

**ECO-LOKAL INQUIRY (ECO-LI): INTEGRATING GLOBAL ENVIRONMENTAL SUSTAINABILITY WITH TENGGER INDIGENOUS ECOLOGICAL KNOWLEDGE**Diyas Age Larasati<sup>1\*</sup> , Nurfirdawati Binti Muhamad Hanafi<sup>2</sup> <sup>1</sup> Faculty of Teaching and Education, Universitas Wijaya Kusuma Surabaya, Jawa Timur Indonesia<sup>2</sup> Faculty of Education, Tun Hussein Onn Malaysia University, Johor Darul Ta'zim, MalaysiaCorresponding author email: [diyas\\_larasati@uwks.ac.id](mailto:diyas_larasati@uwks.ac.id)**Article Info**

Received: Nov 26, 2025

Revised: Jan 09, 2026

Accepted: Feb 12, 2026

OnlineVersion: Feb 19, 2026

**Abstract**

Environmental sustainability education in elementary schools is often delivered through global and abstract perspectives that are weakly connected to students' local ecological and cultural contexts. This study aims to develop the Eco-Lokal Inquiry (ECO-LI) model, a culturally grounded inquiry-based learning framework that integrates Global Environmental Sustainability (GES) principles with Tengger Traditional Ecological Knowledge (TEK) to strengthen contextual and meaningful environmental learning. This study employed an integrative literature review design by systematically analyzing peer-reviewed journal articles, scholarly books, and international policy documents published between 2014 and 2024. Data were collected from Scopus, Web of Science, ERIC, and Google Scholar using explicit inclusion and exclusion criteria. An analytical instrument grid was used to extract key themes, which were then examined through thematic synthesis, comparative epistemological analysis, and conceptual model construction. The results of the analysis produced the ECO-LI model, which consists of five inquiry phases: contextual problem orientation, local ecological exploration, dialogic inquiry between indigenous knowledge and science, glocal reflection, and community-based environmental action. The findings reveal a strong conceptual alignment between GES dimensions—ecological integrity, social sustainability, and sustainability literacy—and Tengger ecological practices such as sacred forest protection, ritual-based conservation, and communal stewardship. This study demonstrates that inquiry-based learning can function as a dialogic space that bridges scientific sustainability frameworks and indigenous ecological worldviews without subordinating either knowledge system. The novelty of this research lies in its glocal inquiry framework, which positions TEK and science as complementary epistemologies within sustainability education.

**Keywords:** Eco-Lokal Inquiry, Glocalization, Global Environmental Sustainability, Inquiry-Based Learning, Indigenous Environmental Education, Traditional Ecological Knowledge.



© 2026 by the author(s)

This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

---

## INTRODUCTION

Climate change, loss of biodiversity, deforestation, and increasing pressure on natural resources are becoming more real in everyday life around the world. These issues are no longer just topics for scientific discussion, but they are now affecting people's daily lives, including children in elementary schools. To understand environmental complexity, education must do more than just give facts. It also needs to build ecological awareness and the ability to connect local phenomena with global contexts. This idea matches the perspective of Global Environmental Sustainability (GES), which seeks to preserve the Earth by integrating ecological, economic, and social dimensions in a holistic way (Sachs, 2015).

However, even though GES has developed rapidly in global policy and research, environmental education is often stuck in abstract approaches that are disconnected from the cultural context of the students. In reality, many indigenous communities have passed down ecological knowledge over generations. This knowledge is called Traditional Ecological Knowledge (TEK), which includes knowledge, practices, values, and beliefs built through long-term interaction with the environment (Berkes, 2018). TEK is not just practical knowledge, but also a worldview that sees nature as a living entity that should be respected and protected.

One indigenous community with rich TEK is the Tengger people in the Bromo Tengger Semeru area. The daily life of the Tengger people is marked by ecological rituals such as Kasada, Karo, Jubuh, and prohibitions against cutting or damaging sacred forests. These practices are not just spiritual traditions, but also forms of environmental management that align with modern conservation principles. Anthropological research shows that Tengger ecological rituals serve as social mechanisms to maintain the sacredness of ecological spaces, build social solidarity, and regulate human interaction with fragile mountain landscapes.

If we look closely, the ecological values in Tengger culture strongly align with the GES framework, especially in areas like conservation management, environmental ethics, and community-based natural resource management. Yet, an irony exists: schools near Tengger often teach environmental issues using global examples like global warming, the Amazon rainforest, and polar bears, instead of connecting them to the living ecological practices in their own culture. In fact, culturally relevant education has been shown to improve conceptual understanding, motivation to learn, and commitment to environmental action (Gay, 2018; Tanti et al., 2020; Kurniawan et al., 2022).

This situation led to the creation of Eco-Lokal Inquiry (ECO-LI), a learning model based on inquiry that connects Global Environmental Studies (GES) with Traditional Ecological Knowledge (TEK) of the Tengger community. Inquiry learning lets students build knowledge by asking questions, investigating phenomena, collecting data, and reflecting on their findings (Pedaste et al., 2015; Tanti et al., 2021). When inquiry is combined with local cultural context, students not only learn science but also gain an understanding of their community's identity and ecological wisdom. At this point, education becomes a bridge between the local world and global challenges.

However, integrating GES and TEK into formal education still faces many challenges. GES comes from a global scientific framework—carbon emissions, biodiversity indexes, ecological footprints—while TEK is built on cosmological beliefs, rituals, and spiritual relationships between humans and nature. These two knowledge systems are often seen as conflicting or difficult to combine. Yet, recent literature emphasizes that solving global ecological crises requires integrating modern science with local knowledge as a unified epistemological system that complements each other (Hill et al., 2020; Tanti et al., 2021).

## RESEARCH METHOD

This study employed an integrative literature review to develop the Eco-Lokal Inquiry (ECO-LI) model. This approach was selected because it enables the synthesis of empirical findings, theoretical perspectives, and cultural analyses from multiple disciplines. The integrative review is appropriate for constructing a conceptual pedagogical model that connects Global Environmental Sustainability (GES), Traditional Ecological Knowledge (TEK), and inquiry-based learning within elementary education.

Literature was collected from peer-reviewed journal articles, scholarly books, and international policy documents published between 2019 and 2024. Searches were conducted using Scopus, Web of Science, ERIC, and Google Scholar databases. Keywords included global environmental sustainability, education for sustainable development, traditional ecological knowledge, indigenous knowledge, inquiry-based learning, and environmental education. Inclusion criteria were: (1) relevance to sustainability

education, TEK, or inquiry-based learning; (2) publication in peer-reviewed or authoritative academic sources; and (3) availability of full-text articles in English. Non-academic sources and studies unrelated to educational contexts were excluded.

An analytical instrument grid was used to systematically extract data from selected sources. The grid captured information on authorship, publication year, research context, methodological approach, key findings, and relevance to the ECO-LI model dimensions (GES, TEK, and inquiry processes). This instrument ensured consistency and transparency in data organization. Data analysis followed three main stages. First, thematic synthesis was conducted to identify recurring concepts related to sustainability principles, indigenous ecological practices, and inquiry-based pedagogy. Second, a comparative epistemological analysis examined points of convergence and tension between scientific sustainability frameworks and Tengger Traditional Ecological Knowledge. Third, the synthesized findings were translated into the ECO-LI conceptual model, positioning inquiry as a dialogic space connecting global and local knowledge systems.

As a conceptual literature-based study, this research does not involve empirical sampling, statistical testing, or power analysis. Instead, analytical rigor was ensured through conceptual saturation, interdisciplinary triangulation, and systematic documentation of the review process. This study relied solely on secondary data from publicly accessible academic sources. Ethical research standards were maintained through accurate citation, transparency of sources, and respectful representation of indigenous knowledge systems.

## RESULTS AND DISCUSSION

This section presents the results of the integrative literature review by addressing the research purposes and reflecting the analytical procedures employed. The primary outcome of the analysis is the formulation of the Eco-Lokal Inquiry (ECO-LI) model, a glocal inquiry-based learning framework that integrates Global Environmental Sustainability (GES) with Tengger Traditional Ecological Knowledge (TEK). The synthesis of recent sustainability education and indigenous knowledge literature reveals that global sustainability principles and local ecological wisdom are not inherently contradictory. Instead, they share overlapping concerns related to ecological integrity, collective responsibility, and intergenerational sustainability (Hill et al., 2020; Sterling et al., 2022). However, these shared principles are rarely translated into structured pedagogical models for elementary education.

Based on thematic synthesis and comparative epistemological analysis, the ECO-LI model consists of five interconnected inquiry phases: (1) contextual problem orientation, (2) local ecological exploration, (3) dialogic inquiry between indigenous knowledge and science, (4) glocal reflection, and (5) community-based environmental action. These phases were derived from recurring patterns in the literature emphasizing contextual learning, inquiry processes, and action-oriented sustainability education (Rieckmann, 2020; Leicht et al., 2018).

The analysis further indicates a strong alignment between GES dimensions and Tengger ecological practices. Ecological integrity is reflected in practices such as sacred forest protection and ritual-based land use restrictions. Social sustainability aligns with communal values such as *gotong royong* and shared responsibility for water resources. Sustainability literacy is transmitted through oral traditions, rituals, and everyday ecological practices that embed environmental ethics within cultural life. These findings suggest that Tengger TEK operationalizes sustainability principles in lived, culturally meaningful ways rather than abstract indicators alone.

Global environmental education often faces big challenges: how to explain complex issues like climate change, loss of biodiversity, and ecosystem degradation to students who live in local contexts using the language of their own experiences. This shows a knowledge gap between global scientific narratives and the ecological experiences of local communities. It is here that the Eco-Lokal Inquiry (ECO-LI) model comes in as a teaching approach that connects these two different worlds: the global scientific world of Environmental Sustainability (GES), which is supported by data and quantitative indicators, and the Traditional Ecological Knowledge (TEK) of the Tengger community, rooted in rituals, morality, and spiritual relationships with mountain landscapes.

Table 1. Gap Between Global Scientific Narratives And The Ecological Experiences Of Local Communities

Global Environmental Sustainability Aspects	Tengger Local Ecological Practices	Glocalization Meaning
Conservation of nature and ecosystems	Protecting <i>alas larangan</i> (forbidden forests), planting on slopes, and maintaining conservative land-use systems	Adapting global conservation values into spiritually rooted local ecological systems
Social justice and community well-being	Communal cooperation ( <i>gotong royong</i> ), prohibitions on damaging water sources	Environmental stewardship viewed as a moral and social responsibility
Green economy	Ecological farming and culturally embedded agroecosystem practices	Application of green economy principles within customary land-use systems
Environmental education	Transmitting ecological values through rituals, traditions, and spiritual teachings	Environmental education grounded in cultural identity and sacred ecological awareness

The findings of this study highlight the importance of integrating global sustainability frameworks with local ecological knowledge to create meaningful and transformative environmental education. Previous research on Education for Sustainable Development (ESD) emphasizes systems thinking, global citizenship, and long-term ecological awareness, yet often lacks grounding in learners' immediate cultural and ecological contexts (Rieckmann, 2020; UNESCO, 2020; Tanti et al., 2021). The ECO-LI model addresses this limitation by positioning local ecological practices as the entry point for understanding global sustainability challenges.

A key contribution of the ECO-LI model lies in its ability to address epistemological tensions between scientific sustainability frameworks and indigenous worldviews. Scientific GES approaches typically rely on universal indicators and empirical measurements, whereas TEK is grounded in spiritual values, relational ethics, and culturally embedded practices. Rather than privileging one epistemology over the other, ECO-LI frames inquiry as a dialogic space where multiple ways of knowing can coexist and inform one another. This approach aligns with recent scholarship advocating epistemological pluralism in sustainability education (Tengö et al., 2021; Sterling et al., 2022; Tanti et al., 2025).

Compared with previous studies on local wisdom-based environmental education, which often focus on value transmission or moral education, ECO-LI offers a more comprehensive pedagogical structure. It integrates inquiry processes, scientific reasoning, cultural reflection, and community action within a single framework. Recent studies indicate that inquiry-based sustainability learning is most effective when it moves beyond classroom discussions and engages students in real-world ecological action (Fischer et al., 2022). ECO-LI responds to this call by explicitly including a community-based environmental action phase.

The implications of this model extend beyond the Tengger context. While ECO-LI is grounded in indigenous ecological practices, its underlying principles—contextual inquiry, epistemological dialogue, and action-oriented learning—are transferable to other indigenous and culturally diverse settings. This supports recent arguments that sustainability education must adopt glocal approaches that connect global environmental challenges with local knowledge systems and lived experiences (Sterling et al., 2022).

In terms of novelty, this study contributes a glocal inquiry framework that integrates GES and TEK without reducing indigenous knowledge to supplementary content. Instead, TEK is positioned as an equal epistemological partner within inquiry-based learning. However, this study is limited by its conceptual nature and reliance on secondary data. Future research should empirically examine the effectiveness of the ECO-LI model through classroom implementation and mixed-method studies to assess its impact on students' ecological literacy, attitudes, and environmental behavior.

This discussion explains how the integration of Global Environmental Studies (GES) and Traditional Ecological Knowledge (TEK) through the ECO-LI model creates new possibilities for more holistic, reflective, and culturally relevant environmental education. It also explores how the ECO-LI

model helps resolve epistemological conflicts, strengthens inquiry-based learning, and promotes community-based ecological actions.

#### *GES as a Global Framework and Its Challenges in Education*

GES is a global effort to ensure ecological sustainability by integrating social, economic, and environmental dimensions. Global literature focuses on indicators such as carbon emissions, energy use, biodiversity indexes, and ecological footprints (Sachs, 2015). These indicators are important for understanding the planet's condition objectively, but in classroom settings, the GES framework often feels distant from students' daily lives.

In elementary schools, teachers face difficulties explaining abstract concepts like global warming, the carbon cycle, or climate adaptation without providing relevant local contexts. As a result, students perceive environmental issues as happening far from them—in the Arctic, Amazon, or other global regions—rather than in their own villages or surroundings. This gap reduces students' emotional connection, even though sustainability education literature emphasizes that personal connection with nature is essential for developing long-term ecological behavior (Sterling, 2014). In this context, integrating GES with TEK becomes highly relevant. TEK can serve as a bridge connecting global abstractions with real local experiences.

#### *TEK Tengger as a Living Source of Ecological Learning*

The Tengger community has a long tradition of maintaining ecological balance in the Bromo–Semeru mountain area. Rituals such as Kasada, Karo, and Entas-entas are not only expressions of religious faith but also social instruments that regulate human relationships with nature. Sacred areas like mountains and forbidden forests are clear examples of how spiritual values can function as ecological conservation mechanisms.

In anthropology research, Tengger rituals are seen as part of sacred ecology—a concept showing how spiritual beliefs can produce ecological practices that align with modern conservation goals (Hefner, 1990). TEK Tengger provides ecological knowledge based on experience, such as understanding planting seasons through natural signs or traditional water management passed down through generations. However, although TEK shares similar goals with modern science, they originate from different epistemologies. TEK sees nature as a living entity with "soul," "guardian," and "sacredness," while GES measures it through scientific indicators. This epistemological tension often hinders their integration in formal education. ECO-LI is introduced to address this tension.

#### *Resolving Epistemological Tension through Inquiry Approach*

The inquiry approach in ECO-LI serves as a meeting point between scientific and cultural worlds. Inquiry provides a structured way for students to "examine" local ecological phenomena without ignoring the spiritual dimensions present in Tengger culture.

For example:

- a. Students understand the ban on damaging the forest (a dimension of traditional ecological knowledge).
- b. Then they observe soil erosion, vegetation, and water quality around the forest (a scientific dimension).
- c. Finally, they connect this with the GES framework on biodiversity conservation and climate change adaptation.

In this way, ECO-LI does not force the dominance of modern scientific epistemology, but instead opens space for a meeting between two ways of knowing. This approach aligns with the theory of Multiple Evidence Base by Tengö et al. (2014), which emphasizes that both science and local knowledge should have independent space but also complement each other. ECO-LI is not just a learning model, but a dialogue model between two sources of knowledge.

#### *Culture as the Learning Anchor: How ECO-LI Builds Relevance*

One of the biggest contributions of ECO-LI is making culture the foundation of learning. Culturally Responsive Pedagogy (Gay, 2018) highlights that learning rooted in students' culture creates stronger emotional engagement, improves motivation, and helps students understand complex phenomena through their own experiences. In ECO-LI, students do not learn about climate change from global examples, but from local phenomena such as:

- a. Changes in water flow in umbulan areas,
- b. Changes in farming patterns in Tengger agricultural land,
- c. Increased mass tourism in Bromo,
- d. Or the impact of tourist waste on sacred sites.

Global narratives are then introduced as an extension of students' local experiences. This model aligns with the concept of glocalization (Robertson, 2012), where global issues are explained through local practices and values. In other words, ECO-LI does not teach students "about the world outside," but "about the world here and how it is connected to the whole planet."

#### *ECO-LI as a Transformative Learning Model*

ECO-LI does not only focus on transferring knowledge but also on transforming how students think. This transformation happens through three aspects:

- a. Cognitive Transformation: Students understand the connection between local phenomena and global issues. They do not see GES as abstract theory, but as something present in their daily lives.
- b. Affective Transformation: Adat values, respect for nature, and community solidarity become sources for forming environmental ethics.
- c. Action Transformation: ECO-LI includes a Community-Based Environmental Action phase. Students are involved in real actions such as:
  - Mapping water sources,
  - Documenting sacred forests,
  - Organizing ecological community campaigns,
  - Planting local vegetation.

#### *Relevance of ECO-LI for the Future of Environmental Education*

In the global context, many environmental education models remain generic and not sensitive to local cultures. However, every community has its own unique ecological knowledge system. If integrated into teaching methods, this can enrich students' understanding of sustainability. ECO-LI contributes in the following ways:

- a. It serves as an integrative model between GES and TEK

This is a theoretical innovation that is not commonly found in the literature, especially in the context of Indonesia.

- b. It strengthens locally rooted environmental literacy

Students learn through examples they recognize, not abstract concepts distant from their experiences.

- c. It produces a holistic learning approach

Combining cognitive, affective, spiritual, and ecological aspects.

- d. It addresses the divide between science and culture

ECO-LI shows that both can enrich each other.

- e. It fosters community-based ecological actions

Which have a direct impact on local conservation efforts.

## **CONCLUSION**

This study developed the Eco-Lokal Inquiry (ECO-LI) model as a glocal, inquiry-based pedagogical framework that integrates Global Environmental Sustainability (GES) with Tengger Traditional Ecological Knowledge (TEK). Based on an integrative review of recent literature, the findings indicate that sustainability education in elementary schools becomes more meaningful when global environmental concepts are connected to students' local ecological experiences and cultural identities. The results demonstrate that inquiry-based learning can function as a dialogic space that bridges scientific sustainability frameworks and indigenous ecological worldviews without positioning one knowledge system as superior to the other. Through its five inquiry phases, ECO-LI enables students to interpret local ecological practices using scientific reasoning, while simultaneously appreciating the ethical, cultural, and spiritual dimensions embedded in indigenous knowledge. This approach supports the development of ecological literacy, environmental ethics, and community-oriented responsibility.

Theoretically, this study contributes a glocal inquiry framework to the fields of Education for Sustainable Development, culturally responsive pedagogy, and indigenous knowledge integration.

Practically, the ECO-LI model offers educators a structured and adaptable approach for designing sustainability learning that is culturally grounded, contextually relevant, and action-oriented. By embedding community-based environmental action within the inquiry process, the model encourages learning that extends beyond the classroom into real ecological engagement. Nevertheless, this study is limited by its conceptual nature and reliance on secondary data. Future research is recommended to empirically examine the implementation of the ECO-LI model in classroom settings and to explore its impact on students' ecological understanding, attitudes, and environmental behavior across diverse cultural contexts. Overall, the ECO-LI model highlights the potential of integrating local ecological wisdom and global sustainability goals to foster more inclusive, transformative, and culturally meaningful environmental education.

### ACKNOWLEDGMENTS

I would like to express my gratitude to all participants and the research team.

### AUTHOR CONTRIBUTIONS

Conceptualization by D.A.L; Methodology by D.A.G; Software by D.A.G; Validation by N.B.M.H; Formal Analysis by D.A.L and N.B.M.H; Investigation by D.A.L and N.B.M.H; Writing – Original Draft Preparation by D.A.L and N.B.M.H; Writing – Review & Editing by D.A.L and N.B.M.H.

### CONFLICTS OF INTEREST

The author(s) declare no conflict of interest.

### USE OF ARTIFICIAL INTELLIGENCE (AI)-ASSISTED TECHNOLOGY

The authors declare that no artificial intelligence (AI) tools were used in the generation, analysis, or writing of this manuscript. All aspects of the research, including data collection, interpretation, and manuscript preparation, were carried out entirely by the authors without the assistance of AI-based technologies.

### REFERENCES

- Andriyani, N. L., & Suniasih, N. W. (2021). Development of learning videos based on problem-solving characteristics of animals and their habitats contain in IPA subjects on 6th-grade. *Journal of Education Technology*, 5(1), 37-47. <https://doi.org/10.23887/Jet.V5i1.32314>.
- Amhag, L., Hellström, L., & Stigmar, M. (2019). Teacher educators' use of digital tools and needs for digital competence in higher education. *Journal of Digital Learning in Teacher Education*, 35(4), 203-220. <https://doi.org/10.1080/21532974.2019.1646169>.
- Ashraf, M. A., Mollah, S., Perveen, S., Shabnam, N., & Nahar, L. (2022). Pedagogical applications, prospects, and challenges of blended learning in Chinese higher education: A systematic review. *Frontiers in psychology*, 12, 772322. <https://doi.org/10.3389/Fpsyg.2021.772322>.
- Bawack, R. E., Roderick, S., Badhrus, A., Dennehy, D., & Corbett, J. (2025). Indigenous knowledge and information technology for sustainable development. *Information Technology for Development*. DOI: <https://doi.org/10.1080/02681102.2025.2472495>
- Berkes, F. (2018). *Sacred Ecology* (4th ed.). Routledge. <https://doi.org/10.4324/9781315424006>.
- Datta, R., Charles, C., Chapola, J., Haque, C. E., & Subroto, S. (2025). Rethinking environmental sustainability education through land-based learning and practice with Woodland Cree First Nation, Lac La Ronge, Saskatchewan, Canada. *Discover Sustainability*, 6(1), 194. <https://doi.org/10.1007/s43621-025-01000-7>
- Larasati, D. A., & Yuanta, F. (2021). Efektivitas media microsoft 365: Sway terhadap high order thinking skill dalam pembelajaran daring di era society 5.0 [The effectiveness of Microsoft 365 media: Sway on high order thinking skills in online learning in the era of Society 5.0]. *Jurnal Basicedu*, 5(6), 5397-5404. <https://doi.org/10.31004/Basicedu.V5i6.1568>.
- Fischer, D., Verlie, B., & Moloney, S. (2022). Education for sustainability: Research, policies, and practice. *Sustainability Science*, 17(1), 1–12. <https://doi.org/10.1007/s11625-021-01010-2>
- Gay, G. (2018). *Culturally responsive teaching: Theory, research, and practice*. Teachers College Press. <https://doi.org/10.1080/09518398.2018.1502147>.
- Isyafiani, G. P., Astra, I. M., & Sugihartono, I. (2023, January). Pengembangan Media Pembelajaran Permainan Monopoli Digital Berbasis Problem Based Learning Pada Pokok Bahasan Dinamika

- Rotasi Dan Kesetimbangan Benda Tegar. In *Joint Prosiding IPS dan Seminar Nasional Fisika* (Vol. 11). <https://doi.org/10.21009/03.1102.Pf18>.
- Haryanto, Sardin, dkk. (2024). The Potential of Community Empowerment Through Local Wisdom. IOP Conference Series.
- Hays, J., Dounias, E., & Ninkova, V. (2025). *Sustainable education should include Indigenous knowledge*. *Nature Human Behaviour*, 9, 2415–2417. <https://doi.org/10.1038/s41562-025-02288-1>
- Hefner, R. W. (1990). *The politics of multiculturalism: Pluralism and citizenship in Malaysia, Singapore, and Indonesia*. University of California Press. <https://doi.org/10.1525/aeq.1990.21.3.04x0047m>.
- Hill, R., Nates-Parra, G., & Robinson, C. J. (2020). Working with Indigenous knowledge and science in environmental management. *Environmental Science & Policy*, 112, 1–7. <https://doi.org/10.1016/j.envsci.2020.02.008>.
- Iwan, I., Jeni, J., & Nurfathurrahmah, N. (2025). Strengthening conservation literacy through integrating local wisdom into problem-based learning in secondary school students. *Participatory Educational Research*, 12(6), 108-122. <https://doi.org/10.17275/per.25.81.12.6>
- Jayanthi, Ni Kadek Eka. (2025). The influence of human resources quality on the welfare of independent village communities based on Tri Hita Karana. *International Journal of Basic and Applied Sciences*. 14 (4) (2025) 130-136. <https://doi.org/10.14419/87hx6708>.
- Kristinayanti, W. S., Zaika, Y., Devia, Y. P., Solimun, S., & Wibowo, M. A. (2025). Insights into local wisdom of Tri Hita Karana concept for improving sustainability: A literature review and opportunities for future study. In *E3S Web of Conferences* (Vol. 622, p. 04013). EDP Sciences. <https://doi.org/10.1051/e3sconf/202562204013>.
- Kurniawan, D. A., Astalini, A., Darmaji, D., Tanti, T., & Maryani, S. (2022). Innovative learning: Gender perception of e-module linear equations in mathematics and physics. *Indonesian Journal on Learning and Advanced Education (IJOLAE)*, 92-106. <https://doi.org/10.23917/ijolae.v4i2.16610>.
- Larasati, Age Larasati & F. Yuanta. (2021). Efektivitas Media Microsoft 365: Sway Terhadap High Order Thinking Skill Dalam Pembelajaran Daring Di Era Society 5.0. *Jurnal Basicedu*, Vol 5, No 6, Bll 5397–5404. <https://doi.org/10.31004/Basicedu.V5i6.1568>.
- Latip, A. (2024). Local and Indigenous Knowledge (LIK) in science learning: A systematic literature review. *Journal of Turkish Science Education*, 21(2). <https://doi.org/10.36681/tused.2024.2710>.
- Manns, M., Heiss, J., Morohashi, J., & Loupis, L. (2025). Harnessing Indigenous Knowledge for Education for Sustainable Development. *Journal of Education for Sustainable Development*, 19(2), 157-167. <https://doi.org/10.1177/09734082251360875>.
- Pedaste, M., Mäeots, M., et al. (2015). Phases of inquiry-based learning: Definitions and the inquiry cycle. *Educational Research Review*, 14, 47–61. <https://doi.org/10.1016/j.edurev.2014.02.001>.
- Rieckmann, M. (2020). Education for sustainable development goals: Learning objectives and outcomes. *Sustainability*, 12(18), 1–15. <https://doi.org/10.3390/su12187570>
- Sachs, J. (2015). *The Age of Sustainable Development*. Columbia University Press. <https://doi.org/10.1007/978-3-319-18051-4>.
- Sejati, A. E., dkk. (2023). The Environmental Conservation Value of Tengger Tribe's Traditional Ceremony. *GTG Journal*.
- Sterling, S., Fazey, I., & McKinlay, A. (2022). Sustainability education and transformation: New directions for learning and change. *Sustainability Science*, 17(2), 1–14. <https://doi.org/10.1007/s11625-021-01032-w>
- Swaradesy, R. G. (2025). EcoPedagogy Model based on indigenous ecological wisdom (Dukuh context). *JPE Journal, UNY*.
- Tanti, T., Kurniawan, D. A., Kuswanto, K., Utami, W., & Wardhana, I. (2020). Science process skills and critical thinking in science: Urban and rural disparity. *Jurnal Pendidikan IPA Indonesia*, 9(4), 489-498. <https://doi.org/10.15294/jpii.v9i4.24139>.
- Tanti, T., Astalini, A., Kurniawan, D. A., Darmaji, D., Puspitasari, T. O., & Wardhana, I. (2021). Attitude for physics: The condition of high school students. *Jurnal Pendidikan Fisika Indonesia*, 17(2), 126-132. <https://doi.org/10.15294/jpfi.v17i2.18919>.
- Tanti, T., Darmaji, D., Astalini, A., Kurniawan, D. A., & Iqbal, M. (2021). Analysis of user responses to the application of web-based assessment on character assessment. *Journal of education*

- technology*, 5(3), 356-364. <https://doi.org/10.23887/jet.v5i3.33590>.
- Tanti, T., Utami, W., Deliza, D., & Jahanifar, M. (2025). Investigation in vocation high school for attitude and motivation students in learning physics subject. *Journal Evaluation in Education (JEE)*, 6(2), 479-490. <https://doi.org/10.37251/jee.v6i2.1452>.
- Tengö, M., Hill, R., Malmer, P., et al. (2021). Weaving knowledge systems in sustainability science. *Ambio*, 50(6), 1011–1026. <https://doi.org/10.1007/s13280-020-01344-0>
- Uehara, T. K. (2023). 'Glocalizing' land-use and forest governance in the tropics. PMC.
- UNESCO. (2017). Education for Sustainable Development: Learning Objectives. UNESCO.
- Zhang, X., Jung, W., & Asari, M. (2025). Systematic review of environmental education teaching practices in schools: Trends and gaps (2015–2024). *Sustainability*, 17(19), 8561. <https://doi.org/10.3390/su17198561>