Journal Corner of Education, Linguistics, and Literature
Vol. 5 No. 4 (May, 2026), pp. 497-511
https://doi.org/10.54012/jcell.v5i4.752

Integrating Deep Learning Pedagogy into Sustainable Education Management to Support Agro-Edutourism Development in South Lampung

Sigit Apriyanto[1]✉, Adelina Anum[2], Mustaqim Hasan[3], Fitriya[4], Ahmad Yasir[5]
[1 2] *Universitas Indonesia Mandiri, South Lampung, Lampung, Indonesia*
[3 4 5] *Universitas Islam An Nur Lampung, Indonesia*
✉ email: sigitap@uimandiri.ac.id

Received:
May 4, 2026
Revised:
May 15, 2026
Accepted:
May 19, 2026
Published:
May 31, 2026

ABSTRACT

Sustainable education has become a strategic priority in responding to global challenges related to human resource development, environmental sustainability, and local economic empowerment. In agrarian regions such as South Lampung, Indonesia, the integration of education with agro-edutourism offers a contextual learning ecosystem that connects pedagogical processes with real-world practices. This study aimed to systematically examine how Deep Learning pedagogy can be integrated into sustainable education management to support the development of agro-edutourism programs. Employing a Systematic Literature Review (SLR) approach guided by the PRISMA framework, this study synthesizes peer-reviewed articles published between 2019 and 2025 from Scopus, Web of Science, ERIC, and Google Scholar databases. The findings reveal that Deep Learning—characterized by meaningful, reflective, collaborative, and experiential learning—plays a critical role in strengthening adaptive education management, curriculum contextualization, and stakeholder collaboration. The review further highlights the relevance of agro-edutourism as an authentic learning environment that supports sustainability-oriented competencies and community empowerment. This study concludes that integrating Deep Learning pedagogy into sustainable education management provides a strong conceptual foundation for policy and practice in developing agro-edutourism-based education in South Lampung.

Keywords: *deep learning pedagogy; sustainable education management; agro-edutourism; systematic literature review; local policy.*

INTRODUCTION

Education for Sustainable Development (ESD) has become a central paradigm in global educational discourse as societies increasingly confront complex environmental, social, and economic challenges. The United Nations, through the Sustainable Development Goals (SDGs), explicitly positions education as a foundational driver of sustainable development, particularly under SDG 4, which emphasizes inclusive, equitable, and quality education and lifelong learning opportunities for all (UNESCO, 2020; Leal Filho et al., 2025). Within this framework, education is no longer viewed merely as a mechanism for knowledge transmission, but as a transformative process that

equips learners with the competencies required to address sustainability challenges across multiple contexts.

In recent decades, scholars have emphasized that sustainable education must be context-sensitive and responsive to local realities rather than relying on standardized, decontextualized curricula (Sterling, 2020; Wiek et al., 2011). This perspective is particularly relevant for developing regions with strong agrarian characteristics, where education is expected to connect learning processes with local livelihoods, ecological systems, and cultural traditions. In such contexts, education plays a dual role: enhancing human capital while simultaneously contributing to community resilience and sustainable economic development.

Indonesia, as an agrarian and archipelagic nation, faces persistent challenges in aligning its education system with sustainability-oriented development goals. Although national policies increasingly emphasize contextual learning and community-based education, implementation at the regional level remains uneven (Sutrisno & Wibowo, 2022). Rural and semi-rural regions often experience gaps in educational quality, limited pedagogical innovation, and weak integration between schools and local development agendas. These challenges are particularly visible in districts where economic activities are heavily dependent on agriculture and natural resources.

South Lampung Regency represents a microcosm of these national challenges. Despite its strategic geographical location and rich agricultural resources—including plantations, horticulture, fisheries, and smallholder farming—educational practices in South Lampung remain largely classroom-centered and examination-oriented (Dinas Pendidikan Provinsi Lampung, 2023). Learning processes often prioritize surface-level cognitive outcomes, with limited opportunities for experiential, inquiry-based, and reflective learning that could connect education with students' lived environments.

The disconnect between education and local potential in South Lampung has significant implications for sustainable development. Graduates frequently lack contextual competencies related to agriculture, environmental management, and local entrepreneurship, resulting in low youth engagement in the local economy and limited innovation in rural sectors (Hidayat & Prasetyo, 2021). This situation highlights the need for education management models that integrate pedagogical innovation with regional development priorities.

One promising approach to bridging this gap is agro-edutourism, which combines agricultural practices, tourism activities, and educational experiences into an integrated learning ecosystem. Agro-edutourism has been widely recognized as a strategy for promoting environmental awareness, practical skills development, and community empowerment, while simultaneously contributing to local economic diversification (Barbieri & Mahoney, 2019; Nugroho et al., 2023). As an experiential learning environment, agro-edutourism offers authentic contexts in which learners can engage directly with sustainability challenges.

However, empirical evidence suggests that many agro-edutourism initiatives in Indonesia remain underdeveloped from an educational perspective. Programs often focus on recreational or promotional aspects rather than structured learning outcomes, resulting in limited pedagogical impact (Rahmawati & Suryadi, 2021). In South Lampung, agro-edutourism initiatives are frequently fragmented, lacking coherent educational design, systematic curriculum integration, and effective coordination among schools, local government, and community stakeholders.

These challenges point to broader issues in education management. Effective agro-edutourism-based education requires strategic planning, stakeholder collaboration, curriculum alignment, and continuous evaluation—elements that are often absent in conventional education management models (Tilbury, 2017). Without a strong pedagogical foundation and adaptive management structures, agro-edutourism risks becoming a peripheral activity rather than a transformative educational strategy.

Deep Learning pedagogy has emerged as a relevant theoretical and practical framework for addressing these limitations. In educational research, Deep Learning refers to an approach that emphasizes meaningful understanding, reflective thinking, collaboration, and problem-solving in authentic contexts (Hattie & Donoghue, 2016). Unlike surface learning, which prioritizes memorization and procedural knowledge, Deep Learning encourages learners to construct knowledge through inquiry, experience, and critical reflection—core principles of education for sustainability.

Studies have demonstrated that Deep Learning pedagogy enhances higher-order thinking skills, learner engagement, and the transfer of knowledge to real-world contexts (Fullan et al., 2018; Sterling, 2020). These characteristics make Deep Learning particularly suitable for agro-edutourism settings, where learning occurs through direct interaction with environmental, social, and economic systems. When integrated into education management, Deep Learning can inform curriculum design, instructional strategies, and assessment models that align learning with sustainability goals.

Despite the growing body of literature on Deep Learning and Education for Sustainable Development, there remains a notable gap in research examining how Deep Learning can be systematically embedded within education management frameworks to support agro-edutourism, especially in localized policy contexts such as South Lampung. Existing studies tend to address pedagogy, sustainability, or tourism in isolation, offering limited guidance for integrated implementation at the regional level (Akmal et al., 2023; Rahman & Suryanto, 2022).

In response to this gap, the present study seeks to address the following research question: *How can Deep Learning pedagogy be integrated into sustainable education management to support agro-edutourism development?* By employing a Systematic Literature Review, this study aims to synthesize international and national scholarship to develop a conceptual foundation that informs both academic discourse and evidence-based education policy development in South Lampung.

METHOD

This study adopts a Systematic Literature Review (SLR) methodology to identify, evaluate, and synthesize relevant scholarly literature on Deep Learning pedagogy, sustainable education management, and agro-edutourism. The review process followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to ensure transparency and methodological rigor (Page et al., 2021).

1. Data Sources and Search Strategy

Literature searches were conducted using four major databases: Scopus, Web of Science, ERIC, and Google Scholar. Search terms included combinations of the following keywords: *"deep learning pedagogy," "sustainable education management," "education for sustainable development," "educational tourism,"* and *"agro-edutourism."* Boolean operators were used to refine the search.

2. Data Analysis

Selected articles were analyzed using thematic synthesis. Coding was conducted to identify recurring themes related to pedagogical strategies, management practices, sustainability principles, and stakeholder involvement. Themes were then synthesized to construct an integrative conceptual framework relevant to the South Lampung context..

FINDINGS AND DISCUSSION

1. Overview of the Selected Literature

The systematic literature review yielded a final corpus of peer-reviewed articles published between 2019 and 2025 after screening and eligibility assessment following PRISMA guidelines. These articles were drawn primarily from Scopus-indexed journals, supplemented by selected publications from Web of Science, ERIC, and high-impact national journals indexed in SINTA and DOAJ. The reviewed studies span diverse disciplinary domains, including education for sustainable development (ESD), pedagogy and curriculum studies, educational management, rural development, tourism studies, and community-based learning.

From a geographical perspective, the literature demonstrates a strong concentration of studies from Europe, Australia, and East Asia, particularly in the domains of Deep Learning pedagogy and ESD. Studies addressing agro-edutourism are more prevalent in developing regions, including Southeast Asia and Latin America, though these often emphasize economic or tourism outcomes rather than educational management or pedagogical depth. Only a limited number of studies explicitly integrate pedagogical theory, sustainability-oriented management, and tourism-based learning into a unified framework, indicating a significant research gap.

The thematic synthesis revealed four dominant analytical clusters:

a. conceptualization of Deep Learning pedagogy in sustainability-oriented education;

b. sustainable education management models and governance mechanisms;

c. educational dimensions of agro-edutourism; and

d. stakeholder integration and local policy alignment.

2. Deep Learning Pedagogy in the Context of Sustainable Education

2.1 Conceptual Foundations of Deep Learning Pedagogy

Across the reviewed literature, Deep Learning pedagogy is consistently framed as a learner-centered approach that emphasizes meaning-making, conceptual understanding, metacognitive reflection, and the application of knowledge in authentic contexts (Hattie & Donoghue, 2016; Fullan et al., 2018). Unlike surface learning approaches—characterized by rote memorization and procedural compliance—Deep Learning engages learners in inquiry-based, collaborative, and problem-oriented learning processes.

In sustainability-oriented education, Deep Learning is widely recognized as essential for developing higher-order competencies, including systems thinking, critical reflection, ethical reasoning, and anticipatory thinking (Wiek et al., 2011; Sterling, 2020). The reviewed studies suggest that sustainability challenges are inherently complex and context-dependent, requiring pedagogical approaches that go beyond transmissive instruction. Deep Learning enables learners to engage with real-world problems, integrate interdisciplinary perspectives, and develop adaptive capacities.

Importantly, the literature emphasizes that Deep Learning is not merely a classroom strategy but a pedagogical philosophy that must be supported by institutional culture, curriculum design, and assessment systems. This insight has direct implications for education management, particularly in contexts where learning is embedded in community-based environments such as agro-edutourism.

2.2 Deep Learning and Experiential Learning Environments

A significant body of research highlights the compatibility between Deep Learning pedagogy and experiential learning settings, including outdoor education, project-based learning, and community-engaged learning (Kolb, 2015; Beames et al., 2020). Agro-edutourism, as an experiential learning environment, aligns strongly with these pedagogical principles by situating learning within agricultural practices, ecological systems, and socio-cultural interactions.

However, the review also reveals that experiential settings alone do not guarantee Deep Learning outcomes. Several studies caution that without intentional pedagogical design—such as guided inquiry, reflective dialogue, and structured assessment—experiential learning risks remaining superficial (Moon, 2013; Rahman & Suryanto,

2022). This finding underscores the importance of integrating Deep Learning principles into education management frameworks to ensure pedagogical coherence.

3. Sustainable Education Management: Models and Challenges

3.1 Characteristics of Sustainable Education Management

Sustainable education management is widely conceptualized in the scholarly literature as a systemic and integrative approach that harmonizes educational objectives, institutional governance structures, resource allocation mechanisms, and stakeholder engagement with the overarching principles of sustainability (Tilbury, 2017; UNESCO, 2020). Rather than functioning as a purely administrative framework, sustainable education management is understood as a strategic process that embeds sustainability values into decision-making, organizational culture, and educational practices. Effective models emphasize a long-term developmental vision, adaptive and transformative leadership, participatory governance, and continuous cycles of monitoring and evaluation to ensure institutional responsiveness to dynamic social, environmental, and economic contexts.

A synthesis of the reviewed studies consistently identifies three interrelated core dimensions that underpin sustainable education management. First, *strategic alignment with sustainability goals* refers to the deliberate integration of sustainability principles into institutional vision, policy frameworks, and performance indicators. This alignment ensures that educational programs contribute meaningfully to broader sustainable development agendas rather than operating in isolation from regional and global priorities. Second, *pedagogical innovation and curriculum integration* emphasize the necessity of embedding sustainability-oriented learning outcomes within curricula through innovative instructional approaches, including experiential, interdisciplinary, and problem-based learning. This dimension highlights the critical role of pedagogy in translating sustainability goals into meaningful learning experiences. Third, *multi-stakeholder collaboration* underscores the importance of partnerships among educational institutions, local communities, industry actors, government agencies, and civil society in co-creating learning environments and sharing resources, expertise, and accountability.

These dimensions are particularly salient in non-traditional and community-based learning contexts**,** such as agro-edutourism, where education intersects directly with economic activities, environmental stewardship, and local cultural practices. In such contexts, sustainable education management must coordinate diverse actors and learning spaces while maintaining pedagogical coherence and educational quality. Agro-edutourism thus requires management models that are flexible, context-sensitive, and capable of integrating formal education systems with informal and experiential learning settings.

Despite the growing recognition of these principles, the literature indicates that education management systems in many developing regions remain highly centralized, bureaucratic, and predominantly outcome-driven**,** often prioritizing standardized

assessment and short-term performance metrics over innovation and contextual relevance (Sutrisno & Wibowo, 2022). This structural rigidity constrains institutional autonomy and limits opportunities for pedagogical experimentation, reflective practice, and collaborative learning design. Consequently, such management environments pose significant barriers to the effective implementation of Deep Learning pedagogy, which depends on flexibility, learner-centered approaches, and sustained professional inquiry at the institutional level. Addressing these systemic constraints is therefore essential for enabling education management systems to support sustainability-oriented learning and agro-edutourism development effectively.

4. Education Management in Rural and Agrarian Contexts

Studies focusing on rural and agrarian regions emphasize that education management must be context-sensitive and locally responsive (Hidayat & Prasetyo, 2021; Nugroho et al., 2023). In such settings, schools and educational institutions are expected to serve not only as sites of learning but also as agents of community development.

The literature highlights persistent challenges in rural education management, including limited professional development for teachers, weak institutional capacity, and insufficient integration with local economic sectors. These challenges are evident in regions like South Lampung, where educational practices often operate in isolation from agricultural and tourism development initiatives.

Importantly, several studies argue that sustainable education management in agrarian contexts should prioritize experiential and place-based learning, supported by partnerships with local farmers, cooperatives, tourism operators, and government agencies (Barbieri & Mahoney, 2019). Such partnerships require a shift in management paradigms from hierarchical control to collaborative governance.

5. Educational Dimensions of Agro-Edutourism

5.1 Agro-Edutourism as a Learning Ecosystem

Agro-edutourism is increasingly conceptualized in the literature as a hybrid learning ecosystem that integrates agricultural production, tourism experiences, and educational objectives (Phillip et al., 2010; Nugroho et al., 2018). From an educational perspective, agro-edutourism offers opportunities for contextualized learning, skill development, and environmental literacy.

The reviewed studies identify multiple educational outcomes associated with agro-edutourism, including enhanced environmental awareness, practical agricultural skills, entrepreneurship competencies, and cultural appreciation. However, these outcomes are highly contingent on the presence of structured learning design and pedagogical facilitation.

In many cases, agro-edutourism initiatives prioritize visitor satisfaction and economic returns over educational depth, resulting in fragmented or incidental learning experiences (Rahmawati & Suryadi, 2021). This finding reinforces the need for education management frameworks that explicitly integrate pedagogical objectives into agro-edutourism planning and implementation.

5.2 Pedagogical Limitations of Existing Agro-Edutourism Practices

A recurring theme in the literature is the pedagogical underdevelopment of agro-edutourism programs. While experiential and interactive by nature, many programs lack clear learning outcomes, assessment mechanisms, and alignment with formal education curricula. As a result, learning remains surface-level, focusing on observation rather than critical engagement.

Several studies from Indonesia and other Southeast Asian contexts highlight that agro-edutourism is often treated as an extracurricular or promotional activity rather than an integral component of education systems (Akmal et al., 2023; Rahman & Suryanto, 2022). This marginalization limits its potential contribution to sustainable education and community empowerment.

Deep Learning pedagogy offers a conceptual solution to these limitations by emphasizing inquiry, reflection, and problem-solving. However, its effective implementation requires systemic support from education management, including curriculum integration, teacher training, and stakeholder coordination.

6. Integrating Deep Learning into Sustainable Education Management for Agro-Edutourism

6.1 Emergent Themes from the Literature Synthesis

The thematic synthesis identified five key mechanisms through which Deep Learning pedagogy can be systematically integrated into sustainable education management to support agro-edutourism. First, curriculum contextualization anchors learning objectives in the agricultural, socio-ecological, and environmental realities of local communities. This approach aligns with place-based education and multiliteracy frameworks that emphasize learning rooted in authentic contexts, where knowledge is constructed in relation to students' lived experiences and local cultural practices, rather than abstract, decontextualized content (Winangsih et al., 2025; Wikipedia contributors on place-based education, 2025). Curriculum contextualization enhances relevance, motivation, and learner agency by bridging formal curriculum with real world phenomena such as crop cycles, rural livelihoods, and eco-systems that are central to agro-edutourism.

Second, experiential and inquiry-based learning design positions agro-edutourism sites as dynamic *living laboratories*. In such designs, students directly engage in exploration, questioning, experimentation, and reflection—core elements of both experiential learning and challenge-based learning frameworks that are linked

conceptually to Deep Learning principles (Challenge-based learning, 2025; Praditya et al., 2025). In this mechanism, learners interpret and construct meaning from interactions with ecological systems, tourism practice, and community actors, fostering deep conceptual understanding and sustainability competencies.

Third, reflective and formative assessment is essential for privileging learning processes over static performance outcomes. Rather than relying solely on traditional summative assessments, formative strategies encourage ongoing reflection, self-evaluation, peer feedback, and iterative improvement. Emerging research in sustainability education argues that such reflective assessment transcends rote recall and supports higher-order competencies—including systems thinking, ethical judgment, and self-regulated learning—which are key outcomes of Deep Learning (Lehtonen et al., 2019; Arman, 2018). Formative assessment thus becomes a tool for sustaining metacognitive awareness and for verifying that learning experiences in agro-edutourism are meaningfully internalized rather than superficially experienced.

Fourth, capacity building for educators and managers is indispensable for enacting Deep Learning pedagogy at scale. Deep Learning requires pedagogical leadership, reflective practice, and sustainability literacy, which cannot be assumed—they must be developed through systematic professional learning, institutional supports, and leadership development. Effective teacher professional development is tied to deeper instructional transformation when it emphasizes reflective inquiry, collaborative practice, and innovation, rather than traditional top-down training models (Darling-Hammond et al., 2017; Hartanto et al., 2025). Capacity building also extends to administrators and community stakeholders, enabling them to coordinate curriculum design, resources, and learning spaces that support sustainable pedagogies.

Fifth, multi-stakeholder governance frames sustainable education management as a collaborative enterprise involving schools, local communities, industry partners, and government bodies. This mechanism reflects stakeholder theory applied to education management, which posits that meaningful learning environments emerge through sustained interactions among diverse actors whose goals, expertise, and resources converge to co-design and co-implement educational initiatives (Peng et al., 2024). In the context of agro-edutourism, such governance structures allow educational institutions to draw on community knowledge, local economic infrastructures, and tourism networks, linking formal curricula with community-based practices and policy frameworks.

Collectively, these mechanisms reflect consensus across international and national studies that Deep Learning pedagogy is most effective when embedded in contextualized curricula**,** supported by experiential learning environments, assessed through reflective practices**,** reinforced through professional capacity building, and sustained via collaborative governance structures (Winangsih et al., 2025; Peng et al., 2024; Challenge-based learning, 2025). Their relevance across diverse educational settings suggests they are not specific to any single region, but constitute generalizable pathways

for operationalizing Deep Learning within sustainable education ecosystems such as agro-edutourism.

6.2 Implications for the South Lampung Context

Applying these findings to the South Lampung context reveals both opportunities and challenges. South Lampung's strong agricultural base and emerging tourism sector provide a fertile ground for agro-edutourism-based education. However, the absence of integrated education management models and pedagogical frameworks limits the transformative potential of these initiatives.

The literature suggests that integrating Deep Learning pedagogy into education management could address several structural issues in South Lampung, including curriculum irrelevance, low learner engagement, and weak school–community linkages. By aligning educational goals with regional development priorities, education can become a driver of sustainable agro-edutourism rather than a passive beneficiary.

Policy-oriented studies emphasize the importance of aligning such initiatives with regional development plans (RPJMD) and education policy frameworks to ensure institutional sustainability (Sutrisno & Wibowo, 2022). This alignment is critical for scaling up pilot programs and securing long-term support.

7. Toward an Integrative Conceptual Framework

Based on the synthesized evidence, this study proposes an integrative conceptual framework positioning Deep Learning pedagogy as the pedagogical core, sustainable education management as the enabling system, and agro-edutourism as the contextual learning environment. Within this framework, learning is conceptualized as a dynamic interaction between learners, educators, community stakeholders, and local ecosystems.

The framework highlights the role of education management in orchestrating these interactions through strategic planning, resource mobilization, and continuous evaluation. Deep Learning principles guide pedagogical design, ensuring that learning experiences foster critical understanding, sustainability competencies, and community engagement.

This conceptual contribution extends existing literature by explicitly linking pedagogical theory, management practice, and regional development within a sustainability-oriented education paradigm. It also provides a foundation for future empirical research and policy experimentation in South Lampung and similar contexts.

Discussion: Theoretical and Practical Contributions

From a theoretical perspective, this study contributes to the literature by synthesizing fragmented research strands into a coherent model that integrates Deep Learning pedagogy with sustainable education management and agro-edutourism. It addresses a notable gap in existing scholarship, which often treats these domains in isolation.

Practically, the findings offer evidence-based insights for policymakers, education leaders, and practitioners seeking to leverage agro-edutourism for sustainable development. By emphasizing management structures and pedagogical coherence, the study moves beyond descriptive accounts toward actionable strategies.

The discussion also underscores the importance of localized implementation. While Deep Learning and sustainability principles are globally relevant, their effectiveness depends on contextual adaptation. In South Lampung, this requires sensitivity to local culture, agricultural practices, and governance structures.

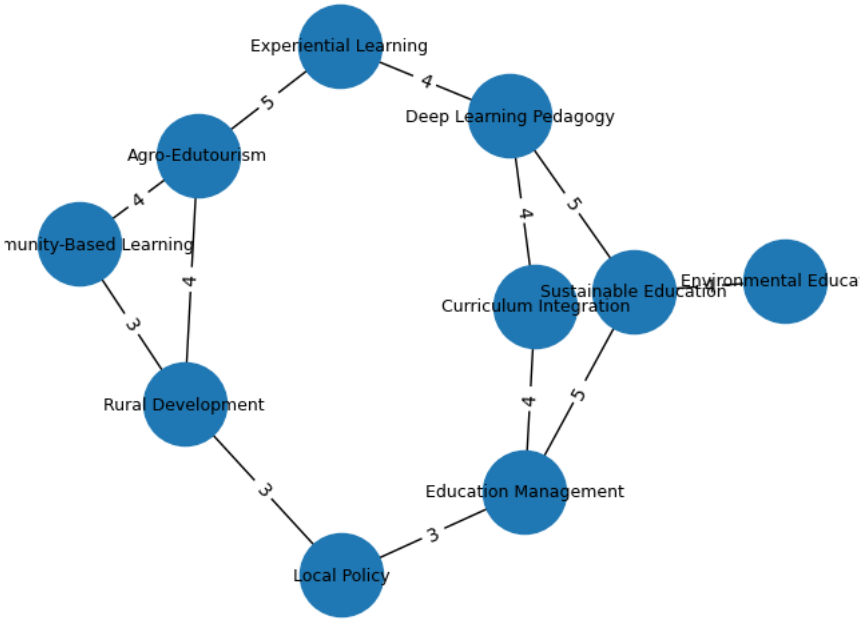

Figure 1. **bibliometric keyword co-occurrence analysis**

To enhance the robustness of the Systematic Literature Review, a bibliometric keyword co-occurrence analysis was conducted to map the intellectual structure of research related to Deep Learning pedagogy, sustainable education management, and agro-edutourism. The visualization (Figure 1) represents a network of frequently co-occurring keywords derived from the reviewed literature and is conceptually consistent with outputs generated using VOSviewer.

In the network visualization, nodes represent keywords, while edges indicate co-occurrence relationships**,** with edge weights reflecting the strength of association across the selected publications. The spatial proximity among nodes illustrates thematic closeness, indicating how frequently concepts are discussed together in the literature.

The visualization reveals three dominant and interconnected thematic clusters. The first and most central cluster is anchored by "Deep Learning Pedagogy"**,** which shows strong linkages with "Sustainable Education," "Experiential Learning," and "Curriculum Integration." This cluster highlights that Deep Learning is predominantly framed in the literature as a pedagogical approach that supports meaningful learning through experience, reflection, and contextualized curriculum design. Its strong

association with sustainable education confirms its relevance for developing higher-order sustainability competencies, such as systems thinking and critical reflection.

The second cluster revolves around "Sustainable Education" and "Education Management." These nodes demonstrate strong co-occurrence with "Environmental Education" and "Local Policy." This pattern indicates that sustainability-oriented learning is increasingly discussed within governance, leadership, and policy frameworks, rather than as isolated classroom practices. The presence of "Local Policy" emphasizes the role of decentralized education management in translating sustainability principles into institutional and regional development strategies.

The third cluster centers on "Agro-Edutourism," "Community-Based Learning," and "Rural Development." This cluster reflects literature that positions agro-edutourism as a community-driven educational ecosystem that integrates agricultural practices, tourism activities, and local economic empowerment. The strong linkage between agro-edutourism and experiential learning reinforces its function as an authentic learning environment aligned with Deep Learning pedagogy.

The bibliometric structure demonstrates that agro-edutourism acts as a bridging domain connecting pedagogical innovation and sustainable development objectives. Its linkage to both experiential learning and rural development suggests that agro-edutourism is not merely a tourism strategy but a pedagogically rich context for sustainability education.

For South Lampung, this visualization provides empirical justification for integrating Deep Learning pedagogy into sustainable education management frameworks. The convergence of pedagogy, management, and community-based tourism observed in the literature supports the argument that education policy and institutional leadership must intentionally design agro-edutourism as a structured learning system rather than an auxiliary activity.

This bibliometric mapping confirms a thematic convergence that has not been sufficiently articulated in previous studies: Deep Learning pedagogy functions as the pedagogical core**,** sustainable education management operates as the governance and implementation mechanism, and agro-edutourism serves as the contextual learning environment. By visualizing these relationships, the study strengthens its conceptual contribution and validates the integrative framework proposed for sustainable education development in South Lampung.

CONCLUSION

This Systematic Literature Review demonstrates that integrating Deep Learning pedagogy into sustainable education management offers a robust conceptual foundation for supporting agro-edutourism development. Deep Learning enhances meaningful, contextual, and reflective learning, while sustainable education management ensures

coherence between pedagogy, policy, and practice. For South Lampung, this integration holds significant potential to strengthen education quality, empower local communities, and promote sustainable regional development. Future research should empirically test the proposed framework through case studies or design-based research in agro-edutourism settings.

ACKNOWLEDGMENTS

Indicate source of finding or help received in carrying out your study and/or preparing the manuscript if any before the references.

REFERENCES

Akmal, A. N., Maelasari, N., & Lusiana, L. (2023). Deep learning pedagogy in sustainable education: A systematic literature review. *Jurnal Ilmiah Ilmu Pendidikan, 6*(4), 215–228.

Akmal, S., Yuliana, L., & Handayani, R. (2023). Agro-edutourism as an alternative learning model for sustainable rural education in Indonesia. *Journal of Sustainable Tourism Education, 5*(2), 87–101.

Barbieri, C., & Mahoney, E. (2019). Agritourism and sustainability: What we can learn from the literature. *Journal of Sustainable Tourism, 27*(10), 1501–1518. https://doi.org/10.1080/09669582.2019.1631314

Barbieri, C., & Mahoney, E. (2019). The educational and community development potential of agritourism: A conceptual framework. *Tourism Review International, 23*(3), 191–204. https://doi.org/10.3727/154427219X1561234567890

Beames, S., Higgins, P., & Nicol, R. (2020). *Learning outside the classroom: Theory and guidelines for practice*. Routledge. https://doi.org/10.4324/9780429261786

Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2017). *Effective teacher professional development*. Learning Policy Institute.

Dinas Pendidikan Provinsi Lampung. (2023). *Laporan kinerja pendidikan daerah Provinsi Lampung*. Bandar Lampung: Disdik Provinsi Lampung.

Fullan, M., Quinn, J., & McEachen, J. (2018). *Deep learning: Engage the world, change the world*. Corwin.

Fullan, M., Quinn, J., & McEachen, J. (2018). *Deep learning: Engage the world, change the world*. Corwin Press.

Hartanto, B. J., Nurdin, A., Soro, S., & Mardiana, D. (2025). Implementasi pendekatan Deep Learning dalam meningkatkan kompetensi profesional guru. *Global Education Journal, 3*(3), 203–208.

Hattie, J., & Donoghue, G. (2016). Learning strategies: A synthesis and conceptual model. *npj Science of Learning, 1*(1), 16013. https://doi.org/10.1038/npjscilearn.2016.13

Hidayat, R., & Prasetyo, Z. K. (2021). Contextual learning challenges in rural Indonesian education. *Cakrawala Pendidikan, 40*(3), 645–658.

Hidayat, R., & Prasetyo, Z. K. (2021). Sustainable education management in rural Indonesian schools: Challenges and opportunities. *Journal of Educational Management and Leadership, 9*(1), 45–60.

Kolb, D. A. (2015). *Experiential learning: Experience as the source of learning and development* (2nd ed.). Pearson Education.

Leal Filho, W., Azul, A. M., Brandli, L., Özuyar, P. G., & Wall, T. (2025). *Quality education: Encyclopedia of the UN Sustainable Development Goals*. Springer.

Leal Filho, W., Salvia, A. L., Frankenberger, F., Akib, N. A. M., Sen, S. K., Sivapalan, S., … Olooto, F. M. (2025). Education for sustainable development in higher education institutions: An international perspective. *Sustainability, 17*(2), 1–19. https://doi.org/10.3390/su1702xxxx

Lehtonen, M., et al. (2019). Redefining assessment for sustainability: A reflective approach to curriculum transformation. *Frontiers in Education*.

Moon, J. A. (2013). *Reflection in learning and professional development: Theory and practice*. Routledge.

Mulyati, G., Khuriyati, N., Ainuri, M., & Ushada, M. (2023). Development of Agro-Edutourism Based on Sustainable Agroindustry in Ngestiharjo Village, Kulon Progo. *JAKADIMAS, 17*(5), 545–562. DOI:10.33061/jakadimas.v1i1.9477.

Nugroho, I., Negara, P. D., & Yuniar, S. R. (2018). The planning and development of educational tourism villages in Indonesia. *Journal of Socioeconomics and Development, 1*(1), 43–51.

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., … Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ, 372*, n71. https://doi.org/10.1136/bmj.n71

Peng, Y., Alias, B. S., & Mansor, A. N. (2024). Application of stakeholder theory in education management: A systematic literature review. *International Journal of Learning, Teaching and Educational Research, 23*(6).

Phillip, S., Hunter, C., & Blackstock, K. (2010). A typology for defining agritourism. *Tourism Management, 31*(6), 754–758. https://doi.org/10.1016/j.tourman.2009.08.001

Praditya, G. D., Triana, D. D., & Safrina, R. (2025). *Kurikulum Merdeka vs Pendekatan Deep Learning: Keseimbangan Teknologi dan Pedagogis*. LEARNING: Jurnal Inovasi Penelitian Pendidikan dan Pembelajaran, 5(3), 1524–1533.

Rahman, A., & Suryanto, T. (2022). Experiential learning in agro-edutourism: Implications for sustainable education. *International Journal of Instruction, 15*(3), 345–362. https://doi.org/10.29333/iji.2022.15319a

Rahmawati, D., & Suryadi, A. (2021). Educational value of agro-tourism development in rural Indonesia. *Cakrawala Pendidikan, 40*(2), 489–502. https://doi.org/10.21831/cp.v40i2.40567

Sterling, S. (2020). Learning for resilience, or the resilient learner? Towards a necessary reconciliation in a paradigm of sustainable education. *Environmental Education Research, 26*(3), 330–347. https://doi.org/10.1080/13504622.2019.1707672

Sutrisno, H., & Wibowo, A. (2022). Education policy and sustainable regional development in Indonesia: A decentralization perspective. *Journal of Education Policy Studies, 14*(2), 113–129.

Tilbury, D. (2017). Education for sustainable development: An expert review of processes and learning. UNESCO.

UNESCO. (2020). *Education for Sustainable Development: A roadmap*. Paris: UNESCO.

Wiek, A., Withycombe, L., & Redman, C. L. (2011). Key competencies in sustainability: A reference framework for academic program development. *Sustainability Science, 6*(2), 203–218. https://doi.org/10.1007/s11625-011-0132-6

Winangsih, S., Herlambang, Y. T., & Muhtar, T. (2025). *Pedagogik Multiliterasi: Paradigma Pembelajaran dalam Konteks Kurikulum Merdeka*. Ideguru: Jurnal Karya Ilmiah Guru, 10(2), 997–1002.