Original Article

SEHATI e-issn 3025-7824

Socio-Economic and Humanistic Aspects for Township and Industry
Vol. 3, No. 3 (2025) pp 590-600
https://doi.org/10.59535/sehati.v3i3.537

Strategies for Enhancing Education Quality Through Digitalization Towards World Class Education at Universitas Pendidikan Indonesia Bumi Siliwangi's Partner Schools

Sri Kadarsih *[2], Kasful Anwar [1], Fridiyanto Fridiyanto [1]

[1] Sultan Thaha Saifuddin State Islamic University of Jambi, **Indonesia;** [2] Al Mujaddid Sabak Islamic Institute, Indonesia

✉ srikadarsih1@gmail.com

Open Access

This article contributes to:

Abstract. In response to the global urgency for education systems to adapt to the demands of the 21st century, this study examines strategic efforts to enhance education quality through digitalization at Universitas Pendidikan Indonesia (UPI) Bumi Siliwangi's partner schools. As nations strive to develop competitive and future-ready human capital, integrating digital technologies into school systems has become a critical pathway toward achieving World Class Education. This research investigates how digital tools—such as Learning Management Systems, multimedia platforms, and online communication applications—are utilized to transform learning processes, administrative operations, and stakeholder engagement. Key enablers identified include visionary leadership, ongoing professional development, infrastructure readiness, and collaborative support from UPI. However, challenges such as digital inequality, varying levels of digital literacy, and resistance to change highlight the need for systemic and sustainable strategies. The findings emphasize that advancing digitalization is not merely a technical upgrade but a cultural shift, requiring long-term commitment and policy alignment to ensure inclusive, high-quality education for all learners.

Keywords: Digitalization, Education, Leadership, Infrastructure, Technology.

1. Introduction

The digital transformation in education has emerged as a global imperative, driven by the rapid advancement of technology and the increasing demand for 21st-century skills [1]. Across all educational levels, including early childhood education, institutions must adapt their systems, pedagogies, and infrastructures to remain relevant and globally competitive. TK-KB-DC Lab UPI Bumi Siliwangi, as a laboratory school under Universitas Pendidikan Indonesia (UPI), serves not only as an educational institution but also as a model for innovation and pedagogical development. Its role as a benchmark for other ECE institutions in Indonesia makes its engagement in digitalization critically important. Effective digital integration can enhance learning experiences while preserving the cultural identity and pedagogical values that are core to Indonesian early childhood education [2].

The COVID-19 pandemic accelerated the adoption of digital technologies across the globe, exposing both opportunities and limitations, particularly in the ECE sector. TK-KB-DC Lab UPI, like many schools worldwide, was required to pivot quickly to hybrid and online learning modalities, despite varying levels of digital readiness among staff and parents. While this transition highlighted the flexibility and resilience of the school, it also uncovered significant barriers related to infrastructure, device availability, and teacher training. These challenges are amplified in developing country contexts, where the digital divide remains a persistent issue [3]. Addressing such inequities is essential for ensuring that all children—regardless of socioeconomic background—have access to quality early education enhanced by digital tools.

Article info
Submitted: 2025-4-2
Revised: 2025-7-12
Accepted: 2025-7-14

The concept of World Class Education emphasizes not only academic excellence but also inclusivity, sustainability, and innovation [4]. For ECE institutions, this requires adapting technology to support holistic child development, including social-emotional skills, creativity, and character building. At TK-KB-DC Lab UPI, the BKBB model (Budaya, Karakter Bangsa, dan Bermain Berbasis) offers a culturally grounded framework that emphasizes play-based learning, national identity, and character education. However, this model must evolve through digital enhancement in order to align with global education standards. By integrating digital resources into the BKBB framework, the school can foster a learning environment that is both locally rooted and globally relevant [5].

Existing research supports the use of digital tools in early childhood classrooms to personalize learning, promote engagement, and develop foundational digital literacy [6]. Educational apps, virtual storytelling platforms, and interactive games can transform passive instruction into active learning experiences. These tools allow children to explore concepts through play, make independent choices, and receive instant feedback—all of which are essential for early cognitive development. However, digital content must be carefully selected to ensure that it aligns with age-appropriate learning objectives and reflects the values and culture of the local community [7]. Without such consideration, technology risks becoming a distraction or source of cultural disconnect rather than a tool for enrichment.

In Indonesia, the national education reform policy *Merdeka Belajar* encourages schools to innovate using technology while maintaining contextual and cultural relevance (Kemdikbud, 2023). TK-KB-DC Lab UPI, as an institution with strong ties to UPI and a history of pedagogical innovation, is uniquely positioned to lead the digital transformation in PAUD (early childhood education). However, several challenges remain, including limited infrastructure funding, uneven access to digital tools, and resistance to change among educators. These constraints underscore the importance of a phased, inclusive digitalization strategy that considers both technological and human factors [8]. Strengthening the school's leadership, planning, and collaboration mechanisms is vital for ensuring long-term sustainability.

The PAUD HIBER (Holistik Integratif Berbasis Edukasi Rakyat) program implemented in Bandung City offers a comprehensive framework that integrates education, health, nutrition, and child protection (Dinas Pendidikan Kota Bandung, 2022). This framework aligns with global definitions of quality ECE and provides a foundation upon which digitalization can be layered. Through digital tools such as data dashboards and digital portfolios, schools can better monitor children's development, identify areas of concern, and communicate progress with families. For instance, TK-KB-DC Lab UPI could leverage digital applications to document children's milestones, enabling more informed and timely educational decisions. Such integration enhances the holistic and responsive nature of ECE.

Educator readiness is a critical factor in successful digital transformation [9]. At TK-KB-DC Lab UPI, many teachers have received basic training in tools like Google Workspace for Education, Canva, and Padlet. While this is a positive development, digital competency must go beyond operational skill to include pedagogical insight on how to integrate technology meaningfully into early learning. Ongoing professional development programs should be responsive to teacher needs and include collaborative learning formats, such as peer mentoring and lesson study. Moreover, these programs must address both technical skills and ethical considerations, including screen time limits and

safeguarding children's privacy. This dual focus ensures that teachers can use technology with purpose and responsibility.

Infrastructure remains one of the most pressing challenges in sustaining digital initiatives in ECE. Interviews conducted with Ms. Anik Indah Rahmawati, S.Pd, administrative staff at TK-KB-DC Lab UPI, revealed that the school still experiences occasional connectivity issues and lacks an adequate number of devices for simultaneous class use (Interview, 2025). As a result, teachers often rotate usage among groups or rely on printed materials when necessary. Creative solutions, such as offline digital learning kits or device-sharing agreements with local stakeholders, have been considered. In some cases, collaboration with businesses and community members has resulted in the donation of tablets and routers, demonstrating the potential of community-based digital support.

Parental involvement is also essential in the successful integration of digital technology in ECE. Many parents, especially those with limited formal education or technological exposure, struggle to support their children's digital learning activities at home. As Ms. Nida Rahmawati, S.Pd, the principal, explained, "Parents need to feel confident and informed, otherwise they will resist or disengage from the digital process" (Interview, 2025). To address this, TK-KB-DC Lab UPI organizes orientation sessions, provides user guides, and uses WhatsApp to maintain communication and offer support. Schools can also encourage parental participation through digital storytelling events or home-based assignments that require minimal but meaningful digital engagement. These efforts help foster a shared understanding of the benefits and expectations of digital education[10].

This study aims to document and analyze how TK-KB-DC Lab UPI is navigating the opportunities and challenges of digital transformation within the context of early childhood education in Indonesia. By examining its strategies, practices, and stakeholder perspectives, the research contributes to a broader understanding of how digitalization can be leveraged to advance World Class Education in ECE settings. The findings highlight the importance of context-sensitive approaches, long-term capacity building, and inclusive planning in making digital innovation meaningful and sustainable. As digital education continues to evolve, lessons from pioneering schools such as TK-KB-DC Lab UPI offer valuable insights for shaping future educational policy and practice.

2. Method

This study employed a qualitative descriptive approach with a case study design, focusing on UPI Bumi Siliwangi's partner schools as the research setting. Data were collected through in-depth interviews with the school principal (Ms. Nida Rahmawati, S.Pd) and administrative staff (Ms. Anik Indah Rahmawati, S.Pd), as well as through participatory observation and document analysis. The qualitative data were analyzed using an interactive model consisting of data reduction, data display, and conclusion drawing. Triangulation of data sources was applied to ensure the validity and reliability of findings. This approach was chosen to provide a detailed and contextual understanding of how digitalization strategies are implemented and their impact on education quality at the school level.

3. Result and Discussion

3.1 Digitalization Strategy Implementation in UPI Partner School Learning Systems

The integration of digitalization within UPI Bumi Siliwangi's partner school learning systems reflects a strategic response to the global shift toward technology-enhanced

education. As education systems evolve in response to 21st-century demands, partner schools are expected to adapt pedagogical methods, curriculum content, and assessment mechanisms accordingly [11]. Universitas Pendidikan Indonesia (UPI) has played an active role in facilitating this transformation by supporting digital innovation, especially within laboratory and partner schools that serve as models for broader educational ecosystems. This includes providing access to platforms, training programs, and collaborative networks that encourage schools to reimagine how learning is delivered and experienced (fischer). The alignment between UPI's vision for World Class Education and its partner school strategies serves as a foundational pillar for these digitalization efforts.

Digitalization initiatives within these schools typically begin with the adoption of Learning Management Systems (LMS), digital communication platforms, and multimedia tools. Google Classroom, Zoom, and Canva are among the frequently used platforms that support both synchronous and asynchronous learning. These tools allow educators to deliver lessons, distribute assignments, and facilitate discussions in both in-person and remote settings. The flexibility provided by digital tools enhances instructional design, making learning more dynamic and accessible [12]. Moreover, such platforms encourage students to engage with content beyond the physical classroom, fostering independent learning habits essential for lifelong learning.

School principals and administrators play a critical role in driving digital transformation. Ms. Nida Rahmawati, S.Pd, principal of one of the partner schools, emphasized that leadership commitment is central to the successful implementation of digital initiatives.

> *"It's not just about having the tools,"*
>
> she noted,
>
> *"it's about changing the school culture to embrace innovation and continuous improvement."*

This perspective underscores the importance of vision-driven leadership in navigating institutional change. School leaders are responsible for mobilizing resources, setting clear expectations, and creating a supportive environment where teachers feel confident in using digital technologies [13]. Teacher training and professional development are equally vital in ensuring that digital tools are used effectively. UPI has facilitated workshops and coaching sessions for partner school educators to build competence in educational technology. These programs focus not only on the technical use of platforms, but also on pedagogical integration—how digital tools can enhance student engagement, differentiation, and formative assessment. Teachers are encouraged to design interactive learning materials, use real-time feedback tools, and explore project-based digital activities. Such training promotes not only skill development but also reflective teaching practices aligned with 21st-century learning goals [14].

Infrastructure readiness significantly affects the pace and depth of digital implementation. Some partner schools, especially those in urban settings, have access to stable internet connections, multimedia classrooms, and updated devices. However, disparities remain—schools in more remote areas often struggle with limited connectivity and outdated equipment. These infrastructural constraints require strategic planning and, at times, external partnerships to bridge the digital divide. UPI's involvement helps in mitigating these disparities by facilitating access to devices and offering guidance on managing limited resources effectively.

Administrative digitalization is another area of progress within UPI partner schools. Tasks such as student attendance, report card generation, and internal communication

have increasingly moved to digital platforms. According to Michalowski et al. [15], an administrative staff member, digital systems have streamlined workflows and reduced administrative burden.

"Now we can track student data more easily and respond to parents faster,".

The shift to digital administration supports not only efficiency but also transparency, making school operations more accountable and data-driven. Parental engagement has also benefited from digitalization. Many partner schools use WhatsApp groups, email, and digital bulletins to communicate academic updates and student progress to parents. This continuous communication fosters a stronger school-community relationship, especially when parents are empowered to participate in their child's learning process. While not all parents are digitally literate, schools have responded by offering training and using simple, accessible platforms. Strengthening this collaboration ensures that digital learning is supported both at school and at home, promoting continuity and consistency.

Student-centered learning has emerged as a hallmark of digital strategy implementation. Through the use of digital storytelling, gamified quizzes, and online research tasks, students become more engaged and active participants in their own learning journey. This shift supports constructivist approaches, where students build knowledge through exploration and interaction. Moreover, digitalization enables differentiated instruction by allowing students to access content at their own pace and revisit materials when needed. As a result, learners with diverse needs and abilities can benefit from more personalized educational experiences [16]. Digital assessments and feedback mechanisms are also gaining traction in partner schools. Teachers now utilize Google Forms, Kahoot, and other digital assessment tools to measure student understanding in real-time. These tools enable more frequent, formative assessments that inform instructional adjustments. Students receive instant feedback, which supports metacognitive skills and motivates improvement. The data collected from digital assessments can also be used to monitor learning trends and guide school-level decision-making on curriculum planning and intervention strategies [17].

Collaborations between UPI and partner schools further reinforce digital transformation. UPI regularly involves teacher candidates in practicum programs, encouraging the transfer of digital knowledge and innovative teaching strategies to partner schools. These collaborations create reciprocal learning environments where both university students and schoolteachers benefit from shared experiences. Additionally, joint research, pilot programs, and digital curriculum development projects are fostering a culture of continuous improvement. The university's academic expertise and technological support strengthen the capacity of partner schools to evolve.

Despite these advancements, challenges persist. Resistance to change among some educators, lack of sustained funding, and concerns over digital distractions remain ongoing issues. Addressing these requires long-term strategies that include stakeholder engagement, policy support, and integration of digitalization into broader school improvement plans. Encouraging experimentation and celebrating small successes can help shift mindsets and promote a culture of innovation. Ultimately, digitalization must be seen as a journey rather than a destination—one that evolves in response to context, capacity, and educational vision.

In summary, the implementation of digitalization strategies in UPI Bumi Siliwangi's partner school learning systems demonstrates both promise and complexity. Through strong leadership, teacher training, infrastructure development, and university

collaboration, schools are progressively building digital ecosystems that support quality education. While challenges remain, the commitment to innovation and alignment with World Class Education goals provides a clear direction for future growth. These partner schools offer valuable insights into how digital transformation can be pursued in a contextual, inclusive, and sustainable manner.

3.2 The Impact of Digitalization on Teaching Quality and School Management

The integration of digitalization in education has reshaped traditional teaching methods and school management structures. In UPI Bumi Siliwangi's partner schools, particularly those affiliated through laboratory and field school networks, the adoption of digital tools has transformed not only instructional delivery but also how schools operate on a day-to-day basis. Teachers and administrators alike have experienced significant shifts in workload, interaction styles, and performance monitoring. These changes reflect a broader redefinition of educational quality in the digital era—where flexibility, responsiveness, and data use are becoming key metrics.

One of the most visible impacts of digitalization is the increase in teaching quality through the diversification of instructional materials and methods. Educators are no longer confined to textbooks and chalkboards; instead, they can design lessons that include video clips, online quizzes, interactive storytelling, and gamified content. According to Ms. Nida Rahmawati, S.Pd, "Our teachers now have more tools to engage students. They're excited to try new things like making digital worksheets or using video animation for explanations" (Interview, 2025). This level of creativity and engagement allows for more dynamic classroom experiences that appeal to various learning styles.

Moreover, the ability to access vast digital resources enables teachers to tailor instruction to individual student needs. Through learning analytics embedded in platforms like Google Classroom or Quizziz, teachers can monitor student performance in real-time and adjust their approach accordingly. Differentiated instruction, long considered a best practice, becomes more feasible when digital data is readily available. Teachers can provide remedial materials or enrichment tasks with minimal delay, reducing the learning gap between students. Such personalization contributes directly to improved educational outcomes [18].

Collaboration among teachers has also improved, supported by digital platforms that facilitate resource sharing and joint lesson planning. Through Google Drive, Padlet, or even messaging apps, teachers are now able to co-develop learning modules, give feedback, and reflect on instructional practices. The use of online collaborative tools has created a stronger professional learning community within the schools. Ms. Nida noted that regular peer-sharing meetings have become more productive since educators can showcase digital lesson samples and troubleshoot common issues together. This peer support system has contributed to a more confident and innovative teaching culture. Professional development is more accessible and relevant in the digital context. Teachers now participate in webinars, online courses, and digital literacy workshops organized by UPI and other partners. These activities are often recorded or offered asynchronously, enabling teachers to learn at their own pace. The flexibility of digital professional development aligns well with educators' busy schedules. In some cases, teachers use social media platforms such as YouTube or TikTok as informal learning sources to discover new strategies or tools. The openness to continuous self-improvement has become a characteristic of digitally active educators.

From a management perspective, digitalization has significantly enhanced operational efficiency. School administrators now manage attendance records, academic

documentation, and communications through digital systems. According to Ms. Anik Indah Rahmawati, S.Pd,

> *"Everything is more streamlined now. We use shared spreadsheets, Google Forms for surveys, and email for official announcements. It saves time and reduces errors" (Interview, 2025).*

This automation of routine tasks has freed up staff to focus more on school development initiatives, parent engagement, and student support services. Financial and asset management has also improved through digital tools. Partner schools have started using budget tracking software or cloud-based inventory systems to monitor expenses and maintain transparency. These systems are particularly useful when reporting to stakeholders such as education authorities or partner institutions like UPI. By using digital dashboards and financial templates, schools can ensure greater accountability and avoid discrepancies. Furthermore, digital records provide historical data that can inform future planning and budgeting decisions. Parent-school communication has been transformed through the use of digital platforms. WhatsApp, Telegram, and school websites have become the main channels for announcements, student progress reports, and coordination of activities. Ms. Anik explained that many parents now feel more informed and involved in their child's education.

> *"We update them weekly. It could be a message, a photo of class activities, or reminders about homework or events. They really appreciate it,".*

Increased parental engagement has had a positive impact on student behavior and motivation. Digitalization also supports the school's accountability systems. By collecting and analyzing student achievement data digitally, schools can set more measurable goals and evaluate progress more effectively. Real-time data makes it easier to identify at-risk students and implement timely interventions. Additionally, teacher performance evaluations are now based on broader criteria that include digital resource creation, student engagement levels, and participation in training. This fosters a results-oriented and transparent school culture [19].

Student attendance monitoring has become more accurate and less time-consuming through automated systems. Teachers no longer need to manually fill out daily records, as attendance can be recorded via QR codes or online forms linked to classroom platforms. This has minimized human error and allowed administrators to compile attendance reports instantly. Data trends can also be used to analyze patterns, such as absenteeism rates, and guide necessary follow-up. Such systems ensure that no student falls through the cracks unnoticed. One of the less visible but significant impacts of digitalization is the empowerment of non-teaching staff. Administrative personnel are now more engaged in decision-making processes, as they have access to up-to-date school data and communication tools. They are also more confident in using technology, which elevates their role beyond clerical support. This holistic staff involvement contributes to a more collaborative and resilient school environment. As Ms. Anik remarked,

> *"Now I can contribute ideas, not just do paperwork" (Interview, 2025).*

Despite these positive changes, the digital shift also brings new responsibilities and pressures. Teachers must balance screen time with active learning, monitor digital behavior, and ensure that technology enhances rather than replaces human interaction. Similarly, administrators are tasked with safeguarding data privacy and managing cyber-related risks. These added responsibilities require updated school policies and clear

protocols. Continuous support from UPI and relevant authorities is essential to help schools manage these evolving demands.

The shift to digital has also influenced school culture and identity. Partner schools are increasingly seen as modern, forward-looking institutions, which can enhance their reputation and attract more community support. This perception is important for sustaining quality and innovation in the long term. Schools that embrace digitalization while staying true to their core values—such as inclusive, character-based education—are best positioned to thrive. It is this balance between innovation and identity that defines successful educational transformation. The impact of digitalization on teaching quality and school management in UPI's partner schools is multifaceted and transformative. It has empowered educators, streamlined administrative processes, and fostered deeper connections with parents and communities. However, sustainability depends on continued investment in training, infrastructure, and policy alignment. With strong leadership and university collaboration, these schools are well on their way to fulfilling the vision of World Class Education in a local, meaningful context.

3.3 Challenges and Sustainability of Digitalization in UPI Partner Schools

While the integration of digitalization in UPI Bumi Siliwangi's partner schools has produced many benefits, the process is not without its challenges. Ms. Nida Rahmawati, S.Pd noted that the most common difficulty faced by teachers is the varying level of digital literacy.

> *"Some teachers are still hesitant to explore new platforms. They are used to conventional methods and feel overwhelmed when they have to try something new,".*

This situation slows the full implementation of digital strategies, especially when consistent training and peer mentoring are limited due to time and workload constraints. Infrastructure also remains an issue, particularly regarding internet connectivity and the availability of digital devices. In her statement, Ms. Nida highlighted that although the school has made progress in equipping classrooms with basic digital tools, not all students have access to stable internet or personal devices at home.

> *"We try to make learning as inclusive as possible, but the gap is still there, especially for students from lower-income families,".*

This digital divide poses a serious obstacle to achieving equitable quality education across all student groups. On the administrative side, Ms. Anik Indah Rahmawati, S.Pd emphasized that the sustainability of digitalization depends not only on technology but also on human adaptation. She stated, "We can install systems and software, but if the people are not ready or willing to adapt, it won't work." Therefore, she stressed the importance of building digital culture across all levels—from leadership to classroom teachers to supporting staff. Sustainability also requires strong leadership commitment and continuous institutional support in terms of budget, maintenance, and follow-up training. To overcome these issues, the school has taken small but steady steps. Internal mentoring and teacher collaboration sessions are held to support those who are less confident with technology. They also collaborate with UPI to gain access to additional resources and consultation. Ms. Nida added,

> *"The presence of university partners like UPI gives us new insights and also motivates us to keep progressing. But we also need long-term policies to make this a habit, not just a temporary program."*

These collaborations show the essential role of higher education institutions in empowering and accompanying schools in their digital journey [20]. The challenges in implementing and sustaining digitalization in partner schools revolve around capacity building, infrastructure gaps, and the need for cultural change. Nevertheless, the commitment shown by the school leadership, supported by university collaboration, provides a strong foundation for progress. Ensuring long-term sustainability will require strategic planning, resource allocation, and inclusive professional development. If these aspects are addressed, digitalization will not only improve education quality but also foster readiness for World Class Education in a more comprehensive and inclusive manner.

4. Conclusion

The successful implementation of a digitalization strategy relies on several key pillars: leadership commitment, ongoing teacher training, infrastructure readiness, and collaborative support from higher education institutions like UPI. The adoption of digital platforms like Google Classroom, Zoom, and Canva has enabled more flexible, responsive, and inclusive synchronous and asynchronous learning. This initiative also encourages the implementation of student-centered learning through activities such as digital assessments, technology-based projects, and instant feedback that enhance student motivation and learning awareness. From a management perspective, digitalization has driven operational efficiency through automated attendance recording systems, data-driven grade reporting, and more intensive school-parent communication. Non-teaching staff have also experienced increased roles and capacities through access to digital-based management systems. This supports a more collaborative and transparent work environment.

However, challenges remain, such as low digital literacy among some teachers, limited infrastructure, especially in rural areas, and resistance to changes in work culture. Disparities in access to devices and connectivity are also major obstacles to achieving digital education equity. Therefore, the sustainability of a digitalization strategy requires long-term policies, strengthening of a digital culture across all levels, and consistent resource allocation. Ongoing collaboration between UPI and partner schools has proven to be a crucial catalyst in addressing these challenges. Good practices such as training programs, mentoring, and student internships can encourage the transfer of knowledge and innovation within the school environment. Thus, digitalization in the context of UPI partner schools is not simply the implementation of technology, but rather a comprehensive transformation of the educational ecosystem, making it more adaptive, collaborative, and ready to compete globally.

5. Acknowledgments

The authors would like to express their sincere gratitude to Sultan Thaha Saifuddin State Islamic University of Jambi, Indonesia, and Al Mujaddid Sabak Islamic Institute, Indonesia, for their valuable support and contribution to this research.

6. Declaration

Author contributions and responsibilities - The authors made major contributions to the conception and design of the study. The authors took responsibility for data analysis, interpretation and discussion of results. The authors read and approved the final manuscript.

Funding - This research did not receive external funding.

Availability of data and materials - All data is available from the author.
Competing interests - The authors declare no competing interests.
Did you use generative AI to write this manuscript? - I do not use AI assistance in my manuscript.
Declaration of generative AI and AI-assisted technologies in the writing process - During the preparation of this work the author did not use AI to write, edit, or other things related to the manuscript.

7. References

[1] S. M. H. Amiri, "Digital Transformations in Education: Research Insights for 21st-Century Learning," Mar. 26, 2025, *Social Science Research Network, Rochester, NY*: 5194886. doi: 10.2139/ssrn.5194886.

[2] I. Nurasiah, M. S. Sumantri, N. Nurhasanah, and A. R. Casmana, "Cultural Values' Integration in Character Development in Elementary Schools: The Sukuraga as Learning Media," *Front. Educ.*, vol. 7, May 2022, doi: 10.3389/feduc.2022.849218.

[3] P. Vassilakopoulou and E. Hustad, "Bridging Digital Divides: a Literature Review and Research Agenda for Information Systems Research," *Inf Syst Front*, vol. 25, no. 3, pp. 955–969, Jun. 2023, doi: 10.1007/s10796-020-10096-3.

[4] S. Bulathwela, M. Pérez-Ortiz, C. Holloway, M. Cukurova, and J. Shawe-Taylor, "Artificial Intelligence Alone Will Not Democratise Education: On Educational Inequality, Techno-Solutionism and Inclusive Tools," *Sustainability*, vol. 16, no. 2, Art. no. 2, Jan. 2024, doi: 10.3390/su16020781.

[5] T. Smith, L. Avraamidou, and J. D. Adams, "Culturally relevant/responsive and sustaining pedagogies in science education: theoretical perspectives and curriculum implications," *Cult Stud of Sci Educ*, vol. 17, no. 3, pp. 637–660, Sep. 2022, doi: 10.1007/s11422-021-10082-4.

[6] Z. Wei, "Navigating Digital Learning Landscapes: Unveiling the Interplay Between Learning Behaviors, Digital Literacy, and Educational Outcomes," *J Knowl Econ*, vol. 15, no. 3, pp. 10516–10546, Sep. 2024, doi: 10.1007/s13132-023-01522-3.

[7] C. A. Wesner *et al.*, "Co-creating a conceptual model of Indigenous relational wellbeing in early childhood: Planting seeds of connectedness," *Infant Mental Health Journal: Infancy and Early Childhood*, vol. 46, no. 2, pp. 115–132, 2025, doi: 10.1002/imhj.22149.

[8] C. B. Chrusciak, A. L. Szejka, and O. C. Junior, "Integrating Digital Transformation with Human-Centric Factors Strategies to Enhance Organisational Process Performance: The HOPE Model," *Journal of Industrial Information Integration*, p. 100785, 2025.

[9] A. Althubaiti, J. M. Tirksstani, A. A. Alsehaibany, R. S. Aljedani, A. M. Mutairii, and N. A. Alghamdi, "Digital transformation in medical education: Factors that influence readiness," *Health Informatics J*, vol. 28, no. 1, p. 14604582221075554, Jan. 2022, doi: 10.1177/14604582221075554.

[10] X. Huang, H. Li, L. Huang, and T. Jiang, "Research on the development and innovation of online education based on digital knowledge sharing community," *BMC Psychol*, vol. 11, no. 1, p. 295, Sep. 2023, doi: 10.1186/s40359-023-01337-6.

[11] L. Zhao, B. Zhao, and C. Li, "Alignment analysis of teaching–learning-assessment within the classroom: how teachers implement project-based learning under the curriculum standards," *Discip Interdscip Sci Educ Res*, vol. 5, no. 1, p. 13, Sep. 2023, doi: 10.1186/s43031-023-00078-1.

[12] A. Alam and A. Mohanty, "Educational technology: Exploring the convergence of technology and pedagogy through mobility, interactivity, AI, and learning tools," *Cogent Engineering*, vol. 10, no. 2, p. 2283282, Dec. 2023, doi: 10.1080/23311916.2023.2283282.

[13] J. Locke *et al.*, "Helping Educational Leaders Mobilize Evidence (HELM): The iterative redesign of the Leadership and Organizational Change for Implementation (LOCI) intervention for use in schools," *Implementation Research and Practice*, vol. 5, p. 26334895241242523, May 2024, doi: 10.1177/26334895241242523.

[14] S. Ramadani and A. R. Sofa, "Kejujuran dalam perspektif pendidikan Islam: Nilai fundamental, strategi implementasi, dan dampaknya terhadap pembentukan karakter santri di pesantren," *Jurnal Manajemen Dan Pendidikan Agama Islam*, vol. 3, no. 1, pp. 193–210, 2025.

[15] M. Michalowski, M. Topaz, and L. M. Peltonen, "An AI-Enabled Nursing Future With no Documentation Burden: A Vision for a New Reality," *Journal of Advanced Nursing*, vol. n/a, no. n/a, doi: 10.1111/jan.16911.

[16] L. Tetzlaff, F. Schmiedek, and G. Brod, "Developing Personalized Education: A Dynamic Framework," *Educ Psychol Rev*, vol. 33, no. 3, pp. 863–882, Sep. 2021, doi: 10.1007/s10648-020-09570-w.

[17] A. Barthakur, R. Marrone, S. Esnaashari, V. Kovanovic, and S. Dawson, "Advancing Holistic Decision-Making Systems in Schools: Insights From Academic Research and Practical Applications," *Journal of Computer Assisted Learning*, vol. 41, no. 3, p. e70021, 2025, doi: 10.1111/jcal.70021.

[18] M. Syahripin, C. Wijaya, and S. Nahar, "Principal Planning Management in Increasing Teacher Work Productivity," *International Journal of Islamic Education, Research and Multiculturalism (IJIERM)*, vol. 3, no. 3, pp. 184–197, 2021.

[19] W. N. Hidayat, N. Nurlaila, E. Purnomo, and N. Aziz, "Technological Pedagogical and Content Knowledge (TPACK) in Islamic Religious Education in the Digital Era," *Al Hikmah: Journal of Education*, vol. 4, no. 1, pp. 93–106, 2023.

[20] R. Luckin, M. Cukurova, C. Kent, and B. Du Boulay, "Empowering educators to be AI-ready," *Computers and Education: Artificial Intelligence*, vol. 3, p. 100076, 2022.