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Integration of Local Wisdom in Digital Learning: A Literature Review

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Abstrak
Tujuan-literatur ini bertujuan untuk mengeksplorasi integrasi kearifan lokal ke dalam pembelajaran digital untuk meningkatkan relevansi dan efektivitas pendidikan. Menggunakan analisis bibliometrik dengan VOSviewer, studi ini memetakan tema penelitian utama, koneksi, dan tren dalam bidang yang sedang berkembang ini. Pendekatan ini berfokus pada analisis pola dalam kata kunci yang terkait dengan siswa, guru, alat digital, dan model pembelajaran yang diinformasikan oleh pengetahuan budaya lokal. **Temuan**-Temuan mengungkapkan bahwa mengintegrasikan kearifan lokal memperkaya pembelajaran digital dengan menumbuhkan pedagogi responsif budaya yang mendukung identitas dan pengembangan karakter siswa. Media inovatif seperti komik digital disorot sebagai alat yang efektif dalam konteks ini. **Orisinalitas/Nilai-**Tinjauan ini juga mengidentifikasi minat penelitian yang meningkat, terutama dari Indonesia, yang menekankan pentingnya model pembelajaran adaptif berbasis data berdasarkan konteks lokal. Studi ini memberikan wawasan berharga bagi pendidik dan pembuat kebijakan yang ingin mengembangkan kerangka kerja pembelajaran digital yang inklusif dan relevan yang didasarkan pada pengetahuan lokal.

Kata kunci: *Kearifan Lokal, Bibliometrik, pembelajaran, digital*

Abstract
Purpose-This literature review aims to explore the integration of local wisdom into digital learning to enhance educational relevance and effectiveness. **Research Methodology/Design/Approach**-Using bibliometric analysis with VOSviewer, the study maps key research themes, connections, and trends within this emerging field. The approach focuses on analyzing patterns in keywords related to students, teachers, digital tools, and learning models informed by local cultural knowledge. **Finding**-Findings reveal that integrating local wisdom enriches digital learning by fostering culturally responsive pedagogy that supports student identity and character development. Innovative media such as digital comics are highlighted as effective tools in this context. **Originality / Value-**The review also identifies growing research interest, particularly from Indonesia, emphasizing the importance of adaptive, data-driven learning models based on local contexts. The study provides valuable insights for educators and policymakers seeking to develop inclusive and relevant digital learning frameworks grounded in local knowledge.

Keywords: *Local Wisdom, Bibliometric, learning, digital*

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Introduction

The integration of local wisdom into educational processes has gained significant attention due to its alignment with the Sustainable Development Goals (SDGs) and its potential to enhance culture-based learning (Ningrum et al., 2018; Pamungkas & Manaf, 2023). Local wisdom, which encompasses the cultural knowledge and practices of a community, plays a crucial role in preserving cultural heritage and fostering educational relevance and sustainability (Arjaya et al., 2024). This approach not only supports the preservation of cultural heritage but also promotes a more inclusive and contextually relevant education system.

Integrating local wisdom into digital learning has been shown to improve various educational outcomes. For instance, studies have demonstrated that incorporating local cultural wisdom into learning models can significantly enhance student learning outcomes compared to traditional methods (Pamungkas & Manaf, 2023). This integration helps students quickly understand and relate to the material presented, thereby improving their overall academic performance and engagement.

Research has highlighted the practicality and effectiveness of digital learning integrated with local wisdom. For example, a study involving high school students showed that such integration improved students' physics problem-solving skills and digital literacy (Siswanto et al., 2022). The study found that the learning process was practical and could be effectively implemented by teachers, leading to significant improvements in students' skills and knowledge.

The use of digital media in education, particularly at the elementary level, presents both opportunities and challenges. Integrating local wisdom into digital devices requires careful consideration of content adequacy, local wisdom values, and media accessibility (Nasrudin et al., 2019; Putri et al., 2025; Zuhry et al., 2024a) . Despite these challenges, successful integration can revive and maintain local wisdom while enhancing the learning experience.

Several case studies illustrate the successful integration of local wisdom into digital learning. For instance, the development of a web-based batik learning application in a vocational high school in Indonesia demonstrates how digital platforms can be used to teach traditional crafts and cultural values (Widiaty et al., 2019) . Similarly, the use of augmented reality (AR) in learning batik has shown to be an effective way to promote local wisdom through technological innovation (Widiaty et al., 2021) .

Integrating local wisdom into science learning has been shown to improve student competencies in various domains. A study on integrated science learning based on local wisdom in junior high schools found significant improvements in students' knowledge and affective domains [7] . This approach provides students with a more comprehensive understanding of the subject matter, making it easier for them to master the material.

The growing interest in integrating local wisdom into digital learning suggests a need for educational policies that support this approach. Future research should explore additional reputable indexed journal article databases to further enhance bibliometric studies on this topic (Arjaya et al., 2024; Zulkarnain & Retno Dwiningrum, 2024) . Educational policies can be designed to use local wisdom as part of inclusive education programs, helping to overcome social and cultural gaps among students and fostering character development (Amini, 2020; Arjaya et al., 2024; Rismawati et al., 2025; Zuhry et al., 2024b). By integrating local wisdom into digital learning, educators can create a more engaging, relevant, and culturally rich learning environment that benefits students academically and personally.

Method

This study uses a bibliometric method to analyze the integration of local wisdom in digital learning. Bibliometrics is an approach that involves statistical analysis of scientific publications to identify research trends, citation patterns, and collaboration between researchers (Erdyneeva et al., 2024; Shah & Kanojiya, 2025; Zulkarnain & Retno Dwiningrum, 2024). Data was collected from the Scopus database, which includes publications related to this topic over a specific time frame.

Before the filtering, a search of the Scopus database with the keywords "Local Wisdom" AND "Digital Learning" yielded 66 documents. After applying filters with a range of years from 2020 to 2025, as well as limiting the subject area to Social Sciences, document types only to articles, and languages only in English, the results showed that 27 relevant documents were found. Once the data is collected then as well as the use of bibliometric analysis tools such as VOSviewer for data visualization (Abdi et al., 2024; Rahmawati et al., 2025).

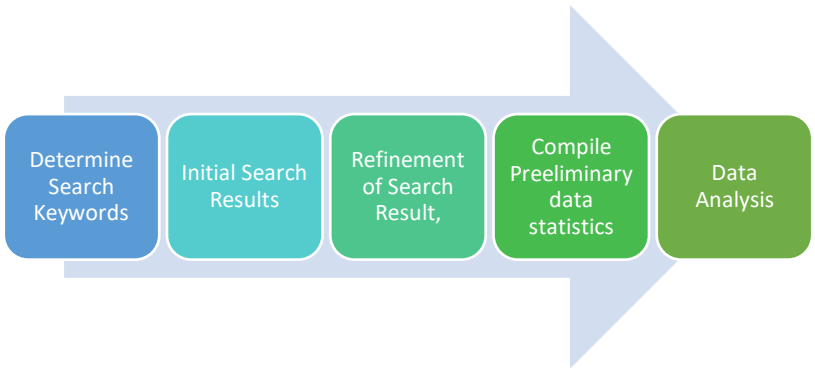

Figure 1: Stages of Bibliometric Analysis according to Tranfield et al. (2003)

Once the data is collected, the analysis is carried out using various bibliometric indicators to evaluate publication trends, citation patterns, and collaboration networks in these areas (Abdi et al., 2024; Erdyneeva et al., 2024). This analysis includes aspects such as the number of publications per year, types of publications, publication languages, citation analysis per year, collaboration between countries, and co-citation analysis (Erdyneeva et al., 2024; Wang et al., 2025) . The results of this analysis help identify key themes and influential researchers in the integration of local wisdom in digital learning, as well as reveal the geographical distribution of research contributions (Erdyneeva et al., 2024).

The results of bibliometric analysis are visualized using tools such as VOSviewer to map patterns of collaboration and relationships between research topics (Hagan et al., 2025). These visualizations help in identifying thematic clusters and emerging research trends, as well as providing insights into research areas that are still underexplored (Chaudhary & Singh, 2024) . The findings of this analysis provide a basis for researchers, educators, and policymakers to develop more effective strategies for integrating local wisdom into digital learning, as well as to steer future research in a more specific and relevant direction (Abdi et al., 2024; Chaudhary & Singh, 2024; Wang et al., 2025).

Findings and discussion

Document Based 5 Years

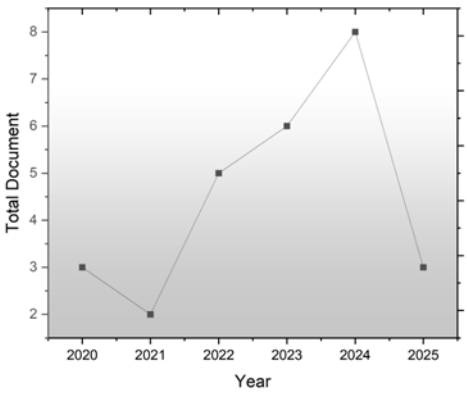

Figure 2: Document Based on Scopus

Based on data on the number of documents produced from 2020 to 2025, it can be seen that there are significant fluctuations. In 2020, the number of documents reached 3, then decreased to 2 in 2021. After that, there was a gradual increase starting from 5 documents in 2022 and increasing to 6 documents in 2023. The peak of document production will occur in 2024 with the highest number of documents, namely 8 documents. However, in 2025 the number of documents will have decreased sharply back to 3 documents. This trend illustrates the dynamics in document production throughout the period that can be influenced by various internal and external factors.

Network Visualization

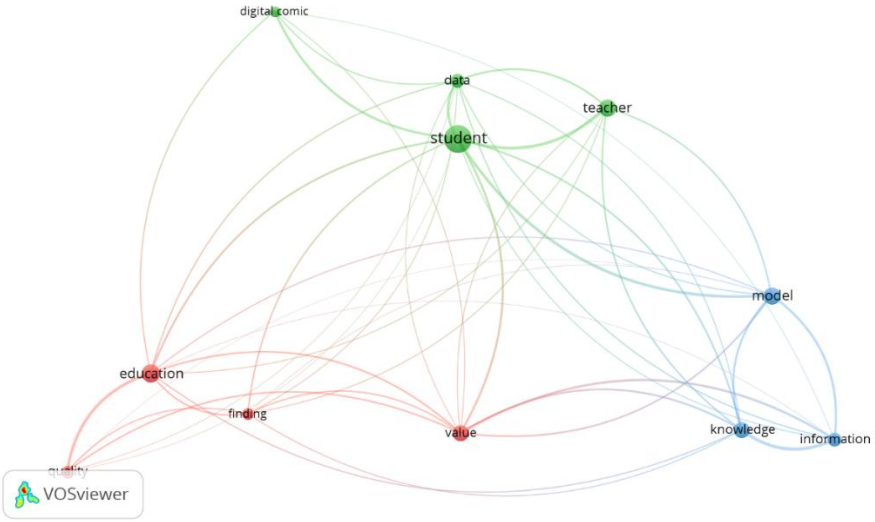

Figure 3: Network Visualization

Red Cluster (Education and Finding): This cluster contains concepts such as education, finding, value, and quality that show a focus on evaluation and outcome aspects in education. The relationship between concepts in this cluster emphasizes the importance of measuring quality and value in the learning process and how the results of educational research are an important part of the development of educational theory and practice.

Green Cluster (Student, Data, Teacher, Digital Comic): This cluster highlights the relationship between students, teachers, and data with a touch of digital technology such as digital comic. This reflects the use of data-driven and technology-based approaches in education, which shows the trend of integrating digital technology into the teaching and learning process, making the learning experience more interactive and relevant to the times.

Blue Cluster (Model, Knowledge, Information): Concepts in this cluster such as models, knowledge, and information show a focus on theoretical and methodological aspects related to knowledge processing and modeling. This cluster involves understanding how information and knowledge are compiled, analyzed, and used to support the development of educational science and the application of effective learning models.

Overley Visualization

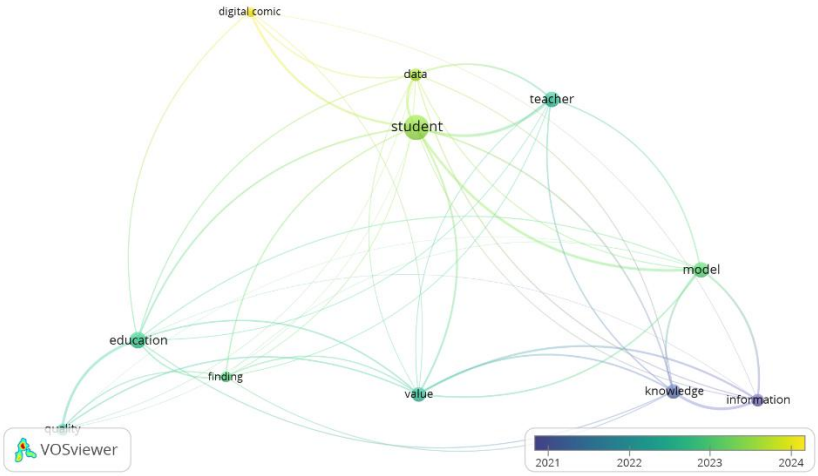

Figure 4: Overley Visualization

Yellow-Green Cluster-2024 (Student, Digital Comic, Data): This cluster highlights the close relationship between the concept *of student*, *data*, and *digital comics*. This indicates that there is a learning approach that focuses on the use of data and digital technology in the context of education. *Digital comics* as a unique element in this cluster indicate innovations in learning methods that are more interactive and interesting for students.

Light Green Cluster 3023 (Teacher, Value, Finding): Concepts such as *teacher*, *value*, and *finding* gather in this cluster, showing a focus on the role of teachers in providing added value through the learning process. *Finding* is the key that supports evaluation or important findings in education that can strengthen the quality of teaching and learning outcomes.

Light Blue Cluster 2022 (Education, Quality): This cluster is centered on the concept *of education* and *quality*, which underlines the importance of quality or quality of education. He reflects attention to educational standards and quality evaluation as the basis for developing an effective and quality learning system.

Dark Blue Cluster 2021 (Model, Knowledge, Information): This cluster focuses on theoretical and conceptual aspects in the form of *models*, *knowledge*, and *information*. This emphasizes the understanding and processing of knowledge and the use of models in analyzing and conveying information in the context of education.

This overall visualization shows the complex interaction between learning technology, educational quality, the role of teachers, and knowledge modeling. Each cluster has an important role in supporting an education ecosystem that is modern, innovative, and integrated with data and digital technology.

Density Visualization

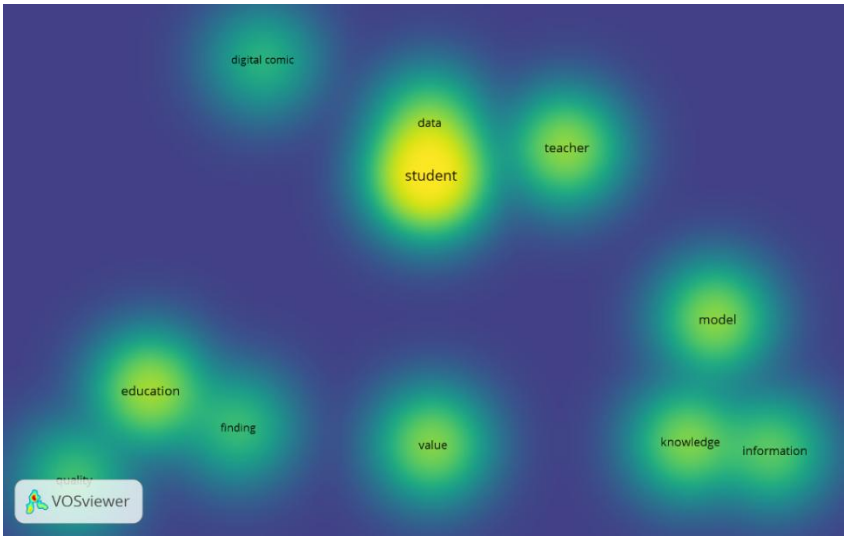

Figure 5: Density Visualization

Student and Data as the Center of Attention: In this visualization, the word student emerges as the main hot spot, indicating that the main focus in this network is the learner. Adjacent to the student is there and the teacher, which indicates a close relationship between the student, the data collected or analyzed, and the role of the teacher in the learning context. This emphasizes the focus on interaction between students, teachers, and the use of data as the foundation for the development of the learning process.

Value and Education as an Important Focus: In addition, value and education are also seen as prominent hot spots, showing attention to the value and quality of education. This indicates that in the education ecosystem, aspects of value and quality of learning are the main concerns that affect learning outcomes and the evaluation of the effectiveness of education as a whole. Model, Knowledge, and Information as Theoretical Pillars: The relatively bright group of model, knowledge, and information words in the lower right of the heatmap shows that theoretical and conceptual aspects are highly considered, especially in the context of information processing and knowledge as well as modeling that underlies the education and research process.

Digital Comic as an Innovation Element: At the top left, digital comics appear with a more subtle but quite striking presence as an innovative element in networking. This indicates that the use of digital and creative learning media is becoming part of the learning methods being studied or implemented, adding a new dimension to the learning experience. Overall, this heatmap visualization highlights the balance between practical and theoretical aspects in education, with a strong emphasis on the roles of students, teachers, and data, as well as attention to the value and quality of education. The existence of innovation elements such as digital comics adds color to a dynamic and modern learning approach.

Conclusion

The integration of local wisdom in digital learning emphasizes the importance of incorporating cultural values and local contexts into the technology-based educational process. The main focus of the research is on the active role of students and teachers as the main actors in this learning, with local wisdom that is not only the content, but also the basis for the development of learning models that suit the needs and socio-cultural characteristics of students. Creative digital media such as digital comics is one of the effective innovations to deliver learning materials with an interesting and contextual approach.

The research also highlights important values and findings that show that the integration of local wisdom in digital learning is able to enrich the learning experience while building students' identities and character holistically. Recent studies show a trend of increasing academic

interest in this topic, reflecting the need for more relevant and meaningful learning in the digital age. Therefore, the development of adaptive learning models and based on local data is a strategic step forward to ensure the sustainability and effectiveness of education that optimally integrates local wisdom.

List of abbreviations

Not applicable

Acknowledgment

Not applicable

Declaration

The author declares that there is no conflict of interest regarding the publication of this article.

Ethics approval and consent to participate

Not applicable

Consent for publication

Not applicable

Availability of data and materials

Not applicable

Competing interests

All authors declare that there are no relevant conflicts of interest related to this research.

Author contributions

JJ responsible for the conception and design of the study, MA collection data, manuscript writing, II and MP analysis, and interpretation. All author also reviewed and approved the final version of the manuscript

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