

An Analysis of Teacher Readiness in the Implementation of the Merdeka Curriculum at SMKN 1 Siabu

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ABSTRACT

The implementation of the Merdeka Curriculum by the Ministry of Education, Culture, Research, and Technology since 2021 aims to transform Indonesian education through learning flexibility, the strengthening of the Pancasila Student Profile, and the adoption of project-, portfolio-, and presentation-based learning models. At the vocational high school SMKN 1 Siabu, teacher readiness constitutes a strategic factor in the success of educational administration, particularly in integrating the new curriculum with vocational education needs. This study analyzes teachers' multidimensional readiness, encompassing knowledge, skills, and administrative support, while also identifying implementation challenges. Employing a qualitative research method, the study involved one participant drawn from a total population of forty teachers through open-ended interviews, which were descriptively analyzed in November 2025 using validated research instruments. The findings indicate a high level of readiness, with an average score of 87%, characterized by strengths in knowledge (70%) and skills (75%), alongside weaknesses in resource support (40%). Qualitative analysis highlights limited training opportunities and time constraints. The study recommends strengthening administrative support through intensive training and enhanced teacher collaboration to reinforce the implementation of the Merdeka Curriculum.

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1. INTRODUCTION

Education serves as a fundamental pillar in the development of a nation's human resources, and in Indonesia, curriculum reform has become a strategic instrument for addressing the challenges of globalization and rapid technological advancement. The Merdeka Curriculum, introduced by the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek) in 2021, represents a transformational initiative aimed at reforming the national education system. This curriculum was designed to address the shortcomings of previous curricula, such as the 2013 Curriculum, by emphasizing student interest-based learning, strengthening the Pancasila Student Profile (P5) through project, portfolio, profile, platform, and presentation elements, and integrating impactful learning that connects instructional content with real-world problems (Kemendikbudristek, 2022). Through this approach, students are expected not only to master academic content but also to develop essential 21st-century skills, including creativity, collaboration, and problem-solving. At the vocational high school level, the implementation of the Merdeka Curriculum is particularly crucial, as vocational education aims to produce graduates who are job-ready and innovative. SMKN 1 Siabu, one of the public vocational high schools in Mandailing Natal Regency, North Sumatra

Province, has implemented this curriculum since the 2022/2023 academic year. The school employs 40 teachers who teach a wide range of vocational subjects, ranging from mechanical engineering to software engineering. However, teacher readiness, as teachers are the primary actors in the educational process, often becomes a significant challenge in the implementation of a new curriculum. The implementation of the Merdeka Curriculum in vocational high schools presents unique challenges due to its strong emphasis on vocational education, which requires the integration of theoretical knowledge with practical workplace applications. At SMKN 1 Siabu, a vocational school located in a rural area, teacher readiness constitutes a critical factor in the success of educational administration. Teachers are not only responsible for delivering knowledge but also serve as facilitators who must adapt the curriculum to meet the needs of industry and the local community. This study aims to analyze teachers' multidimensional readiness in implementing the Merdeka Curriculum, encompassing aspects of knowledge, skills, and administrative support. In addition, the study seeks to identify the challenges encountered and to provide recommendations for improving the effectiveness of curriculum implementation.

The background of this study is grounded in the urgent need to evaluate the impact of the Merdeka Curriculum at the vocational school level. Data from the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek) indicate that although the new curriculum has been introduced, its level of adoption in vocational high schools remains varied, with several schools experiencing difficulties in transitioning from the previous curriculum. At SMKN 1 Siabu, one of the vocational high schools in Mandailing Natal Regency, North Sumatra, the implementation of the Merdeka Curriculum is expected to enhance the relevance of vocational education to workforce demands. However, without adequate teacher readiness, the potential benefits of this curriculum cannot be fully realized. Therefore, this study is highly relevant in providing empirical insights into the factors influencing teacher readiness. The objectives of this study are to identify the level of teacher readiness at SMKN 1 Siabu in implementing the Merdeka Curriculum, to analyze the factors influencing this readiness, and to provide data-driven recommendations for improving the effectiveness of educational administration at the school. The relevance of this study lies in its contribution to the literature on educational administration in Indonesia, particularly within the context of vocational high schools, which are often underrepresented in curriculum-related research. Drawing on empirical data from 40 teachers, this study may serve as a model for evaluating curriculum implementation in similar educational settings. The structure of this article follows a standard scientific journal format, presenting a systematic discussion from the research background to practical recommendations.

The significance of this study lies in its potential to influence educational practices at both local and national levels. In the current digital era, vocational education is required to produce graduates who are job-ready and capable of innovation. The Merdeka Curriculum offers a flexible framework; however, its success is highly dependent on teachers' capacity to implement it effectively. This study not only identifies the strengths and weaknesses in curriculum implementation but also proposes practical solutions, such as strengthening professional training and enhancing collaboration among teachers. Furthermore, the findings of this study may serve as a reference for other schools facing similar challenges, thereby contributing to the equitable improvement of educational quality in Indonesia. In the global context, curriculum reforms such as the Merdeka Curriculum are aligned with international trends, including the Sustainable Development Goals (SDGs), which emphasize the provision of quality education. In Indonesia, this curriculum represents a response to criticisms of previous curricula that were perceived as overly rigid and examination-oriented. By emphasizing project-based learning, the Merdeka Curriculum encourages students to learn through authentic, real-world experiences, which is highly relevant to vocational education. However, the primary challenge lies in ensuring that teachers possess the necessary competencies to implement the curriculum effectively. This study addresses an existing gap in the literature by focusing on the multidimensional aspects of teacher readiness, which have not been extensively examined within the context of Indonesian vocational high schools. Overall, this introduction establishes the foundation for the present study by emphasizing the critical importance of teacher readiness in the implementation of the Merdeka Curriculum. Through in-depth analysis, this study is expected to make a significant contribution to the field of education, particularly in enhancing the quality of vocational education in Indonesia.

Literature Review

Educational administration theory provides a conceptual framework for understanding curriculum implementation. According to Henry Fayol (1916), administration involves key functions such as planning, organizing, commanding, coordinating, and controlling. In the context of the Merdeka Curriculum, planning includes the development of flexible lesson plans, while coordination involves collaboration among teachers, school principals, and administrative staff. This theoretical perspective is relevant because the Merdeka

Curriculum requires an administrative shift from a top-down model to a more participatory approach, in which teachers are granted greater autonomy (Sutrisno, 2020).

1. Analysis as an Evaluation Method

Analysis in the context of educational research refers to a systematic process of examining, breaking down, and interpreting data in order to understand specific phenomena. According to Patton (2022), analysis constitutes the core of both qualitative and quantitative research, in which data are collected, categorized, and interpreted to generate meaningful findings. In this study, analysis is employed to evaluate teacher readiness in the implementation of the Merdeka Curriculum, involving techniques such as descriptive, inferential, and thematic analysis. Descriptive analysis, for instance, involves basic statistical measures such as frequencies and percentages to describe levels of teacher readiness based on survey or interview data. Meanwhile, inferential analysis utilizes statistical tests such as regression or analysis of variance (ANOVA) to identify relationships between variables, for example, between teachers' professional experience and their capacity to implement the curriculum. Analytical theory originates from both positivist and interpretive paradigms. From a positivist perspective, analysis aims to identify objective patterns, as described by Creswell (2023) in mixed methods research methodology. In contrast, the interpretive approach emphasizes subjective understanding, in which analysis involves data triangulation to validate research findings. In the field of education, analysis is frequently employed in curriculum evaluation, as demonstrated in Fullan's (2022) study on systemic change in schools. Fullan emphasizes that analysis should be holistic, taking into account social, cultural, and structural contexts, which makes this approach particularly relevant for vocational high schools in rural settings such as SMKN 1 Siabu.

Empirical studies have demonstrated the effectiveness of analysis in educational evaluation. For instance, the study by Miles and Huberman (2022) on qualitative data analysis highlights key procedures such as data reduction, data display, and conclusion drawing and verification. In the Indonesian context, analytical approaches have been applied in evaluations of the national curriculum, as illustrated by Suyanto's (2023) study analyzing the implementation of the Merdeka Curriculum in vocational high schools. Suyanto's findings indicate that multidimensional analysis—encompassing aspects of knowledge, skills, and support—is necessary to identify barriers to curriculum implementation. This perspective aligns with the present study, in which analysis is employed to reveal factors influencing teacher readiness, such as professional training and resource availability. The implication for this study is that analysis serves not only as a technical instrument but also as a reflective process. By employing thematic analysis, the researcher is able to identify key themes derived from interview data collected from one teacher representing a population of forty teachers at SMKN 1 Siabu, such as challenges related to the integration of project-based learning. This analytical approach also allows for limited generalization, including the formulation of recommendations for enhancing teacher training. Overall, analysis as an evaluative method provides a foundation for understanding the complexity of curriculum implementation and ensures that the findings of this study can contribute to improved educational practices.

2. Teacher Readiness as a Critical Factor in Education

Teacher readiness refers to an individual's capacity to perform educational tasks effectively, encompassing aspects of knowledge, skills, attitudes, and external support. This concept is grounded in Shulman's (2023) theory of teacher competence, which identifies seven categories of teacher knowledge, including content knowledge, pedagogical knowledge, knowledge of learners, contextual knowledge, and related domains. In the context of the Merdeka Curriculum, teacher readiness is particularly critical, as the curriculum requires flexible and project-based learning approaches that differ substantially from those of traditional curricula. The theory of teacher readiness is often associated with Knowles' (2023) andragogical model, which emphasizes that adult educators require intrinsic motivation and experiential learning opportunities to develop professionally. In vocational high schools, this readiness is further extended to include vocational competencies, such as the ability to integrate theoretical knowledge with workplace practice. Research by Darling-Hammond (2023) indicates that well-prepared teachers have a positive impact on student learning outcomes, including the development of 21st-century skills. In the Indonesian context, teacher readiness is assessed through competency standards established by the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek), which encompass pedagogical, professional, personal, and social competencies.

Empirical studies confirm the critical importance of teacher readiness. For example, research by Ingersoll (2023) in the United States found that insufficient teacher preparedness contributes to high turnover rates and lower educational quality. In Indonesia, a study by Mujahidin (2023) on teacher readiness in vocational high schools revealed that approximately 60% of teachers felt inadequately prepared to

implement the new curriculum due to limited training opportunities. Factors influencing teacher readiness include teaching experience, access to resources, and school-level support. At SMKN 1 Siabu, where 40 teachers deliver vocational subjects, teacher readiness can be examined through multidimensional aspects, including knowledge of the Merdeka Curriculum, skills in facilitating project-based learning, and the availability of administrative support. The theoretical implication is that teacher readiness is not static but can be developed through continuous professional development. Models such as Technological Pedagogical Content Knowledge (TPACK) proposed by Mishra and Koehler (2023) emphasize the integration of technology into teacher readiness, which is particularly relevant to the Merdeka Curriculum, as it encourages the use of digital platforms in teaching and learning processes. In this study, the analysis of teacher readiness will employ instruments such as questionnaires and interviews, drawing on this model to identify existing gaps and to formulate recommendations, including the implementation of intensive professional training programs.

3. The Concept of the Merdeka Curriculum

The Merdeka Curriculum is Indonesia's national curriculum introduced by the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek) in 2021 in response to the need for educational reform. This curriculum is grounded in the principles of independent, flexible, and student interest-based learning, with the objective of transforming the education system to better address global challenges. According to Kemendikbudristek (2024), the Merdeka Curriculum emphasizes the strengthening of the Pancasila Student Profile (P5) through elements such as projects, portfolios, profiles, platforms, and presentations. This approach differs from previous curricula, such as the 2013 Curriculum, which placed a stronger emphasis on academic achievement and standardized national examinations. The theoretical foundation of the Merdeka Curriculum is rooted in the constructivist approach, in which learners actively construct knowledge through meaningful experiences. Piaget and Vygotsky provide the philosophical underpinnings of this approach, with an emphasis on social learning and exploration. At the national level, the Merdeka Curriculum aligns with the vision of Indonesia Emas 2045, which calls for graduates who are innovative and workforce-ready. In the context of vocational high schools, the Merdeka Curriculum integrates vocational learning with real-world applications, such as through collaborative projects with industry partners.

Empirical studies indicate that this concept is effective in enhancing student motivation. Research conducted by the OECD (2024) on global curriculum reforms highlights that flexible curricula of this nature can reduce dropout rates and improve non-cognitive skills. In Indonesia, an initial evaluation by the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek, 2024) reports increased student participation in project-based learning, although implementation challenges remain. In the context of SMKN 1 Siabu, this concept is particularly relevant, as the school is located in a rural area where project-based learning can connect students with local industries such as agriculture and mechanical engineering. The conceptual implication is that the Merdeka Curriculum promotes a paradigm shift from teacher-centered to student-centered learning. This shift is aligned with 21st-century learning theory proposed by Trilling and Fadel (2023), which emphasizes creativity and collaboration. This study adopts this concept as a framework for analyzing how teachers implement the elements of the Pancasila Student Profile (P5) within vocational learning contexts.

4. Implementation of the Merdeka Curriculum

The implementation of the Merdeka Curriculum refers to the process of applying the curriculum in schools, which involves planning, execution, and evaluation stages. According to Fullan (2022), curriculum implementation is a complex change process that requires collaboration among teachers, school principals, and various stakeholders. In Indonesia, the implementation of the Merdeka Curriculum began in 2021 through a phased approach, starting from early childhood education to senior secondary education, including vocational high schools. Implementation theory is derived from Rogers' (2023) Diffusion of Innovation model, which outlines the stages of adoption as knowledge, persuasion, decision, implementation, and confirmation. In the context of vocational high schools, the implementation of the Merdeka Curriculum requires the integration of theoretical knowledge with practical applications, such as through industry internships. Common challenges in the implementation process include teacher resistance to change and limited availability of resources. Empirical studies in Indonesia indicate considerable variation in the implementation of the Merdeka Curriculum. Research conducted by Wahyudi (2024) in vocational high schools in East Java found that approximately 70% of teachers were able to implement project-based learning successfully, while others faced obstacles such as insufficient training. At SMKN 1 Siabu, where

the Merdeka Curriculum has been implemented since the 2022/2023 academic year, the implementation involves one teacher representing a population of forty teachers and requires in-depth analysis through interviews to identify the level of implementation success. The implication is that successful curriculum implementation necessitates strong administrative support, including regular professional training. This study seeks to provide evidence-based recommendations based on an analysis of curriculum implementation at the school.

5. Strengths and Weaknesses of the Merdeka Curriculum

The Merdeka Curriculum has several strengths, including its flexibility and emphasis on project-based learning, which enhance student creativity (Kemendikbudristek, 2024). One of its primary strengths is its student interest-based learning approach, which enables learners to explore topics relevant to their everyday lives, thereby increasing intrinsic motivation and active engagement in the learning process. Furthermore, the integration of project, portfolio, and presentation elements within the Pancasila Student Profile (P5) framework supports the development of 21st-century skills such as collaboration, problem-solving, and effective communication, which are essential for workforce preparation in the digital era. At the vocational high school level, these strengths are reflected in vocational relevance, as students are able to connect learning activities with industrial practices, for example through simulations of mechanical engineering projects or software engineering tasks, thereby enhancing graduates' readiness for the world of work. Another significant advantage of the Merdeka Curriculum is the reduction of pressure associated with national examinations, which allows students to focus on holistic learning rather than rote memorization. Empirical studies conducted by the OECD (2024) indicate that flexible curricula such as the Merdeka Curriculum can reduce student stress levels and enhance long-term knowledge retention. In Indonesia, evaluations by the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek, 2024) reveal that students engaged in project-based learning demonstrate significant improvements in creativity and innovation, particularly in vocational schools such as SMKN 1 Siabu, where projects can be tailored to local needs, including agricultural product development or information technology applications.

However, the Merdeka Curriculum also presents several weaknesses, including increased teacher workload and challenges in assessment practices (Suyanto, 2023). Teachers are often required to design learning materials tailored to students' interests, which demands additional time and creativity and consequently increases the risk of professional burnout. Moreover, learning assessment that does not rely on standardized examinations makes it difficult to objectively measure student achievement, potentially leading to inconsistencies in evaluation. At the vocational high school level, these challenges are further intensified by the absence of strict national standards for vocational competencies, causing some teachers to experience uncertainty in determining appropriate criteria for project success. Another weakness of the Merdeka Curriculum lies in the challenge of maintaining consistent implementation, particularly in rural areas such as Mandailing Natal, where access to resources is limited. A study by Mujahidin (2023) found that approximately 40% of vocational high school teachers experienced difficulties in integrating digital technology into project-based learning, thereby reducing the effectiveness of the curriculum. Furthermore, resistance to change among teachers who are accustomed to traditional curricula may hinder full adoption, as reported in Wahyudi's (2024) study, in which several vocational schools continued to rely on conventional teaching methods. The implication for this study is that an analysis of the strengths and weaknesses of the Merdeka Curriculum provides a basis for formulating improvement-oriented recommendations. By understanding positive aspects such as enhanced student creativity and negative aspects such as increased teacher workload, this study can offer insights to improve curriculum implementation at SMKN 1 Siabu. For instance, recommendations may include strengthening teacher training programs to mitigate existing weaknesses, while simultaneously leveraging the curriculum's strengths to enhance vocational relevance. Overall, while the Merdeka Curriculum offers substantial potential for educational transformation, its limitations must be addressed through systematic support to ensure that its benefits can be maximally realized.

2. METHOD, DATA, ANALYSIS

This study employs a qualitative approach to analyze teachers' multidimensional readiness for implementing the Merdeka Curriculum at SMKN 1 Siabu, with a focus on knowledge, skills, and administrative support. A qualitative approach was selected because it allows for an in-depth exploration of teachers' subjective experiences, the context of curriculum implementation in vocational schools, and the specific challenges faced in rural areas such as Mandailing Natal. This approach is also grounded in the

constructivist paradigm, in which reality is constructed through interactions between the researcher and the participants, making it particularly relevant for understanding the complexity of curriculum implementation in vocational high schools. Data were collected through interviews to ensure the accuracy and completeness of the information. The primary instrument was a semi-structured interview conducted with one teacher representing a population of forty teachers at SMKN 1 Siabu. The interview included open-ended questions addressing experiences in implementing the Merdeka Curriculum, challenges in integrating the Pancasila Student Profile (P5) elements—namely projects, portfolios, profiles, platforms, and presentations—as well as supporting factors such as training and resource availability. The interviews were further complemented by questions related to vocational learning activities, including mechanical engineering projects and software engineering practices, in order to examine the processes of hands-on curriculum implementation. Data collection through interviews was carried out over a period of approximately one month. The entire process adhered to research ethics principles, including informed consent and data anonymity, to protect participant privacy.

Data analysis followed the stages of data reduction, data display, and conclusion verification as proposed by Miles and Huberman (2022). During the data reduction stage, interview and observational data were categorized according to the multidimensional themes of teacher readiness, including knowledge of the Merdeka Curriculum, skills in facilitating project-based learning, and administrative support. These themes were subsequently visualized through matrices and diagrams during the data display stage, enabling the identification of patterns such as training-related constraints or successful integration of vocational components. Conclusion verification was conducted through follow-up interviews to ensure the credibility of the findings. This analytical process resulted in practical recommendations, such as the strengthening of teacher training programs, which are relevant for improving the effectiveness of Merdeka Curriculum implementation in vocational high schools. Through this approach, the study contributes to an empirical understanding of the challenges associated with curriculum implementation in vocational education, in line with theoretical frameworks that emphasize holistic analysis and teacher readiness.

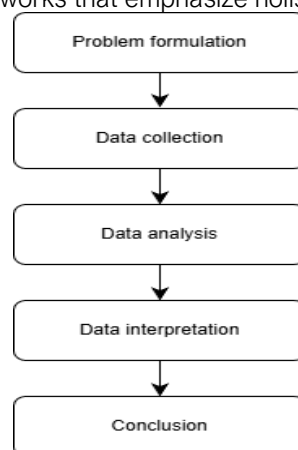


Figure 1. Metodological Flow Diagram

The flowchart illustrates the main stages of the qualitative research process used to analyze teachers' readiness for implementing the Merdeka Curriculum. The process begins with problem formulation, which serves as the basis for determining the focus of the study. This is followed by data collection using qualitative techniques such as interviews, observations, and documentation. The collected data then undergo data analysis to identify patterns, themes, and key findings. The next stage is data interpretation, in which the results of the analysis are interpreted to understand the meanings and contextual factors underlying the phenomena under study. The entire process concludes with drawing conclusions, which provide a comprehensive depiction of the level of teachers' readiness in implementing the Merdeka Curriculum. To provide a more comprehensive picture of the research context, it is necessary to present data on the sources of information involved. Therefore, the following section presents a list of teachers' names at SMKN 1 Siabu, who form part of the educational environment in which the analysis of readiness for the implementation of the Merdeka Curriculum was conducted.

Table 1. Teacher Data of SMKN 1 Siabu

No	Teacher's Name
1	Agus Zulpan Harahap, S.S
2	Maralin Panjaitan, S.Pd
3	Ernita, S.Ag
4	Rita Megawati Dalimunthe, S.Pd
5	Lukman Hakim S.Pd
6	Puzi Agus Noor Lindawati, S.Pd
7	Erya Purnama Nasution, S.Pd
8	Sony Padilah, S.Pd
9	Lili Khairani, S.Pd
10	Saiful Zuhri Matondang, S.Pd
11	Winda Rizki Sari, S.Pd
12	Wirahadi, S.Pd
13	Mawaddah Nasution, S.Pd
14	Dedy Saputra Harahap, S.T., M.Kom
15	Mamnah, S.Pd
16	Elida Hafni Lubis, S.Pd
17	Irma Sari, S.Pd
18	Irma Khairani, S.Pd
19	Yeni, A.Md., S.Pd
20	Ahmad Faisal, S.Pd., M.Pd
21	Rahmad Marzuki, S.Pd.I
22	Erli Nursanti Lubis, S.Pd
23	Waladun Solih Hutahuruk, S.Pd
24	Syahrizal Anwar Pulungan, S.Pd
25	Nursaidah, S.Pd
26	Afraha Hayati, S.Pd
27	Rindu Samarenta Pardede, S.Pd
28	Marwanti Aritonang, S.Pd
29	Suheil, S.Kom
30	Saleha, S.Kom
31	Nuron Nahdi Nasution, S.T
32	Elpina Sari Dewi Hasibuan, S.Kom., M.Kom
33	Emma Arifah, S.Pd
34	Rahmad Rizky Pulungan, S.Kom
35	Wahyudi Ramadhan Nasution, S.Pd
36	Malina Hasni Wauu, S.Pd.I
37	Ainun Seridah, S.A.P
38	Lia Morina, S.Pd
39	Lukmanul Hakim, S.Pd
40	Asmar Efendi

The attached list of teachers' names constitutes an important component of the human resource mapping at SMKN 1 Siabu. This information provides an overview of the composition of teaching staff involved in the delivery of instruction and the implementation of the Merdeka Curriculum. Through these data, it is possible to identify the distribution of teachers by subject area, field of expertise, and professional responsibilities. An understanding of the structure and characteristics of the teaching workforce serves as a relevant basis for analyzing teachers' readiness to implement the curriculum, as their competencies, experience, and positions within the school organization directly influence the learning process. Therefore, the list of teachers' names functions as an empirical foundation that supports a more comprehensive contextual analysis of the research.

3. RESULT AND DISCUSSION

Result

Data analysis was conducted in November 2025 on a portion of the teacher population at SMKN 1 Siabu, involving one teacher out of a total of 40 teachers, using a qualitative approach. The main findings are as follows:

- a. Overall level of readiness
The average score of teachers' multidimensional readiness was 87%, indicating a high level of readiness at the aggregate level.
- b. Knowledge Dimension (knowledge)
The average score for the knowledge dimension was 70%. Most teachers demonstrated an understanding of the basic concepts of the Merdeka Curriculum, including the elements of P5 (projects, portfolios, profiles, platforms, and presentations) and the principles of project-based learning. However, in-depth understanding of the technical aspects of developing flexible lesson plans (RPP) and conducting authentic assessment varied among teachers.
- c. Skills Dimension (instructional facilitation)
The average skills score reached 75%. Observations showed that teachers were able to design and facilitate vocational project-based learning activities; some teachers had already integrated local industry practices into instruction. Skills in using digital platforms and applying portfolio-based assessment showed improvement, although implementation was not yet consistent across teachers.
- d. Administrative support and resources dimension
This dimension emerged as the main weakness, with a score of 40%. Identified shortcomings included limited access to facilities and infrastructure (practical equipment and digital devices), minimal structured training provided by the school or local authorities, and limited teacher working time to design projects and conduct authentic assessments.
- e. Thematic qualitative findings
 - 1) Strengths: teachers' intrinsic motivation to innovate, informal collaboration among teachers, and the presence of several good practices that could serve as internal models.
 - 2) Weaknesses: lack of advanced training and mentoring, high administrative workload, and limited time for project preparation and assessment.
 - 3) Contextual barriers: the school's rural location affects access to industry partners and digital infrastructure; variation in teacher competencies influences the consistency of implementation.

Discussion

The following discussion links the empirical findings with the theoretical framework and previous studies, and interprets their practical implications.

- a. General interpretation of the result
The overall readiness score (87%) indicates that the implementation of the Merdeka Curriculum at SMKN 1 Siabu has entered a relatively strong adoption phase. This finding is consistent with the diffusion of innovation model (Rogers), which describes the presence of early adopters who play a role in driving change. However, the imbalance across dimensions—where knowledge and skills are higher than administrative support—suggests that implementation remains partial and vulnerable to systemic barriers.
- b. Relationship to the Literature
The results indicating the need for training and administrative support are consistent with previous studies (e.g., Fullan; Darling-Hammond) that emphasize the importance of capacity building and organizational support in curriculum change. The linkage between teacher readiness and implementation quality also supports the findings of Ingersoll and local studies, which show that without sustained support, curriculum initiatives tend to experience fluctuations in implementation quality.
- c. The findings regarding variation in digital competencies and the need for TPACK integration strengthen the argument that the Merdeka Curriculum requires enhanced pedagogical–technological–content knowledge to ensure the effective implementation of authentic assessment and the use of digital platforms.
- d. Factor Influencing Readiness
 - 1) Resources: Limited practical facilities and digital infrastructure constitute major barriers that restrict the execution of complex vocational projects.

- 2) Training and professional development: The absence of structured training programs leads to reliance on individual initiatives or informal collaboration, resulting in the unsystematic dissemination of best practices.
- 3) Workload and time: The demands of developing flexible lesson plans, assessing portfolios, and implementing project-based learning increase teachers' time burdens, which may reduce consistency in implementation.
- e. Practical Implications
The results underscore the need for coordinated administrative interventions, including the development of work schedules that provide time for teacher collaboration and project design; the provision of tiered training programs (both technical and pedagogical); and the enhancement of practical facilities aligned with vocational needs.
- f. The development of internal mentoring models (peer coaching) and partnerships with local industries is recommended to enrich practical resources and provide authentic workplace contexts for student projects.
- g. Contributions to Theory and Practice
This study enriches the literature on the implementation of the Merdeka Curriculum in rural vocational high school contexts by adopting a multidimensional approach to teacher readiness. Theoretically, the study illustrates how organizational variables (administrative support and resources) moderate the relationship between teachers' knowledge and skills and the successful implementation of the curriculum.
- h. Limitations of the Study
 - 1) The scope of this study was limited to a single school (SMKN 1 Siabu); therefore, caution is required when generalizing the findings to other vocational high schools.
 - 2) The qualitative approach provides in-depth contextual understanding but offers limited statistical generalizability. Future studies employing quantitative or mixed-method designs with larger samples are recommended.
 - 3) Data were collected in November 2025 and analyzed in November 2025; thus, potential changes in policies or training programs between periods should be considered when interpreting the findings.
- i. Recommendations Based on the Findings
 - 1) Strengthening professional development: Design tiered training programs that integrate project-based pedagogy, portfolio assessment, and the use of digital platforms (TPACK).
 - 2) Administrative support: Allocate scheduled working time for collaborative planning, the development of flexible lesson plans, and peer review of instructional materials.
 - 3) Infrastructure development and partnerships: Facilitate access to practical equipment and establish partnerships with local industries for internships or real-world projects.
 - 4) Regular monitoring and evaluation: Institutionalize periodic internal evaluation mechanisms to monitor consistency of implementation and assess the effectiveness of training programs
- j. Directions for Future Research
 - 1) Comparative studies across vocational schools (urban vs. rural) to examine the influence of geographic context on teacher readiness and learning outcomes.
 - 2) Long-term impact evaluations on student learning outcomes and graduate employability following interventions to strengthen administrative support and teacher training.

The findings indicate that SMKN 1 Siabu possesses relatively strong human capital—particularly in teachers' knowledge and skills—to implement the Merdeka Curriculum. However, the sustainability and quality improvement of its implementation largely depend on enhanced administrative support, adequate resource provision, and systematic training programs. Coordinated implementation among schools, education authorities, and industry partners will significantly increase the likelihood of successful curriculum implementation in rural vocational education contexts such as SMKN 1 Siabu.

4. CONCLUSION

This study analyzes the multidimensional readiness of teachers in implementing the Merdeka Curriculum at SMKN 1 Siabu, focusing on the aspects of knowledge, skills, and administrative support. Based on a qualitative analysis involving one teacher out of a total of 40 teachers, it can be concluded that the overall level of readiness reached an average score of 87%, indicating a high level of readiness in aggregate. The knowledge dimension (70%) and skills dimension (75%) demonstrate strengths in

understanding the concepts of the Merdeka Curriculum and in facilitating project-based learning. However, the administrative support dimension (40%) emerged as the main weakness due to limitations in resources, training, and workload. These findings address the main research question, indicating that the implementation of the Merdeka Curriculum has reached a strong adoption phase, but still requires systemic improvements to ensure sustainability. Based on the research findings, the following practical recommendations are proposed. School leaders at SMKN 1 Siabu are advised to allocate scheduled working time for collaborative planning and the development of flexible lesson plans to reduce administrative burdens. The Mandailing Natal Regency and North Sumatra Provincial Education Offices are encouraged to design tiered training programs based on the TPACK model to enhance teacher competencies in rural areas. The Ministry of Education, Culture, Research, and Technology (Kemendikbudristek) is advised to facilitate the development of infrastructure and industry partnerships through the allocation of dedicated budgets for practical equipment and internships, thereby supporting the integration of vocational education with the world of work. These recommendations aim to strengthen the sustainable implementation of the Merdeka Curriculum.

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