilizing digital media in the learning process. This is reflected in the questionnaire results, which showed 41.5% of respondents are in the diagram below:

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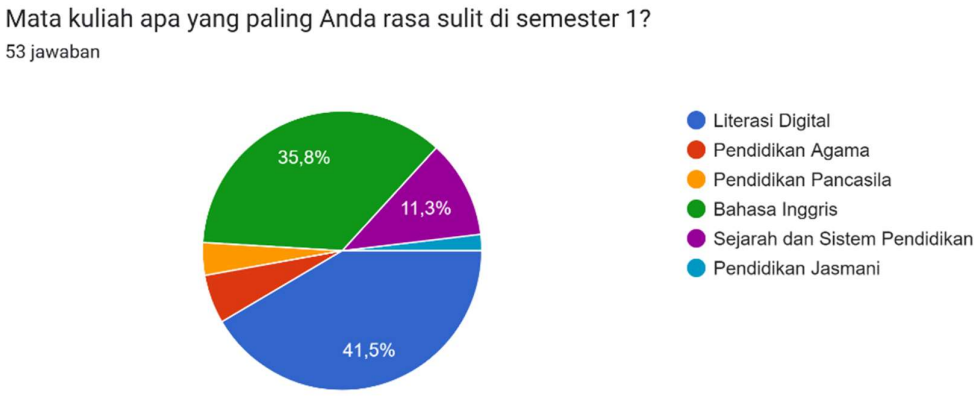

Figure 1Course Learning Difficulty Chart

Another gap is in the learning model used by teachers, namely, 48.1% of respondents answered that learning was done using the lecture method, which can be seen in Figure 2, where the blue color appears to dominate.

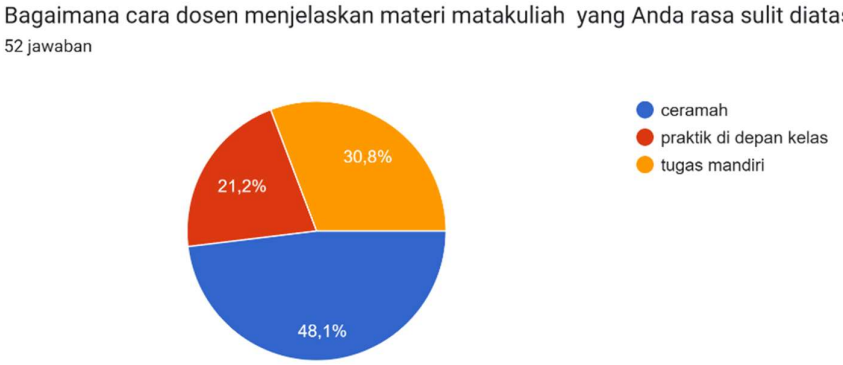

Figure 2Classroom Learning Methods

This is not in line with the learning styles of students, 58% of whom choose learning videos as the media most frequently used for learning, and 54% also use modules, as can be seen in Figure 3.

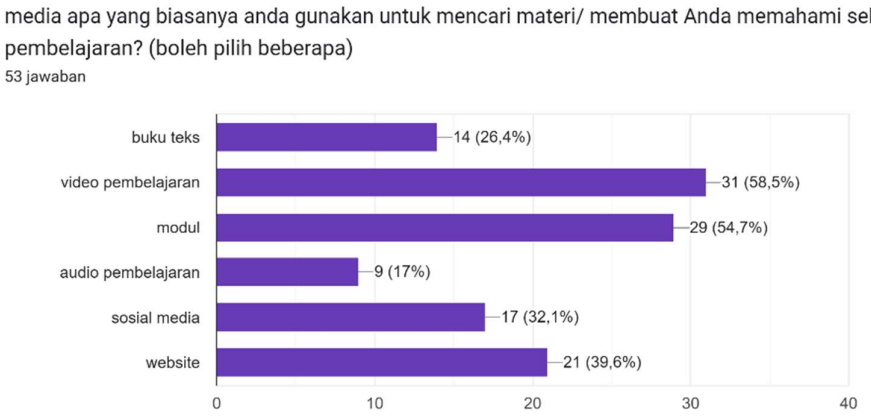

Figure 3Student Learning Styles

Apart from the students' learning styles, students also responded to whether or not there were teaching materials used by lecturers to help them understand material in lectures that was considered difficult, as can be seen in Figure 4 below.

Figure 4. Use of Teaching Materials/Media

Of the 53 respondents, 26 answered "no," 12, and 27 did not answer. This means that 39 respondents, or 73.58%, answered " no" to teaching materials that could be mentioned or used. Modern teachers must be able to utilize technology effectively and ethically to support the learning process.

According to several literature studies, digital literacy is a form of ability to obtain, understand, and use information originating from various sources in digital form (Naufal, 2021). **The use of various digital media in classroom learning** should be maximized, rather than relying solely on lectures. This gap between competency requirements and implementation effectiveness is the starting point of this research.

Module Design and Development: Integration of Theory and Practice

Once needs are identified, the next step is to design the module. Based on the literature review, good instructional design must integrate various elements to maximize learning.

The proposed model should include the following components: (1) Clear Learning Objectives: Each unit or chapter in the module should have specific, measurable, achievable, relevant, and time-bound (SMART) learning objectives. (2) Structured Learning Materials: Content should be presented logically, with gradually increasing levels of difficulty and accommodating different levels of mastery of learners. (3) Practical Video Tutorials: Videos should be designed to demonstrate practical applications of the concepts being taught, for example, how to effectively use digital collaboration tools. This is based on the fact that most students prefer to use video learning, supported by other research that suggests that short videos that focus on a single concept are more effective in facilitating learning (Brame, 2016). (4) Independent Learning Activities: The module should include exercises, quizzes, and assignments that encourage students to apply their knowledge and skills directly. (5) Formative Evaluation: Each section of the module should be accompanied by a formative assessment to provide instant feedback to students, allowing them to track their learning progress.

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CONCLUSION

Based on the needs analysis, the learning model developed must: (1) have learning objectives, (2) be module-based, so that it is flexible and can accommodate differences in mastery levels between participants. (3) Include practical video tutorials, (4) Provide independent, task-based contextual learning activities. (4) Integrate formative evaluation to monitor progress.

The initial analysis also revealed a significant gap in demand for modular teaching materials enriched with video tutorials, which served as a key foundation for the model's design. Developing a module-based learning model with video tutorials will not only address the curriculum gap but also have broader implications. The model can serve as a blueprint for other study programs at universities seeking to improve their students' digital literacy skills.

Furthermore, by equipping prospective teachers with strong digital competencies, this model indirectly contributes to improving the quality of education at the elementary level in the future. Digitally competent teachers will be better able to create relevant and engaging learning experiences and prepare their students for the challenges of the 21st century.

This research is expected to be an important reference source for educators, curriculum developers, and policymakers in formulating more effective strategies for building a digitally literate education ecosystem.

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