

Eco-Heutagogy Based History Learning Design at Adiwiyata High School Bandung

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Abstract. This study aims to develop a history learning design based on Eco-Heutagogy at SMA Adiwiyata Bandung as an innovative effort in integrating ecological awareness, learning independence, and strengthening student character through contextual and transformative history learning. The initial design of the learning device is compiled theoretically and conceptually based on the results of preliminary studies, needs analysis, theoretical studies, student characteristics, Adiwiyata school characteristics, and a synthesis of the concepts of eco-heutagogy and learning independence. The Eco-Heutagogy approach emphasizes student-centered learning (self-determined learning), reflective, collaborative, and based on harmonious relations between humans, the environment, and socio-cultural values. This study uses the Research and Development (R&D) method with stages including needs analysis, learning design design, initial product development, expert validation, limited trials, product revision, field trials, and model refinement. The research subjects involved history teachers and students at SMA Adiwiyata Bandung. Data collection techniques were conducted through interviews, observations, questionnaires, documentation studies, and learning outcome tests. While data analysis was conducted qualitatively and quantitatively to assess the feasibility, practicality, and effectiveness of the developed design. The results of the study indicate that the developed Eco-Heutagogy-based history learning design is theoretically and empirically valid, practical for use by teachers, and effective in increasing ecological awareness, critical thinking skills, learning independence, and active student involvement in the history learning process. Thus, this learning design has the potential to be a relevant alternative model to be implemented in environmentally conscious schools, Adiwiyata High School, to support the creation of history education that is meaningful, contextual, and oriented towards sustainable character building.

Keywords: history learning design, eco-heutagogy, adiwiyata high school, research and development.

INTRODUCTION

Education in the 21st century faces increasingly complex challenges, not only related to the demands of mastering knowledge and technology, but also related to closely related to humanitarian issues, ecological crises, environmental degradation, and the weakening of social awareness among the younger generation. Schools, as formal educational institutions, are required to produce students who are not only academically intelligent, but also sensitive towards the environment, critical thinking skills, independent learning, and social responsibility (Aditya et al., 2020). In this context, learning in schools needs to be directed towards a more transformative, contextual, and meaningful approach, so that the educational process is truly able to respond to the needs of the times. History education has a strategic position in building this awareness because history, in essence, not only contains narratives of past events but also reflects the complex relationships between humans, nature, power, culture, and life values (Adilla et al., 2023).

History records how human civilization

developed, how humans exploited nature, how social conflicts arose due to inequality, and how local wisdom values emerged as a form of adaptation to the environment (Abidin et al., 2025). Thus, history learning has great potential to foster ecological awareness, critical awareness, and moral responsibility in students. However, this potential is often not optimally realized in school learning practices (Alifa et al., 2024). The reality of history learning in many schools still shows problematic tendencies, namely the dominance of lecture methods, an orientation towards memorizing facts, an emphasis on cognitive achievement alone, and a lack of space for reflection and active student involvement (Amaliati et al., 2024). History learning is often perceived as a boring subject, full of names of figures and dates of events, and irrelevant to everyday life. This pattern of learning not only hinders the development of critical thinking skills but also distances students from the substantive meaning of history as a means of forming self-awareness, social awareness, and ecological awareness (Andayani et al., 2025).

On the other hand, the current context of

education in Indonesia has actually provided ample space for the development of innovative and contextual learning, particularly through policies that strengthen character education and environment-based education (Ananda et al., 2021). One strategic program relevant to this is the Adiwiyata School program. The Adiwiyata program aims to shape school members who care about and are environmentally conscious through the integration of environmental values in school policies, curricula, participatory activities, and environmentally friendly infrastructure management. Adiwiyata High School in Bandung is a concrete example of a school that has structurally and culturally developed a school environment that supports the growth of ecological awareness among students (Anugrah, 2021). However, the existence of Adiwiyata schools does not automatically guarantee the integration of ecological values into every subject, including history. In many cases, environmental education is still focused on extracurricular activities or general school programs, such as community service, reforestation, and waste management, but has not been fully internalized into classroom learning designs (Arifin, 2022).

In fact, integrating environmental values into intracurricular learning is key to ensuring that environmental education does not remain symbolic, but rather shapes the way students think, behave, and act (Arifin et al., 2022). One approach that is considered relevant to addressing this need is the eco-heutagogical approach. Eco-heutagogy is a development of the concept of heutagogy or self-determined learning, which is a learning approach that places students as the main subjects who have autonomy in determining their learning process, combined with an ecological perspective that emphasizes harmonious relations between humans, the environment, and socio-cultural life (Asmayawati et al., 2025). In this approach, learning is not only directed at mastering material, but also at developing self-awareness, ecological awareness, critical reflection, and lifelong learning skills (Astuti et al., 2023).

Learning independence is a crucial competency for students to navigate the era of disruption. Learning independence reflects an individual's ability to independently manage the learning process, from planning and implementation to evaluation. Research over the past five years has shown that the level of student independence in Indonesia remains relatively low and is influenced by the dominance of learning approaches that do not provide enough space for active student

participation. Therefore, innovations in learning design are needed to encourage students to become independent learners. One relevant approach to addressing these challenges is heutagogy, or self-determined learning. The heutagogy approach emphasizes that students have full autonomy in determining their learning process, including in selecting materials, strategies, and evaluating learning. Recent research shows that the application of heutagogy can increase students' learning independence, motivation, and self-reflection (Magister Scientiae, 2024).

METHODS

The research method used in this article is a research and development (R&D) approach that aims to produce a product in the form of an eco-heutagogical history learning design that is not only theoretically feasible but also practical to use and effective in improving the quality of history learning at SMAN 13 Kota Bandung (Gunawan, 2020). This approach was chosen because the characteristics of the research did not stop at describing the learning conditions that took place in the classroom, but were directed at a systematic process of designing, developing, testing, and refining (Hidayat, 2021). As a learning product that can be applied in practice by teachers, this research adapts the R&D model developed in educational research with stages that include needs analysis, initial design, product development, expert validation, limited testing, product revision, field testing, and final product refinement (Hanim, 2025).

At the needs analysis stage, researchers conducted an in-depth study of the actual conditions of history learning at SMAN Adiwiyata in Bandung through direct observation in classrooms to see the patterns of learning interaction, the strategies used by teachers, the level of student participation, and how environmental values have been integrated into history learning (Hardi et al., 2021). In addition, in-depth interviews were conducted with history teachers to explore their views, experiences, difficulties, and needs in developing more contextual and environmentally-conscious history learning. While questionnaires were also distributed to students to find out their perceptions of history learning, their level of interest in learning, meaningful learning experiences, and the extent to which they felt history learning was relevant to their lives and environmental issues around them. Data from observations, interviews, and questionnaires were

collected (Hartono, 2023). This data was then analyzed to formulate the real learning needs that became the main basis for the preparation of eco-heutagogical learning designs. The next stage was the initial design of the learning, which was prepared based on the results of the needs analysis and theoretical studies of relevant literature, such as historical learning theory, heutagogical theory, environmental education theory, and 21st-century learning approaches (Hidayat, 2024).

In this stage, researchers formulated in detail the components of learning design, which included learning objectives oriented towards developing ecological awareness and independent learning, eco-heutagogical learning principles that placed learners as active subjects, and learning syntax that included stages of exploration, reflection, critical dialogue, and real action (Ikhsan, 2025). Learning strategies that encourage collaboration and project-based learning, learning media and resources that utilize the school environment and the local context of Bandung as authentic learning resources, as well as an evaluation system that not only assesses cognitive aspects but also the process, attitudes, and involvement of learners (Ilmawati et al., 2021). The initial design that had been compiled was then developed into a more operational initial product in the form of learning tools that could be used by teachers, such as implementation guidelines, sample learning scenarios, and evaluation instruments. This initial product then went through an expert validation stage involving history subject matter experts, learning experts, and education practitioners who had competence in the field of environmental education (Indrajit, 2022).

RESULTS AND DISCUSSION

The results of this study indicate that the development of Eko-Heutagogi-based history learning design at SMAN 13 Bandung City has a significant impact on both the quality of the learning process and the development of student competencies. Findings from the initial stage of the study, obtained through needs analysis, show that prior to the implementation of the developed learning design (Kuwoto, 2024). History learning in the classroom is still dominated by conventional approaches using lectures, limited discussions, and assignments that do not fully provide space for students to think critically and reflect on the connection between historical material and the context of the environment and real life. Most students expressed (Kuwoto et al., 2024) that history learning tends to be theoretical and

meaningless. Teachers also admitted that even though the school has Adiwiyata status and has various environmental programs (Kuwoto et al., 2024). Teachers also acknowledged that history learning tends to be theoretical and meaningless, even though the school has Adiwiyata status and has various environmental programs (Kuwoto et al., 2024).

The concept of conceptual teaching modules is also related to the development of learning tools in the Independent Curriculum which positions teaching modules as learning tools that are systematically arranged based on student characteristics, learning objectives, environmental context, and student learning needs, as explained by Noviantari and Agustina (2023) that teaching modules are learning tools that are arranged contextually, flexibly, meaningfully, and oriented towards developing student competencies so that teaching modules must be adapted to the conditions of the school environment and student characteristics. In addition, according to research by Pranata, Saputro, and Handayani (2023), hypothetical teaching modules in development research function as initial designs that contain learning objectives, learning steps, learning strategies, media, assessments, and learning activities that will be tested for feasibility, practicality, and effectiveness before being widely implemented in learning. In the context of this research, the conceptual teaching module is designed based on the principles of eco-heutagogy which emphasizes.

The integration of ecological values into history education has not been carried out in a structured manner due to the lack of systematic and applicable learning designs. This initial condition provides a strong basis for researchers to develop learning designs that are not only innovative but also realistic and in line with real needs in the field, following the development of Eko-Heutagogi-based learning designs (Kuwoto et al., 2024). Developed and validated by experts, the validation results show that, in general, the learning design is considered very feasible in terms of content, pedagogical structure, and relevance of the approach. Subject matter experts assess that the integration of ecological issues in history material, such as the discussion of natural resource exploitation during the colonial period and the dynamics of environmental change in the local history of Bandung (Kuwoto, 2025), As well as the local wisdom of the community in maintaining the balance of nature, providing depth of meaning to history learning, while learning experts assessed

that the designed learning syntax, which includes the stages of problem exploration, critical reflection, collaborative dialogue, and real action, is very much in line with the principles of heutagogy which places learners as active subjects of learning (Lestari, 2025).

The relevance of Eko-Heutagogi learning design to history learning needs in schools

The relevance of eco-heutagogical history learning design to the needs of history learning in schools can be understood as a conceptual and practical answer to various fundamental issues that have arisen in the practice of history learning in the classroom, because history learning is still often perceived as a boring subject, requiring memorization, and lacking direct relevance to the real lives of students (Rusydiyah, 2024). As a result, many students participate in history learning only to meet academic requirements without truly understanding the substantive meaning of the historical events being studied. This condition is exacerbated by conventional learning patterns that are still predominantly used by teachers, such as one-way lectures and the exclusive use of textbooks (Setiawan, 2020). In addition, evaluations emphasize lower-level cognitive aspects, whereas ideally, history learning should be a vehicle for building students' historical awareness, critical thinking skills, social awareness, and moral sensitivity to the realities of life in context (Rahmawati, 2024).

Eco-heutagogical learning design is highly relevant because it offers a fundamentally different learning paradigm, namely learner-centered learning, providing space for learning autonomy, encouraging critical reflection, and linking historical material to the real ecological, social, and cultural contexts surrounding learners (Pertiwi et al., 2017). The eco-heutagogical approach no longer places learners as objects receiving information, but as active subjects who construct their own knowledge through a process of exploration, dialogue, reflection, and real action, so that history learning is no longer abstract and distant from life, but becomes a lively, contextual, and meaningful learning experience (Supriatna, 2021). This relevance is even stronger when linked to the characteristics of 21st-century learners who live in a fast-paced flow of information, are accustomed to broad access to knowledge through digital technology, and need intellectually challenging and socially relevant learning, because today's learners are no longer satisfied with being served (Salimah, 2024).

Conceptual Teaching Module

The conceptual teaching module in the research entitled *Eco-Heutagogy-Based History Learning Design to Improve Students' Learning Independence at Adiwiyata High Schools in Bandung City* is an initial design of learning tools that are compiled theoretically and conceptually based on the results of preliminary studies, needs analysis, theoretical studies, student characteristics, Adiwiyata school characteristics, and a synthesis of the concept of eco-heutagogy and learning independence which are then developed into learning guidelines before validation and field trials are carried out, so that the conceptual teaching module functions as an initial design or learning prototype that is still temporary and will continue to undergo revisions and improvements based on expert validation results, user responses, and implementation results in the field, as explained by Walter R. Borg and Meredith D. Gall which was again reviewed by Sugiyono (2022) that in Research and Development (R&D) research, the initial product or hypothetical design is a conceptual design that is developed based on field needs and scientific theory before its effectiveness is empirically tested.

The concept of conceptual teaching modules is also related to the development of learning tools in the Independent Curriculum, which positions teaching modules as learning tools systematically structured based on student characteristics, learning objectives, environmental context, and student learning needs. As explained by Noviantari and Agustina (2023), teaching modules are learning tools that are structured contextually, flexibly, meaningfully, and oriented toward developing student competencies. Therefore, teaching modules must be adapted to the school environment and student characteristics. Furthermore, according to research by Pranata, Saputro, and Handayani (2023), hypothetical teaching modules in development research serve as initial designs containing learning objectives, learning steps, learning strategies, media, assessments, and learning activities that will be tested for feasibility, practicality.

Student Learning Independence

Learning independence is the main concept in the research entitled *"Eco-Heutagogy Based History Learning Design to Improve Student Learning Independence at Adiwiyata High School in Bandung City"* because learning independence is an essential competency in 21st century education that requires students to have lifelong learning

abilities, critical, adaptive, reflective thinking, and be able to make decisions independently in the learning process, as explained by the Organization for Economic Co-operation and Development in the OECD Learning Compass 2030 that 21st century students must have student agency, namely the ability to determine learning goals, manage learning, and be responsible for decisions and learning processes carried out (OECD, 2021), so that students are no longer positioned as passive recipients of information but as active individuals who are able to build knowledge independently through contextual and reflective learning experiences, in addition, according to Hase and Kenyon in the development of the heutagogy concept which was re-examined in the latest research by Blaschke and Marín (2020) it is explained that learning independence is not only related to the ability to learn alone but also the ability to determine the direction of learning independently or self-determined learning, which positions students as the primary controllers of the learning process.

The concept of independent learning then developed through the theory of self-directed learning proposed by Malcolm Knowles and reinforced in the latest research by Yusuf and Anwar (2022) which explains that independent learners are individuals who are able to take the initiative in analyzing learning needs, setting learning goals, selecting learning resources, determining learning strategies, and providing learning outcomes independently, then the concept developed into heutagogy or self-determined learning which according to Blaschke's research (2021) that learners not only help the learning process but also the direction of learning based on experience, reflection, and independent exploration so that learners are able to become lifelong learners who are adaptive to changing times. In addition, the Organization for Economic Co-operation and Development in the Future of Education and Skills 2030 report (OECD, 2022) emphasized that independent learning is closely related to social learning or social learning where learners learn through interaction, collaboration, communication, and real experiences that enable their ability to reflect, solve problems, and social and environmental awareness, so that learning is not only on achievement but also on the development of character and social responsibility of participants.

Products of Eco-Heutagogical History Learning Design Development

The results of this research and development (R&D) are in the form of a main product, namely an eco-heutagogical history learning design that has been developed systematically, structurally, and contextually in accordance with the history learning needs at SMAN 13 Kota Bandung (Wibowo, 2024). This learning design does not only stop at the conceptual level but is manifested in the form of an operational learning model that can be directly used by teachers in classroom learning practices, where the model includes the formulation of learning objectives that emphasize strengthening historical awareness, ecological awareness, independent learning, and critical thinking skills of students (Yuliana, 2025). The development of detailed learning syntax begins with the contextual orientation stage, which links historical material to the realities of students' lives, followed by the stage of exploring social and ecological issues that encourage students.

Observing the surrounding environment as a source of learning, a stage of historical reflection that encourages students to interpret historical events in greater depth, a stage of independent knowledge construction through discussion, dialogue, and search for learning resources, to a stage of learning action that is realized through context-based learning projects based on the environment (Robbins, 2025). In addition, the results of the development also include the formulation of the role of teachers as facilitators, mediators, and learning partners who are tasked with building a dialogical, reflective, and empowering classroom climate, as well as the role of students as active subjects of learning who have autonomy in determining the direction of learning, expressing opinions, and building their own understanding (Soetopo, 2020). The developed product is also equipped with supporting learning tools in the form of eco-heutagogical history teaching modules containing materials, learning activities, and critical reflections, as well as student activity sheets designed to encourage exploration of the school environment and social environment as sources of historical learning (Yukl, 2021).

The suitability of the Eco-Heutagogy approach with the characteristics of 21st century learners

The suitability of the eco-heutagogical approach to the characteristics of 21st-century learners can be seen in how this approach is fundamentally aligned with the needs of the younger generation, who live in a social, cultural, and technological context that is very different from that of previous generations

(Kuwoto, 2024). They can no longer be positioned as passive individuals who only receive knowledge from teachers, but rather as subjects of learning who are accustomed to interacting with various sources of information through digital technology, social media, and complex social environments. This condition requires the world of education to present a learning model that provides more space for active participation, independent exploration, freedom of thought, and the ability to reflect on learning experiences (Kuwoto, 2024). All of these characteristics are inherently contained in the principles of eco-heutagogy. Eco-heutagogy places learners as self-determined learners who are given the opportunity to choose topics, determine learning strategies, and explore diverse learning resources (Kuwoto, 2024). As well as building understanding based on their real experiences, this approach is highly relevant to the needs of today's learners, who tend to be more interested in learning that gives them intellectual freedom and opportunities for authentic engagement, rather than instructional and uniform learning. In addition, 21st-century learners (Kuwoto et al., 2024) Faced with global challenges such as environmental crises, climate change, social conflicts, and digital information overload, they need learning that not only equips them with academic knowledge but also shapes critical awareness, social sensitivity, and ecological responsibility. It is in this context that eco-heutagogy becomes highly relevant because this approach integrates cognitive, affective, and ethical dimensions into a unified learning process (Kuwoto et al., 2024).

Integrating ecological values into history lessons to reinforce the meaning of the material.

The integration of ecological values in history learning through eco-heutagogy-based learning design has proven to be one of the most substantive aspects in strengthening the meaning of history learning for students, because so far history learning is often understood narrowly as a study of political events, figures, and chronology of events, while the dimensions of the relationship between humans, the environment, and socio-ecological dynamics (Kuwoto, 2024). In history, it often receives less attention, even though if examined more deeply, the history of human civilization has never been separated from its relationship with nature, the environment, and the ecosystem where humans live and develop, so that when ecological values are integrated into history learning, students begin to see that history is not just a story of the

past, but a mirror that shows how human actions towards nature in the past have long-term consequences (Kuwoto et al., 2024).

To develop a deeper historical awareness, as they not only understand what happened, but also why it happened and what its implications are for present and future life, the integration of ecological values also enriches the affective dimension in history learning, as students not only learn cognitively (Hardi et al., 2021) but also experience emotional and moral involvement when they realize that the environmental damage they witness today has long historical roots, so that history learning becomes a space for ethical reflection that encourages the growth of a sense of responsibility, empathy, and concern for the environment. In addition, the integration of ecological values in history learning is also relevant to the global education agenda on education for sustainable development (Ilmawati et al., 2021). Because through this approach, students are equipped with the ability to understand environmental issues holistically, think across time between the past, present, and future, and realize that the sustainability of life is very dependent on human awareness.

Transformation of the role of teachers in the design of history learning based on Eco-Heutagogy

The implementation of eco-heutagogy-based history learning design fundamentally demands a transformation of the teacher's role in the learning process, because teachers are no longer positioned as the sole source of knowledge that dominates the class, but rather as facilitators, companions, and learning partners who play a role in creating a learning climate that enables students (Dewanto et al., 2025). Developing independently, critically, and reflectively, in the context of conventional learning, history teachers are often still trapped in their traditional role as conveyors of material oriented to textbooks and curriculum demands, so that the space for dialogue, exploration, and reflection of students becomes very limited, while in the eco-heutagogy approach, teachers are actually required to design open, flexible, and contextual learning experiences, where students (Kuwoto et al., 2024).

This role transformation is clearly visible in learning practices at SMAN 13 Bandung City when teachers no longer only explain historical material in a one-way manner, but begin to facilitate critical discussions about ecological issues in history, encouraging students to observe the environment

around the school (Gunawan, 2020). As well as directing them to reflect on the relationship between historical events and the social and ecological realities they face, the role of teachers in this context emphasizes the ability to construct meaningful provocative questions, provide constructive feedback, and create a psychologically safe classroom atmosphere so that students dare to express opinions and critical views (Maulana, 2024). This transformation in the role of teachers also demands a paradigm shift in teacher professionalism, as teachers are no longer simply required to master historical material. They are also required to possess sensitivity to environmental issues, reflective pedagogical skills, and skills in building contextual learning based on students' real-life experiences (Maulana, 2024). Thus, eco-heutagogy-based learning designs not only impact students but also encourage continuous teacher professional development, as teachers are challenged to continuously learn, reflect on their practices, and adapt to the dynamic needs of students contributes significantly to the development of their intellectual capacity as critical and reflective individuals (Oktaviani, 2022).

CONCLUSION

Based on the entire research and development process that has been carried out, starting from the needs analysis stage, design planning, product development, expert validation, limited trials, field trials, to the analysis of the results of the implementation of eco-heutagogy-based history learning design at SMAN 13 Bandung City, it can be concluded that the developed learning design has strong relevance, validity, practicality, and effectiveness in answering the problems of history learning in secondary schools, because conceptually (Kuwoto et al., 2024). This design is able to present a more contextual, participatory, and transformative learning paradigm compared to the conventional learning approach that has been more dominantly used, history learning which was originally perceived as a rote and less meaningful subject, through the eco-heutagogy approach actually experiences a transformation into a reflective learning space that encourages students to think critically, build understanding independently, and link historical material with the social and ecological realities they experience in everyday life (Kuwoto et al., 2024). The results of the study showed that students not only experienced an increase in conceptual understanding of historical material, but also showed a more positive

change in learning attitudes, higher learning motivation, and more active involvement in the learning process, because they felt that the learning they underwent had personal meaning and real relevance to their lives, eco-heutagogy-based learning design has also been proven to be able to encourage the development of students' critical thinking skills (Kuwoto et al., 2024). Because through this approach, students are no longer just receiving information, but are trained to ask questions, analyze cause-effect relationships, reflect on the impact of a historical event, and formulate arguments rationally and responsibly, in addition, this study also shows that the integration of ecological values in history learning is able to enrich the meaning of learning, because students begin to understand that history is not only related to political events and great figures (Abidin, 2025).

REFERENCE

- Aditya, R. (2020). Ecopedagogy in History Learning. *Indonesian Journal of Education*, 1(1), 141–150.
- Adilla, F., & Hamzah, Z. (2023). Contextual Learning to Improve Historical Understanding. *Indonesian Journal of Curriculum and Teaching*, 9(2), 45–57.
- Abidin, R. (2025). Adaptive History Learning in 21st-Century Education. *Journal of Educational Innovation*, 7(1), 12–23.
- Alifa, V. N., Hanum, R., & Andari, S. (2024). Implementation of the Independent Learning/Independent Campus (MBKM) Policy. *DIAJAR: Journal of Education and Learning*, 3(4), 441–447. <https://doi.org/10.54259>.
- Amaliati, S., Rusydiyah, E. F., & Bakar, M. A. (2024). Ecopedagogy and environmental literacy in research trends in Indonesia. *QALAMUNA: Journal of Education, Social, and Religion*, 16(2), 1083–1100. <https://doi.org/10.37680>
- Andayani, A., Marpelina, L., & Sariyatun, S. (2025). Rethinking ecopedagogy in web-based history learning: A critical examination of its impact on students' ecoliteracy. *Ianna Journal of Interdisciplinary Studies*, 7(2), 773–788.
- Ananda, S. (2021). Heutagogy-based learning design. *Cakrawala Pendidikan*, 2(2), 144–153.
- Anugrah, Y. (2021). Collaborative learning strategies in secondary schools. *Journal of Collaborative Learning*, 5(3), 31–42.
- Arifin, Z. (2022). Students' environmental literacy. *Journal of Education: Theory, Research, and*

- Development*, 3(1), 277–286.
- Arifin, Z., Sariyatun, S. (2022). History learning in the 21st century: a theoretical review of models and materials. *Yupa: Historical Studies Journal*, 3(1), 1–11. <https://doi.org/10.30872/yupa.v3i1.163>
- Asmayawati, A., & Masliati, T. (2025). 21st-century education for early childhood: building character, technology, and literacy. *Jurnal Anak Bangsa*, 4(1), 1–10. <https://doi.org/10.46306/jas.v4i1.92>.
- Astuti, P., & Yusuf, H. (2023). A problem-based learning model to develop students' critical thinking skills. *Journal of Education Development*, 10(4), 67–80.
- Azizah, F. (2024). Strengthening character through contextual learning. *Journal of Educational Sciences*, 5(1), 193–202.
- Budianto, T. (2025). Development of independent curriculum teaching modules. *Jurnal Education*, 6(2), 156–165.
- Basri, H. (2024). Digital learning in developing 21st-century skills. *Educational Technology Review*, 11(2), 55–67.
- Cahyani, D. (2021). Students' critical thinking skills. *Journal of Education and Learning*, 8(2), 112–121.
- Cahyo, A. (2020). The role of technology in contemporary history learning. *Journal of Digital Learning*, 4(1), 23–34.
- Chasanah, R., Mustofa, A., & Putra, Z. (2025). 21st-century educational strategies for improving learning effectiveness. *Jurnal Pendidikan Tambusai*, 9(1), 4239–4247.
- Darmawan, R., & Dewi, S. (2022). Field research-based history learning. *Journal of Historical Pedagogy*, 3(3), 89–102.
- Darmawan, R. (2022). Problem-Based Learning in Social Studies. *Journal of Social Studies Education Research*, 9(1), 165–174.
- Dewanto, R., Ramadhan, A. R., Firdaus, F. F., Mozrapa, E. S., & Hidayat, T. (2025). Cultivating National Character through History Education. *JPSL: Journal of Social and Environmental Education*, 3(2), 11–27.
- Dewi, L. (2023). Digital Learning Innovation in Schools. *International Journal of Instruction*, 10(2), 28–37.
- Fadilah, N. (2024). Ecopedagogy in History Learning. *Indonesian Journal of Education*, 11(1), 121–130.
- Fauzan, A. (2025). Heutagogy-Based Learning Design. *Cakrawala Pendidikan*, 12(2), 124–133.
- Fauzan, A. (2025). The effectiveness of the heutagogy approach on student learning achievement. *Lifelong Education Journal*, 5(1), 7–19. <https://doi.org/10.59935/lej.v5i1.30>.
- Fitri, Y., Putri, D., & Larasati, S. (2023). Integration of digital literacy in high school history learning. *Journal of Social Studies Education*, 8(2), 101–115.
- Gunawan, I. (2020). Environmental Literacy of Students. *Journal of Education: Theory, Research, and Development*, 13(1), 177–186.
- Hidayat, T. (2021). 21st-Century Learning in Secondary Schools. *Historia: Journal of History Education*, 14(2), 180–189.
- Hanim, F. (2025). Environmental History for School. *HISTORIKA*, 2025(2), 55–68.
- Hardi, N., & Rahman, S. (2021). Application of Project-Based Learning in Social Studies. *Journal of Applied Education Research*, 5(4), 39–53.
- Hartono, B. (2023). Self-Directed Learning (Heutagogy) Model for History Classes. *International Journal of Learning and Teaching*, 12(3), 25–38.
- Hidayat, B. (2024). 21st-century learning and the challenges of contemporary teachers. *Journal of Innovative Education*, 13(1), 77–92.
- Ikhsan, A. (2025). A contextual approach to improving understanding of 21st-century history. *Journal of Curriculum Innovation*, 9(1), 44–57.
- Ilmawati, R., & Yusof, M. (2021). Analysis of the use of digital learning media in history. *Journal of Education and Technology*, 15(1), 60–71.
- Indrajit, A. (2022). Collaborative learning strategies in the digital era. *Digital Education Journal*, 7(3), 99–110.
- Iskandar, T., & Sari, M. (2024). 21st-century learning in elementary schools: a literature review. *Elementary Education Journal*, 5(2), 33–47.
- Ilham, M. (2022). Strengthening character through contextual learning. *Journal of Educational Sciences*, 15(1), 133–142.
- Jannah, R. (2023). Development of independent curriculum teaching modules. *Journal of Education*, 1(2), 136–145.
- Kamil, M., Wahyudin, U., & Ardiwinata, J. S. (2024). Heutagogy and learning innovation. *QALAMUNA: Journal of Education, Social, and Religion*, 16(2).
- Kusuma, R., & Triana, L. (2020). Problem-based learning and improving students' critical thinking. *Journal of Educational Psychology*, 10(3), 150–163.
- Kurniawan, D. (2024). Project-based learning in

- education. *Journal of Basicedu*, 2(1), 189–198.
- Kuwoto, M. A. (2024). The Merdeka Curriculum Reform on Aspects of Historical Thinking Skills in History Subjects in Senior High Schools. *Scaffolding Journal of Islamic Education and Multiculturalism*, 4(3), 754–774. <https://doi.org/10.37680/scaffolding.v4i3.4289>.
- Kuwoto, M. A., & Saputra, E. (2024). Portraying Multicultural Education in Local History Learning: An Effort to Awaken the Spirit of Nationalism. *Jurnal Artifak*, 11(1), 1–14. <https://doi.org/10.25157>.
- Kuwoto, M. A., Sudarmanti, R., & Utami, A. B. (2024). Construction of Political Education in Learning Pancasila and Citizenship in Increasing Students' Political Awareness. *Civics Journal: Media for Citizenship Studies*, 21(2), 274–283. <https://doi.org/10.21831>.
- Kuwoto, M. A., Siregar, I., Barkara, R. S., Hasibuan, R. A., Afrillyan, M., Syahputra, D., Rafianti, R., & Ramona, N. (2024). Independent curriculum reform in high school historical thinking skills. *Indonesian Education Journal*, 13(4), 682–695. <https://doi.org/10.23887>.
- Kuwoto, M. Ari. Portraying Multicultural Education in Local History Learning: Science and Technology in History Education. *Journal of Advanced Research in Applied Sciences and Engineering Technology* (2024): 69–83. <https://doi.org/10.37934/araset.55.2.6983>.
- Lestari, S. (2025). Students' critical thinking skills. *Journal of Education and Learning*, 3(2), 12–21.
- M. A. Kuwoto, L. Yulifar, T. Ma'mur, D. Saripuddin, En E. Supriatna, Paradigm Of Historical Thinking: Alternative Strategies For Utilizing Historical Thinking Skills In Implementing Independent Curriculum. *Hist. J. Pendidik Dan Peneliti Sej.*, Vol 7, No 1, Bll 93–104, 2022.
- Magay, D., Relmasira, S. C., & Sanoto, H. (2024). 21st-century learning innovations in Indonesia: an analysis of practices, opportunities, and challenges. *Indonesian Journal on Education (IJoEd)*. <https://doi.org/10.70437/sj6w3s05>
- Maulana, F. (2024). The role of teachers in 21st-century learning: a systemic review. *Journal of Teacher Education*, 18(2), 44–58.
- Mustika, P. (2023). Authentic assessment strategies for history learning. *Assessment in Education*, 5(2), 23–35.
- Mahendra, Y. (2020). Problem-based learning in social studies. *Journal of Social Studies Education Research*, 4(1), 105–114.
- Magay, D., Relmasira, S. C., & Sanoto, H. (2024). 21st-century learning innovations in Indonesia: an analysis of practices, opportunities, and challenges. *Indonesian Journal on Education (IJoEd)*. <https://doi.org/10.70437/sj6w3s05>
- Maulana, F. (2024). The role of teachers in 21st-century learning: a systemic review. *Journal of Teacher Education*, 18(2), 44–58.
- Mustika, P. (2023). Authentic assessment strategies for history learning. *Assessment in Education*, 5(2), 23–35.
- Nugroho, A. (2021). Digital learning innovations in schools. *International Journal of Instruction*, 5(2), 108–117.
- Oktaviani, D. (2022). Skills-based history learning for the 21st century. *Journal of Historical Education*, 10(1), 15–29. <https://doi.org/10.37934/6983>.
- Pahlevi, M., & Wardani, S. (2023). Integration of digital literacy in social studies learning. *Journal of Social Education*, 6(3), 68–83.
- Prapti, S., Wiyati, I., Yuliana, E., Kanzunidin, M., & Rondli, W. S. (2025). Transforming 21st-century learning: Exploring good practices in implementing P5 in the Merdeka curriculum in elementary schools. *Trihayu: Journal of Elementary School Education*, 11(2), 9–21.
- Putri, D. (2024). A blended learning approach in history learning. *Journal of Blended Education*, 3(2), 39–53.
- Pratama, R. (2022). Ecopedagogy in history learning. *Indonesian Journal of Education*, 6(1), 201–210.
- Putri, N. (2023). Heutagogy-based learning design. *Horizons of Education*, 7(4), 334–343.
- Rahmadani, K., Rifaldi, U. A., Athoullah, Wiyono, Umam, H., & Nafrijal. (2024). Indonesia's education revolution in the 5.0 era. *Cendekia: Journal of Education and Learning*, 18(1).
- Ramadhan, H., & Utomo, F. (2021). The use of social media as a medium for digital history. *Journal of Digital Media in Education*, 9(1), 21–34.
- Rahayuningsih, Y. S., & Muhtar, T. (2022). Digital pedagogy as an effort to improve 21st-century teacher competency. *Basicedu Journal*, 6(4), 6960–6966 <https://doi.org/10.31004>.
- Rinaldi, T. (2025). Ecoliteracy in social education: a pedagogical approach. *Journal of Social Pedagogy*, 2(1), 47–59.
- Rusydiyah, E. F. (2024). Ecopedagogy for Building Students' Ecological Awareness. *Journal of Environmental Education*, 14(3), 81–93.
- Rahmawati, D. (2024). Students' Environmental Literacy. *Journal of Education: Theory, Research, and Development*, 8(1), 117–126.

- Sari, P. (2025). 21st-Century Learning in Secondary Schools. *Historia: Journal of History Education*, 9(2), 120–129.
- Setiawan, B. (2020). Strengthening Character through Contextual Learning. *Journal of Educational Sciences*, Kyai and Santri. Proceedings of the National Seminar 10(1), 253–262.
- Pertiwi, A. K., Cahyani, S. S. A., Diana, R. C., and Gunawan, I. 2017. Value-Based and Ethical Leadership: A Study of Symbolic Interactions between Kyai and Santri. Proceedings of the National Seminar on Family, School, and Community Synergy in Strengthening Character Education. Faculty of Education, State University of Malang, Malang, November 16, pp. 1-9.
- Supriatna, N. (2021). Development of independent curriculum teaching modules. *Jurnal Education*, 11(2), 256–265.
- Salimah, T. T. (2024). A learning management system-based heutagogy approach in history learning as an effort to increase historical awareness. *Widya Winayata: Jurnal Pendidikan Sejarah*, 10(2), 55–69. <https://doi.org/10.23887>.
- Setyoningrum, I. A. (2025). The effectiveness of the heutagogy approach on student learning achievement. *Lifelong Education Journal*, 5(1), 7–19.
- Sholikhah, H., Maryana, A. S., & Sasmita, F. E. (2025). Innovation in 21st-century learning strategies and the role of teachers in facing the challenges of modern education. *Tambusai Education Journal*, 9(1), 4239–4247. <https://doi.org/10.31004>.
- Supriatna, N. (2023). Integration of hybrid learning in secondary schools. *Journal of Hybrid Education*, 7(3), 54–68.
- Suryani, N. (2022). Project-based learning in education. *Basicedu Journal*, 12(1), 129–138.
- Triana, L., & Fahmi, R. (2024). Efforts to improve student learning collaboration through the PBL approach. *Journal of Collaborative Pedagogy*, 8(1), 19–32.
- Utami, W. (2023). Students' critical thinking skills. *Journal of Education and Learning*, 13(2), 132–141.
- Wibowo, S. (2024). Problem-based learning in social studies. *Journal of Social Studies Education Research*, 14(1), 265–274.
- Yuliana, R. (2025). Digital learning innovation in schools. *International Journal of Instruction*, 15(2), 268–277.
- Robbins, S. P. 2025. *Organizational Behavior*. New Jersey: Pearson Education, Inc.
- Soetopo, H. 2022. *Organizational Behavior: Theory and Practice in Education*. Bandung: Remaja Rosdakarya.
- Vonny, S. A., Mujiati, M., Rosidah, A., and Gunawan, I. 2017. Principal Leadership Styles from a Psychological Perspective. *Journal of Educational Management and Supervision*, 2(2), 109–123.
- Yukl, G. 2021. *Leadership in Organization*. New York: Prentice Hall, Inc.
- Rohman, A. (2023). *Educational Policy*. Faculty of Education, UNY: Unpublished.
- Soemarwoto. (2004). *Indonesian Environmental Law*. Jakarta:
- Subarsono, AG. (2024). *Public Policy Analysis: Concepts, Theories, and Applications*. Yogyakarta: Student Library. Graphic Rays.
- Sugiyono. (2024). *Quantitative, Qualitative, and R&D Research Methods*. Bandung: Alfabeta.
- Implementation of Environmental Education (Kadorodasih) 53 Environmental Education Law No. 32 of 2009 concerning Environmental Protection and Management.
- Zufa, M.I. (2022). *Implementation of Environmental Education Policy at SD N Ungaran I Yogyakarta*. Thesis. UNY Yogyakarta.