

Implementation and Challenges of the Independent Curriculum in 21st Century Learning

Implementasi dan Tantangan Kurikulum Merdeka dalam Pembelajaran Abad 21

<https://doi.org/10.24036/pakar.v22i2.510>

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Abstract

Education, as the foundation of the younger generation, faces pressure to adapt to the developments of the 21st century. The Merdeka Curriculum emerges as a solution to accommodate the dynamics of these changes, emphasizing a contemporary learning approach. However, its implementation in the field encounters complex challenges, including policy issues, changes in the role of teachers, and the adaptation of educational infrastructure. This research explores the implementation of the Merdeka Curriculum, identifies specific challenges, and contributes to developing a responsive curriculum in the 21st-century era. The literature review highlights the interconnectedness of the Merdeka Curriculum with 21st century learning, emphasizing the autonomy of students and the utilization of technology as a common thread. Teachers transition to facilitators, and collaboration with the community becomes essential. The research method employs a qualitative descriptive approach with a literature review study, comprehensively discussing the literature review application. The research findings reveal challenges in implementing the Merdeka Curriculum, such as teacher paradigm changes, policies, and infrastructure. The literature review outlines findings from ten literature sources discussing research results related to the Merdeka Curriculum, emphasizing successes, obstacles, and necessary improvements. The discussion involves aspects of implementing the Merdeka Curriculum, the paradigm shift in 21st century education, and specific challenges. Teacher adaptation, infrastructure support, and continuous evaluation are key factors in overcoming challenges and achieving adaptive, relevant, and responsive education in the modern era.

Keywords: merdeka curriculum, 21st century learning, implementation, challenges.

Abstrak

Pendidikan sebagai pondasi generasi muda menghadapi tekanan untuk menyesuaikan diri dengan perkembangan Abad ke-21. Kurikulum Merdeka muncul sebagai solusi untuk mengakomodasi dinamika perubahan tersebut, menekankan pendekatan pembelajaran kontemporer. Namun, implementasinya di lapangan dihadapkan pada tantangan kompleks, termasuk kebijakan, perubahan peran guru, dan adaptasi infrastruktur pendidikan. Penelitian ini menggali implementasi Kurikulum Merdeka, mengidentifikasi tantangan konkret, dan memberikan kontribusi terhadap pengembangan kurikulum responsif di era Abad ke-21. Metode studi literatur adalah teknik pengumpulan data penelitian dengan cara memilah dan mengumpulkan berbagai macam informasi yang berkaitan dengan obyek penelitian seperti melalui abstrak hasil penelitian, indeks, *review*, jurnal dan buku referensi disediakan secara *online*. *Literature review* menguraikan temuan dari sepuluh sumber pustaka yang membahas hasil penelitian terkait Kurikulum Merdeka, menyoroti kesuksesan, hambatan, dan perbaikan yang diperlukan. Pembahasan melibatkan aspek implementasi Kurikulum Merdeka, perubahan paradigma pendidikan abad ke-21, dan tantangan konkret. Penyesuaian guru, dukungan infrastruktur, dan evaluasi berkelanjutan menjadi kunci dalam mengatasi tantangan dan mencapai pendidikan adaptif, relevan, dan responsif di era modern.

Kata Kunci: kurikulum merdeka, pembelajaran abad ke-21, implementasi, tantangan.

1. Introduction

Education as the foundation for the formation of the younger generation faces significant pressure to align itself with the developmental demands of the 21st century. Profound changes in the field of technology and information emphasize the need for a curriculum that can respond to the dynamics of these changes (Thana & Hanipah, 2023). The Independent Curriculum emerged as an effort to meet the urgent need for education to synergize with students' needs and meet societal progress demands (Muhsin, 2021).

The development of the Merdeka Curriculum was inspired by the desire to present a more contemporary approach to learning, beyond the limits of traditional approaches (Inayati, 2022). The philosophy behind this concept provides greater space for learners to manage their learning process. Therefore, implementing the Merdeka Curriculum is not just a matter of learning materials but also marks a fundamental change in the educational paradigm. According to Fachruddin (2019) Teachers must move from a focus on teaching material to a focus on developing student abilities. This requires teachers to develop more flexible and adaptive learning strategies.

The goals of the paradigm shift include strengthening teacher independence in taking control of learning, releasing standards that are too binding and demand homogeneous learning processes in all educational units in Indonesia, and strengthening student agency, which is the right and ability of students to determine their learning process by setting learning goals to be achieved, reflecting on their abilities, and taking steps proactively and taking responsibility for their success (Sartini & Mulyono, 2022). The era of the independent curriculum also makes the skills that students must have developed as well, namely 21st century skills which are based on the assumption that the new century requires different skills for individuals to survive in their evolving lives (Jamila, 2023).

The importance of character learning that refers to individual skills, especially the development of 21st century skills for the younger generation in exploring a rapidly developing life, has become the task of education to build and improve the character of the nation in order to realize national goals and meet the demands of an increasingly advanced era. One of the basic foundations in education, especially in Indonesia, is using curriculum in educational units (Dewantara, 2021).

Although the goals of the Merdeka Curriculum are ambitious and innovative, the reality of its implementation in the field is faced with several complex challenges (Anggreini & Priyojadmiko, 2022). These challenges involve policy areas, changes in the role of teachers, and adaptation of educational infrastructure. Therefore, in-depth research is needed to explore the implementation of Merdeka Curriculum and identify concrete challenges that may arise, so that it can respond to the dynamics of learning in the 21st century era. With a broader understanding, this research can have an impact in the future and help create an effective and adaptable curriculum in schools.

This research aims to discover how 21st century skills can be realized through the learning process, especially through learning based on problem solving and project methods. This research also aims to discover how Merdeka Curriculum can help students develop 21st century skills, such as mastery of character, literacy, skills, and technology, and how teachers can adjust learning tools and effective methods to shape students' skills according to the times in the 21st century.

2. Literature Review

2.1. Independent Curriculum Concept

The independent curriculum has diverse extracurricular learning where content will be optimized so that learners have enough time to explore concepts and strengthen competencies. In the learning process, teachers have the flexibility to choose various learning tools so that learning can be tailored to students' learning needs and interests (Purwanto, 2024). This curriculum has projects to strengthen the achievement of the Pancasila learner profile. Then, it is developed based on certain themes set by the government. This project aims to avoid achieving specific learning outcome targets, so it is not tied to subject content (Fauzi, 2022).

2.2. 21st Century Learning Concepts

21st century learning is defined as a learner-centered learning process based on communication, collaboration, critical thinking, creativity, values, and ethical applications. "A learning process that focuses on a student-centred approach based on elements of communication, collaboration, critical thinking, creativity, and values and ethical applications" (Pertiwi et al., 2018). 21st century learning is a learner-centered teaching and learning process using information and communication technology as a multi-source that places learners actively in acquiring attitudinal competencies, knowledge, and 21st century skills and literacy (Mardhiyah et al., 2021).

2.3. Linkage of Merdeka Curriculum and 21st Century Learning

The Merdeka Curriculum and 21st-century learning are intertwined educational paradigms, creating the foundation for a profound educational transformation (Wali et al., 2023). The concept of learner independence is a central point in the Merdeka Curriculum, where they are not only recipients of information, but also managers and shapers of their learning. This aligns with the essence of 21st century learning, which emphasizes developing critical skills such as critical thinking, creativity, communication, and digital literacy (Wijaya et al., 2016). In the Merdeka Curriculum, teachers transition from traditional roles to learning facilitators, creating an environment that supports student exploration and development of understanding. Learning in the 21st century must also prepare generations of Indonesian humans to welcome information and communication technology advances in social life (Listiani et al., 2023).

The utilization of technology is the common thread that connects these two concepts. 21st century learning understands the importance of technology as a support for the learning process, and the Merdeka Curriculum responds by utilizing it for learning experiences (Thana & Hanipah, 2023).

2.4. Challenges and Opportunities

2.4.1. Challenge

21st century education requires effective critical thinking and problem-solving skills. The integration of ICT in 21st century learning requires teachers and students to master technology to facilitate the learning process (Angga et al., 2022). However, ICT tools are no longer seen as materials that must be specifically studied in school, but as tools used in learning a subject (Majir, 2020). Implementing 21st century learning skills through an independent curriculum requires developing 4C skills, namely communication, collaboration, critical thinking, and creativity. However, there are still challenges in applying these skills in practice. 21st century learning requires a paradigm shift from a teacher-centric approach to a student-centric approach. However, this change requires significant time and effort to be implemented effectively.

2.4.2. Opportunities

Implementing 4C skills through an independent curriculum can improve the quality of education and prepare students to face the challenges of the 21st century. The integration of ICT in 21st century learning can improve the efficiency and effectiveness of the learning process and facilitate access to information. 21st century learning requires mastery of character, literacy, skills and technology (Mudrikah et al., 2022). An independent curriculum can help students develop the character and literacy needed to face the challenges of the 21st century. The independent curriculum can help students develop the Pancasila student profile, which includes critical thinking skills, creativity, and the ability to communicate and collaborate (Hanipah, 2023).

3. Research Methods

This research uses a qualitative descriptive method with the type of *library research*, which involves collecting information from related scientific works in a literature review. Study research is a data collection technique by sorting and collecting various information related to the research object, such as through abstracts of research results, indexes, reviews, journals and reference books provided online (Ridwan et al., 2021).

The research design included: 1) Topic selection, 2) Exploration of information, 3) Determining the focus of research based on the information that has been obtained, 4) Sources of data collected in the form of information or empirical data sourced from books, journals, research reports and other literature that supports the theme of this research, 5) Reading literature sources, 6) Making research notes, 7) Processing research notes, 8) Processing research notes, 8) Processing research notes, 8) Processing research notes. Processing research notes, 8) Report preparation (Widiyono & Millati, 2021). Then the data collection techniques used are editing, organizing and finding the results of research, namely conducting further analysis of the results of organizing data using predetermined rules, theories and methods so that certain conclusions are obtained which are the results of the answer to the problem formulation (Sugiyono, 2010). Data analysis is *content* analysis, which is research that is an in-depth discussion of the contents of written or printed information and then concludes based on the data that has been collected and analyzed (Sugiyono, 2010).

4. Results and Discussion

4.1. Research Results

In the study to be discussed, the author used ten sources of literature that were needed to examine the phenomenon of agrarian conflicts, especially those that occurred in East Java Province. These literature sources were obtained from e-journals and Google Scholar.

Table.1. Literature Results Table

No	Title	Author	Research Results
1.	Concepts and Implementation of Merdeka Curriculum in 21st-Century Learning at SD / MI	(Inayati, 2022).	The results showed that the Merdeka Curriculum aims to optimize the spread of education in Indonesia by using various methods in the classroom. The Merdeka Curriculum in elementary schools

	<p>emphasizes project-based learning to create the Pancasila Student Profile. This method also aligns with modern learning principles, which provide students with 4C skills essential to meet the demands of the times. Three options exist for implementing the Merdeka Curriculum (IKM) in elementary schools (SD). Namely the independent learning category, the independent change category, and the independent sharing category, which will be applied to grade I and grade IV SD / MI starting in the 2022/2023 school year.</p>
<p>2. Implementation of Stem Learning in the Merdeka Curriculum: Mapping Readiness, Barriers and Challenges for Junior High School Teachers (Fakhrudin et al., 2023).</p>	<p>The results showed 13 obstacles and 8 problems in implementing the Merdeka Curriculum, and the application of models or approaches varied. The conclusion that can be drawn from this activity is that the readiness, barriers and challenges identified from the teacher's perspective indicate that implementing the Merdeka Curriculum still needs improvement. Therefore, greater efforts, including extensive teacher training, are needed to improve understanding and implementation of the Merdeka Curriculum.</p>
<p>3. Analysis of the Merdeka Belajar Curriculum in Facilitating 21st Century Learning in Senior High Students (Hanipah, 2023).</p>	<p>The research findings indicate that: 1) The implementation of the independent learning curriculum as a facilitator of 21st century learning is positively assessed. This is evident through the implementation of learning tools at SMAN 2 Merauke which successfully integrates 21st century skills such as collaboration, communication, critical thinking, creativity, character, and citizenship into the learning process. 2) The role of the principal and teachers: The principal as the responsibility holder and the teacher as the implementer of learning play a central role in successfully implementing an independent curriculum with 21st century skills.</p>
<p>4. Independent Campus Learning: Challenges or Obstacles given 21st (Sulistyo et al., 2022).</p>	<p>The research findings confirm that although students face various obstacles, the Merdeka Learning Campus Merdeka (MBKM) Program significantly positively</p>

Century Learning Demands?	impacts students' personal and technical skills. However, this study also shows room for improvement, both in the regulatory and implementation aspects of MBKM, which still need further improvement.
5. The Role of Teachers in Facing the Challenges of Implementing Merdeka Belajar to Improve Mathematics Learning in the Omicron Era and Society 5.0 Era (Anggreini & Priyojadmiko, 2022).	The results of the study (1) show that the concept of independent learning consists of four policy pillars, (2) namely freedom of thought, independence in innovation, independent and creative learning, and achieving happiness. (3) Understanding the meaning of independent learning and the role of teachers in the context of independent learning helps teachers and students think freely. Educators must have skills and expertise in artificial intelligence, big data, the Internet of Things, and robotics when implementing free learning in the Omicron and Society 5.0 era. Society 5.0 encourages teachers to be more creative and teach their students to think critically and creatively.
6. Transforming education through an Independent Learning Curriculum to Face 21st Century Challenges (Ekasari, 2023).	The purpose of implementing free learning is to produce a generation that has superior quality and strong character. Teachers are expected to create active and learner-centered learning activities. During the learning process, teachers and learners have the freedom to choose learning activities that suit the unique needs of learners. One way to realize independent learning is to allow learners to learn about their environment and connect it to their subject matter. In addition, they are encouraged to collaborate and talk with others in problem solving. Ultimately, this process helps learners improve their critical thinking skills, creativity, cooperation, and practice social and communication skills. The role of teachers in independent learning is defined as a guidance system, where teachers must be able to facilitate and guide learners to develop their potential thoroughly and sustainably. The transformation of education through an independent

			curriculum is an important milestone in the 21st century.
7.	Transformation of Education Policy through the Implementation of Merdeka Belajar Curriculum	(Rambung et al., 2023).	Through education reform and the implementation of an independent curriculum, learners become the main actors in the learning process. They actively determine their interests, design their learning and evaluate their progress. The role of teachers changes to mentors and facilitators, assisting learners in developing independent and critical thinking skills. Besides teaching learners how to think across disciplines, collaborate, innovate and tackle real-world challenges, this approach helps them prepare for the complexities of the working world. Independent education and curricula must be transformed to make learning environments inclusive, relevant and responsive to the needs of future generations.
8.	Challenges in the Implementation of Pancasila Student Profile Values in Indonesian Language Learning in Merdeka Belajar Curriculum	(Amir et al., 2022).	This study identifies that students' lack of interest in reading is one of the obstacles in applying the values of the Pancasila Student Profile in Indonesian language teaching. In addition, there is an obstacle in the form of lack of attention from parents who must fully understand their role as student mentors. Furthermore, the achievement of Indonesian language learning is focused on developing language competencies, including listening, speaking, reading and writing skills.
9.	Independent Curriculum Development as an Upgrade to 21st Century Skills in Education	(Lubis et al., 2023).	Merdeka Curriculum was created to give learners freedom and independence, focusing on developing 21st century skills such as critical thinking, creativity and digital literacy. It is gradually being implemented at all levels of education in Indonesia, and has been adopted by 143,265 education units. The Merdeka Curriculum can help learners face future challenges by developing skills critical to adapting to an increasingly complex and connected society.
10.	Challenges to Teacher Professionalism:	(Wulandari et al., 2023).	The research shows that teachers in the 21st era face the challenge of incorporating

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technology efficiently in the learning process. They need to innovate in designing optimal learning experiences by utilizing technology, while having information management and assessment skills. On the other hand, students are expected to have life and career skills, learning and innovation skills, and information media and technology skills. Teachers are expected to play a role as facilitators, innovators, and educators to improve the quality of education by the times. In the Merdeka curriculum, learning media involves various formats, including audio, visual, audio visual, and kinesthetic, supported by technologies such as the Internet of Things, Artificial Intelligence, and Big Data.

4.2. Discussion

4.2.1. Implementation of the Merdeka Curriculum

Implementing the Merdeka Curriculum marks a major step in the educational paradigm shift, where learners are given independence and freedom in managing their learning (Lubis et al., 2023). This change has a significant impact, especially on the role of teachers, who must now become facilitators and assistants, not just conveyors of information (Rambung et al., 2023). Challenges arise in shifting the paradigm of teachers from conventional roles to learning facilitators, and training and support efforts are needed to ensure the success of this transition.

In addition, this implementation also depends on adequate policy support and educational infrastructure. The adoption of policies that support change, as well as the availability of adequate resources and infrastructure, are key to the successful implementation of the Merdeka Curriculum. The development of 21st century skills in students is the main goal, especially the current educational demands that require students to master 21st century skills, namely 4C 1) *Creativity Skills and Innovation*, 2) *Critical Thinking and Problem Solving*, 3) *Communication Skills*, and 4) *Collaboration Skills* (Sulistyo et al., 2022). Continuous evaluation is required to assess the effectiveness of implementation and provide a basis for continuous adjustment and improvement.

In addition, in line with the development of the 21st century, the learning media must also follow technological developments, such as the use of videos, PPT, *game platforms*, and technologies such as the *Internet of Things*, *Artificial Intelligence*, and *Big Data* (Wulandari et al., 2023). With a deep understanding and good handling of all these aspects, implementing the Merdeka Curriculum can create an education that is more adaptive, relevant, and responsive to the demands of the times.

4.2.2. 21st Century Education Paradigm Shift

The 21st century education paradigm shift reflects a fundamental transformation in responding to the increasingly dynamic and complex demands of the times. One of the critical points in this change is the shift in the role of the teacher from the traditional model to a learning facilitator (Wulandari et al., 2023). Teachers act not only as information conveyors but also as guides encouraging learners to actively manage and explore their learning.

In this new educational paradigm, 21st century skills are the main focus. Critical thinking, creativity, collaboration, communication, digital literacy, and problem solving are crucial in preparing learners for an ever-changing world (Anggreini & Priyojadmiko, 2022). 21st century education views learners as individuals with unique potential and supports the development of multiple intelligences.

The main challenge faced in this paradigm shift is adjustment at the level of teachers and educational institutions. Teachers must develop new skills, such as managing the classroom with an inclusive approach, supporting project-based learning, and utilizing technology effectively (Anggreini & Priyojadmiko, 2022). Educational institutions must also transform curriculum structures, teaching methods and assessments to match the demands of 21st century education. The involvement of technology is key in supporting these changes (Wulandari et al., 2023). The use of online learning platforms, integration of advanced technologies such as artificial intelligence, and data analysis to develop personalized learning are integral parts of this paradigm shift.

Overall, the 21st century education paradigm shift creates a new foundation that emphasizes developing 21st century skills and an understanding that learning is no longer static but dynamic and continuous. With these changes, education is likely to more effectively prepare young people to face the ever-evolving challenges and opportunities in modern society.

4.2.3. Challenges in Implementing the Merdeka Curriculum

Education in the 21st century is one of the most important challenges. It requires solving problems and development to become an entity that plays a significant role in human progress in the era of globalization (Wulandari et al., 2023). Fakhruddin (2023) mentioned that the challenges that arise in education are not only limited to the relationship between teachers and students, but can become more complex if the curriculum system implemented needs to be more efficient in regulating input, process, output, and feedback.

Ihsana mentions that the implementation of the idea of "independent learning" is faced with various challenges that need to be recognized and overcome to ensure the success of a more independent learning approach. Firstly, student readiness is crucial as each student has a different skill level, discipline or desire to learn independently. Some may require additional assistance in managing their time and learning. In addition, a paradigm shift and training that helps teachers acquire new skills are needed to transform their role into facilitators (Rambung et al., 2023).

Another challenge involves teachers' readiness and understanding of the 'independent learning' approach. Teachers may need intensive training to understand and apply this concept effectively, especially in identifying students' needs. In the context of "independent learning", monitoring and assessing student progress becomes more complex as it includes specific skills such as problem-solving and critical thinking. In addition, the planning and structure of independent learning can be an obstacle for students who need clearer guidance. Other challenges include students' limited access to necessary resources, especially if the availability of technology or

learning materials is a constraint. In self-directed learning, self-discipline and high motivation are required. Some students may need help maintaining motivation or managing time well (Rambung et al., 2023).

Extra mentoring and support are important, especially for students facing learning barriers or dealing with complex concepts. Other challenges include harmonizing with the existing education system, which may conflict with traditional education structures, and measuring success, which may require a more holistic approach to assessment that conventional metrics can only sometimes measure. In the face of these challenges, holistic strategies and support need to be put in place to implement "independent learning" to achieve optimal results (Rambung et al., 2023).

5. Conclusion

Based on the research and discussion results, implementing the Merdeka Curriculum is an innovative step in developing education in Indonesia. Adopting education policies that support change and providing adequate resources are the keys to success. The transformation of education towards a new 21st century paradigm requires adjustments at the level of teachers and educational institutions, emphasizing 21st century skills.

To improve the implementation of the Merdeka Curriculum, it is necessary to improve the readiness of teachers and students through intensive training. This also includes empowering parents to be active partners in supporting learning. Adequate infrastructure and policy support must ensure students' access to educational resources. Continuous evaluation must be conducted to assess the effectiveness of implementation and devise continuous improvement strategies. The importance of developing 21st century skills such as critical thinking, creativity and digital literacy should be reinforced in the curriculum. Teachers must also be supported in taking on the role of facilitators and mentors by organizing continuous training programs.

Another challenge involves teachers' readiness and understanding of the 'independent learning' approach. Teachers may need intensive training to understand and apply this concept effectively, especially in identifying students' needs. In the context of "independent learning", monitoring and assessing student progress becomes more complex as it includes specific skills such as problem-solving and critical thinking.

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