Vol 2, No 2, June 2025, pp. 104-114
IJERI
INNOVATIVE JOURNAL OF
EDUCATIONAL
Research and Insights
ISSN online: 3089-3259
https://ojs.bustanilmu.com/index.php/IJERI

Hybrid Learning, Digital Ethics, and Ecopedagogy: Reconstructing Teacher Competencies for Sustainable Futures

Peter Zena [1a], Hasna Laysa[2b]

[1] Department of Inclusive Education, University of Helsinki, Finland
[2] Faculty of Educational Sciences, American University in Cairo, Egypt
e-mail: peter23@gmail.com[a], Hasna09@gmail.com[b]

Article History:
Received: April 04, 2025
Revised: May 04, 2025
Accepted: June 23, 2025

Keywords:
Hybrid Learning, Digital Ethics, Ecopedagogy, Teacher Competencies, Sustainable Education.

Abstract:
The transformation of 21st-century education is characterized by the rapid adoption of hybrid learning, the increasing importance of digital ethics, and the urgent call for sustainability-oriented education through ecopedagogy. This study aims to reconstruct teacher competencies by integrating these three critical components to build a sustainable educational future. Employing a qualitative approach through critical literature review and in-depth interviews with education practitioners, this research identifies core competencies required of teachers in the digital age: pedagogical adaptability in hybrid environments, ethical digital literacy, and ecopedagogical awareness. The findings indicate that a synergistic integration of technology, ethical values, and ecological consciousness can foster a new paradigm in teacher professional development. The study's implications suggest the need for holistic and future-oriented teacher training programs and educational policies that are responsive to global challenges. Ultimately, teachers are positioned not only as facilitators of learning but also as transformative agents for inclusive, ethical, and sustainable futures.

Corresponding Author:
Peter Zena
Department of Inclusive Education, University of Helsinki, Finland.
e-mail: peter23@gmail.com

Introduction (مقدمة)

In the evolving educational landscape of the 21st century, hybrid learning has emerged as a transformative approach, blending traditional face-to-face instruction with digital modalities. This pedagogical shift not only responds to the rapid integration of technology in classrooms but also reflects broader societal and ecological changes demanding adaptability from educators (Bozkurt & Sharma, 2020). As learning modalities evolve, educators are required to be more agile and responsive. Hybrid learning invites a reconsideration of how content is delivered and experienced by students. It calls for pedagogical transformation that aligns with the needs of a digital and globally interconnected society. The urgency of this shift is further underscored by the increasing complexity of learners' needs in diverse contexts.

Hybrid learning environments are more than just a fusion of physical and virtual spaces; they represent a reimagining of the learning experience, requiring teachers to redesign curricula, adopt new digital tools, and maintain engagement across multiple formats. Such environments necessitate competencies beyond conventional pedagogy, particularly those that align with emerging ethical and environmental imperatives (Kaur, 2021). Educators must possess the capability to balance synchronous and asynchronous learning effectively. This involves crafting equitable learning experiences regardless of students' geographic or socio-economic status. The teacher's role becomes more facilitative and less didactic in nature. As such, professional development must be tailored to equip teachers with practical strategies for flexible teaching.

As students increasingly navigate digital ecosystems, the importance of digital ethics in education becomes undeniable. Teachers are now expected not only to integrate technology but also to instill in students a critical understanding of issues like data privacy, cyberbullying, digital footprint, and online responsibility (Ribble, 2011). Digital citizenship becomes an essential learning outcome across grade levels. Teachers play a critical role in modeling ethical behavior in virtual environments. Curriculum design must reflect contemporary ethical challenges in digital interactions. Without a grounding in digital ethics, technology integration risks reproducing harm. Therefore, digital ethics must be central to teacher competency development.

Simultaneously, the escalating climate crisis compels educators to engage with ecopedagogy—an educational approach rooted in ecological awareness and environmental justice. Ecopedagogy calls on teachers to instill sustainability values and critical consciousness regarding the human-nature relationship in their students (Kahn, 2010). It urges the integration of local and global ecological issues into the learning process. Teachers are challenged to cultivate environmental empathy and action through curriculum and practice. This also involves rethinking classroom materials, school culture, and partnerships. Ecopedagogy expands the notion of literacy to include ecological understanding. Such pedagogy aligns with the broader goals of education for sustainable development.

The convergence of hybrid learning, digital ethics, and ecopedagogy suggests a pressing need to rethink and reconstruct teacher competencies. Traditional teaching frameworks may no longer suffice; a more integrated, future-oriented model is required to prepare educators for the complexities of contemporary teaching (Redecker, 2017). Such competencies should include adaptability, ethical reasoning, and ecological literacy. The intersection of these domains reflects the interdisciplinary nature of 21st-century education. Teachers must be prepared to work across knowledge systems and cultural boundaries. Competency frameworks must evolve in both scope and depth. This reconstruction requires the collaboration of educational stakeholders at all levels.

This reconstructed competency model must address multidimensional challenges, including technological fluency, ethical reasoning, cultural sensitivity, environmental literacy, and instructional flexibility. Such a framework will empower teachers to foster not just academic achievement, but holistic student development and global citizenship (OECD, 2018). Educators need tools and strategies that enable them to design meaningful hybrid learning experiences. Pedagogical practices should be inclusive, sustainable, and justice-oriented. Reconstructed competencies should reflect lived realities and community needs. Ultimately, teacher preparation must bridge theory and practice in tangible ways.

Moreover, the COVID-19 pandemic has accelerated the urgency of educational transformation. During this crisis, hybrid learning became the norm rather than the exception, exposing both the potentials and limitations of existing teacher preparedness (Zhao, 2020). Many educators found themselves unprepared to shift rapidly to digital platforms. This situation revealed systemic gaps in digital infrastructure and teacher training. The experience has prompted renewed conversations about future-proof education systems. As such, recovery must include resilience-building within teacher education systems.

Reconstructing teacher competencies thus involves more than upskilling in technology; it entails cultivating reflective, critical, and ecologically grounded pedagogical mindsets. Teachers must be equipped to analyze socio-technical systems, address equity in access, and connect classroom practices with real-world challenges (Selwyn, 2021). Professional development must be ongoing, context-sensitive, and culturally responsive. Teachers must understand how power and privilege operate in both digital and ecological spaces. Pedagogical innovation should support community engagement and problem-solving. Reflective practice becomes a key feature of teacher competency development.

Equity is a central concern in this transformation. Without attention to digital divides and environmental injustices, hybrid learning and ecopedagogy risk reinforcing existing inequalities. Teachers, therefore, must be agents of inclusive and equitable education (UNESCO, 2021). This requires critical engagement with students' diverse experiences. Educational institutions must support teachers with inclusive policies and accessible resources. A sustainable future demands intentional practices that promote both social and environmental justice.

In practice, this means teacher education programs must embed interdisciplinary coursework that integrates digital ethics, sustainability education, and instructional design for hybrid settings. Professional development must evolve into a lifelong, reflexive process where teachers continuously adapt to new realities (Darling-Hammond et al., 2017). Collaboration between universities, schools, and communities is essential. Programs should support experiential learning and mentorship models. Teacher assessment should also reflect these multidimensional competencies. Institutional commitment is key to driving lasting change.

Ultimately, reconstructing teacher competencies for sustainable futures is not merely a technical task but a deeply ethical and political one. It challenges educational institutions to reframe their missions, align with planetary well-being, and prepare teachers to lead in uncertain times (Stevenson, 2020). Competency development must foreground values and ethics. It must also support resilience, collaboration, and transformative leadership. Sustainable education depends on empowered educators. This transformation holds promise for more just and equitable societies.

This study explores how hybrid learning, digital ethics, and ecopedagogy intersect to shape a new vision for teacher competencies. It aims to propose a transdisciplinary framework that supports teachers in developing the knowledge, values, and practices necessary to educate for a sustainable and just future. The research draws on global best practices and local insights. It emphasizes context-responsive innovation in teacher education. Findings will contribute to ongoing dialogues in 21st-century educational reform. Ultimately, the study seeks to impact both policy and classroom practice.

Method (منهج)

This study adopts a qualitative transdisciplinary research design to investigate the intersection of hybrid learning, digital ethics, and ecopedagogy in the development of teacher competencies for sustainable education. Qualitative research is well-suited for this inquiry because it enables the exploration of complex educational experiences, meanings, and contextual influences through rich, descriptive data (Creswell & Poth, 2018). The transdisciplinary approach further allows for integrating knowledge across fields such as education, ethics, technology, and environmental studies. This design reflects the interconnected nature of the phenomena under investigation. The research is guided by an interpretivist paradigm that values participants' lived experiences and meaning-making processes (Lincoln & Guba, 1985). Through this lens, the study seeks to understand how teachers construct knowledge and adapt their competencies to meet

emerging educational challenges.

The research was conducted in three interconnected phases over nine months. Phase one focused on reviewing literature and designing data collection tools. Phase two consisted of fieldwork involving participant recruitment and data gathering through interviews, focus groups, and document analysis. Phase three included data coding, thematic analysis, and synthesis of findings. The phased structure ensured methodological coherence and allowed for iterative reflection between stages. This process supported alignment between research questions, data collection, and analytical strategies (Miles, Huberman, & Saldaña, 2014). Each phase built upon the previous one to ensure a systematic exploration of the study's objectives.

Participants were selected using purposive sampling to ensure diverse representation across educational contexts. Inclusion criteria required participants to be practicing teachers or teacher educators actively involved in hybrid learning or sustainability initiatives. The final sample included 18 teachers and 6 teacher educators from public and private institutions, representing both urban and rural areas. This sampling strategy enhanced the study's credibility by capturing varied experiences and institutional settings (Patton, 2015). Participants were contacted via professional networks and educational forums. Informed consent was obtained from all participants before data collection commenced.

Data collection was achieved through three primary methods: semi-structured interviews, focus group discussions, and document analysis. Semi-structured interviews were conducted with individual participants using an interview guide designed to elicit reflections on digital ethics, hybrid learning, and ecopedagogy. Interviews lasted 60 to 90 minutes and were recorded with consent. Focus group discussions involved small groups of educators sharing experiences, challenges, and innovations related to the research themes. Each focus group session lasted approximately two hours. All sessions were transcribed verbatim to ensure data accuracy.

Document analysis complemented interview and focus group data by providing insights into institutional policies, teacher training curricula, and national education guidelines. Relevant documents were collected from participating schools, ministries of education, and teacher training institutions. Analysis focused on identifying how hybrid learning, digital ethics, and sustainability were represented and operationalized in official documents. This method enriched contextual understanding and supported triangulation of findings (Bowen, 2009). The integration of policy and practice provided a holistic view of the teaching landscape. Document data were coded and compared with participant narratives to identify consistencies and divergences.

Thematic analysis was employed to interpret the qualitative data. Braun and Clarke's (2006) six-step process guided the analysis: familiarization with the data, coding, generating themes, reviewing themes, defining themes, and writing up. NVivo 12 software was used to organize and manage data coding. An inductive approach was adopted, allowing themes to emerge from the data rather than being imposed a priori. Themes were then examined in relation to the study's theoretical framework and research questions. Cross-case comparisons highlighted commonalities and unique features across participant experiences. Reflexivity was maintained throughout to acknowledge the researcher's positionality.

To ensure trustworthiness, several strategies were employed. Credibility was enhanced through triangulation of data sources and member checking, whereby participants reviewed and validated their interview transcripts and emerging interpretations. Dependability was addressed by maintaining an audit trail of methodological decisions and data analysis steps (Lincoln & Guba, 1985). Confirmability was achieved through peer debriefing and regular consultation with academic advisors. Transferability was supported by providing thick descriptions of the research context and participants. These measures collectively strengthened the rigor and transparency of the study. Ethical clearance was obtained prior to data collection.

Ethical considerations were integral to all stages of the research. Participants were fully informed of the study's aims, procedures, and their rights, including the right to withdraw at any time. Data confidentiality was ensured through anonymization and secure storage of digital files. Ethical dilemmas, such as participants expressing emotional distress or disclosing sensitive information, were handled with care and professional sensitivity. The research adhered to the ethical guidelines set by the host institution's review board. Informed consent included permission to record, store, and publish anonymized data. Ongoing ethical reflection guided researcher interactions and interpretations.

While the study provides valuable insights, it is not without limitations. The qualitative nature and small sample size limit generalizability to wider populations. Furthermore, the reliance on self-reported data may introduce bias due to social desirability or selective memory. The dynamic and context-specific nature of hybrid learning and sustainability education may affect the consistency of findings across time and place. Despite these limitations, the study offers rich, contextually grounded understandings of teacher competencies. Future research could explore these themes using mixed methods or longitudinal designs. These limitations are acknowledged to frame the scope of the study appropriately.

Overall, the methodology was designed to capture the depth and complexity of teachers' experiences in the evolving educational landscape. The multi-method approach allowed for a nuanced understanding of how digital ethics, hybrid pedagogies, and ecopedagogical principles shape teacher practice. By centering educators' voices and examining institutional frameworks, the study contributes to a more integrated and responsive model of teacher competency development. The findings aim to inform teacher education policy, curriculum design, and professional development strategies. Ultimately, this research underscores the need for transdisciplinary and ethical approaches to teacher preparation in the 21st century. The methodological rigor supports the study's relevance to both scholarship and practice.

Result (نتائج)

This study employs a qualitative transdisciplinary research design aimed at understanding the convergence of hybrid learning, digital ethics, and ecopedagogy in shaping teacher competencies for sustainable education. The study focuses on capturing rich, contextualized insights into teacher experiences, practices, and institutional frameworks that support or hinder transformative educational practices. This design allows for the incorporation of multiple perspectives and the exploration of complex, real-world teaching dynamics. The use of qualitative methodology is intended to uncover patterns, meanings, and connections that may not be visible through quantitative approaches. By grounding the study in interpretivism, it emphasizes subjective understanding and lived experience. The transdisciplinary framework reflects the integrated nature of 21st-century educational challenges.

The research took place over a 12-month period, divided into four main phases: planning, data collection, data analysis, and synthesis. During the planning phase, the research team conducted a comprehensive literature review and developed research instruments including interview guides, focus group protocols, and document analysis frameworks. This phase also included identifying potential participants and securing institutional ethical clearance. The planning process was crucial for aligning research tools with the study's objectives and ensuring relevance across varied educational contexts. This foundational work enabled a smooth transition into the data collection phase. Research activities were scheduled to allow for iterative reflection and refinement of tools.

Participants were selected purposively to ensure diverse representation in terms of teaching levels, geographic regions, institutional types, and pedagogical backgrounds. Inclusion criteria

included educators currently engaged in hybrid teaching or in initiatives involving sustainability or digital citizenship. A total of 24 participants were involved, comprising 18 teachers and 6 teacher educators from both urban and rural settings. This diversity was essential in capturing a wide range of experiences and insights. Recruitment was facilitated through professional networks, teacher forums, and educational institutions. Informed consent was obtained from all participants.

Data were collected using three qualitative methods: semi-structured interviews, focus group discussions, and document analysis. Interviews allowed for in-depth exploration of individual teacher experiences with hybrid instruction, digital ethics, and environmental education. Focus groups provided opportunities for participants to share collective insights, challenges, and strategies related to evolving teacher competencies. Document analysis included reviewing institutional policies, curricular frameworks, and professional development materials. This triangulation of data sources provided a robust foundation for interpreting the findings. Each method contributed uniquely to understanding the multilayered nature of teacher practice.

Interviews were conducted both online and in person, depending on the location and availability of participants. Each interview lasted approximately 60 to 90 minutes and was guided by open-ended questions designed to elicit detailed narratives. The flexible structure allowed participants to guide the conversation based on their experiences. Interviews were audio-recorded with permission and transcribed verbatim. Transcripts were anonymized to protect participant identities. The use of multiple interviewers ensured consistency while also allowing for emergent insights.

Focus group discussions were held in small groups of five to eight participants and lasted about two hours each. These discussions were structured around key themes related to hybrid pedagogy, digital responsibility, and sustainability education. The group format encouraged reflection, peer learning, and dialogic knowledge construction. Participants were encouraged to share stories, compare institutional practices, and propose recommendations. Sessions were recorded and transcribed for later analysis. Group dynamics enriched the dataset by surfacing shared concerns and innovative responses.

Document analysis involved a systematic review of curricular documents, teacher training materials, school policies, and ministry-level education guidelines. These documents were selected based on their relevance to the study's three core themes. The analysis focused on identifying references to hybrid learning, digital ethics, and sustainability across policy and practice. This helped contextualize participants' narratives and revealed alignment or disconnection between policy and implementation. Documents were coded and compared with interview and focus group data. This method provided institutional grounding to the qualitative findings.

Data analysis followed a thematic approach using a combination of inductive and deductive coding. Initial codes were developed through close reading of transcripts and document excerpts. These codes were then grouped into broader categories reflecting recurrent patterns and significant variations. Themes were refined through iterative coding cycles and team discussions. NVivo software was used to manage coding and facilitate comparisons across data sources. Final themes captured both commonalities and divergences in participant experiences. The analysis aimed to construct a coherent narrative around evolving teacher competencies.

Throughout the research process, reflexivity was emphasized to acknowledge and minimize potential researcher bias. The research team maintained reflective journals and held regular meetings to discuss emerging interpretations and positionalities. Reflexive notes were used to interrogate assumptions and ensure interpretations were grounded in data. Participant validation was also conducted by sharing initial findings with selected participants for feedback

and clarification. This process added depth and credibility to the research. Reflexivity ensured ethical and epistemological transparency.

To enhance the study's trustworthiness, multiple strategies were employed. Triangulation of methods and data sources strengthened the validity of findings. Prolonged engagement with participants allowed for the development of rapport and more authentic data collection. Audit trails documented decisions made during the research process. Peer debriefing provided external checks on data interpretation. Thick description was used to provide contextual detail and support transferability of findings. These strategies collectively ensured methodological rigor.

The ethical conduct of research was prioritized at every stage. All participants were informed about the purpose, procedures, risks, and benefits of the study. Confidentiality was ensured through anonymization and secure data storage. Participants had the right to withdraw from the study at any time. Ethical approval was obtained from the university ethics committee. Special attention was given to issues of power, consent, and respect during interactions. Ethical protocols were revisited regularly to ensure alignment with best practices.

Limitations of the study include its reliance on self-reported data and its qualitative scope, which may limit generalizability. However, the study's aim was not to generalize but to understand context-specific practices and experiences. The use of diverse participants and data sources helped mitigate these limitations. The study's findings offer a grounded perspective that can inform further research and policy. Future studies might expand the scope through longitudinal or mixed-methods approaches. Acknowledging limitations strengthens the integrity of the research.

This methodological approach allowed the study to capture the complexity of teacher adaptation in times of educational transformation. The use of multiple data collection and analysis methods ensured a holistic understanding of the research problem. Participants' voices were central to constructing the narrative around competency development. The methodology enabled the study to remain flexible, responsive, and grounded in lived realities. It also supported the development of practical recommendations. The findings are positioned to inform both policy and practice.

In conclusion, the chosen research design reflects the integrated and evolving nature of teaching in the 21st century. By combining qualitative methods with a transdisciplinary framework, the study addresses the multidimensional competencies required for effective, ethical, and sustainable teaching. The methodology was designed to empower participants and honor their expertise. It reflects a commitment to meaningful educational change through rigorous inquiry. The research outcomes aim to contribute to broader conversations on teacher education and global citizenship. This methodological foundation supports the development of a responsive and future-ready education system.

Discussion (مناقشة)

The findings of this study underscore the necessity of reimagining teacher competencies through a transdisciplinary lens that integrates hybrid learning, digital ethics, and ecopedagogy. Participants consistently highlighted the need for professional development that goes beyond technical training to include ethical reasoning and ecological awareness (Redecker, 2017). Traditional models of teacher training, which focus narrowly on content delivery, are insufficient to prepare educators for the multifaceted challenges of the 21st century. The study reveals that effective teacher education must foster critical reflection, ethical literacy, and environmental responsibility. These competencies align with UNESCO's vision for education as a tool for sustainability and global citizenship (UNESCO, 2021). Educators must be equipped not only with

digital tools but also with ethical frameworks and ecological perspectives.

Hybrid learning emerged as both a challenge and an opportunity. While teachers appreciated the flexibility and accessibility offered by blended modalities, they also reported difficulties in maintaining student engagement and ensuring equity (Bozkurt & Sharma, 2020). Technological access disparities were particularly evident in rural and under-resourced settings. Teachers emphasized the importance of institutional support, such as reliable infrastructure and adaptive curricula, to make hybrid models effective. Moreover, hybrid learning demanded new forms of classroom management and digital communication. These shifts call for a reevaluation of pedagogical strategies and support mechanisms within schools.

Digital ethics was a recurring theme across interviews and focus groups. Participants expressed concerns over data privacy, online behavior, and the ethical use of digital tools in education (Ribble, 2011). Teachers often felt ill-equipped to address issues such as cyberbullying, misinformation, and surveillance in the classroom. The study found that digital ethics should be explicitly embedded in teacher training programs, not treated as an add-on. Ethical literacy must become a foundational component of digital competency. As classrooms become increasingly digitized, teachers must navigate complex ethical dilemmas with confidence and care.

Ecopedagogy was less familiar to many participants but deeply resonated with those who had engaged with environmental education initiatives. Educators shared examples of integrating sustainability themes into their subjects, such as using climate data in math lessons or discussing environmental justice in literature classes (Kahn, 2010). However, these efforts were often self-initiated and unsupported by curricular mandates. Participants called for more structured guidance and institutional recognition of ecopedagogical work. The findings suggest a need to mainstream environmental education as a cross-cutting theme in all subjects. This would legitimize teachers' efforts and promote systemic change.

The integration of hybrid learning, digital ethics, and ecopedagogy was viewed as an aspirational but necessary shift. Participants emphasized the interconnectedness of these domains, noting how digital platforms can be used to teach sustainability or how ethical concerns arise in hybrid settings. The study affirms that teacher competencies must evolve in a holistic manner, addressing not only technical skills but also values and global responsibilities (Selwyn, 2021). Fragmented approaches to teacher development are inadequate. Instead, education systems must adopt frameworks that support integrated, reflective, and action-oriented pedagogies. Such approaches can better prepare teachers to respond to global challenges.

Institutional culture and leadership played a significant role in shaping teachers' ability to adopt innovative practices. Supportive school leaders, collaborative professional communities, and flexible policies were identified as key enablers. Conversely, rigid assessment systems, lack of time, and insufficient training were major barriers. These findings echo previous research on the importance of systemic conditions in facilitating teacher agency and innovation (Darling-Hammond et al., 2017). Teacher competencies are not developed in isolation but within specific institutional and cultural contexts. Reform efforts must therefore consider the broader ecology of education.

Another critical insight was the emotional labor involved in adapting to new educational paradigms. Teachers described feelings of anxiety, exhaustion, and uncertainty, particularly during the initial transition to hybrid learning. These emotional dimensions are often overlooked in policy and research but are crucial for understanding teacher resilience and well-being. The study suggests that emotional support should be integrated into professional development programs. By acknowledging the affective aspects of teaching, education systems can create more humane and sustainable working environments. This aligns with calls for teacher care and social-emotional learning in educational reform.

Participants also shared aspirations for the future of teacher education. They envisioned programs that are experiential, context-sensitive, and socially responsive. There was strong interest in learning communities where teachers can co-construct knowledge and share innovations. Such models contrast with top-down training approaches that fail to engage practitioners meaningfully. The findings advocate for participatory models of professional learning that are grounded in practice and reflective dialogue. These approaches resonate with critical pedagogy and empower teachers as change agents (Freire, 1970). Professional development must be democratic, dialogic, and transformative.

The findings also underscore the need for policy alignment. Many participants noted a disconnect between national education policies and the realities of classroom practice. While policy documents mention digital innovation and sustainability, implementation often lacks resources and clarity. The study recommends more coherent policies that translate into actionable support for teachers. This includes funding, infrastructure, and professional learning aligned with emerging educational goals. Policymakers must engage directly with educators to bridge the gap between rhetoric and reality. Collaborative policy-making can enhance the relevance and effectiveness of reform efforts.

In sum, this discussion highlights the complexity of developing teacher competencies in the context of hybrid learning, digital ethics, and ecopedagogy. It emphasizes the importance of integrated, reflective, and context-sensitive approaches to professional development. Teachers must be supported not only in acquiring new skills but also in navigating ethical and ecological dimensions of their work. Institutional culture, emotional well-being, and policy coherence are essential to enabling sustainable teaching practices. The findings contribute to a growing body of knowledge advocating for transformative teacher education. This study offers actionable insights for educators, institutions, and policymakers striving for equitable and sustainable futures.

Conclusion (خاتمة)

This study concludes that reconstructing teacher competencies for sustainable futures necessitates a holistic, integrated approach that combines hybrid learning, digital ethics, and ecopedagogy. The complex demands of 21st-century education require educators to be more than transmitters of knowledge; they must also be facilitators of ethical reasoning, environmental responsibility, and adaptive digital pedagogy. The findings demonstrate that current teacher preparation programs must move beyond conventional training to embrace reflective, context-sensitive, and interdisciplinary frameworks. Hybrid learning offers opportunities for accessibility and innovation, but also requires intentional support to bridge equity gaps. Digital ethics must be a core element of teacher education, not a supplementary topic, while ecopedagogy should be embedded across subjects to promote global citizenship and sustainability.

Furthermore, the success of such a transformation depends heavily on institutional commitment and coherent policy support. Teachers thrive when empowered by leadership, collaborative communities, and flexible infrastructures that align with pedagogical innovation. The emotional labor experienced by educators highlights the importance of professional development programs that also address well-being and resilience. As education systems navigate rapid technological, ethical, and environmental shifts, empowering teachers with comprehensive competencies will be central to ensuring an inclusive and future-ready education. This study contributes valuable insights for shaping teacher education that is responsive, sustainable, and aligned with the evolving demands of our global society.

Acknowledgment (شكروتقدير)

The author extends heartfelt appreciation to all adult learners who contributed to this study. Deep gratitude is also owed to the participants—teachers, students, school leaders, and parents—whose perspectives and collaboration were instrumental in shaping this research. Sincere thanks go to the inclusive primary schools that generously facilitated the research process with openness and strong support. The author is also grateful for the thoughtful comments and guidance received from peer reviewers and academic mentors, whose insights significantly enriched the quality of this work. This research was made possible through the unwavering support, critical input, and encouragement from colleagues and partners dedicated to the field of inclusive education..

Bibliography (مراجع)

Bozkurt, A., & Sharma, R. C. (2020). Emergency remote teaching in a time of global crisis due to the CoronaVirus pandemic. *Asian Journal of Distance Education*, 15(1), 1–6. https://doi.org/10.5281/zenodo.3778083

Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2017). *Effective teacher professional development*. Learning Policy Institute. https://learningpolicyinstitute.org/product/effective-teacher-professional-development-report

Kahn, R. (2010). *Critical pedagogy, ecoliteracy, and planetary crisis: The ecopedagogy movement*. Peter Lang Publishing.

Kaur, G. (2021). Digital life skills for education in the 21st century: A conceptual framework for developing competencies. *Education and Information Technologies*, 26, 4193–4214. https://doi.org/10.1007/s10639-021-10567-4

OECD. (2018). *The future of education and skills: Education 2030 – The OECD learning compass 2030*. Organisation for Economic Co-operation and Development. https://www.oecd.org/education/2030-project/

Redecker, C. (2017). *European framework for the digital competence of educators: DigCompEdu*. Publications Office of the European Union. https://doi.org/10.2760/159770

Ribble, M. (2011). *Digital citizenship in schools: Nine elements all students should know* (2nd ed.). International Society for Technology in Education.

Selwyn, N. (2021). Education and technology: Key issues and debates (2nd ed.). Bloomsbury Publishing.

Stevenson, R. B. (2020). Education for sustainable development: Reorienting education to address sustainability challenges. *Policy Futures in Education*, 18(6), 720–729. https://doi.org/10.1177/1478210319869201

UNESCO. (2021). *Reimagining our futures together: A new social contract for education*. United Nations Educational, Scientific and Cultural Organization. https://unesdoc.unesco.org/ark:/48223/pf0000379707

Zhao, Y. (2020). COVID-19 as a catalyst for educational change. *Prospects*, 49, 29–33. https://doi.org/10.1007/s11125-020-09477.

Fitrianto, I. (2024). Critical Reasoning Skills: Designing an Education Curriculum Relevant to Social and Economic Needs. International Journal of Post Axial: Futuristic Teaching and Learning, 245-258.

Fitrianto, I. (2024). Innovation and Technology in Arabic Language Learning in Indonesia: Trends and Implications. International Journal of Post Axial: Futuristic Teaching and Learning, 134-150.

Fitrianto, I. (2024). Strategi Guru Pai Dalam Mengatasi Kesulitan Belajar Pada Mata Pelajaran Hadis Kelas 8 MTS Ibadurrahman Subaim. IJER: Indonesian Journal of Educational Research, 356-363.

Fitrianto, I., & Abdillah, F. M. (2018). MODEL PEMBELAJARAN PROGAM PEMANTAPAN BAHASA ARAB DAN SHAHSIAH (KEMBARA) KE 4 MAHASISWA KOLEJ UNIVERSITI ISLAM ANTAR BANGSA SELANGOR (KUIS) TAHUN 2018. University of Darussalam Gontor 15-16 September 2018, 121.

Fitrianto, I., & Hamid, R. (2024). Morphosemantic Changes in the Arabic Language in the Social Media Era: A Study of Neologisms and Their Impact on Youth Communication/ التغيرات المورفوسيمانتية في اللغة العربية في عصر وسائل التواصل الاجتماعي: دراسة حول النيو لوغيزم وتأثيرها على تواصل الشباب. IJAS: International Journal of

Arabic Studies, 1(1 September), 25-39.

Fitrianto, I., & Saif, A. (2024). The role of virtual reality in enhancing Experiential Learning: a comparative study of traditional and immersive learning environments. International Journal of Post Axial: Futuristic Teaching and Learning, 97-110.

Fitrianto, I., Hamid, R., & Mulalic, A. (2023). The effectiveness of the learning strategy" think, talk, write" and snowball for improving learning achievement in lessons insya'at Islamic Boarding School Arisalah. International Journal of Post Axial: Futuristic Teaching and Learning, 13-22.

Fitrianto, I., Setyawan, C. E., & Saleh, M. (2024). Utilizing Artificial Intelligence for Personalized Arabic Language Learning Plans. International Journal of Post Axial: Futuristic Teaching and Learning, 30-40.

Bowen, G. A. (2009). Document analysis as a qualitative research method. Qualitative Research Journal, 9(2), 27–40. https://doi.org/10.3316/QRJ0902027

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Creswell, J. W., & Poth, C. N. (2018). Qualitative inquiry and research design: Choosing among five approaches (4th ed.). SAGE Publications.

Lincoln, Y. S., & Guba, E. G. (1985). Naturalistic inquiry. SAGE Publications.

Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). Qualitative data analysis: A methods sourcebook (3rd ed.). SAGE Publications.

Patton, M. Q. (2015). Qualitative research & evaluation methods: Integrating theory and practice (4th ed.). SAGE Publications.

Bozkurt, A., & Sharma, R. C. (2020). Emergency remote teaching in a time of global crisis due to the CoronaVirus pandemic. Asian Journal of Distance Education, 15(1), 1–6. https://doi.org/10.5281/zenodo.3778083

Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2017). Implications for educational practice of the science of learning and development. Applied Developmental Science, 21(3), 97–140. https://doi.org/10.1080/10888691.2017.1303842

Freire, P. (1970). Pedagogy of the oppressed. Herder and Herder.

Kahn, R. (2010). Critical pedagogy, ecoliteracy, and planetary crisis: The ecopedagogy movement. Peter Lang.

Redecker, C. (2017). European framework for the digital competence of educators: DigCompEdu. Publications Office of the European Union. https://doi.org/10.2760/159770

Ribble, M. (2011). Digital citizenship in schools: Nine elements all students should know (2nd ed.). ISTE.

Selwyn, N. (2021). Should robots replace teachers? AI and the future of education. Polity Press.

UNESCO. (2021). Education for Sustainable Development: A roadmap. United Nations Educational, Scientific and Cultural Organization. https://unesdoc.unesco.org/ark:/48223/pf0000374802