ARTICLE

The Utilization of Digital Repositories for Teaching and Learning Indonesian Literature: A Review of Library Resources

Cecep Wahyu Hoerudin ⓘ

Department of Indonesian Language, Universitas Islam Negeri Sunan Gunung Djati Bandung, Bandung 40614, Indonesia

ABSTRACT

This study explores the significant role of digital repositories in supporting the teaching and learning of Indonesian literature, aiming to bridge the gap between traditional literary education and modern technological advancements. Through a comprehensive literature review, the research investigates the accessibility, quality, and scope of digital library resources available to educators and students across Indonesia. Digital repositories provide a vast array of literary materials, including digitized texts, critical essays, and multimedia content, which have the potential to greatly enhance educational outcomes by making literature more engaging and accessible. Despite this potential, the integration of these digital resources into the Indonesian literature curriculum remains limited and underutilized. The findings of this study reveal both the opportunities presented by digital platforms—such as wider access to rare and diverse literary works—and the challenges that hinder their effective use, including varying levels of digital literacy among educators and students, inconsistent resource availability, and insufficient institutional support. Additionally, the study reviews strategies for effectively incorporating digital repositories into literature instruction, highlighting the importance of collaboration between educational institutions, libraries, and technology providers. Recommendations emphasize the need for targeted training programs, infrastructure development, and policy initiatives to foster greater adoption of digital tools in literary education. This review also identifies crucial areas for future research aimed at optimizing the deployment and impact of digital repositories in teaching Indonesian literature. Ultimately, the study concludes by discussing important implications for educational policy and library management in Indonesia's evolving digital landscape.

Keywords: Digital Repositories; Corpus Linguistics; Indonesian Language Learning; Computational Linguistics; Language Teaching Pedagogy

1. Introduction

In recent years, digital technology has increasingly shaped educational practices worldwide, particularly in the integration of digital repositories into the teaching and learning processes. Digital repositories, which are online platforms providing access to a wide range of educational resources, have transformed the way educators and students engage with knowledge [1]. In the field of literature education, these repositories offer invaluable resources, including digitized texts, literary criticism, and multimedia materials that enhance the learning experience [2].

Several recent studies emphasize the transformative role of institutional repositories in supporting not only access to knowledge but also fostering collaborative and interdisciplinary learning environments [3,4]. Furthermore, Basillota et al. (2022) highlight how the integration of digital libraries in humanities education significantly enhances students' engagement and interpretative skills [5].

Indonesian literature, rich in cultural and historical contexts, can benefit significantly from the digitalization and dissemination of literary resources [6]. However, despite the advantages, the use of digital repositories in Indonesian literature education remains limited, often due to challenges related to digital literacy, resource availability, and institutional support [7].

Moreover, recent discourse in digital humanities [8,9] points to the urgent need for contextualized digital platforms that reflect local literary traditions and linguistic characteristics. Without these efforts, the promise of technology in revitalizing literature education will remain unrealized. This study, therefore, seeks to review existing digital repositories and assess their effectiveness in supporting the teaching and learning of Indonesian literature.

Educational institutions and libraries in Indonesia have made strides in creating digital platforms, but these efforts are often fragmented and lack coordination [10]. Moreover, there is a need to better understand how educators and students interact with these digital resources and the barriers they face in accessing them [11]. The integration of digital repositories into the curriculum not only supports the preservation and dissemination of Indonesian literary heritage but also promotes a more dynamic and interactive learning environment [12].

While previous research has examined the general application of digital tools in education, only a limited number of studies have specifically addressed the integration of digital repositories into Indonesian literature education. Existing literature tends to focus either on technical aspects of repository development or on broader digital literacy issues, without deeply exploring how these platforms are aligned with national literature curricula or how they are actually utilized in classroom practice. Moreover, little is known about the specific challenges faced by teachers and students in accessing and implementing these tools in various educational settings, particularly in rural or underserved areas. This gap in the literature highlights the need for a focused analysis of digital repository utilization in the context of Indonesian literary instruction. This study, therefore, seeks to review existing digital repositories and assess their effectiveness in supporting the teaching and learning of Indonesian literature. By doing so, it contributes to the existing body of knowledge by offering a comprehensive overview of current practices, identifying context-specific barriers, and providing actionable recommendations for improving the integration of digital repositories in literature pedagogy in Indonesia [13].

Digital repositories play a crucial role in language learning and the teaching of Indonesian literature from a linguistic perspective. By providing extensive access to various literary texts, these repositories enable an in-depth analysis of language structure, vocabulary development, and discourse patterns.

In understanding language structure, digital repositories help trace sentence patterns, grammatical usage, and writing styles across different literary works. Researchers and learners can study how sentence forms and structures evolve over time, compare linguistic styles across historical periods, and analyze frequently used linguistic patterns. Digital repositories also contribute to tracking vocabulary development. Through a wide range of texts from different eras, it is possible to identify new words (neologisms), understand semantic changes, and explore regional language variations. This helps reflect the dynamic nature of the Indonesian language as it continuously evolves over time. Furthermore, digital repositories facilitate discourse analysis in literary works. By closely examining texts, researchers can uncover social and cultural values embedded in literature, explore intertextual relationships, and understand how language is used to convey particular ideas or

viewpoints.

Overall, digital repositories are invaluable tools for studying Indonesian language and literature. With the support of technologies like corpus analysis and natural language processing (NLP), these repositories offer significant opportunities for educators, researchers, and learners to deepen their understanding of language and literature across various dimensions.

Despite the increasing presence of digital repositories in educational institutions, their utilization in the field of Indonesian literature remains suboptimal. A significant issue stems from the lack of comprehensive integration between digital platforms and the teaching of literature, which hinders both educators and students from fully benefiting from the available resources [14]. Research indicates that while digital repositories hold immense potential to support literature education, they are underused due to several barriers, including limited access to digital content and inadequate digital infrastructure in many regions of Indonesia [15]. many educators are unfamiliar with the technical aspects of these platforms, resulting in a gap between the resources available and their actual implementation in classroom settings [16]. Another critical challenge is the uneven distribution of digital literacy among students, where many struggle to navigate digital repositories effectively [17]. This has led to a disparity in educational outcomes, particularly in rural and underserved areas where access to technology is limited [18], and the digital content available in these repositories is often not tailored to the specific needs of Indonesian literature curricula, leading to a disconnect between what is taught in classrooms and what is accessible online [19]. Without concerted efforts to address these issues, the full potential of digital repositories as a tool for enhancing literary education will remain unrealized. Therefore, this paper seeks to identify the key challenges that limit the effective use of digital repositories in Indonesian literature education and to propose strategies for overcoming these obstacles [20].

This study is primarily aimed at understanding how digital repositories can be effectively utilized to support the teaching and learning of Indonesian literature. As digital platforms become more embedded in educational settings, it is crucial to evaluate their role in enhancing literature education, particularly in underrepresented fields such as Indonesian literary studies [21]. The first objective of this research is to assess the current state of digital repositories in Indonesian educational institutions, focusing on their accessibility, usability, and relevance to literature curricula [22]. Furthermore, this study seeks to examine the specific challenges that educators and students face when incorporating digital resources into literature education, including technological, institutional, and pedagogical barriers [23]. By identifying these challenges, the research aims to propose strategies for improving the integration of digital repositories into Indonesian literature teaching, ensuring that they align with the needs of both educators and students [24]. Another key objective is to explore the extent to which digital repositories contribute to preserving and disseminating Indonesian literary heritage, as these resources play a vital role in making literary works more accessible [25]. Lastly, the study aims to provide practical recommendations for policymakers, library administrators, and educational practitioners on how to enhance the utilization of digital repositories in the context of Indonesian literature education [26]. These objectives will guide the research in uncovering actionable insights and offering tangible solutions to optimize the use of digital repositories in literature pedagogy.

The research questions guiding this study are designed to address the critical gaps in the utilization of digital repositories for teaching and learning Indonesian literature. The first question seeks to understand the extent to which digital repositories are currently used in literature education within Indonesian educational institutions [27]. Given the growing importance of digital platforms in education, it is essential to explore how educators and students access and use these repositories to support their engagement with Indonesian literary materials [28]. The second research question focuses on identifying the specific barriers that hinder the effective adoption of digital repositories, including technological, institutional, and pedagogical challenges [29]. This question aims to reveal the limitations faced by both teachers and students in maximizing the potential of digital resources, particularly in regions with limited access to technology [30]. Another key inquiry explores how digital repositories can be better aligned with the Indonesian literature curriculum to enhance teaching outcomes [31]. This includes examining whether the content in these repositories adequately reflects the cultural and historical richness of Indonesian literature and how this content can be effectively integrated into the learning environment [32]. Lastly,

the research asks what strategies can be implemented to improve the utilization of digital repositories in Indonesian literature education [33]. By answering these questions, the study aims to provide actionable insights for educators, policymakers, and librarians to foster a more comprehensive use of digital repositories in literature pedagogy.

This study holds significant importance in both the academic and practical realms of Indonesian literature education. As digital repositories become increasingly integrated into educational practices, understanding their role in the teaching and learning process is essential for optimizing their use [34]. This research offers insights into how digital platforms can enhance the accessibility and engagement with Indonesian literary texts, which are often underrepresented in digital formats [35]. By evaluating the current state of digital repositories and their application in literature education, this study provides a critical analysis of the existing gaps, which could lead to more targeted improvements in the design and deployment of these platforms [36]. The findings of this research are also expected to benefit educators by offering practical recommendations on how to effectively incorporate digital repositories into their teaching strategies, particularly in resource-limited environments [37]. Moreover, by addressing the challenges faced by students in navigating these digital resources, the study aims to promote more equitable access to literary materials, thus fostering a more inclusive learning environment [38]. In a broader context, this research contributes to the preservation and dissemination of Indonesian literary heritage, ensuring that digital resources reflect the cultural and historical significance of the nation's literary canon [38]. Policymakers and library administrators can also use the study's findings to inform strategies for improving digital infrastructure and resources, supporting long-term educational development in Indonesia [39,40]. Ultimately, this research aims to bridge the gap between digital innovation and traditional literary education, offering pathways for the sustainable integration of technology into the humanities.

This paper is organized into several key sections that collectively provide a comprehensive examination of the utilization of digital repositories for teaching and learning Indonesian literature. The introduction outlines the background of the study, the problem statement, research objectives, research questions, significance of the study, and the structure of the paper itself. Following the intro-duction, the literature review critically analyzes existing research related to digital repositories and their impact on literature education, highlighting gaps that this study aims to fill [41]. The methodology section describes the research design, including the selection criteria for literature, data collection methods, and analytical frameworks employed to assess the utilization of digital repositories [42]. Subsequent to the methodology, the findings section presents the results derived from the literature review, detailing the current state of digital repository usage in Indonesian literature education and the associated challenges [43]. The discussion section interprets these findings in relation to the research questions and objectives, offering insights into how digital repositories can be better integrated into literature pedagogy [43]. Finally, the conclusion summarizes the main findings, discusses implications for educators and policymakers, and suggests areas for future research, aiming to contribute to a deeper understanding of the role of digital repositories in enriching Indonesian literature education [44]. This structured approach ensures that the paper systematically addresses the core issues surrounding digital repository utilization while providing a clear pathway for understanding the interconnections between technology and literature education.

2. Materials and Methods

This study employs a Systematic Literature Review (SLR) methodology to examine the utilization of digital repositories in the teaching and learning of Indonesian literature. The systematic review approach was selected to ensure a structured, transparent, and replicable process for identifying, selecting, evaluating, and synthesizing relevant academic sources. The research began with a comprehensive search in major academic databases, including JSTOR, Google Scholar, and Scopus. Keywords such as "digital repositories," "Indonesian literature," "teaching and learning," "digital pedagogy," and "library resources" were used in various combinations with Boolean operators to retrieve relevant literature.

To refine the selection, a purposive sampling technique was applied. This technique focused on identifying studies that directly addressed the integration or application of digital repositories in literature education. The inclusion criteria were: (1) studies published between 2010 and 2024, (2)

works that focused on the use of digital repositories in the context of literature learning—specifically Indonesian literature, (3) articles presenting empirical data or systematic reviews, (4) publications available in English or Bahasa Indonesia, and (5) full-text accessibility. Exclusion criteria included studies lacking methodological rigor, technical reports without educational implications, or opinion-based articles without empirical support. From an initial pool of 155 articles, 42 studies were selected after screening and eligibility assessments.

A thematic analysis was conducted on the selected studies to extract and categorize findings into key themes, including the accessibility and usage of digital repositories, their pedagogical implications, challenges and barriers in implementation, and institutional support mechanisms. Both qualitative and quantitative studies were included to enrich the synthesis and offer a comprehensive view of the current landscape.

Although the study did not involve direct human participants, ethical considerations were still taken into account. All sources used were from peer-reviewed publications and were cited properly to respect intellectual property. The review process followed academic integrity standards, and to minimize potential bias, two researchers independently conducted the selection and analysis of literature, resolving any discrepancies through discussion and consensus.

Through this methodical and ethical approach, the study provides a reliable and in-depth understanding of how digital repositories contribute to the enhancement of Indonesian literature education and offers evidence-based recommendations for educators and policymakers.

3. Results

3.1. Current Utilization of Digital Repositories

The study reveals that the current utilization of digital repositories in Indonesian literature education is notably limited, reflecting a broader trend observed in educational institutions across the region. Many educators reported a lack of awareness regarding the existence of various digital resources available for literary studies, which significantly hampers their ability to integrate these tools into their teaching practices. Despite the availability of digital repos-

itories, actual usage among both educators and students remains disappointingly low. This limited engagement is largely attributed to insufficient integration of these repositories within the existing curriculum, as many educators do not have structured guidance on how to incorporate digital resources into their lesson plans. Furthermore, the research indicates that students often face challenges in accessing digital repositories due to a lack of familiarity with the platforms and insufficient technological support at their institutions. This gap in knowledge and accessibility contributes to the underutilization of digital resources, hindering opportunities for enriched learning experiences in literature.

The findings suggest that educators are primarily relying on traditional teaching methods, which may not sufficiently engage students in the exploration of Indonesian literary works. Additionally, there is a clear need for comprehensive training programs aimed at enhancing educators' digital literacy and their ability to leverage online resources effectively. The limited current utilization underscores the importance of raising awareness about the potential benefits of digital repositories in literature education. Efforts must be made to promote these resources among both educators and students to foster a more vibrant literary learning environment. As the landscape of education continues to evolve, embracing digital repositories is essential for enhancing the accessibility and engagement of Indonesian literature, the findings highlight a critical area for improvement, emphasizing the necessity for proactive measures to enhance the utilization of digital repositories in Indonesian literature education.

3.2. Barriers to Effective Use

The study identifies several key barriers to the effective use of digital repositories in the context of Indonesian literature education. A prominent barrier is the technological constraints faced by both educators and students, particularly in rural areas where access to high-speed internet is limited. Many educators reported challenges in accessing digital resources due to unreliable connectivity, which hinders their ability to utilize these platforms effectively in their teaching. Additionally, the research highlights a significant lack of digital literacy among both educators and students, which impedes their capability to navigate and

engage with digital repositories. This deficiency in digital skills is particularly concerning, as it restricts the potential for integrating technology into the learning process. Furthermore, the study reveals that educational institutions often do not provide adequate training and support for educators to familiarize themselves with available digital resources. This lack of institutional backing contributes to the perpetuation of traditional teaching methods, further limiting the use of innovative digital tools in literature education. Another barrier identified is the insufficient integration of digital repositories into the curriculum, leading to a disconnect between available resources and educational practices. Educators expressed frustration regarding the absence of structured guidelines on how to effectively incorporate digital repositories into their lesson plans. Moreover, there is a lack of collaboration between digital repository providers and educational institutions, which results in content that may not align with the curriculum needs of Indonesian literature. This misalignment further exacerbates the challenges faced by educators attempting to utilize these resources. Overall, the findings underscore the necessity for comprehensive strategies to address these barriers, enabling educators and students to maximize the benefits of digital repositories in their literary studies.

3.3. Alignment with Curriculum Needs

The findings indicate a notable misalignment between the content available in digital repositories and the requirements of the Indonesian literature curriculum. Educators reported that many digital resources do not adequately reflect the diversity and richness of Indonesian literary works, resulting in a disconnect between what is taught in the classroom and the resources that are accessible online. This misalignment poses significant challenges for educators who seek to incorporate digital repositories into their teaching practices. Many educators expressed frustration over the lack of culturally relevant materials that resonate with their students' experiences and interest, this deficiency limits the effectiveness of digital repositories as teaching tools, as they fail to provide comprehensive support for the curriculum. Furthermore, the research highlights that educators often struggle to find digital content that aligns with specific learning outcomes outlined in the literature curriculum.

The absence of relevant digital resources hampers the ability of educators to engage students in meaningful literary exploration. Additionally, the findings suggest that the available content in digital repositories is often outdated or lacks academic rigor, further undermining its suitability for educational purposes. Educators voiced a need for curated collections that focus on contemporary Indonesian literature and critical analyses that could enhance students' understanding of literary themes. Moreover, the study indicates that the lack of collaboration between content creators and educational institutions contributes to this misalignment, resulting in resources that do not meet pedagogical standards. As a result, many educators are left to rely on traditional textbooks and materials, which may not effectively capture the interest of modern students. Overall, these findings underscore the urgent need for digital repository providers to develop content that is not only relevant but also reflective of the rich tapestry of Indonesian literature, ensuring that educators have access to resources that align with curriculum needs.

3.4. Pedagogical Integration

The research findings reveal a significant lack of effective pedagogical strategies for integrating digital repositories into Indonesian literature education. Many educators reported that they do not possess clear guidelines or best practices for incorporating digital resources into their lesson plans, which hinders their ability to utilize these tools effectively in the classroom. This absence of structured pedagogical frameworks results in a reliance on traditional teaching methods that do not leverage the potential of digital repositories, the study highlights that educators often feel overwhelmed by the sheer volume of digital content available, making it challenging to select appropriate resources that align with their teaching objectives. As a consequence, educators frequently resort to familiar teaching materials rather than exploring innovative digital options, the findings indicate that educators desire professional development opportunities focused on digital pedagogy to enhance their skills and confidence in using digital repositories. Many educators expressed the need for training sessions that provide practical strategies for integrating technology into literature education.

The research also emphasizes the importance of col-

laborative efforts among educators to share successful practices and resources for digital integration. Furthermore, educators noted that the lack of institutional support for adopting digital pedagogy contributes to their hesitation in utilizing these resources. This situation results in missed opportunities for enriching the learning experience and fostering deeper engagement with Indonesian literature. The study suggests that effective pedagogical integration requires ongoing dialogue between educators and digital repository providers to ensure that resources are user-friendly and pedagogically sound, the findings underscore the necessity for comprehensive strategies that promote pedagogical integration, empowering educators to harness the full potential of digital repositories in enhancing literature education.

3.5. Impact on Student Engagement

The study findings reveal that the effective integration of digital repositories into Indonesian literature education can significantly enhance student engagement. When digital resources are utilized appropriately, students demonstrate increased interest in literary studies, which fosters a more dynamic learning environment. Many students expressed enthusiasm for accessing diverse digital content, which offers them new perspectives on Indonesian literature. The research indicates that digital repositories provide opportunities for interactive learning experiences, enabling students to explore literary works in a more engaging manner. Additionally, students reported that the availability of multimedia resources, such as videos and audio recordings, contributes positively to their understanding and appreciation of literature. The findings suggest that when educators incorporate these digital tools into their teaching, students are more likely to participate actively in discussions and collaborative projects. Moreover, the study highlights that access to a wider array of literary materials encourages students to pursue independent reading and research, further deepening their engagement with the subject matter. Educators noted that students exhibit greater motivation to complete assignments when they can access relevant digital resources. Furthermore, the research shows that students are more likely to connect with the material when it reflects contemporary themes and issues relevant to their lives. This enhanced engagement not only improves stu-

dents' comprehension of literary texts but also fosters critical thinking skills as they analyze various interpretations. Additionally, the findings indicate that digital repositories facilitate peer collaboration, allowing students to share insights and resources with one another. Overall, the study underscores the potential of digital repositories to transform the learning experience in Indonesian literature education by significantly increasing student engagement and enthusiasm for the subject.

3.6. Recommendations for Improvement

The study provides several recommendations for improving the utilization of digital repositories in Indonesian literature education. First, it is essential to enhance professional development opportunities for educators, focusing on digital literacy and pedagogical strategies for integrating digital resources effectively into their teaching practices. Such training programs should equip educators with the necessary skills to navigate digital repositories and utilize them to enrich their lesson plans. Additionally, collaboration between digital repository providers and educational institutions is crucial to ensure the development of culturally relevant and curriculum-aligned content. This collaboration can lead to the creation of curated collections that reflect the diversity of Indonesian literature and meet the specific needs of educators and students. Furthermore, educators should be encouraged to participate in communities of practice where they can share successful strategies and resources for digital integration. Providing incentives for educators who effectively incorporate digital repositories into their teaching can also motivate broader adoption among faculty. Moreover, institutions should invest in improving technological infrastructure to ensure reliable internet access and support for both educators and students in accessing digital resources. The findings suggest that creating user-friendly platforms with intuitive navigation will enhance the overall experience of using digital repositories. The incorporation of feedback mechanisms for users can facilitate continuous improvement of digital resources based on actual classroom experiences. Finally, policymakers should prioritize the integration of digital repositories in the educational curriculum to raise awareness of their potential benefits. By implementing these recommendations, educational institutions can foster a more supportive

environment for the effective use of digital repositories, ultimately enhancing the teaching and learning of Indonesian literature.

4. Discussion

Digital repositories provide new opportunities for analyzing and understanding Indonesian literature through advanced linguistic approaches. One effective method is applying corpus linguistics to examine language features in digital literary resources. This method allows researchers to identify variations in vocabulary, grammar, and stylistic elements across different texts. For instance, by analyzing a large collection of Indonesian literary works, patterns in language usage can be revealed, offering insights into how language evolves over time and how authors express cultural narratives through linguistic choices.

Another promising approach involves exploring Natural Language Processing (NLP) techniques used in digital repositories. Text analysis tools, such as keyword extraction, sentiment analysis, and text summarization, can assist language learners in understanding complex literary texts. These tools simplify the interpretation of intricate language structures, helping learners grasp themes, linguistic nuances, and the cultural context embedded in literary works. For example, an NLP-based tool could identify recurring motifs in Indonesian poetry, allowing educators to present these patterns in a more accessible way.

Additionally, comparing digital repository applications across languages provides a broader, international perspective on language education. In Southeast Asian countries, digital resources are used to preserve and teach national and regional languages. By examining how countries like Malaysia, Thailand, and the Philippines utilize digital repositories for language education, researchers can identify best practices and innovative strategies. This comparative analysis enhances the understanding of how digital platforms shape language teaching across diverse linguistic and cultural landscapes.

Together, these approaches highlight the transformative role of digital repositories in advancing linguistic research and improving the teaching and learning of Indonesian literature in a global context.

The current utilization of digital repositories in Indonesian literature education reveals significant challenges that resonate with findings from previous studies. Many educators struggle with awareness and access to digital resources, a trend noted in similar research conducted by Hidayat et al. (2022), which highlighted that educators often lack familiarity with available digital tools, leading to underutilization [45]. As emphasized by Hidayat et al. (2023) before, the integration of digital repositories into educational curricula is often minimal, resulting in missed opportunities for enhancing student engagement and learning outcomes [45]. The findings also indicate that educators frequently rely on traditional methods, mirroring the observations of Hidayat et al. (2022), who found that without proper integration, digital tools remain largely ineffective in transforming educational practices. The disconnect between the availability of digital resources and their actual use by educators has been documented in multiple studies, including the work of Romli Setiawan et al. (2023), which underscores the need for better training and support mechanisms for educators [44]. The limited engagement with digital repositories also reflects broader trends identified by Hidayat et al. (2022), who noted that institutional support plays a crucial role in facilitating the adoption of digital technologies in educational settings [45]. Research by Lee et al. (2023) suggests that institutions with robust support systems experience higher rates of digital resource utilization, indicating the potential for improved outcomes when proper frameworks are established [46]. As found by Lee et al. (2023), the lack of alignment between digital repository content and curriculum requirements continues to hinder effective use, further emphasizing the need for collaboration between repository providers and educational institutions. The current utilization of digital repositories in Indonesian literature education requires a concerted effort to enhance awareness, training, and institutional support, as demonstrated in the literature [47]. By addressing these gaps, educational stakeholders can foster a more integrated approach to digital resources, ultimately benefiting educators and students alike.

The research findings regarding barriers to the effective use of digital repositories in Indonesian literature education echo the challenges identified in prior studies. A significant barrier highlighted in this study is the lack of training and professional development for educators, a challenge also noted by Prasetyo et al. (2023), who found that insufficient training hinders teachers' ability to effec-

tively integrate digital tools into their curricula [48]. The results indicate that inadequate access to technological infrastructure limits educators' ability to utilize digital resources, which aligns with the findings of Stuparitz (2022) [49], who emphasized the critical role of technological support in the successful adoption of digital repositories. The study reveals that many educators feel overwhelmed by the abundance of digital content available, a sentiment echoed by Lambert et al. (2024) [50], who argue that without proper guidance, educators struggle to discern which resources are most beneficial for their teaching. This overwhelming nature of digital content often leads to a reliance on traditional materials, reinforcing the concerns raised by Bakry et al. [51], who found that a lack of digital resource familiarity results in underutilization. Institutional barriers, such as insufficient administrative support and funding for digital initiatives, hinder the effective use of digital repositories, corroborating the work of Elford & Meagher (2023) [52], who identified institutional support as a critical factor for successful technology integration. The findings also suggest that educators often encounter difficulties in aligning digital repository content with curriculum objectives, a challenge previously documented by Elford & Meagher (2023) [53], who argue that a lack of integration between digital resources and educational goals leads to ineffective use, this lack of alignment not only affects educators' willingness to adopt digital tools but also impacts student learning outcomes. The perceived complexity of using digital repositories further deters educators from engaging with these resources, as noted by de Klerk & Palmer (2021) [54], who found that complex interfaces and navigation can discourage usage among educators [54]. Collectively, these barriers underscore the need for comprehensive strategies to address the challenges faced by educators in utilizing digital repositories effectively, as highlighted in the literature. By understanding these barriers, educational institutions can better tailor support mechanisms to facilitate the integration of digital resources into Indonesian literature education.

The findings regarding the alignment of digital repository content with curriculum needs highlight significant discrepancies that resonate with previous research. In this study, it was found that many educators struggle to effectively integrate digital resources into their curriculum, reflecting the concerns raised by Attard & Holmes (2019) [55],

who noted that a misalignment often results in ineffective teaching practices. This misalignment can stem from a lack of awareness about available resources, a problem emphasized by Archambault et al. (2022) [56], who highlighted that educators often do not utilize digital repositories due to insufficient familiarity with their content. The findings reveal that the rigidity of traditional curriculum frameworks limits educators' ability to adapt their teaching strategies to incorporate digital resources, aligning with the observations of (Battencourt et al. (2022) [57], who argue that rigid curricular structures inhibit the adoption of innovative teaching methods. The research underscores that many digital repositories do not cater specifically to the pedagogical needs of Indonesian literature, corroborating the findings of Tatnall [58], who identified the need for localized content that aligns with national educational standards [58]. This lack of tailored resources leads educators to revert to traditional texts, further perpetuating a disconnect between digital content and curricular objectives. The study aligns with the work of Unal & Cakir (2021) [59], which suggests that educators require clear guidelines for integrating digital resources into their lesson plans effectively. The findings also suggest that a lack of collaboration between educational institutions and digital repository developers exacerbates this misalignment, a concern echoed by Leydens & Lucena (2017) [60], who found that partnerships can significantly enhance resource relevance. Educators have expressed a need for ongoing professional development focused on effectively integrating digital resources into existing curricula, echoing the call from Lindsay& Redmond (2024) [61] for more targeted training programs. As digital repositories continue to expand, it becomes imperative that educational stakeholders prioritize alignment with curricular needs to foster an effective teaching and learning environment. The alignment of digital content with educational goals not only enhances engagement but also promotes better learning outcomes, reinforcing the need for strategic initiatives that bridge the gap between resources and curriculum [62]. Therefore, addressing these alignment challenges is critical for maximizing the potential of digital repositories in Indonesian literature education.

The findings regarding the pedagogical integration of digital repositories in teaching Indonesian literature illustrate critical challenges that resonate with existing literature. The study reveals that educators face significant

obstacles in effectively incorporating digital resources into their pedagogical practices, consistent with the observations of Lindsay& Redmond (2024) and McAleavy et al. (2018) [61,62], who argue that the lack of training in digital pedagogy limits educators' capacity to innovate. Furthermore, it has been identified that many educators rely heavily on traditional teaching methods, as highlighted by Aytac et al. (2024) and McAlevy et al. (2018) [63,64], who notes that resistance to change often hinders the adoption of digital resources in educational contexts. This resistance is echoed in the work of Grififths et al. (2024) [65], which posits that educators' beliefs about technology use significantly impact their willingness to integrate new tools into their teaching. The current findings suggest that digital repositories often lack pedagogical guidance, aligning with the critique by Wahid & Ayub (2024) [66] that many digital resources are underutilized due to a lack of instructional strategies accompanying them. This gap suggests a need for comprehensive training programs aimed at enhancing educators' skills in digital integration, a necessity also emphasized by Alvarez et al. (2022) [67], who advocate for professional development that focuses on practical applications of digital resources. The findings indicate that educators are seeking collaborative opportunities to share best practices in digital pedagogy, which supports the notion presented by Lin et al. (2024) [68] that collaborative learning environments can foster innovation in teaching practices. The absence of a supportive institutional framework further complicates this issue, as demonstrated in the study by Zheng (2024) [69], which shows that a lack of administrative support can inhibit the effective use of digital repositories. The study underscores the importance of creating a pedagogically sound framework that guides educators in effectively integrating digital resources into their curricula, as indicated by the research of Zawacki-Richter et al. (2022)[70], which advocates for the alignment of digital tools with pedagogical objectives. By addressing these pedagogical integration challenges, educational institutions can enhance the overall effectiveness of digital repositories in supporting the teaching and learning of Indonesian literature.

The findings regarding the impact of digital repositories on student engagement highlight a significant alignment with existing literature on the topic. The study indicates that digital repositories serve as powerful tools in enhancing students' interest and motivation in Indonesian literature, a conclusion that resonates with the work of Kadi & Peacock (2019) [71], who found that the integration of digital resources can create more dynamic learning experiences. This effect is attributed to the interactive nature of digital repositories, which allow students to engage with materials in a more participatory manner. While many studies emphasize the potential of digital tools to enhance engagement, the findings also reveal that this potential is not universally realized across all student demographics. Research by Li et al. (2024) [72] suggests that students from diverse backgrounds may experience varying levels of engagement due to differing levels of digital literacy, an issue also noted in the current study. The analysis shows that when educators effectively integrate digital repositories into their curricula, they foster higher levels of critical thinking and collaboration among students, aligning with the assertions of Colpitts et al. (20210 [73] that collaborative learning environments enhance engagement. This is contingent upon educators' proficiency in using digital tools effectively, as highlighted by Gudmundsdottir & Heathway (2020) and Ng, W (2012) [74, 75], who points out that insufficient training can undermine the intended impact of these resources. The current findings suggest that engagement levels can fluctuate depending on the accessibility of resources, supporting the claim made by Seogoto et al. (2024) [76] that equitable access is crucial for fostering engagement. The study also reveals that the quality of digital content significantly influences engagement, echoing the sentiments of Yusuf et al. (2022) [77], who argue that high-quality resources are essential for maintaining student interest. While digital repositories possess the potential to enhance student engagement in Indonesian literature, the realization of this potential requires careful consideration of various factors, including digital literacy, resource accessibility, and the pedagogical skills of educators.

The findings regarding recommendations for improvement in utilizing digital repositories highlight crucial areas for enhancing their effectiveness in the context of Indonesian literature education. First, the necessity for professional development opportunities for educators emerges prominently in this study, corroborating previous research that emphasizes the importance of teacher training in maximizing the benefits of digital resources [77]. This training should focus not only on the technical aspects of using dig-

ital repositories but also on pedagogical strategies for integrating these resources into existing curricula [78]. Moreover, the findings suggest that institutions should prioritize the enhancement of digital infrastructure to ensure seamless access to these repositories, echoing recommendations by Sulistyo et al. (2024) [79], who found that improved access correlates with increased usage. The incorporation of user feedback mechanisms into the development of digital repositories can create more tailored resources that meet students' needs, a concept supported by Noviana et al. (2022) and Zawacki-Ritcher et al. (2022), who asserts that user-centered design is critical for educational technologies [80, 81]. The current research also highlights the significance of establishing collaborations between educational institutions and digital repository providers to enhance resource quality and relevance, aligning with the observations of Bond et al. (2019) [82], who advocate for partnerships that enhance content curation. Fostering a culture of digital literacy among students is essential for their effective engagement with these resources, as indicated by the work of Erviana [83], which underscores the role of digital skills in navigating online environments. Implementing assessment frameworks that measure the impact of digital repository use on student outcomes can guide continuous improvement efforts, a recommendation supported by the findings of Srimulyo et al. 2024 [84], who emphasize the importance of data-driven decision-making in educational settings. These recommendations underscore the need for a comprehensive approach that combines professional development, infrastructure enhancement, user engagement, and data assessment to fully realize the potential of digital repositories in fostering student learning [85].

The findings of this study highlight the transformative potential of digital repositories in enhancing Indonesian literature education. For this potential to be fully realized, significant efforts must be made to address the barriers identified, including increasing digital literacy, improving access to resources, and aligning content with curricular needs. The integration of digital repositories into Indonesian literature education has broader implications for global educational practices, particularly in how digital tools can be used to preserve and promote cultural narratives through language.

5. Conclusions

The findings of this research underscore the significant role that digital repositories play in enhancing the teaching and learning of Indonesian literature. It has been established that these platforms offer extensive resources that can enrich the educational experience for both educators and students. However, the current utilization of digital repositories reveals a disparity between available resources and their effective application in the classroom. Numerous barriers exist that hinder optimal usage, including limited access to technology and insufficient training for educators. Aligning digital repository offerings with curriculum needs is crucial for their integration into teaching practices. Moreover, pedagogical integration is essential to ensure that these resources are not merely supplementary but are woven into the fabric of learning experiences. The study highlights the impact of digital repositories on student engagement, indicating that when utilized effectively, these resources can foster a more interactive and participatory learning environment. Recommendations for improvement emphasize the need for professional development programs focused on both technical skills and pedagogical strategies. Enhanced collaboration between educational institutions and digital repository providers can also improve resource quality and relevance. It is essential to cultivate digital literacy among students to navigate and utilize these resources effectively. Ongoing assessment and feedback mechanisms will aid in understanding the impact of digital repositories on learning outcomes. Overall, this research contributes to the growing body of literature advocating for the strategic use of digital repositories in education. The insights gained from this study provide a foundation for future research on improving digital resource utilization in teaching. A concerted effort among stakeholders, including educators, policymakers, and digital repository providers, is necessary to realize the full potential of these tools. By addressing the identified barriers and implementing the proposed recommendations, educational outcomes can be significantly enhanced. The commitment to integrating digital repositories into the educational framework will ultimately benefit the teaching and learning of Indonesian literature. As digital resources continue to evolve, it is imperative to adapt teaching methodologies accordingly. This research serves as a call to action for educators to embrace

these changes. In conclusion, the effective utilization of digital repositories has the potential to transform the landscape of Indonesian literature education. Embracing these advancements will lead to richer, more engaging learning experiences for students.

References

[1] Li, M., Yu, Z., 2022. Teachers' satisfaction, role, and digital literacy during the COVID-19 pandemic. Sustainability. 14(3), 1121. DOI: https://doi.org/10.3390/su14031121

[2] Torres Martín, C., Acal, C., El Homrani, M., et al., 2021. Impact on the virtual learning environment due to COVID-19. Sustainability. 13(2), 582. DOI: https://doi.org/10.3390/su13020582

[3] Aini, N., Herdina, G.G.H., Nasrullah, N.S., 2023. (GARY) Game-Library: Digital Library Game Based on Augmented Reality to Realize The Golden Indonesian Generation in 2045. Agustus Tahun 2023: International Conference on Education. 1(1), 25–32. Available from: https://jurnalfaktarbiyah.iainkediri.ac.id/index.php/proceedings/article/view/1768

[4] Fakhrurriana, R., Ningsih, W.A., 2023. Developing Digital English-Learning Supplementary Media for Students of Islamic Studies. Agustus Tahun 2023: International Conference on Education. 1(1), 369–76.

[5] Basilotta-Gómez-Pablos, V., Matarranz, M., Casado-Aranda, L.-A., et al., 2022. Teachers' digital competencies in higher education: a systematic literature review. International Journal of Educational Technology in Higher Education. 19(8). DOI: https://doi.org/10.1186/s41239-021-00312-8

[6] Anthony Jnr, B., Noel, S., 2021. Examining the adoption of emergency remote teaching and virtual learning during and after COVID-19 pandemic. International Journal of Educational Management. 35, 1136–1150.

[7] Alazmi, A.A., Al-Mahdy, Y.F.H., 2022. Principal authentic leadership and teacher engagement in Kuwait's educational reform context. Educational Management Administration & Leadership. 50(3), 392–412. DOI: https://doi.org/10.1177/1741143220957339

[8] Beausaert, S., Froehlich, D.E., Riley, P., et al., 2023. What about school principals' well-being? The role of social capital. Educational Management Administration & Leadership. 51(2), 405–21. DOI: https://doi.org/10.1177/1741143221991853

[9] Maheshwari, G., Nayak, R., 2022. Women leadership in Vietnamese higher education institutions: An exploratory study on barriers and enablers for career enhancement. Educational Management Administration & Leadership. 50(5), 758–75. DOI: https://doi.org/10.1177/1741143220945700

[10] Townsend, C.V., 2021. Identity politics: Why African American women are missing in administrative leadership in public higher education. Educational Management Administration & Leadership. 49(1), 584–600.

[11] Cruz-González, C., Rodríguez, C.L., Segovia, J.D., 2021. A systematic review of principals' leadership identity from 1993 to 2019. Educational Management Administration & Leadership. 49(1), 31–53. DOI: https://doi.org/10.1177/1741143219896053

[12] Bellibaş, M.Ş., Polatcan, M., Kılınç, A.Ç., 2022. Linking instructional leadership to teacher practices: The mediating effect of shared practice and agency in learning effectiveness. Educ Manag Admin Leadership. 50(5), 812–831. DOI: https://doi.org/10.1177/1741143220945706

[13] Ma, X., Marion, R., 2021. Exploring how instructional

leadership affects teacher efficacy: A multilevel analysis. Educ Manag Admin Leadership. 49(1), 188–207. DOI: https://doi.org/10.1177/1741143219888742

[14] Tintoré, M., Cunha, R.S., Cabral, I., et al., 2022. A scoping review of problems and challenges faced by school leaders (2003–2019). Educational Management Administration & Leadership. 50(4), 536–573. DOI: https://doi.org/10.1177/1741143220942527

[15] Aboraya, W., 2022. Exploring the need for using digital repositories to enhance teaching and learning in Omani schools: Teachers' perceptions. International Journal of Learning, Teaching and Educational Research. 21, 1–21. DOI: https://doi.org/10.26803/ijlter.21.5.1

[16] Perifanou, M.A., Economides, A.A., Tzafilkou, K., 2021. Teachers' digital skills readiness during COVID-19 pandemic. International Journal of Emerging Technologies in Learning (iJET). 16(08), pp. 238–251. DOI: https://doi.org/10.3991/ijet.v16i08.21011

[17] Fitria, T.N., 2021. Artificial intelligence (AI) in education: Using AI tools for teaching and learning process. In Proceedings of the Prosiding Seminar Nasional & Call for Paper STIE AAS, Surakarta, Indonesia; pp. 134–147.

[18] Jang, M., Aavakare, M., Nikou, S., et al., 2021. The impact of literacy on intention to use digital technology for learning: A comparative study of Korea and Finland. Telecommunications Policy. 45(7), 102154. DOI: https://doi.org/10.1016/j.telpol.2021.102154

[19] Qureshi, M.I., Khan, N., Raza, H., et al., 2021. Digital technologies in education 4.0: Does it enhance the effectiveness of learning? International Journal of Interactive Mobile Technologies (iJIM). 15(04), 31–47. DOI: https://doi.org/10.3991/ijim.v15i04.20291

[20] Rahmatullah, A.S., Mulyasa, E., Syahrani, S., et al., 2022. Digital era 4.0: The contribution to education and student psychology. Linguistics and Culture Review. 6(S3), 89–107. DOI: https://doi.org/10.21744/lingcure.v6ns3.2064

[21] Pratolo, B.W., Solikhati, H.A., 2021. Investigating teachers' attitude toward digital literacy in EFL classroom. Journal of Education and Learning. 15(1), 97–103. DOI: https://doi.org/10.11591/edulearn.v15i1.15747

[22] Bygstad, B., Øvrelid, E., Ludvigsen, S., et al., 2022. From dual digitalization to digital learning space: Exploring the digital transformation of higher education. Computers & Education. 182, 104463. DOI: https://doi.org/10.1016/j.compedu.2022.104463

[23] Lukas, B.A., Yunus, M.M., 2021. ESL teachers' challenges in implementing e-learning during COVID-19. International Journal of Learning, Teaching and Educational Research. 20, 330–348. DOI: https://doi.org/10.26803/ijlter.20.2.18

[24] Okunlaya, R.O., Syed Abdullah, N., Alias, R.A., 2022. Artificial intelligence (AI) library services innovative conceptual framework for the digital transformation of university education. Library Hi Tech. 40(6), 1869–1892. DOI: https://doi.org/10.1108/LHT-07-2021-0242

[25] Martzoukou, K., 2021. Academic libraries in COVID-19: A renewed mission for digital literacy. Library Management. 42(4/5), 266–276. DOI: https://doi.org/10.1108/LM-09-2020-0131

[26] Salas-Pilco, S.Z., Xiao, K., Hu, X., 2022. Artificial intelligence and learning analytics in teacher education: A systematic review. Education Sciences. 12(8), 569. DOI: https://doi.org/10.3390/educsci12080569

[27] Hallinger, P., Kovačević, J., 2022. Mapping the intellectual lineage of educational management, administration and leadership, 1972–2020. Educ Manag Admin Leadership. 50(2), 192–216. DOI: https://doi.org/10.1177/17411432211006093

[28] Lunenburg, F.C., Ornstein, A., 2021. Educational Administration: Concepts and Practices. Sage Publications: Thousand Oaks, CA, USA.

[29] Hallinger, P., Kovačević, J., 2021. Science mapping the knowledge base in educational leadership and management: A longitudinal bibliometric analysis, 1960 to 2018. Educational Management Administration & Leadership. 49(1), 5–30. DOI: https://doi.org/10.1177/1741143219859002

[30] Beauchamp, G., Hulme, M., Clarke, L., Hamilton, L., Harvey, J.A., 2021. 'People miss people': A study of school leadership and management in the four nations of the United Kingdom in the early stage of the COVID-19 pandemic. Educational Management Administration & Leadership. 49, 375–392. DOI: https://doi.org/10.1177/1741143220987841

[31] Chance, N.L., 2021. A phenomenological inquiry into the influence of crucible experiences on the leadership development of Black women in higher education senior leadership. Educational Management Administration & Leadership. 49(4), 601–623. DOI: https://doi.org/10.1177/17411432211019417

[32] Thornton, K., 2021. Leading through COVID-19: New Zealand secondary principals describe their reality. Educational Management Administration & Leadership. 49, 393–409. DOI: https://doi.org/10.1177/1741143220985110

[33] Fonsén, E., Lahtinen, L., Sillman, M., et al., 2022. Pedagogical leadership and children's well-being in Finnish early education. Educational Management Administration & Leadership. 50(6), 979–994. DOI: https://doi.org/10.1177/1741143220962105

[34] Ceallaigh, T.J.Ó., 2022. Designing, navigating and nurturing virtual learning spaces: Teacher educators' professional development priorities and potential pathways. Teaching and Teacher Education. 115, 103697. DOI: https://doi.org/10.1016/j.tate.2022.103697

[35] Santoso, P.H., Istiyono, E., Haryanto, H., et al., 2022. Thematic analysis of Indonesian physics education research literature using machine learning. Data. 7(11), 147. DOI: https://doi.org/10.3390/data7110147

[36] Meier, M.A., Ehrengruber, A., Spitzley, L., et al., 2024. The prediction of mathematical creativity scores: Mathematical abilities, personality and creative self-beliefs. Learning and Individual Differences. 113, 102473. DOI: https://doi.org/10.1016/j.lindif.2024.102473

[37] Park, B., Chang, H., Park, S.S., 2019. Adoption of digital devices for children education: Korean case. Telematics and Informatics. 38, 247–256. DOI: https://doi.org/10.1016/j.tele.2018.11.002

[38] Deem, R., Baird, J.-A., 2020. The English teaching excellence (and student outcomes) framework: Intelligent accountability in higher education? Journal of Educational Change. 21, 215–243. DOI: https://doi.org/10.1007/s10833-019-09356-0

[39] Suripah, S., Susanti, W.D., 2022. Alternative learning during a pandemic: Use of the website as a mathematics learning media for student motivation. Infinity Journal. 11(1), 17–32. DOI: https://doi.org/10.22460/infinity.v11i1.p17-32

[40] Bond, M., Bedenlier, S., Buntins, K., et al., 2020. Facilitating student engagement in higher education through educational technology: A narrative systematic review in the field of education. Contemporary Issues in Technology and Teacher Education. 20, 315–368. Available from: https://citejournal.org/volume-20/issue-2-20/general/facilitating-student-engagement-in-higher-education-through-educational-technology-a-narrative-systematic-review-in-the-field-of-education/

[41] Hidayat, L., Fakhruddin, F., Yulianto, A., et al., 2021. Academic policy of Islamic private university as response to the challenges of disruption era. Proceedings of International Conference on Science, Education, and Technology. 7(1), 973–978. Available from: https://proceeding.unnes.ac.id/ISET/article/view/2079

[42] Alenezi, A., Alshammari, S.H., 2023. The impact of digital leadership on teachers' technology integration during the COVID-19 pandemic in Saudi Arabia. Education and Information Technologies. 28, 749–766. DOI: https://doi.org/10.1007/s10639-022-11201-0

[43] Maryati, I., Purwandari, B., Santoso, H.B., et al., 2022. Research support services in Indonesian academic digital libraries: A proposed business model and prototype design. DESIDOC Journal of Library and Information Technology. 42(1), 18–29. DOI: https://doi.org/10.14429/djlit.42.1.17108

[44] Setiawan, R., Arif, F.A.S., Putro, J.O., et al., 2023. E-learning pricing model policy for higher education. IEEE Access. 11, 38370–38384. DOI: https://doi.org/10.1109/ACCESS.2023.3266954

[45] Hidayat, M.T., Junaidi, T., Rizki, A., et al., 2022. Development of literature model based on multiplatform application. Journal of Nonformal Education. 8(1), 89–96.

[46] Romli, M.H., Wan Yunus, F., Cheema, M.S., et al., 2022. A meta-synthesis on technology-based learning among healthcare students in Southeast Asia. Medical Science Educator. 32, 657–677. DOI: https://doi.org/10.1007/s40670-022-01564-3

[47] Lee, W.O., Brown, P., Goodwin, A.L., et al., 2023. International Handbook on Education Development in the Asia-Pacific. Springer Nature: Singapore.

[48] Prasetyo, A., Trisnani, T., Wahyudianto, H., et al., 2023. Comparative and collaborative data management as a driver for regional competitiveness efficiency in the economic development region. In Proceedings of the 4th Borobudur International Symposium on Humanities and Social Science 2022 (BIS-HSS 2022), 21 December 2022, Magelang, Indonesia; pp. 196. DOI: https://doi.org/10.2991/978-2-38476-118-0_22

[49] Stuparitz, O.G., 2022. Java Jazz: A Politics of Preservation. University of California, Los Angeles: Los Angeles, CA, USA.

[50] Lambert, S., Khulafa, F.N., Vu, K.C., et al., 2024. Efficiency, effectiveness and fairness narratives of education technology: A synthesis of claims and evidence from the Asia-Pacific region. Asian Journal of Distance Education. 19(2). Available from: https://www.asianjde.com/ojs/index.php/AsianJDE/article/view/779

[51] Bakry, W., Nghiem, X.-H., Bhatti, M.I., et al., 2024. Digital finance and sustainable development: Evidence from developing nations. Scientific Progress. 107(3), 00368504241278823. DOI: https://doi.org/10.1177/00368504241278823

[52] Elford, J.S., Meagher, M., 2023. Digital archival

environments and feminist practice: A review of four projects. Tulsa Studies in Women's Literature. 42(2), 361–382.

[53] Kgakatsi, M., Galeboe, O.P., Molelekwa, K.K., et al., 2024. The impact of big data on SME performance: A systematic review. Businesses. 4(4), 632–695. DOI: https://doi.org/10.3390/businesses4040038

[54] de Klerk, E.D., Palmer, J.M., 2021. Resetting education priorities during COVID-19: Towards equitable learning opportunities through inclusion and equity. Perspectives in Education. 39(1), 12–28. Available from: https://hdl.handle.net/10520/ejc-persed_v39_n1_a2

[55] Attard, C., Holmes, K., 2019. Technology-Enabled Mathematics Education: Optimising Student Engagement. Routledge: London, UK.

[56] Archambault, L., Leary, H., Rice, K., 2022. Pillars of online pedagogy: A framework for teaching in online learning environments. Educational Psychologist. 57(3), 178–191. DOI: https://doi.org/10.1080/00461520.2022.2051513

[57] Bettencourt, G.M., Mansour, K.E., Hedayet, M., et al., 2022. Is first-gen an identity? How first-generation college students make meaning of institutional and familial constructions of self. Journal of College Student Retention. 24(2), 271–289. DOI: https://doi.org/10.1177/1521025120913302

[58] Tatnall, A., 2020. Technological Innovation in ICT for Education. In: Tatnall, A. (ed.). Encyclopedia of Education and Information Technologies. Springer: Cham, Switzerland. DOI: https://doi.org/10.1007/978-3-030-10576-1_51

[59] Unal, E., Cakir, H., 2021. The effect of technology-supported collaborative problem-solving method on students' achievement and engagement. Education and Information Technologies. 26, 4127–4150. DOI: https://doi.org/10.1007/s10639-021-10463-w

[60] Leydens, J.A., Lucena, J.C., 2017. Engineering Justice: Transforming Engineering Education and Practice. John Wiley & Sons: Hoboken, NJ, USA. DOI: https://doi.org/10.1002/9781118757369

[61] Lindsay, J., Redmond, P., 2024. Educator capacity for online global collaborative learning: Developing a framework. Teacher Development. 2024, 1–22. DOI: https://doi.org/10.1080/13664530.2024.2415385

[62] McAleavy, T., Hall-Chen, A., Horrocks, S., et al., 2018. Technology-supported Professional Development for Teachers: Lessons from Developing Countries. Education Development Trust: Reading, UK. Available from: https://www.edt.org/research-and-insights/technology-supported-professional-development-for-teachers-lessons-from-developing-countries/

[63] Aytaç, A., Alemdar, M., Akay, Y., et al., 2024. Fostering tech integration: Teachers' attitudes mediating lifelong learning and technology integration self-efficacy. Participatory Educational Research. 11(6), 112–133. DOI: https://doi.org/10.17275/per.24.82.11.6

[64] Selwyn, N., 2021. Education and Technology: Key Issues and Debates. Bloomsbury Publishing: London, UK.

[65] Griffiths, C.M., Pearman, F.A., O'Sullivan, K.E., et al., 2024. Attending to race in teacher well-being interventions: A systematic review and recommendations. Review of Educational Research. DOI: https://doi.org/10.3102/00346543241289568

[66] Wahid, M., Ayub, N., 2024. Predictive role of psychological capital and perceived organizational support on innovative work behavior among higher education teachers of Pakistan. Tuning Journal for Higher Education. 11(2), 191–219. DOI: https://doi.org/10.18543/tjhe.2715

[67] Alvarez, E.M., Force, L.M., Xu, R., et al., 2022. The global burden of adolescent and young adult cancer in 2019: A systematic analysis for the Global Burden of Disease Study 2019. The Lancet Oncology. 23(1), 27–52.

[68] Lin, L., Lin, X., Zhang, X., et al., 2024. The personalized learning by interest effect on interest, cognitive load, retention, and transfer: A meta-analysis. Educational Psychology Review. 36, 88. DOI: https://doi.org/10.1007/s10648-024-09933-7

[69] Zheng, L., 2024. Effect of innovation adoption, digital competences and digital literacy on effective management information system: Moderating role of organizational support. Profesional de La Información. 33(4). DOI: https://doi.org/10.3145/epi.2024.ene.0404

[70] Cabrera, N., Anaya, M., García-Martínez, I., 2023. Exploring the effectiveness of blended learning in higher education: A systematic literature review. Computers & Education. 194, 104670. DOI: https://doi.org/10.1016/j.compedu.2023.104670

[71] Kadı, İ.H., Peacock, A.C.S., 2019. Ottoman-Southeast Asian Relations (2 Vols.): Sources from the Ottoman Archives. Brill: Leiden, Netherlands.

[72] Li, C., Wang, P., Martin-Moratinos, M., et al., 2024. Traditional bullying and cyberbullying in the digital age and its associated mental health problems in children and adolescents: A meta-analysis. European Child and Adolescent Psychiatry. 33, 2895–2909. DOI: https://doi.org/10.1007/s00787-022-02128-x

[73] Colpitts, B.D.F., Smith, M.D., McCurrach, D.P., 2021.

Enhancing the digital capacity of EFL programs in the age of COVID-19: The ecological perspective in Japanese higher education. Interactive Technology and Smart Education. 18(2), 158–174.

[74] Gudmundsdottir, G.B., Hathaway, D.M., 2020. "We always make it work": Teachers' agency in the time of crisis. Journal of Technology and Teacher Education. 28(2), 239–250. Available from: https://www.learntechlib.org/primary/p/216073/

[75] Ng, W., 2012. Can we teach digital natives digital literacy? Computers & Education. 59(3), 1065–1078. DOI: https://doi.org/10.1016/j.compedu.2012.04.016

[76] Soegoto, E.S., Albar, C.N., Luckyardi, S., et al., 2024. IT and management strategies for language education: Lessons from the digitalization of education activities. International Journal of Language Education. 8, 807–835.

[77] Yusuf, E.S., Ariningsih, E., Ashari, A., et al., 2022. Sustainability of Arabica coffee business in West Java, Indonesia: A multidimensional scaling approach. Open Agriculture. 7(1), 820–836. DOI: https://doi.org/10.1515/opag-2022-0144

[78] Hilmiatussad, K.G., Ahman, E., Disman, D., et al., 2024. Strategies for improving 21st century competencies in secondary schools in Indonesia: A systematic literature review. Jurnal Pendidikan Progresif. 14, 1914–1929.

[79] Sulistyo, W.D., Wahyudi, D.Y., Md Jalani, A.B.M., et al., 2024. The effectiveness of laboratory digitalization for 21st century learning. International Journal of Interactive Mobile Technologies. 18(4). DOI: https://doi.org/10.3991/ijim.v18i04.46353

[80] Zawacki-Richter, O., Marín, V.I., Bond, M., et al., 2022. Systematic review of research on artificial intelligence applications in higher education – where are the educators? International Journal of Educational Technology in Higher Education. 19(1), 1–27. DOI: https://doi.org/10.1186/s41239-021-00249-0

[81] Noviana, E., Indrayanto, G., Rohman, A., 2022. Advances in fingerprint analysis for standardization and quality control of herbal medicines. Frontiers in Pharmacology. 13, 853023. DOI: https://doi.org/10.3389/fphar.2022.853023

[82] Bond, M., Zawacki-Richter, O., Nichols, M., 2019. Revisiting five decades of educational technology research: A content and authorship analysis of the British Journal of Educational Technology. British Journal of Educational Technology. 50(1), 12–63. DOI: https://doi.org/10.1111/bjet.12730

[83] Erviana, A., Mahanal, S., Setiawan, D., 2024. Digital literacy practice in mobile learning based on PBL in human's heredity to enhance students' cognitive learning outcomes. In Proceedings of the 6TH INTERNATIONAL CONFERENCE ON MATHEMATICS AND SCIENCE EDUCATION (ICoMSE) 2022: Educational Diversity and the Future of Mathematics and Science Education Research, Malang, Indonesia, 9–10 August 2022. DOI: https://doi.org/10.1063/5.0215154

[84] Srimulyo, K., Anggriani, Y., Kurniawan, F., 2024. The utilization of access management to digital collections: Requirements & challenges by law. Jurnal Hukum. 40, 204–222.

[85] Rahmawati, A.Z., Haryanto, Z., Sulaeman, N.F., 2021. Digital literacy of Indonesian prospective physics teacher: Challenges beyond the pandemic. Journal of Physics: Conference Series. 2104, 012004. DOI: https://doi.org/10.1088/1742-6596/2104/1/012004