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The Integration of Digital Literacy into Indonesian Language Instruction to Enhance Students' Academic Skills

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ABSTRACT

Rapid advances in information technology require universities to transform their approaches to integrating digital skills into learning. This study aims to analyze the level of digital literacy among students in Indonesian language courses at Universitas Muhammadiyah Parepare (UMPAR) and to identify its contribution to academic performance. Unlike previous studies, which generally only mapped levels of digital literacy, this study offers a new contribution by empirically linking the three dimensions of digital literacy to patterns of their integration into teaching practices and their impact on academic achievement. The study employed a quantitative descriptive approach with 120 students in their third through fifth semesters as respondents. Data were collected through structured questionnaires, participatory observation, and documentation of learning activities, with variables covering the three dimensions of digital literacy: information access, content evaluation, and digital content production. The results indicate that UMPAR students possess good foundational skills in accessing digital information sources but still face significant challenges in evaluating and verifying the accuracy of content. Practices in producing digital academic content, such as writing online academic essays and creating multimedia presentations, are also not yet optimal. Correlation analysis revealed a significant positive relationship between digital literacy and academic ability ($r = 0.54$, $p < 0.01$), confirming that strengthening digital literacy contributes significantly to academic achievement. These findings underscore the need for more systematic learning strategies to develop all dimensions of digital literacy evenly, while also promoting the development of an Indonesian language curriculum that explicitly integrates digital literacy competencies as learning outcomes.

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1. Introduction

The 21st century has brought fundamental changes to nearly every aspect of human life, including the world of education. Digital technology is no longer merely a tool to aid the teaching and learning process; it has evolved into a new ecosystem that is reshaping the way people acquire, process, and produce knowledge. In this context, digital literacy can no longer be viewed as an additional or supplementary skill; it has become a core competency that determines an individual's ability to thrive in the modern era (Pratama et al., 2025)

In the higher education setting, this transformation is felt to be increasingly urgent. Students are expected not only to be able to operate technological devices but also to possess the critical skills to assess the reliability of information sources, utilize digital platforms to construct academic arguments, and produce high-quality scholarly work by leveraging the various digital tools available (Yanti et al., 2021) . These abilities are collectively known as digital literacy, a concept that continues to evolve alongside shifts in the global information ecosystem.

In Indonesian language instruction at the higher education level, the integration of digital literacy holds significant strategic relevance. Indonesian language courses do not merely address linguistic aspects in a normative manner but also serve as a platform for developing critical thinking skills, academic reading, and the production of scholarly texts. Salindri (2024) emphasizes that digital literacy-based Indonesian language instruction in the Society 5.0 era can equip students with the essential competencies needed by college graduates to face the challenges of the times. Thus, the integration of the two is not merely a methodological choice but an academic necessity.

However, the reality on the ground reveals a situation that is not yet entirely encouraging. Various studies reveal that although the current generation of students is known as "digital natives," their familiarity with technology does not automatically correlate with mature digital literacy skills (Subagjo, 2023). Many students are proficient in using social media and entertainment apps, but they remain weak in critically evaluating information, verifying scientific sources, and producing responsible academic content (Sitepu et al., 2025). This gap represents an important research gap that warrants further investigation.

Studies on digital literacy in the context of Indonesian language learning have been conducted at various educational levels. Subagjo (2023) examined the digital literacy skills of MTs students, while Mahmud et al. (2026) focused their research on the high school level. However, studies specifically targeting college students in eastern Indonesia, particularly at Universitas Muhammadiyah Parepare remain very limited. This creates a research gap that needs to be addressed immediately, given that the social context, digital infrastructure, and student characteristics in that region may differ from those studied in major cities.

Based on this background, the objectives of this study are: (1) to measure the level of digital literacy among UMPAR students across three main dimensions of access, evaluation, and content production; (2) to describe the practices of integrating digital

literacy into Indonesian language learning; and (3) to analyze the relationship between digital literacy and improvements in students' academic abilities.

2. Literature Review

2.1. Concepts and Dimensions of Digital Literacy

The term "digital literacy" was first popularized by Paul Gilster in 1997, but its definition has continued to evolve alongside technological advancements. In the context of contemporary Indonesian education, digital literacy can be defined as a set of individual competencies to access, understand, evaluate, communicate, and create information using digital technology in a wise, responsible, and effective manner (Surma & Truong, 2023). This definition emphasizes that digital literacy is not merely a technical skill in operating devices, but encompasses much broader cognitive, ethical, and creative dimensions. This broader perspective is consistent with digital competence frameworks, which conceptualize digital literacy as a combination of technical, cognitive, and pedagogical capabilities required for lifelong learning and professional development (Biggins et al., 2017).

The Indonesian Ministry of Communication and Information Technology (Kominfo RI), through the Siberkreasi National Digital Literacy Movement, has developed a digital literacy framework consisting of four main pillars: digital skills, digital culture, digital ethics, and digital security. This framework serves as the foundation for national policies aimed at strengthening digital literacy across all sectors of society, including in higher education institutions (Ahmad, 2022). At the international level, the European Union's DigComp 2.2 framework identifies five relevant areas of digital competence: information and data literacy, communication and collaboration, digital content creation, security, and problem-solving. Among these competency areas, information management and content creation have become increasingly important in higher education because they directly support students' academic learning, critical inquiry, and scientific communication in digital environments.

Although DigComp 2.2 consists of five competency areas, this study focuses on three dimensions, namely information access, information evaluation, and digital content production, because these competencies align directly with the learning outcomes of Indonesian language courses, particularly academic reading, critical evaluation of sources, and academic writing. The aspects of digital security and problem-solving are recognized as important; however, both fall outside the primary scope of this study.

For the purposes of analysis in this study, three dimensions of digital literacy are the primary focus. First, the dimension of digital access, which refers to students' ability to efficiently locate, retrieve, and utilize information from various digital sources. Second, the dimension of evaluation, which encompasses the capacity to assess the relevance, accuracy, and reliability of information found in the digital space. Third, the content production dimension, which involves the ability to create and disseminate digital content responsibly and creatively (Kardika et al., 2023). These three dimensions are interrelated and collectively form a comprehensive profile of digital literacy.

2.2. Digital Literacy in Indonesian Language Learning

The integration of digital literacy into Indonesian language instruction is one of the key strategies for meeting the demands of 21st-century learning. Indonesian language learning is no longer solely focused on mastering linguistic aspects but is also aimed at developing students' abilities to access, evaluate, process, and communicate information through various digital media. In this context, digital literacy serves as a competency that enables students to develop the critical thinking, information literacy, academic communication, and problem-solving skills required in a modern learning environment. In line with this, " emphasizes that Indonesian language learning in the Society 5.0 era must integrate digital technology as part of the learning process so that students can effectively utilize information while producing high-quality academic work.

Conceptually, Indonesian language learning based on digital literacy aligns with the concept of digital competence as proposed by DigComp 2.2. This perspective is further supported by Çebi et al. (2022), who argue that digital competencies should be transformed into effective technology integration through appropriate pedagogical knowledge and instructional practices. This perspective emphasizes that digital literacy is not limited to the mastery of technological devices but also encompasses the ability to manage information, collaborate, generate new knowledge, and make decisions based on valid information. Therefore, the integration of digital literacy into Indonesian language learning should be designed not merely as the use of digital learning media but also as a process of developing higher-order thinking skills that support students' academic success.

The development of various digital platforms has helped expand the space for learning Indonesian. Nugroho (2022) shows that using Instagram as a learning medium can boost students' motivation to learn while also serving as an authentic tool for developing digital literacy skills. Similarly, Alfalah and Nugroho (2022) demonstrate that the use of digital assessment tools such as Kahoot can increase students' active engagement and improve conceptual understanding compared to conventional teaching methods. These findings indicate that digital technology not only serves as a medium for delivering content but also creates a more interactive, collaborative, and student-centered learning experience. Similar findings were reported by Nurhikmah et al. (2023), who demonstrated that Android-based learning media significantly improved students' reading literacy and digital literacy. These findings indicate that digital technology can simultaneously support language learning and the development of digital competencies.

In the context of higher education, the integration of digital literacy is also aimed at enhancing students' academic competencies through authentic learning activities. Research from the " shows that systematically strengthening digital literacy can produce graduates who are better prepared for the workforce because they possess the ability to search for scientific information, evaluate digital sources, and use technology professionally. Similar results were also reported by Pitrianti et al. (2023), which found that participatory learning activities based on Photovoice can enhance students' digital literacy competencies, particularly in the areas of reflective thinking, digital

communication, and collaboration. These findings demonstrate that the success of digital literacy integration is greatly influenced by instructional designs that provide students with opportunities to use technology as a means of constructing knowledge, rather than merely as a tool for conveying information.

In addition to enhancing academic abilities, digital literacy also plays a role in shaping students' character and academic integrity. Mas'ud et al. (2023) indicates that the transformation of Indonesian language learning based on digital literacy not only enhances cognitive aspects but also supports character development through the cultivation of critical, ethical, and responsible attitudes toward the use of digital information. These findings align with the study (Phillips et al., 2025), which emphasizes that online safety is an integral part of digital literacy. Students are not only expected to be able to access information quickly but must also possess the ability to verify sources, protect personal data, understand digital ethics, and avoid spreading invalid information (Solih & Julianto, 2025). Thus, digital literacy-based Indonesian language instruction plays a strategic role in producing graduates who are not only academically competent but also possess ethical responsibility in utilizing digital technology.

Although DigComp 2.2 consists of five competency areas, this study focuses on three dimensions, namely information access, information evaluation, and digital content production, because these competencies align directly with the learning outcomes of Indonesian language courses, particularly academic reading, critical evaluation of sources, and academic writing. The aspects of digital security and problem-solving are also recognized as important; however, they fall outside the primary scope of this study.

2.3. Academic Skills and Their Relevance to Digital Literacy

Academic skills are a set of competencies that enable students to understand, analyze, develop, and communicate knowledge in a scientific manner. These competencies include critical thinking, information literacy, scientific writing, research, and the ability to communicate ideas logically and systematically. In the context of an increasingly digitized higher education system, academic skills can no longer be separated from digital literacy because most learning processes, including searching for scholarly references, processing data, and publishing academic work, are now conducted through various digital platforms. Therefore, digital literacy is recognized as an essential competency that supports students' academic success in the twenty-first century.

Theoretically, the relationship between digital literacy and academic ability can be explained through the perspective of digital competence, which views the ability to access, evaluate, manage, and produce digital information as the foundation of lifelong learning. Students with strong digital competence tend to be able to select credible information sources, integrate various pieces of information into new knowledge, and produce higher-quality academic work. In line with this, Yunaika (2025) explains that digital competence is a combination of knowledge, skills, attitudes, and responsibility in using digital technology effectively to support the learning process and professional development. Thus, the improvement of academic ability depends not only on mastery of

course material but also on students' ability to utilize digital technology critically and responsibly.

A number of studies indicate that digital literacy significantly contributes to improved academic performance among students. Xayakot et al. (2024) reports that students with high levels of digital competence demonstrate greater ability in searching for scientific literature, evaluating the quality of information, collaborating using digital technology, and producing academic work that meets scientific standards. These findings are supported by Voogt et al. (2013), which, through a systematic review of digital competence in higher education, concluded that mastery of digital competence positively contributes to students' critical thinking, problem-solving, scientific communication, and academic success. These results indicate that digital literacy functions not only as a technical skill but also as a factor influencing the quality of the learning process and academic achievement.

Similar evidence has also been reported in the Indonesian context. Arima et al. (2022) found that students with higher levels of digital literacy achieved better learning outcomes, indicating that digital competence contributes directly to academic achievement. Furthermore, (Kusumasari et al., 2024) found that digital literacy-based learning effectively enhances students' critical thinking skills, which in turn impacts their ability to analyze scientific texts, construct arguments systematically, and produce higher-quality academic writing. These findings indicate that digital literacy serves as a tool that strengthens the process of knowledge construction in language learning.

The relationship between digital literacy and academic ability is also influenced by students' ability to manage their own learning process. Hidayah et al. (2022) found that critical thinking skills and interest in reading have a mutually reinforcing relationship with digital literacy. Students with strong critical thinking skills tend to be more selective in choosing digital information sources, better able to verify the information they obtain, and produce more valid and well-argued academic work. These findings align with the concept of self-regulated learning, which explains that students who are able to plan, monitor, and evaluate their learning processes will utilize digital technology more effectively to achieve academic goals. Therefore, digital literacy and academic abilities are not merely correlated but mutually reinforce one another through active, reflective, and continuous learning processes.

Based on these findings, it is clear that digital literacy is a key determinant in the development of students' academic abilities. Mastering the skills to access information, evaluate the credibility of sources, and produce digital-based academic content enables students to enhance their critical thinking, scientific writing, and academic communication skills, as well as their ability to complete various academic tasks more effectively. Therefore, integrating digital literacy into Indonesian language instruction aims not only to improve students' technological proficiency but also to serve as a strategy for strengthening their academic competencies, equipping them to face the challenges of higher education and the workforce in the digital age.

2.4. Students' Digital Literacy Levels

Advances in digital technology have prompted various countries to assess students' digital competency levels as a basis for developing education policies. Various international studies show that although young people are the group that uses digital technology most intensively, their digital literacy levels still vary considerably, particularly in the areas of information evaluation, digital security, and problem-solving. Digital competence cannot be measured solely by the ability to operate digital devices, but also by an individual's ability to manage information, collaborate, create digital content, maintain digital security, and resolve various problems that arise during the use of technology. Therefore, students' level of digital literacy should be understood as a multidimensional competency that develops gradually through learning experiences and the educational environment.

A systematic review conducted by shows that most studies in higher education report that students have relatively good skills in accessing digital technology, but still face various challenges in the areas of information evaluation, data literacy, and academic content production. These findings indicate that the intensity of technology use does not always correlate directly with students' level of digital competence. Similarly, " explains that mastery of 21st-century digital skills is not only determined by technical ability but is also influenced by critical thinking, communication, collaboration, creativity, and problem-solving skills. Thus, the development of digital literacy in higher education needs to be directed toward building more comprehensive competencies rather than merely mastering technology.

In the Indonesian context, various studies indicate that college students' digital literacy levels remain in the moderate category, with varying proficiency across each dimension. Yanti et al., 2021), which involved students from various universities in Indonesia, found that the most prominent weaknesses lie in the ability to evaluate information and understand aspects of digital security. These findings are reinforced by Antika & Marapuang (2023), which indicates that students have relatively good skills in accessing digital information but still require improvement in digital ethics, verifying information sources, and critical thinking skills when utilizing various digital sources. This situation suggests that the ease of obtaining information has not yet been fully accompanied by the ability to process and evaluate information academically.

Various studies have also shown that improving digital literacy requires systematically designed learning interventions. Adulyasas (2018) found that implementing digital literacy programs integrated into learning can significantly improve students' literacy skills compared to learning that is not specifically designed for this purpose. These findings indicate that the development of digital literacy does not occur automatically through the everyday use of technology, but requires well-planned pedagogical strategies, curricular support, and learning activities that encourage students to critically access, evaluate, and produce information.

In addition to pedagogical factors, students' digital literacy levels are also influenced by the availability of infrastructure and the readiness of educational institutions. Various

barriers to the implementation of technology-based learning in higher education, including limited internet access, faculty readiness to integrate technology into teaching, and the lack of instructional materials that explicitly develop digital literacy competencies (Paturrahman et al., 2024). These results align with the findings of Yadav (2024), which emphasize that the successful development of students' digital competencies is greatly influenced by institutional support through the provision of infrastructure, academic policies, and the development of educators' competencies. Thus, improving digital literacy is a shared responsibility among students, faculty, and higher education institutions.

Based on these various studies, it can be concluded that Indonesian students' digital literacy still shows a gap between their ability to access digital information and their ability to evaluate and produce high-quality academic content. Most previous studies have also focused on western Indonesia, while research on students in eastern Indonesia, particularly at Universitas Muhammadiyah Parepare remains relatively limited. Differences in student characteristics, digital infrastructure, and academic culture across regions give rise to distinct digital literacy profiles. Therefore, this study is important for providing an empirical picture of students' digital literacy levels in Indonesian language courses at Universitas Muhammadiyah Parepare, while also enriching the empirical evidence regarding the relationship between digital literacy and academic ability in the context of higher education in Indonesia.

2.5. Theoretical Framework

This study is based on five complementary theoretical foundations that explain the relationship between digital literacy and students' academic abilities in Indonesian language learning. These five theories provide conceptual perspectives on how digital competencies are developed, how technology is integrated into the learning process, and how these competencies contribute to improving students' academic abilities.

The main theoretical foundations of this study are the Digital Literacy Theory and the Digital Competence Framework for Citizens (DigComp 2.2) developed by the European Commission. DigComp 2.2 conceptualizes digital competence as comprising five competency areas: information and data literacy, communication and collaboration, digital content creation, safety, and problem solving. This study focuses on three dimensions, namely information access, information evaluation, and digital content production. These dimensions were selected because they are directly aligned with the learning outcomes of the Indonesian Language course, particularly students' ability to read academic texts, critically evaluate scientific sources, and produce scientific papers.

The DigComp framework is underpinned by the concept of *the Digital Competence Framework,* which views digital competence as the integration of knowledge, skills, attitudes, and responsibility in effectively utilizing digital technology for learning, working, and participating in society (Miguel-Revilla et al., 2020). This perspective emphasizes that digital literacy reflects not only technical proficiency in using digital

devices but also the ability to think critically, make decisions, communicate, collaborate, and engage in lifelong learning.

3. Method

This study employed a quantitative descriptive approach with a cross-sectional survey design, supplemented by qualitative data from classroom observations and in-depth interviews to enrich the interpretation. The study was conducted at Universitas Muhammadiyah Parepare in academic programs that offer general Indonesian language courses and lasted four months, from instrument preparation through reporting.

The study population consisted of all active students enrolled in the Indonesian Language course during the current semester (approximately 480 students). The sample was determined using stratified random sampling to ensure representation across various academic programs, with a sample size of 120 respondents calculated using the Slovin formula (5% margin of error). Respondents were drawn from the social sciences, exact sciences, and humanities to obtain a holistic picture of the differences in digital literacy characteristics across academic disciplines.

The instrument consists of a structured questionnaire adapted from the Digital Competence Framework (DigComp 2.2) and draws on validated instruments from Nafri et al. (2021) and Novitri & Marapuang (2023). The adaptation process involved identifying relevant indicators, tailoring the wording of the items to the context of Indonesian language learning, and adjusting the language to ensure it was easily understood by respondents. Of the five DigComp 2.2 competency areas, this study adopted only three dimensions that are directly relevant to Indonesian language learning outcomes, namely access to digital information, information evaluation, and digital content production. The dimensions of digital safety and problem solving were excluded because they fell outside the scope of the study.

Since the instrument was adapted from a framework with established empirical evidence of validity, this study did not perform construct validity testing (EFA/CFA). Instead, the instrument evaluation focused on content validity and internal consistency reliability. Each item was measured using a five-point Likert scale (1 = very unable/never, 5 = very able/always). To establish content validity, the instrument was reviewed by two experts in digital literacy and Indonesian language learning. It was subsequently pilot-tested with 30 students, resulting in a Cronbach's Alpha coefficient of 0.87, indicating high internal reliability.

Quantitative data were analyzed using descriptive statistics (mean, standard deviation, frequency, percentage) to describe the characteristics of the respondents and the distribution of scores for each dimension of digital literacy, which were classified into five categories: very low (<40%), low (40–54%), moderate (55–69%), high (70–84%), and very high (≥85%).

Prior to inferential analysis, the data were tested for normality using the Kolmogorov–Smirnov test (since n>50) and for linearity; both conditions were met, allowing for the application of parametric analysis. The relationship between digital

literacy and academic ability was analyzed using Pearson's product-moment correlation ($\alpha = 0.05$), reported in in terms of the correlation coefficient (r), significance value (p), and 95% confidence interval. The strength of the relationship was interpreted according to Cohen's (1988) categories: very weak (0.00–0.19), weak (0.20–0.39), moderate (0.40–0.59), strong (0.60–0.79), and very strong (0.80–1.00).

Statistical analysis was performed using IBM SPSS Statistics version 25, while Microsoft Excel was used for tabulating and visualizing data. Qualitative data from observations and interviews were analyzed using the Miles and Huberman interactive model (data reduction, data presentation, drawing and verifying conclusions) to strengthen the interpretation of the quantitative results.

4. Results and Discussion

This section presents the research findings obtained through the analysis of questionnaire data, observations, and interviews with 120 UMPAR students who served as research respondents. The presentation of the results begins with an overview of the respondents' profiles as a basic context for understanding the subsequent findings, followed by an analysis of digital literacy levels across each dimension, patterns of digital literacy integration in Indonesian language learning practices, and the relationship between digital literacy and students' academic abilities.

4.1. Demographic Profile of Respondents

The respondents in this study were selected from among active college students who have been taking digital-based courses since the post-pandemic period and are therefore considered to have sufficient experience to serve as data sources. Most of them are in the middle of their academic program, specifically, their third through fifth semesters, which reflects a stage of relatively mature academic adaptation, though they have not yet reached the final stages of their studies. As presented in Figure 1, the respondents were distributed relatively evenly across the selected demographic characteristics, providing a balanced representation of the study population.

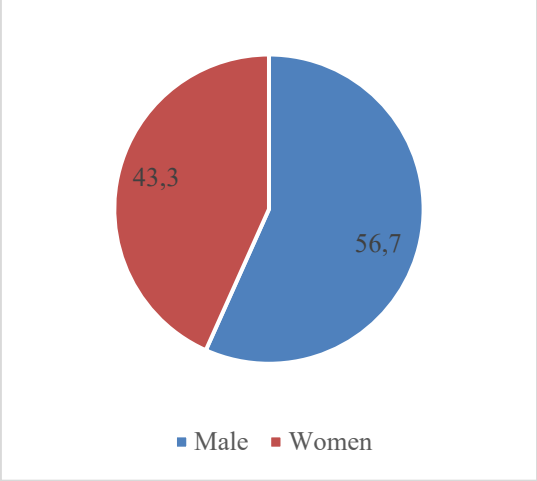

Figure 1. Distribution of Respondents

In terms of composition, the respondents were distributed almost evenly between women and men, with a slightly higher proportion of women. The respondents also came from a variety of academic backgrounds, ranging from education, economics, engineering, and social sciences to health sciences, with Education being the most heavily represented group and Health Sciences having the fewest respondents. The percentage distribution of respondents across faculties is illustrated in Figure 2, highlighting the dominance of students from the Faculty of Education in the sample.

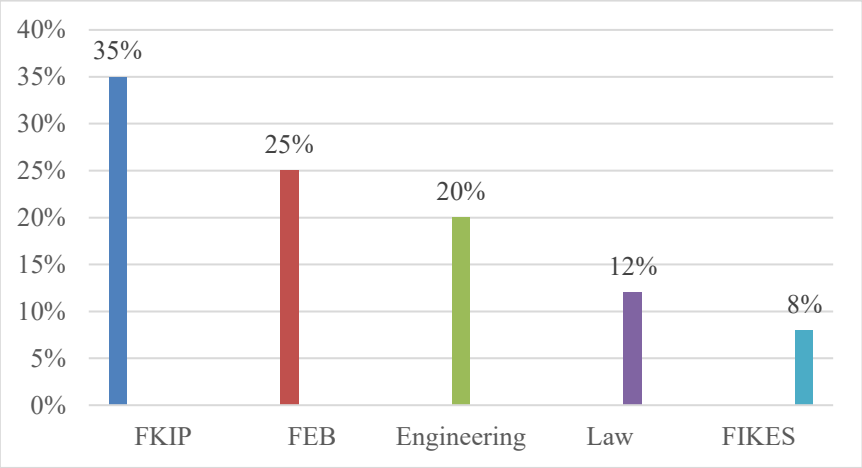

Figure 2. Percentage of Respondents by Faculty

In addition to academic background, the distribution of respondents was also examined in terms of digital device ownership. The majority of respondents had access to a smartphone as their primary device, while ownership of laptops or personal computers was relatively more limited. These differences in device ownership patterns provide an important context for understanding how students' digital literacy develops under conditions of uneven access. As shown in Figure 3, smartphones were the most frequently used digital devices among respondents, whereas laptops and personal computers were used by a considerably smaller proportion of students.

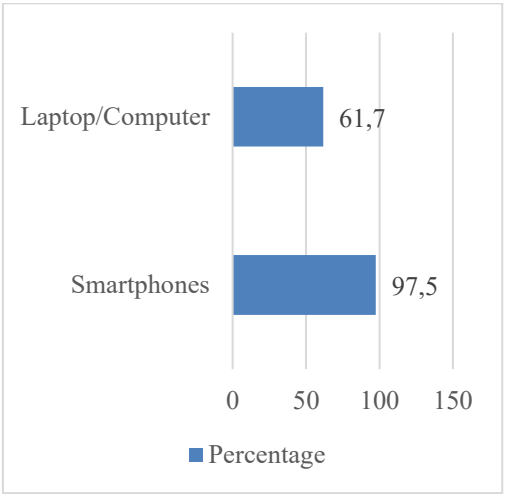

Figure 3. Percentage Device Usage

4.2. Students' Digital Literacy Levels: The Access Dimension

In terms of digital access, students' proficiency levels generally fall into the high category, indicating that the majority of respondents are sufficiently skilled at searching for, finding, and retrieving information from various digital platforms. The ability to use academic search engines such as *Google Scholar* and to access online journal portals is a skill that most students have relatively mastered, reflecting their habit of relying on digital sources as their primary references in academic activities.

However, this level of proficiency is not uniform across all respondent groups. When viewed by academic background, a fairly clear pattern emerges: students from fields that are more technically and quantitatively oriented, such as Engineering and Economics, tend to demonstrate superior digital access skills compared to other groups. Conversely, students in the Social Sciences and Health Sciences fields rank relatively lower, though they still fall within a fairly good range. As illustrated in Figure 4, the distribution of digital access scores across faculties indicates noticeable differences in students' ability to utilize digital resources effectively.

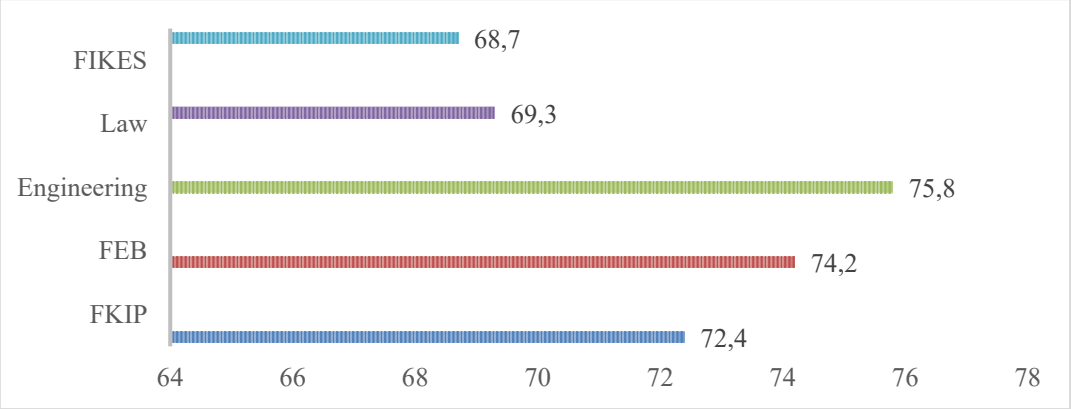

Figure 4. Digital Access by Faculty

The differences in score distribution across study programs indicate that the characteristics of academic disciplines also influence the extent to which students are accustomed to utilizing digital resources to support their learning activities.

This finding is consistent with the results of a study by Anarizka and Wilsa (2024), which also found significant variations in digital access capabilities based on academic major. These differences are most likely influenced by the varying intensity of technology use in learning across different academic programs. Academic programs that more frequently incorporate digital tools into their technical curricula tend to foster more developed digital access habits. This underscores the importance of integrating digital literacy across disciplines, not just in programs that are traditionally technology-oriented.

Although scores on the access dimension were relatively high, classroom observations revealed a more complex picture. Many students appeared quick at finding information but tended to rely on the first page of search results and rarely delved deeper or used advanced search operators. This phenomenon is known as "pseudo-efficiency,"

where the speed of access is not matched by the depth and breadth of the information obtained. This finding aligns with Judijanto's (2024) research, which identified that a high level of digital access does not always correlate with the quality of information retrieval.

4.3. Students' Digital Literacy Levels: Content Evaluation Dimension

The content evaluation dimension showed the lowest average score among the three measured dimensions, at 58.9 (in the "adequate" category). This finding indicates that UMPAR students face greater challenges in assessing the reliability, relevance, and accuracy of the information they find in the digital space. More specifically, items related to the ability to distinguish scientific sources from popular sources, as well as the ability to detect information containing bias or manipulation, received the lowest average scores (below 55%). As illustrated in Figure 5, the content evaluation scores were consistently lower than those of the other digital literacy dimensions, indicating that critical evaluation remains one of the weakest competencies among the respondents.

Figure 5. Content Evaluation

This situation reflects weaknesses also identified in previous studies. Husaeni et al. (2023) found that although digital literacy plays a positive role in critical thinking skills, most students remain limited in evaluation aspects that require deeper methodological knowledge. At the undergraduate level, this weakness becomes more problematic due to higher academic demands, particularly in writing scholarly papers that must be supported by valid and reliable sources.

In-depth interviews with a number of respondents revealed that many of them had difficulty distinguishing between peer-reviewed scientific articles and blog posts or opinion pieces that appear in search engines with a professional-looking appearance. Some respondents admitted to frequently citing information from Wikipedia or general news sites in their academic assignments without further verification. This phenomenon aligns with concerns expressed by " , which notes that the presence of generative AI actually complicates the information evaluation process, as machine-generated content can appear highly convincing even though it may contain factual errors.

Furthermore, weaknesses in this evaluation dimension have direct implications for the quality of students' academic work. Dewi (2025) indicates that Indonesian language instruction that integrates AI-based strategies can significantly improve digital literacy, but must be accompanied by structured training in critical evaluation. Without a strong evaluation component, improved access capabilities actually have the potential to exacerbate the spread of inaccurate information in an academic context.

4.4. Students' Digital Literacy Levels: Content Production Dimension

The digital content production dimension recorded an average score of 63.2 (sufficient category), indicating that students' ability to create and publish digital content is at an intermediate level. Further analysis reveals an interesting polarization: students are relatively more proficient at producing content for informal purposes (social media posts, entertainment content creation) compared to formal academic content such as online papers, data-driven multimedia presentations, or participation in online scientific discussion forums. As illustrated in Figure 6, respondents demonstrated higher levels of competence in producing informal digital content than in developing academically oriented digital products, suggesting that digital production skills remain context-dependent.

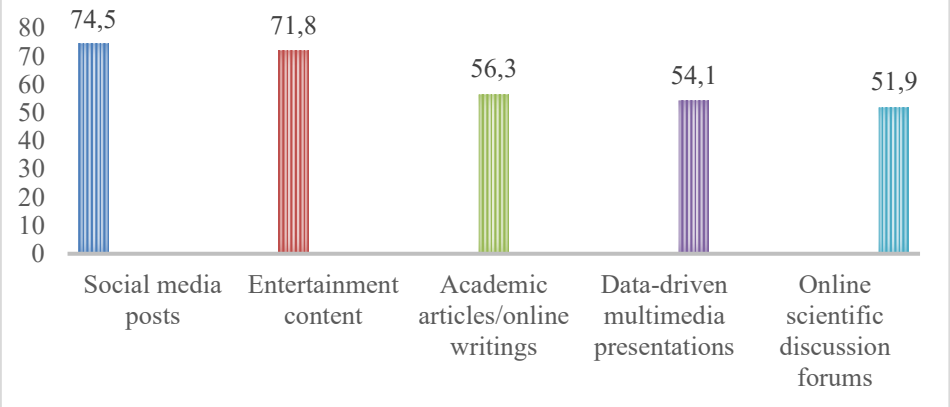

Figure 6. Content Production

Mihnev et al. (2021) identifies a similar polarization in the context of digital literacy implementation in the 5.0 era, where high proficiency in producing informal content does not necessarily translate to proficiency in producing academic content. This indicates that there are specific competencies that need to be explicitly developed in the learning process, namely the ability to translate informal digital skills into a more formal and structured academic context.

Classroom observations reveal that when students are asked to produce digital content in the context of Indonesian language learning, such as creating book review vlogs or grammar infographics, many demonstrate high creativity but pay insufficient attention to linguistic accuracy and the completeness of references. Conversely, when asked to write academic essays online, most students struggled to format their writing

according to academic standards and to utilize digital reference management tools such as Mendeley or Zotero.

Salindri et al. (2024) in a digital literacy guide for young people in Eastern Indonesia emphasizes that the development of digital content production skills must take into account the cultural context and specific needs of local communities. For students in South Sulawesi, integrating elements of local wisdom into digital content production can be an effective and meaningful strategy, as it provides a context that is relevant and closely tied to students' daily experiences.

4.5. Integration of Digital Literacy into Indonesian Language Teaching Practices

An analysis of Indonesian language teaching practices at UMPAR reveals considerable variation among instructors and classes. Generally, three distinct patterns of digital literacy integration can be identified. The first pattern is superficial integration, in which technology is used solely as a tool for delivering content (for example, projecting presentation slides) without any substantive changes to pedagogy. This pattern was found in approximately 40% of the observed classes.

The second pattern is instrumental integration, in which students actively use digital devices to complete tasks, such as searching for online references or creating documents with digital word processors, but have not yet reached the stage of critical reflection on digital literacy itself. This pattern was identified in approximately 45% of the classes. The third pattern, the most ideal, is transformative integration, in which digital literacy serves as both the subject of learning and a means of learning, and students are explicitly encouraged to reflect on their digital practices. Unfortunately, this pattern was found in only about 15% of the observed classes. As illustrated in Figure 7, transformative integration was observed in only about 15% of the classes, whereas instrumental and superficial integration accounted for the majority of teaching practices. These findings indicate that although digital technologies have been incorporated into classroom instruction, their pedagogical potential has not yet been fully realized.

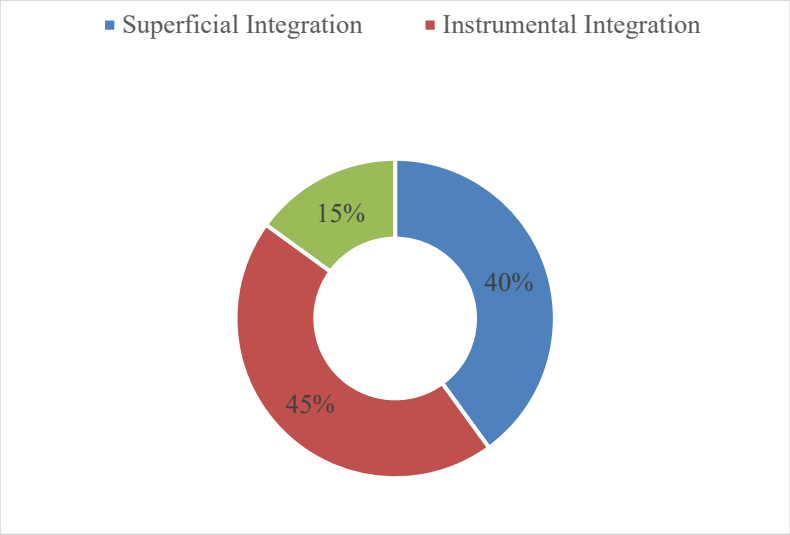

Figure 7. Patterns of Digital Literacy Integration

The research on a general Indonesian language course based on digital literacy, emphasized that the transformation of learning from a superficial pattern to a transformative one requires a comprehensive paradigm shift, ranging from curriculum design and faculty competencies to the institution's academic culture (Salindri et al. 2024). The findings of this study confirm that this transformation process is still occurring gradually at UMPAR and requires more structured interventions.

In a study of digital literacy through language learning on the Kalam UMI LMS, the researchers found that an integrated online learning platform can support the development of digital literacy in a more systematic manner (Syarifuddin & Hasyim, 2023). This experience can serve as a reference for UMPAR in optimizing the use of its existing Learning Management System (LMS) as a vehicle for more structured digital literacy development in Indonesian language courses.

4.6. The Relationship Between Digital Literacy and Academic Ability

An analysis of the correlation between overall digital literacy scores and students' Cumulative Grade Point Average (CGPA) revealed a Pearson correlation coefficient of $r = 0.54$ ($p < 0.01$), which falls into the category of moderate-to-strong positive correlation. When analyzed by dimension, the highest correlation was found between the content evaluation dimension and GPA ($r = 0.61$), followed by the content production dimension ($r = 0.49$) and the access dimension ($r = 0.38$). This finding has important theoretical significance: dimensions related to higher-order cognitive abilities (evaluation) turned out to be more predictive of academic performance than the more technically oriented access dimension.

This strong correlation between content evaluation ability and academic ability can be explained through a logical mechanism: students who are able to critically evaluate sources tend to produce higher-quality academic work, supported by more valid references and stronger arguments. This finding aligns with the results of a study by Husaeni et al. (2023), which highlights the central role of critical evaluation skills in determining overall academic performance. The implication is that efforts to improve academic performance through digital literacy must prioritize the development of the evaluation dimension, rather than merely expanding access to technology.

Further analysis by academic program revealed an interesting pattern. Students from programs whose curricula integrate digital literacy more extensively, such as computer science and communication, not only demonstrated higher digital literacy scores but also higher GPAs compared to the average. Conversely, in academic programs where the curriculum is still dominated by conventional learning methods, the relationship between digital literacy and academic performance appears weaker. These findings underscore the crucial role of curriculum design in mediating the relationship between digital literacy and academic achievement. These findings suggest that strengthening digital literacy through curriculum-integrated learning strategies may serve as an effective approach to improving students' academic achievement across different disciplines.

4.7. Factors Supporting and Hindering the Integration of Digital Literacy

Based on interviews with faculty and students, several factors supporting the successful integration of digital literacy into Indonesian language instruction were identified. Supporting factors include: the availability of reasonably good campus internet infrastructure, though not yet evenly distributed; increasing faculty awareness of the importance of digital literacy; and high student motivation to learn how to use technology. Students' motivation and strong sense of national identity also contribute to a positive reception of digital literacy programs.

Meanwhile, the identified barriers include: unequal access to the internet off campus (especially for students living in remote areas), a lack of explicit curricular guidelines on integrating digital literacy into Indonesian language courses, variability in digital competencies among faculty members, and a scarcity of high-quality, easily accessible digital learning resources in Indonesian. Infrastructure and resource limitations as significant barriers to digital literacy-based learning, particularly in areas far from urban centers .

Psychological barriers also need to be noted. Some faculty members acknowledge experiencing technology anxiety, which affects their confidence in integrating technology into their teaching. Meanwhile, some students report that overly high expectations regarding their digital skills actually cause them to feel pressured. This situation reminds us that digital transformation in education requires not only technological solutions but also adequate psychological and pedagogical support (Saras et al., 2025).

4.8. Pedagogical Implications and Recommendations

Based on the overall findings, this study yields several important pedagogical implications. First, the Indonesian Language course curriculum at UMPAR needs to be revised to explicitly include learning outcomes related to digital literacy, particularly in the dimensions of content evaluation and the production of digital academic content. This approach aligns with the recommendation (Salindri et al., 2024) that Indonesian Language instruction in the Society 5.0 era must proactively build digital competencies as part of the graduate profile.

Second, the professional development of faculty members in the field of digital literacy must be prioritized. Training programs, such as the Quizizz training designed to strengthen teachers' digital literacy, can be adapted for the context of UMPAR faculty members. This capacity building should not be limited to technical skills but must also include a pedagogical understanding of how to meaningfully integrate digital literacy into Indonesian language instruction.

Third, digital teaching materials need to be developed for Indonesian language courses that explicitly integrate digital literacy activities, ranging from digital text analysis and information verification to the production of academic papers using digital platforms. The effectiveness of digital-based learning media in simultaneously improving reading literacy and digital literacy, which can serve as inspiration for the development of similar teaching materials at UMPAR.

This study has several limitations that should be considered when interpreting the findings. The sample consisted of only 120 respondents, which limits the generalizability of the results. Future studies should include larger and more representative samples to improve external validity.

Another limitation is the use of a cross-sectional design, with data collected at a single point in time. Although this design enables the examination of relationships among variables, it does not capture changes in students' digital literacy over time or allow definitive conclusions regarding the causal relationship between digital literacy and academic skills. Longitudinal research is therefore recommended to examine the development of these relationships more comprehensively.

In addition, the study was conducted at a single university, Universitas Muhammadiyah Parepare (UMPAR). Consequently, the findings may reflect institutional characteristics, curriculum design, and learning policies specific to that context. Future studies involving multiple universities with diverse institutional settings would enhance the generalizability and external validity of the findings.

5. Conclusion

This study successfully provided a comprehensive overview of the state of digital literacy among UMPAR students in Indonesian language learning. Several key conclusions can be drawn based on the analyzed findings.

First, the level of digital literacy among UMPAR students is uneven across dimensions. The digital access dimension falls into the "high" category (average 72.4), while the content evaluation (58.9) and content production (63.2) dimensions remain in the "adequate" category. This disparity indicates that ease of access to technology has not been accompanied by the development of the higher-order cognitive competencies required to optimally utilize technology in an academic context.

Second, the integration of digital literacy into Indonesian language instruction at UMPAR is still dominated by superficial and instrumental approaches, while the most ideal transformative approach has been adopted by only a small fraction of instructors. This situation reflects that the necessary pedagogical transformation still requires more structured and systematic intervention.

Third, there is a significant positive correlation between digital literacy and students' academic abilities ($r = 0.54$), with the content evaluation dimension serving as the strongest predictor. This finding confirms that investing in the development of critical evaluation skills regarding digital content is the most effective pathway to improving academic abilities through the integration of digital literacy.

Based on the findings of this study, several recommendations can be proposed. At the institutional level, Universitas Muhammadiyah Parepare (UMPAR) should develop curriculum policies that explicitly integrate digital literacy competency standards into the graduate profile and the learning outcomes of the Indonesian Language course. These policies should be supported by clear implementation guidelines to assist instructors in integrating digital literacy into teaching and learning practices.

At the instructional level, Indonesian Language instructors are encouraged to gradually shift the learning orientation from an instrumental approach to a transformative one by incorporating activities that explicitly foster students' ability to evaluate digital information and produce digital-based academic texts. Collaboration among instructors to exchange best practices in integrating digital literacy into classroom instruction is also recommended.

From a research perspective, future studies should examine more effective models of digital literacy-based Indonesian language learning in higher education institutions, particularly in eastern Indonesia, while considering cultural contexts, digital infrastructure, and local student characteristics. Longitudinal research that follows students' digital literacy development throughout their academic journey would also provide valuable evidence for advancing both theory and educational practice in this field.

Conflict of Interest

The authors declare that there are no conflicts of interest in the research, writing, or publication of this article.

Authors' Contributions

The first author made the primary intellectual contribution to this study by developing the research conception, designing the research methodology, conducting the data analysis, interpreting the findings, and preparing the discussion of the research results. The second author contributed to the data analysis process, while the third author was responsible for interpreting the research findings. The fourth author contributed by conducting the data collection. All authors reviewed the final manuscript, approved the version submitted for publication, and agreed to be accountable for all aspects of the work.

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