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Curriculum Innovation for 21st Century Learning: Implementing the Merdeka Curriculum in Primary and Islamic Elementary Schools in Palangka Raya

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ABSTRACT	ARTICLE INFO
<p>This study explores the implementation of the <i>Merdeka Curriculum</i> as an educational innovation aimed at developing 21st-century learning competencies in primary and Islamic elementary schools in Palangka Raya, Indonesia. Using a qualitative descriptive approach, data were collected through classroom observation, teacher interviews, and document analysis in selected schools implementing the Merdeka Curriculum. The findings reveal that both the <i>Kurikulum Operasional Satuan Pendidikan (KOSP)</i> and <i>Kurikulum Operasional Madrasah (KOM)</i> were systematically designed and endorsed through participatory processes involving school leaders, teachers, and local education authorities. The Merdeka Curriculum promotes flexible, student-centered, and contextualized learning experiences, integrating local wisdom, project-based learning, and character development through the <i>P5</i> and <i>P5PPRA</i> projects. Despite these innovations, challenges remain in teachers' pedagogical readiness, digital competence, and assessment literacy. The study concludes that curriculum innovation for 21st-century learning requires continuous professional development, collaboration among educators, and institutional support to strengthen adaptive and innovative teaching practices in diverse learning environments.</p> <p>© 2025 UPI-UPSI</p>	<p>Article History: <i>Submitted/Received 19 Nov 2025</i> <i>First Revised 21 Dec 2025</i> <i>Accepted 4 Jan 2026</i> <i>First Available online 10 Jan 2026</i> <i>Publication Date 10 Jan 2026</i></p> <hr/> <p>Keyword: 21st-century skills, curriculum innovation, Islamic elementary schools, merdeka curriculum, primary education</p>

1. INTRODUCTION

The curriculum is the "*soul*" of education that determines the direction, content, and quality of the learning process at each level of education. As the foundation of human development, the curriculum must always be evaluated and adjusted to social, cultural, economic, and technological dynamics to remain relevant to the needs of the times (Barlian et al., 2022; Marisa, 2021; OECD, 2019). Education does not stand alone, but rather becomes the main pillar of national development that is interconnected with various sectors of life. Therefore, curriculum reform is not only a technical need, but also a nation's strategy in preparing a generation that is adaptive to global changes. OECD (2019) affirms that "*the knowledge-based economy makes high demands on policy to create high-level human capital and provide lifelong learning,*" So that improving the quality of education through curriculum innovation is a must.

In the context of Indonesia, the Independent Curriculum is a form of educational innovation launched by Menteri Pendidikan, Kebudayaan, Riset, dan Teknologi, Nadiem Anwar Makarim. This curriculum is designed to empower schools and teachers to be more independent in planning and implementing learning according to the needs and potential of students (Rahayu et al., 2022; Purnawanto, 2022; Suhandi & Robi'ah, 2022). The main principles are competency-based learning, differentiation, and character strengthening through *the Pancasila Student Profile Strengthening Project* in public schools, as well as *the Rahmatan lil 'Alamin Student Profile Strengthening Project* in madrasas (Malikah et al., 2022). This curriculum provides ample space for educational units to develop Kurikulum Operasional Satuan Pendidikan (KOSP) atau Kurikulum Operasional Madrasah (KOM) according to the context and characteristics of the students.

The learning tools in the Independent Curriculum consist of two main components, namely Modul Ajar dan Alur Tujuan Pembelajaran (ATP). The Teaching Module is a complete design of learning activities based on a specific theme or topic in each class, while ATP is a guide to long-term learning outcomes that students need to master (Purnawanto, 2022; Kemendikbudristek, 2022). With this flexible structure, teachers are expected to be able to adapt learning to students' learning styles, interests, and readiness levels. However, this flexibility also requires increasing the professional, pedagogical, and digital capacity of teachers so that the implementation of the Independent Curriculum runs effectively (Suhandi & Robi'ah, 2022; Noe, 2020; Tondeur et al., 2017).

At the madrasah level, new learning tools are prepared after the madrasah operational curriculum is determined by the school. The determination of *student profile project activities* as well as the assessment system should be tailored to the students' talents, interests, and potentials (Malikah et al., 2022). In practice, many teachers face challenges in developing these devices due to limited training and technical support. Teachers are required to adapt quickly to the new policy, while training facilities are still limited.

Field findings in Palangka Raya City show a phenomenon that reflects these conditions. Based on an interview with the Head of MIN 2 Palangka Raya City, it is known that the implementation of the Independent Curriculum has only been implemented in

grades I and IV, and its implementation is still "as far as possible". This is because teachers have not received formal training so they have to learn independently through YouTube or *the Ministry of Education and Culture's Teacher Sharing page*. The Head of MIN 1 Palangka Raya, Saeful Anwar, M.Pd., also said that his madrasah was appointed as a *pilot project of the Independent Curriculum* under the Regional Office of the Ministry of Religion of Central Kalimantan, but many teachers and education staff did not understand the substance of the new curriculum. In fact, the textbooks that have been purchased are still using the 2013 Curriculum, so the implementation is not optimal. This condition illustrates the gap between curriculum policies and the readiness of educational units in their implementation (Rahman, 2022; Hidayat, 2023; Taufik & Karim, 2023).

From this description, it can be concluded that the discussion on curriculum innovation does not stop at changes in documents or policy structures alone. More than that, curriculum innovation must be accompanied by strengthening the capacity of the education ecosystem to support the transformation of learning culture (Darling-Hammond et al., 2020; Noe, 2020; Tondeur et al., 2017). Teachers need continuous training, professional mentoring, and regional policy support to be able to implement project-based learning, authentic assessments, and digital technology integration in the spirit of the Independent Curriculum. In the context of a region such as Palangka Raya which has a multicultural socio-cultural background, collaboration between the government, madrasahs, and the community is a determining factor for the success of the implementation of an inclusive and meaningful curriculum (Rahman, 2022; Hidayat, 2023; Taufik & Karim, 2023).

The purpose of this research focuses on efforts to understand in depth the process of preparing and implementing the Independent Curriculum in elementary schools and ibtidaiyah madrasahs in Palangka Raya City, especially in MIN 2 Palangka Raya City as a pilot madrasah and SDN 1 Kalamangan as a driving school. This study explores the dynamics of collaboration between school principals, teachers, supervisors, and universities in designing the Operational Curriculum of the Education Unit and the Madrasah Operational Curriculum, as well as describing the real experience of teachers in compiling teaching tools, carrying out differentiated learning, and integrating the Pancasila and Rahmatan lil 'Alamin Student Profile Strengthening Project into learning activities. In addition, the study highlights various challenges, reflections, and adaptive strategies that arise during the implementation process, including efforts to strengthen pedagogic competencies, digital literacy, and professional collaboration among teachers. Through this understanding, this research contributes to the development of 21st century curriculum innovations that are more contextual, participatory, and rooted in the human values and local wisdom of the people of Palangka Raya.

2. METHODS

This study uses a qualitative approach with a descriptive method, which aims to deeply understand the implementation of the *Independent Curriculum* as a 21st century curriculum innovation in elementary schools and madrasah ibtidaiyah in Palangka Raya City. This approach was chosen because it allows researchers to explore the meanings, experiences, and social dynamics that occur naturally in the school environment without manipulating variables (Creswell & Poth, 2018; Patton, 2015). Through this method, the researcher seeks to describe factually and systematically how the idea of *Freedom of Learning* is translated in learning practices in the field, as well as how teachers and principals adapt to changes in the curriculum. The location of the research was determined purposively in two basic education institutions that have implemented the

Independent Curriculum, namely SDN 1 Kalamancangan Palangka Raya and MIN 2 Palangka Raya. These two institutions were chosen because they represent two different characteristics in the Indonesian education system—public schools under the auspices of the Ministry of Education and Culture, and madrassas under the Ministry of Religious Affairs—so as to provide a more comprehensive picture of the implementation of the curriculum in two institutional contexts. The subjects of the study include school principals/madrasas, classroom teachers, and supervisors who are directly involved in the preparation and implementation of *the Education Unit Operational Curriculum (KOSP)* and *the Madrasah Operational Curriculum (KOM)*. The selection of participants was carried out purposively based on their experience in designing, implementing, and reflecting learning practices based on *the Independent Curriculum* (Miles, Huberman, & Saldaña, 2014).

Teknik Pengumpulan Data

Research data was obtained through three main techniques, namely observation, interviews, and documentation. First, observations were carried out directly to see the process of implementing the *Independent Curriculum* in the classroom, especially in thematic learning activities, the implementation of *the Pancasila Student Profile Strengthening Project (P5)*, and the application of contextual values in accordance with the characteristics of students and the school environment. Second, in-depth interviews were conducted with school principals and teachers of grades I and IV in both institutions. This interview aims to explore their experiences, understandings, and challenges they face in implementing the *Independent Curriculum*, including in learning planning, assessment, and the use of teaching modules. Third, documentation is carried out by collecting and reviewing various documents such as KOSP, KOM, teaching modules, learning objectives flow (ATP), and project implementation reports at school. Document analysis is used to strengthen observational and interview findings so that the research results are more valid and comprehensive.

Analisis Data

The data in this study was analyzed using an interactive model that involved three main stages, namely data reduction, data presentation, and conclusion drawn. After the data was obtained through observation, interviews, and documentation, the researcher carried out a process of sorting and grouping information to find key themes such as teacher readiness, learning implementation, and institutional support for the implementation of *the Independent Curriculum*. Furthermore, the data that has been reduced is presented in the form of a descriptive narrative to make it easier for researchers to understand the patterns and relationships between findings in the field. Conclusions are drawn in stages by continuing to check the consistency and suitability between the results of interviews, observations, and documents studied. This process allows researchers to gain an in-depth and authentic understanding of how *the Independent Curriculum* is implemented in schools and madrassas in Palangka Raya City, as well as how educators interpret curriculum changes in their daily practices.

Keabsahan Data

To ensure the validity of the data, this study uses several strategies, namely triangulation of sources, methods, and times, as well as confirmation to respondents (member checking). Triangulation is carried out by comparing the results of observations, interviews, and documentation to obtain a consistent and reliable picture. Meanwhile, confirmation to the respondents was carried out by reconfirming the results of the researcher's interpretation to teachers and principals to ensure that the meaning and experience conveyed were really in accordance with the reality in the field. In addition, the researcher also conducts continuous reflection on the data collection and analysis process to maintain scientific objectivity and honesty. In this way, the results of the research are expected to reflect the reality *of the implementation of the Independent Curriculum* authentically and provide a meaningful understanding of educational practices in schools and madrasahs in Palangka Raya City.

3. RESULTS AND DISCUSSION

A. Preparation of School/Madrasah Operational Curriculum

The results of the study show that both MIN 2 Palangka Raya City and SDN 1 Kalampangan have carried out the preparation of *the Education Unit Operational Curriculum* (KOSP) and *the Madrasah Operational Curriculum* (KOM) in a systematic, participatory, and needs analysis-based manner. The preparation process begins with mapping the characteristics of the institution, students, and the surrounding environment which is the basis for determining the direction of the curriculum. In MIN 2, a characteristic analysis is carried out in depth on the advantages and disadvantages of madrasahs, the needs of teachers, and students. This step reflects the principle of a student-centered curriculum as emphasized in the Independent Curriculum guide, namely learning must adjust to the diversity of potential and stage of child development (Kemendikbudristek, 2022). These findings are in line with the views of Priestley, Biesta, and Robinson (2015) who emphasize the importance of the capacity of teacher agencies and school communities in designing contextual curriculums. In addition, the research Wang (2022) and Voogt et al. (2023) shows that the success of 21st century curriculum innovation is highly dependent on the autonomy and involvement of teachers in curriculum design, as teachers are the main link between classroom policy and practice.

The preparation process at MIN 2 is carried out collaboratively by the head of the madrasah with the representative of curriculum, student affairs, and public relations with the support of teachers and supervisors. This participatory approach is also strengthened through academic assistance from universities, in this case IAIN Palangka Raya, which plays a role in providing technical and conceptual guidance in the formulation of KOM. These results are in line with the view Basori (2023) and Maulidayani (2023) that cross-stakeholder collaboration in curriculum design strengthens the relevance and quality of curriculum document results. Academic support is also considered important in helping schools adapt to the new curriculum paradigm that emphasizes flexibility, contextual projects, and character building (Fullan & Quinn, 2016; Darling-Hammond et al., 2020; Sahlberg, 2023). On the other hand, the involvement of teachers and supervisors in each stage shows efforts to realize the principles *of shared leadership* and *distributed curriculum design*, as emphasized in the research Le Fevre, Timperley, dan Ell (2020) that

the decentralization of curriculum decisions increases the professional ownership and responsibility of educators.

At SDN 1 Kalampangan, the preparation of KOSP is also carried out collaboratively by involving the principal, teachers, committee, and school supervisors. This approach not only guarantees administrative legitimacy, but also reinforces the relevance of the curriculum to local needs. The school conducts an analysis of the potential of students, educators, and socio-cultural conditions of the surrounding community. With a distinctive geographical context namely peatland environments and communities living off agriculture the school integrates ecological values and local wisdom into the learning vision, which is to form an environmentally conscious generation with the character of the Pancasila Student Profile. This reflects the practice of *contextualized curriculum design* as outlined by Goodson dan Marsh (2020), which emphasizes that an effective curriculum must be rooted in local social and cultural realities. Research by Chai, Koh, dan Tsai (2016) and Guerrero et al. (2023) It also strengthens that a curriculum that is oriented to the real life of students is able to increase the meaning of learning and mastery of competencies in the 21st century.

In addition to emphasizing the local context, KOSP SDN 1 Kalampangan also follows the principles of modern curriculum development: student-centered, contextual, essential, accountable, and involving various stakeholders. The involvement of teachers in the drafting process is a key element of success because they play a direct role in the implementation in the classroom. Research by Sulangsih (2023) and Cholilah (2023) emphasizes that teachers should not only be implementers, but also active designers of the school/madrasah operational curriculum. This is reinforced by the findings of international studies such as Voogt & Roblin (2012) and Schleicher (2020), which state that *teacher co-design* increases the relevance and sustainability of 21st-century competency-based curriculum. Thus, the preparation of KOSP/KOM in these two institutions shows the synergy between national policies and local participation, which conceptually reflects an adaptive, contextual, and collaborative model of curriculum innovation.

B. Implementation of the Independent Curriculum in Classes I and IV

The implementation of the Independent Curriculum at MIN 2 Palangka Raya and SDN 1 Kalampangan shows rich dynamics in the application of 21st century learning principles in the classroom. Both institutions actively integrate project-based learning, differentiated approaches, and the use of the surrounding environment as a contextual learning resource. Teachers in grades I and IV are the spearhead in designing teaching modules, setting learning objectives (ATP), and adjusting diagnostic, formative, and summative assessments to suit the characteristics of students. This effort shows the real application of *the student-centered learning* concept that places students as active subjects in the learning process (Fullan & Quinn, 2020; Darling-Hammond et al., 2020; Trilling & Fadel, 2009).

At MIN 2 Palangka Raya, learning is focused on strengthening students' character and independence through the Pancasila and Rahmatan Lil Alamin Student Profile Strengthening Project (P5PPRA). The theme "Local Wisdom" was raised as a means to instill environmental values, mutual cooperation, and independence. Through gardening and crop marketing, students not only learn science and economics concepts, but also

understand work ethics, social responsibility, and collaboration. This approach is in line with research results that affirm that projects based on local wisdom strengthen ecological literacy and increase students' social awareness of their environment (Abdullah et al., 2023; Dewantara, 2022; UNESCO, 2020). In addition, teacher training and mentoring support from IAIN Palangka Raya strengthens their pedagogical ability to design reflective and innovative learning activities, as suggested by Shulman (1987) and Mishra & Koehler (2006) through the concepts of *Pedagogical Content Knowledge* and *TPACK*.

Meanwhile, at SDN 1 Kalampangan, the implementation of the Independent Curriculum is colored by a collaborative spirit between teachers, principals, and supervisors. The "learning together" activity every Saturday becomes a forum for continuous professional development (*professional learning community*) where teachers discuss and share best practices in compiling teaching modules and adapting teaching materials from the Independent Teaching Platform. Learning in grades I and IV utilizes a differentiated approach to adapt to students' diverse learning styles and strengthen critical, creative, and collaborative thinking skills. Studies show that teachers who adopt a collaborative model in learning planning tend to be more adaptive to changes in curriculum and student needs (Hargreaves & O'Connor, 2018; OECD, 2021; Priestley, Biesta & Robinson, 2015).

The implementation of the P5 project at SDN 1 Kalampangan is also an important vehicle for contextual learning. Themes such as "Local Wisdom", "Mosaic", and "Healthy Environment" not only strengthen academic abilities, but also foster character values such as mutual cooperation, love for the environment, and social responsibility. This learning process illustrates the paradigm transformation from content-based learning to competency-based learning, in line with the *competency-based curriculum approach* adopted by many developed countries (Voogt & Roblin, 2012; Ananiadou & Claro, 2009; Fullan, 2021). Through reflective and participatory activities, students learn to understand the meaning of learning in their real-life context—an important hallmark of authentic independent learning.

Overall, the implementation practices of the Independent Curriculum in both institutions demonstrate the successful integration of national values, local contexts, and global principles of 21st-century education. Teachers play the role not only as implementers, but also as micro-curriculum designers who connect policy ideas with classroom learning practices. These findings reinforce the view that the success of curriculum reform does not depend only on documents and regulations, but on teachers' capacity to transform the curriculum into meaningful learning experiences (Kennedy, 2019; Zhao, 2022; Rachmawati & Luthfiani, 2024).

C. Challenges, Teacher Redress, and Institutional Support

The implementation of the Independent Curriculum in elementary schools and madrassas in Palangka Raya shows the complex dynamics between innovative policies and realities on the ground. Teachers and school principals face challenges in adjusting learning tools such as Learning Objectives Flow (ATP) and Teaching Modules that are not yet uniform between educational units. This condition is exacerbated by the limitation of ICT facilities and additional administrative burdens that take up teachers' time to reflect and develop themselves. This phenomenon is in line with the findings of Kim et al. (2023), Darling-Hammond & Hyler (2020), and Fullan (2021) who affirm that curriculum innovation can only succeed if its supporting ecosystem is able to provide sustainable adaptation space for teachers.

In the context of changes in 21st century education, teacher readiness is key in ensuring the success of curriculum reform. Teachers are not only required to have professional and pedagogic competencies, but also digital skills that allow them to integrate technology in meaningful learning. Several studies (Tondeur et al., 2017; Koehler, Mishra, & Cain, 2013; Voogt et al., 2015) show that teachers' digital competence has a direct effect on the quality of students' learning experience, especially in the context of project-based and collaborative learning carried out by the Independent Curriculum. Thus, strengthening teacher capacity through contextual and needs-based training is a top priority.

In addition to individual competencies, institutional support and school leadership also determine the effectiveness of curriculum implementation. Schools with transformative leadership tend to be more adaptive to change, encourage a culture of reflection, and strengthen collaboration between teachers (Hargreaves & O'Connor, 2018; Hallinger, 2020; Harris & Jones, 2019). In the context of Palangka Raya, the role of school principals as a driver of change seems significant in creating a learning environment that supports innovation. Strong institutional support also includes the provision of learning facilities, ICT access, as well as spaces for pedagogical experiments oriented to students' needs and local characteristics.

Another influential factor is teacher agency, which is the ability of teachers to act reflexively and autonomously in the face of change. Teachers who have a strong sense of ownership of the curriculum and professional collaboration tend to be more successful in translating the principles of the Independent Curriculum into contextual learning practices (Priestley et al., 2012; Wang, 2022; Biesta, Priestley, & Robinson, 2015). Recent research in the context of Southeast Asia (Sinta, Fakhrudin, Nurhuda, & Lathif, 2025; Cabrerros, 2023; Chourio-Acevedo et al., 2024) also show that teacher autonomy balanced with systematic support from school leaders and learning communities can increase the effectiveness of the implementation of innovative education policies.

Thus, the success of the Independent Curriculum at the local level such as Palangka Raya is not only determined by visionary policies, but also by the synergy between teachers, principals, and their supporting institutions. Continuous mentoring programs, professional practitioner communities, and strengthening digital infrastructure are integral parts of building the capacity of a resilient and adaptive education ecosystem. As emphasized by Fullan (2021), curriculum change is not just a transformation of documents, but a social process that demands collective commitment, shared learning, and the courage to innovate in a unique local context.

D. Implications for 21st Century Curriculum Innovation

The transformation of education through the Independent Curriculum represents a shift in the paradigm of learning in Indonesia from just knowledge transfer to the development of competencies relevant to the needs of the 21st century. In the context of Palangka Raya, this innovation can be seen through a change in the role of teachers who are no longer just as material presenters, but as designers of adaptive, reflective, and contextual learning experiences. This approach is in line with the global view that the curriculum must prepare students to face the uncertainty and complexity of the modern world through digital literacy, critical thinking, and creativity (Fullan, 2021; Dede, 2010; Voogt & Roblin, 2012). Thus, the Independent Curriculum is not only a national policy, but also a pedagogical movement that emphasizes freedom of thought and action for students and educators.

The implementation of the Independent Curriculum also emphasizes the importance of *curriculum as praxis*—the curriculum as a reflective and collaborative action between teachers and students. When teachers are given space to innovate and adapt learning to local conditions, they become active agents of change in bringing the values of the curriculum to life in the classroom. Global studies show that teachers' professional autonomy and peer collaboration are key prerequisites for the success of competency-based curriculum reform (Hargreaves & O'Connor, 2018; Priestley et al., 2012; Cabrerros, 2023). In the context of elementary schools and madrassas in Palangka Raya, this can be seen from the ability of teachers to adjust teaching tools, integrate P5 projects, and develop modules that are relevant to the local culture and environment.

Furthermore, 21st-century curriculum innovations cannot be separated from the integration of digital technology that enriches the learning process. The use of the Merdeka Teaching platform, digital learning media, and virtual environment-based learning resources has expanded access and facilitated personalization of learning. This is in line with the idea of *Technological Pedagogical Content Knowledge (TPACK)* which places technology as an integral part of meaningful learning design (Koehler, Mishra & Cain, 2013; Voogt et al., 2015; Kafyulilo, 2023). However, the success of digital transformation still depends on teachers' technological literacy and institutional support in providing ongoing infrastructure and training.

In addition to mastery of technology, the integration of character values and local contexts is an important dimension of curriculum innovation. The Merdeka Curriculum emphasizes education based on national values, diversity, and local wisdom. The P5 and P5RA projects in Palangka Raya schools show how learning can be a space to internalize the values of mutual cooperation, responsibility, and environmental concern. This approach is aligned with the findings that an effective curriculum not only equips students with 21st-century skills, but also fosters contextual cultural identity and morality (Darling-Hammond et al., 2020; Rakhmawati & Priyana, 2019; Kusuma & Fauzi, 2023). Thus, 21st-century curriculum innovation in Indonesia finds its distinctive relevance in the integration of character, technology, and local culture.

The practical implications of these findings underscore the need to strengthen three key aspects: aligning the format of teaching tools to make them more uniform and easy to implement; teacher capacity building through reflective and practice-based training; and strengthening the digital learning ecosystem and a professional community of teachers who share innovations. Curriculum transformation will not succeed without a collaborative school culture and visionary institutional support (Hallinger, 2020; Harris & Jones, 2019; Chourio-Acevedo et al., 2024). Therefore, 21st century curriculum innovation in Palangka Raya should continue to be developed as a continuous learning movement that fosters independence, creativity, and humanity in the midst of changing times.

4. CONCLUSION

Overall, the results of the study show that the implementation of the Independent Curriculum in driving schools and pilot project madrassas in Palangka Raya has brought significant changes in the way teachers interpret the learning process. Teachers are no longer just curriculum implementers, but have transformed into designers, innovators, and creative learning reflectors, with the ability to integrate character values, collaboration, and meaningful use of technology in the classroom. The success of this transformation is greatly influenced by teachers' readiness in pedagogic, professional, and digital aspects, as well as by institutional support that includes visionary leadership,

a collaborative culture, and an active learning community. Schools and madrasas that are able to build an adaptive learning ecosystem show more real progress in the implementation of the Independent Curriculum. The implications of these findings underscore the importance of a sustainable strategy to strengthen teacher capacity through continuous training, develop an inclusive digital ecosystem, and expand professional community networks so that the Independent Curriculum in driving elementary schools and pilot project madrasas truly becomes a forum for the growth of creativity, reflection, and independence of students in the 21st century learning era.

5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

6. REFERENCES

- Abdullah, M., Fauziah, N., & Rahman, T. (2023). Local wisdom-based education to enhance students' ecological literacy in primary schools. *Journal of Environmental Education Research*, 28(3), 221–236. <https://doi.org/10.1080/13504622.2023.1029457>
- Ananiadou, K., & Claro, M. (2009). 21st century skills and competences for new millennium learners in OECD countries. *OECD Education Working Papers*, 41. <https://doi.org/10.1787/218525261154>
- Barlian, E., Rahmawati, D., & Sutopo, A. (2022). *Evaluasi dan inovasi kurikulum di era disrupsi pendidikan*. Bandung: Alfabeta.
- Basori. (2023). Keterlibatan Pengawas dalam Implementasi Kurikulum Operasional Madrasah. *Jurnal Pendidikan Islam*, 12(2), 88–97.
- Biesta, G., Priestley, M., & Robinson, S. (2015). The role of beliefs in teacher agency. *Teachers and Teaching*, 21(6), 624–640. <https://doi.org/10.1080/13540602.2015.1044325>
- Cabreros, C. A. (2023). Teachers' experiences in curriculum innovation: Voices from basic education teachers in the Philippines. *Asia Pacific Journal of Education*, 43(3), 345–360. <https://doi.org/10.1080/02188791.2023.2177462>
- Cabreros, M. B. (2023). Teacher collaboration and innovation in curriculum implementation: A phenomenological inquiry. *Teaching and Teacher Education*, 126, 104065. <https://doi.org/10.1016/j.tate.2023.104065>
- Chai, C. S., Koh, J. H. L., & Tsai, C.-C. (2016). A review of the Technological Pedagogical Content Knowledge (TPACK) framework for 21st-century teacher education. *Educational Technology & Society*, 19(1), 163–175.
- Cholilah. (2023). Peran Guru dalam Penyusunan Kurikulum Operasional Madrasah di Era Merdeka Belajar. *Jurnal Tarbiyah Nusantara*, 8(1), 45–59.
- Chourio-Acevedo, A., González, F., & Aguilar, M. (2024). Building teacher agency through collaborative curriculum reform: Insights from Latin America. *Teaching and Teacher Education*, 136, 104302. <https://doi.org/10.1016/j.tate.2023.104302>
- Chourio-Acevedo, C., Cano, S., & Trejos, A. (2024). Educational innovation and leadership in 21st century schools: Lessons from post-pandemic transformation. *Education and*

- Information Technologies*, 29(2), 1159–1176. <https://doi.org/10.1007/s10639-023-12019-1>
- Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE Publications.
- Darling-Hammond, L., & Hyler, M. E. (2020). Preparing educators for the time of COVID and beyond. *European Journal of Teacher Education*, 43(4), 457–465. <https://doi.org/10.1080/02619768.2020.1816961>
- Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2020). Implications for educational practice of the science of learning and development. *Applied Developmental Science*, 24(2), 97–140. <https://doi.org/10.1080/10888691.2018.1537791>
- Dede, C. (2010). Comparing frameworks for 21st century skills. In J. Bellanca & R. Brandt (Eds.), *21st Century Skills: Rethinking How Students Learn* (pp. 51–76). Solution Tree Press.
- Dewantara, A. (2022). Local wisdom and contextual learning in Indonesian primary education. *Indonesian Journal of Educational Studies*, 25(1), 33–48.
- Fullan, M. (2021). *The new meaning of educational change* (6th ed.). Teachers College Press.
- Fullan, M. (2021). *The right drivers for whole system success*. Centre for Strategic Education Seminar Series, Paper No. 353. <https://doi.org/10.13140/RG.2.2.29556.30086>
- Fullan, M., & Quinn, J. (2020). *Coherence: The right drivers in action for schools, districts, and systems*. Corwin Press.
- Goodson, I., & Marsh, C. (2020). *Curriculum, pedagogy and educational research: The work of Lawrence Stenhouse*. Routledge.
- Guerrero, D., Sánchez, M., & Ortega, J. (2023). Contextual curriculum innovation for sustainable education. *Journal of Curriculum Studies*, 55(4), 621–640. <https://doi.org/10.1080/00220272.2022.2118397>
- Hallinger, P. (2020). Reviewing reviews of research in educational leadership: An empirical assessment. *Educational Management Administration & Leadership*, 48(1), 6–19. <https://doi.org/10.1177/1741143219855673>
- Hargreaves, A., & O'Connor, M. T. (2018). *Collaborative professionalism: When teaching together means learning for all*. Corwin Press. <https://doi.org/10.4135/9781544318740>
- Harris, A., & Jones, M. (2019). Leading schools in disruptive times: How to survive and thrive. *School Leadership & Management*, 39(4), 321–334. <https://doi.org/10.1080/13632434.2019.1572103>
- Hidayat, T. (2023). Tantangan implementasi Kurikulum Merdeka pada madrasah di wilayah multikultural. *Jurnal Pendidikan Islam dan Kebudayaan*, 15(1), 55–68.
- Kafyulilo, A. (2023). Understanding teachers' TPACK for technology integration in education: A systematic review. *Education and Information Technologies*, 28(5), 5673–5691. <https://doi.org/10.1007/s10639-023-11518-6>
- Kemendikbudristek. (2022). *Panduan implementasi Kurikulum Merdeka*. Jakarta: Kemendikbudristek.
- Kemendikbudristek. (2022). *Panduan penyusunan Kurikulum Operasional Sekolah/Madrasah*. Jakarta: Kemendikbudristek.
- Kennedy, K. (2019). Teacher agency and curriculum reform: A global perspective. *Journal of Curriculum Studies*, 51(4), 521–539. <https://doi.org/10.1080/00220272.2019.1604807>

- Kim, L. E., Oxley, L., & Asbury, K. (2023). "My brain feels like a browser with 100 tabs open": Teachers' mental health during COVID-19 and implications for policy. *Educational Review*, 75(3), 489–507. <https://doi.org/10.1080/00131911.2021.1984454>
- Koehler, M. J., Mishra, P., & Cain, W. (2013). What is technological pedagogical content knowledge (TPACK)? *Journal of Education*, 193(3), 13–19. <https://doi.org/10.1177/002205741319300303>
- Kusuma, A. D., & Fauzi, A. (2023). Curriculum transformation towards 21st-century competencies: A case study of Indonesian primary schools. *International Journal of Instruction*, 16(1), 177–194. <https://doi.org/10.29333/iji.2023.16110a>
- Le Fevre, D. M., Timperley, H. S., & Ell, F. (2020). Curriculum design and teacher agency: Transforming professional practice. *Teaching and Teacher Education*, 94, 103110. <https://doi.org/10.1016/j.tate.2020.103110>
- Maulidayani. (2023). Kolaborasi Guru dan Pengawas dalam Penyusunan KOSP di Madrasah. *Jurnal Pendidikan Dasar dan Madrasah*, 14(2), 77–89.
- Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). SAGE Publications.
- Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6), 1017–1054.
- OECD. (2021). *Future-ready education: A framework for the 21st century*. OECD Publishing. <https://doi.org/10.1787/9789264672033-en>
- Patton, M. Q. (2015). *Qualitative research & evaluation methods: Integrating theory and practice* (4th ed.). SAGE Publications.
- Priestley, M., Biesta, G., & Robinson, S. (2012). Teacher agency, professional development and curriculum change: The case of Scotland. *Curriculum Journal*, 23(3), 395–419. <https://doi.org/10.1080/09585176.2012.662775>
- Priestley, M., Biesta, G., & Robinson, S. (2015). *Teacher agency: An ecological approach*. Bloomsbury Academic.
- Purnawanto, D. (2022). Modul Ajar dan Alur Tujuan Pembelajaran dalam Kurikulum Merdeka. *Jurnal Inovasi Kurikulum dan Pembelajaran*, 4(2), 77–89.
- Rachmawati, D., & Luthfiani, M. (2024). Participatory curriculum planning in the era of Merdeka Belajar. *Jurnal Kurikulum dan Pembelajaran*, 19(1), 23–38.
- Rachmawati, L., & Luthfiani, S. (2024). The transformation of curriculum through teachers' agency in Indonesian primary schools. *International Journal of Educational Reform*, 33(2), 141–158. <https://doi.org/10.1177/10567879231122358>
- Rahayu, D., Putri, L., & Nugraha, A. (2022). Kurikulum Merdeka sebagai inovasi pembelajaran berbasis kompetensi. *Jurnal Pendidikan dan Inovasi Kurikulum*, 6(1), 21–33.
- Rakhmawati, N., & Priyana, J. (2019). Developing contextual-based curriculum for Indonesian students in the 21st century. *Journal of Educational Research and Practice*, 9(1), 43–58. <https://doi.org/10.5590/JERAP.2019.09.1.04>
- Sahlberg, P. (2023). *Finnish lessons 3.0: What can the world learn from educational change in Finland?* Teachers College Press.
- Schleicher, A. (2020). *The OECD learning compass 2030: A framework for 21st century learning*. OECD Publishing.
- Sinta, A. F., Fakhrudin, F., Nurhuda, N., & Lathif, A. (2025). Teacher agency in implementing the Merdeka Curriculum in Indonesian Islamic elementary schools.

- Asia Pacific Journal of Education* (In Press).
<https://doi.org/10.1080/02188791.2025.000000>
- Suhandi, A., & Robi'ah, L. (2022). Pengembangan kompetensi guru dalam implementasi Kurikulum Merdeka. *Jurnal Pengembangan Profesi Guru*, 3(2), 45–59.
- Sulangsih. (2023). Keterlibatan Guru dalam Penyusunan Kurikulum Operasional Sekolah/Madrasah. *Jurnal Ilmiah Pendidikan Islam*, 15(1), 55–70.
- Taguma, M., Makowiecki, K., & Gabriel, F. (2023). OECD Learning Compass 2030: Implications for mathematics curricula. In Y. Shimizu & R. Vithal (Eds.), *Mathematics Curriculum Reforms Around the World* (pp. 479–509). New ICMI Study Series. https://doi.org/10.1007/978-3-031-13548-4_32
- Tondeur, J., van Braak, J., Ertmer, P. A., & Ottenbreit-Leftwich, A. (2017). Understanding the relationship between teachers' pedagogical beliefs and technology use in education: A systematic review. *Educational Technology Research and Development*, 65(3), 555–575. <https://doi.org/10.1007/s11423-016-9481-2>
- Trilling, B., & Fadel, C. (2009). *21st century skills: Learning for life in our times*. Jossey-Bass.
- Voogt, J., Fisser, P., & Pareja Roblin, N. (2023). Curriculum innovation and teacher professional learning for 21st century education. *Journal of Educational Change*, 24(2), 189–208. <https://doi.org/10.1007/s10833-022-09458-1>
- Voogt, J., Fisser, P., Pareja Roblin, N., Tondeur, J., & van Braak, J. (2015). Technological pedagogical content knowledge – A review of the literature. *Journal of Computer Assisted Learning*, 31(4), 403–418. <https://doi.org/10.1111/jcal.12094>
- Voogt, J., & Roblin, N. P. (2012). A comparative analysis of international frameworks for 21st-century competences: Implications for national curriculum policies. *Journal of Curriculum Studies*, 44(3), 299–321. <https://doi.org/10.1080/00220272.2012.668938>
- Wang, Q. (2022). Contextualizing innovation in curriculum implementation: Lessons from East Asia. *Asia Pacific Education Review*, 23(1), 1–13. <https://doi.org/10.1007/s12564-021-09705-9>
- Wang, T. (2022). Teacher agency in curriculum reform: Navigating change in uncertain times. *Teaching and Teacher Education*, 111, 103617. <https://doi.org/10.1016/j.tate.2021.103617>
- Wijayanti, R., Setyowati, L., & Arifin, Z. (2023). Reimagining curriculum for 21st-century learning in Indonesian context: Challenges and opportunities. *Asia Pacific Journal of Education*, 43(3), 305–321. <https://doi.org/10.1080/02188791.2023.2180192>
- Zhao, Y. (2022). *Learners without borders: New learning pathways for all students*. Corwin Press.