Evaluation of the Implementation of the Merdeka Curriculum at Vocational High School Using CIPP Model

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Abstract

As per the directive of the head of the ministry of education, culture, research, and technology (number 044/H/KR/2022) regarding educational units implementing Merdeka Curriculum implementation, the Merdeka Curriculum is scheduled to be implemented beginning with the 2022/2023 school year. Researchers employ Stufflebeam's CIPP evaluation approach, which includes context, input, process, and product components, to determine whether the new curriculum has been implemented appropriately and successfully. In Sumbawa, 310 students from vocational schools and 303 teachers participated in this study. The Merdeka Curriculum has been applied well in terms of context, input, process, and outcomes, according to this study, which used survey technique and a quantitative research approach. Researchers discovered that the average context score for instructors was 4.08, the average input score for teachers was 4.03, the average process score for teachers was 3.89, the average output score for teachers was 4.16, and the average student score was 4.00. It was discovered that, aside from that, there were statistically significant values in terms of the context of the teacher (Md = 4.00, n = 303) and the student (Md = 3.56, n = 310), the process of the teacher (Md = 3.86, n = 303) and the student (Md = 4.00, n = 310), the value of U = 38310.000, ρ =.000, r =.000 while the Product of the instructor (Md = 4.29, n = 303) and the pupil (Md = 4.00, n = 310), U = 30985.000, ρ =.000, and r =.000 are obtained. The results of the Mann Withney U-test, however, indicated that the teacher's (Md = 4.00, n = 303) and student's (Md = 4.00, n = 310) inputs were not statistically significant (U = 44775.000, ρ =.307, r =.041). To ensure that teachers and students have the same understanding of context,

input, process, and product, it is intended that the Merdeka Curriculum may be implemented more effectively.

1. Introduction

Launched in February 2022 by the Indonesian Minister of Education, Nadiem Anwar Makarim, the Merdeka Curriculum marks a significant shift in the nation's approach to education. Aimed at addressing learning losses due to the COVID-19 pandemic and revitalizing Indonesian education, the curriculum prioritizes flexibility, student-centered learning, and teacher autonomy. Compared to traditional curricula, the Merdeka Curriculum focuses on essential learning objectives, allowing teachers to delve deeper into key concepts and adapt their methods to individual student needs and interests. This increased flexibility fosters a more dynamic and engaging learning environment (Direktorat Sekolah Dasar, 2022; Direktorat Sekolah Menengah Pertama, 2022b).

The Merdeka Curriculum empowers teachers by giving them greater autonomy in choosing teaching tools and resources. This shift from a prescriptive to a more facilitative approach acknowledges the expertise and creativity of educators, fostering a sense of ownership and responsibility for student learning outcomes (Direktorat Sekolah Menengah Pertama, 2022b). The Merdeka Curriculum is being implemented in stages to ensure a smooth transition. Vocational high schools (SMK) have been at the forefront, with 901 SMK Centers of Excellence adopting the program in the 2021/2022 academic year and an additional 6,803 SMKs joining in 2022/2023 (Kemdikbud, 2023). Other schools have the flexibility to choose between three implementation options: Independent Learning, Independent Change, and Independent Sharing, allowing them to tailor the curriculum to their specific needs and contexts (Direktorat Sekolah Menengah Pertama, 2022a).

Recognizing the importance of ongoing assessment, the Indonesian Ministry of Education is proposing the CIPP model as a framework for evaluating the effectiveness of the Merdeka Curriculum. This comprehensive model considers the context, inputs, processes, and outputs of the program, providing valuable insights into its strengths, weaknesses, and areas for improvement (Badan Standar, Kurikulum, dan Asesmen Pendidikan Kementrian Pendidikan, Budaya, Riset, 2022). The findings from this evaluation will be crucial for informing future refinements and ensuring the continued success of the Merdeka Curriculum in transforming Indonesian education for the better.

The Merdeka Curriculum represents a bold and innovative approach to education in Indonesia. Its emphasis on flexibility, student-centered learning, and teacher autonomy has the potential to revolutionize the learning experience for students and educators alike. As the program continues to be implemented and evaluated, it will be exciting to see how it shapes the future of education in Indonesia.

1.1 Problem Statement

The Merdeka Curriculum, launched in Indonesia in 2022, aims to provide educators with significant flexibility in designing quality learning experiences for their students (Ndari et al., 2023). This approach empowers teachers to cater to individual needs and diverse learning environments. However, the path to successful implementation is not without its obstacles. One major challenge lies in supporting teachers. Implementing new curriculum materials often requires additional training, guidance, and resources. Unfortunately, teachers frequently lack these crucial elements, leading to incomplete or ineffective execution of the curriculum (Hunaepi & Suharta, 2024). Additionally, teacher resistance to change can arise if they perceive the new materials as irrelevant or misaligned with their students' needs. This lack of buy-in further hinders effective implementation (Utami et al., 2023). Student engagement is another area of concern. The curriculum may not adequately reflect the diverse backgrounds and learning styles of students, leading to disengagement and a lack of motivation. This disconnect is further deepened when students find the material culturally or personally irrelevant. Therefore, thorough research and evaluation using the CIPP model are crucial. This model systematically gathers information about the program to identify its strengths and weaknesses, allowing for improvements that can ensure the Merdeka Curriculum truly enhances learning outcomes for all vocational school students.

1.2 Research Questions

Through this study, it was hoped that the following questions would be solved:
1. Whether the Merdeka Curriculum has been effective in terms of Context by students and teachers?
2. Whether the Merdeka Curriculum has been effective in terms of Input by students and teachers?
3. Whether the Merdeka Curriculum has been effective in terms of Process by students and teachers?
4. Whether the Merdeka Curriculum has been effective in terms of Product by students and teachers?
5. Is there a significant difference in mean score opinion between students and teachers about the Merdeka Curriculum in term of Context, Input, Process, and Product?

1.3 Aims and Objectives

This study aimed to use the CIPP evaluation model to determine the effectiveness of implementing the Merdeka Curriculum. The objectives of this study were as follows:

1. To determine the effectiveness of the Merdeka Curriculum by its Context by students and teachers.
2. To determine the effectiveness of the Merdeka Curriculum by its Input by students and teachers.
3. To determine the effectiveness of the Merdeka Curriculum by its Process by students and teachers.
4. To determine the effectiveness of the Merdeka Curriculum by its Product by students and teachers.
5. To compare the mean score opinion difference between students and teachers about the Merdeka Curriculum in term of Context, Input, Process, and Product

2. Literature Review

2.1 Concept of the Merdeka Curriculum

Indonesia's education landscape is undergoing a significant transformation with the launch of the Merdeka Curriculum. This new program, spearheaded by the Ministry of Education, Culture, Research and Technology. Kemendikbud (2022) aims to revolutionize learning by placing student autonomy and flexibility at the forefront. At the heart of the Merdeka Curriculum lies the concept of "Freedom to Learn" (Direktorat Sekolah Dasar, 2022). Minister Nadiem Makarim emphasizes that teachers themselves must first experience the freedom of thought before imparting it to their students. This philosophy challenges the traditional, teacher-centric approach and encourages active exploration and discovery in the learning process. The Merdeka Curriculum shifts the focus away from rote memorization and standardized tests. Instead, it prioritizes the development of essential skills like literacy, numeracy, and character (Direktorat Sekolah Menengah Pertama, 2022b). Assessments are designed to gauge minimum competency in these key areas, providing valuable insights into student progress and learning gaps. This departure from the stress-inducing National Examination system aims to create a more supportive and encouraging learning environment. The Merdeka Curriculum recognizes the diverse needs and capabilities of schools across Indonesia.

Therefore, it offers three distinct implementation options: 1) Independent Learning: Schools gradually incorporate elements and principles of the Merdeka Curriculum while retaining their existing curriculum. This allows for a smooth transition and caters to those seeking a cautious approach (Direktorat Sekolah Menengah Pertama, 2022a); 2) Independent Change: Schools fully adopt the Merdeka structure, utilizing the "Merdeka Mengajar" platform for teaching resources and tools. This option provides greater flexibility and access to a curated learning ecosystem (Kemendikbud, 2022); 3) Independent Sharing: Schools actively participate in developing their own curriculum based on the Merdeka framework, while committing to share their best practices with others. This fosters collaboration and innovation within the educational community (Kemendikbud, 2022).

The Merdeka Curriculum prioritizes individual student needs and learning styles. Teachers are empowered to tailor their instruction and incorporate local context and cultural relevance to maximize engagement and understanding. This shift towards student-centered learning aims to nurture creativity, critical thinking, and problem-solving skills, preparing students for success in a rapidly changing world. Despite its promising vision, the Merdeka Curriculum faces challenges, such as ensuring adequate teacher training and access to resources for successful implementation (Badan Standar, Kurikulum, dan Asesmen Pendidikan Kementrian Pendidikan, Budaya, Riset, 2022). Addressing these concerns and continuously evaluating the program's effectiveness will be crucial for its long-term success. Overall, the Merdeka Curriculum represents a significant step towards a more flexible, student-centered, and inclusive education system in Indonesia. By emphasizing freedom, exploration, and personalized learning, it has the potential to empower students and teachers alike, propelling Indonesian education towards a brighter future.

2.2 Concept of Effectiveness

The concept of effectiveness, though seemingly straightforward, holds intricate layers that experts have been dissecting for years. Achieving program goals and objectives is undoubtedly at its core, but effectiveness transcends mere completion. Diving into the perspectives of various academics reveals a rich tapestry of understanding this crucial notion. At its foundational level, effectiveness signifies the successful execution of tasks while delivering desired outcomes. Siagian was quoted in Indrawijaya (2010), emphasizes effectiveness as a judgment call, considering both the process and cost-effectiveness of task implementation. Efficiency, while important, doesn't guarantee effectiveness. *Ahadi* also in Indrawijaya (2010), aptly highlights this by stating that an organization can be efficient in its operations but fall short of achieving its intended goals, rendering it ineffective.

Taking a broader view, Hasibuan (Indrawijaya, 2010) suggests that effectiveness encompasses not just meeting explicit goals but also fulfilling implicit aspirations. This viewpoint underlines the nuanced nature of

success, extending beyond tangible targets to encompass intangible aspirations that contribute to an organization's overall well-being. Moving beyond the binary of success and failure, Robbins (Indrawijaya, 2010) introduces a time-sensitive dimension to effectiveness. He views it as the level of goal achievement across various timeframes, encompassing both short-term objectives and long-term aspirations. This perspective helps us evaluate programs from a holistic standpoint, considering immediate results while keeping in sight the organization's broader vision.

Saxena (Indrawijaya, 2010) further deepens our understanding by introducing a quantitative element. He proposes that effectiveness can be measured by how far the program has achieved its targets in terms of quality, quantity, and timeliness. This concrete approach provides a tangible metric for gauging success, allowing for objective comparisons and evaluations. By looking into these diverse perspectives, we gain a comprehensive understanding of the multifaceted nature of effectiveness. It's not merely about ticking boxes; it's about achieving goals, adapting to changing environments, and delivering impactful results. As we embrace these various insights, we become better equipped to evaluate and enhance the effectiveness of any program, maximizing its potential to create lasting positive change.

2.3 Curriculum Evaluation

In the ever-evolving landscape of education, curriculum evaluation serves as a vital tool for ensuring relevance, effectiveness, and continuous improvement. It acts as a magnifying glass, allowing us to scrutinize the various components of a curriculum – its objectives, content, instructional strategies, and outcomes – and assess their impact on student learning. As John Dewey eloquently stated, "If we teach today's students as we taught yesterday's, we rob them of tomorrow" (Bărbuceanu, 2020). Curriculum evaluation heeds this message, guiding us beyond mere completion rates and towards fostering innovation and advancement. At its core, curriculum evaluation can be broadly classified into two key approaches: formative and summative. Formative evaluation, as emphasizes, occurs during the development and implementation stages of a curriculum. It acts as a feedback loop, identifying strengths and weaknesses, and informing revisions and improvements. Summative evaluation, on the other hand, takes place once the curriculum has been finalized. Its focus lies in determining the overall effectiveness and merit of the program, often employing quantitative data and statistical analysis (Ornstein & Hunkins, 2017).

Further delving into the depths of evaluation models, we encounter diverse frameworks that provide structured approaches to assessing a curriculum's worth. One prominent model is the Bradley Effectiveness Model, developed by Richard S. Bradley (1985). It emphasizes ten interconnected indicators, such as curriculum alignment, instructional strategies, and assessment systems, offering a comprehensive picture of a curriculum's efficacy (Ornstein & Hunkins, 2017). Studies like Alsallaiy's (2015) showcase the model's practical application in evaluating school-based programs, highlighting its strength in considering multiple, interwoven factors. Another established model is the Tyler Objectives-Centered Model, formulated by Ralph W. Tyler (1949). This approach focuses on clearly defined learning objectives and their rigorous assessment. Its systematic and logical nature offers a structured framework for ensuring learning journeys reach their intended destinations (Ibeh, 2021). Kibogoji's (2014) investigation in science labs and Cruickshank's (2013) exploration in health and physical education demonstrate the model's adaptability to diverse contexts, while acknowledging the need for flexibility and consideration of broader learning outcomes.

Moving beyond pre-determined objectives, the Stufflebeam CIPP Model, crafted by Daniel L. Stufflebeam on 1960, takes a cyclical approach focusing on context, input, process, and product (Lee et al., 2019). It delves into the environment surrounding the curriculum, analyzes potential implementation methods, monitors ongoing processes, and assesses the final outcomes, providing a holistic picture of the program's operation (Stufflebeam, 1971). Asad et al.'s (2016) study employing the CIPP model for textbook evaluation and Prasetyo's (2022) implementation for school-level quality assessment exemplify the model's versatility and effectiveness in various contexts. Finally, the Stake Responsive Model (1975), championed by Robert E. Stake, prioritizes the concerns and perspectives of stakeholders. It emphasizes an interactive and open process, drawing insights from various audiences to tailor the evaluation dynamically. Kihn's (2017) study on a school improvement initiative and Miller and Patel's (2019) evaluation of a community mental health program showcase the model's strength in fostering stakeholder engagement and providing a comprehensive understanding of a program's impact.

2.4 CIPP Evaluation Model

Born from a desire to improve, not merely prove, the CIPP model, formulated by Stufflebeam et al. (1967), emerges as a cornerstone in program evaluation. This framework, as presented by Suharsimi Arikunto and Cepi Safruddin (2009), shifts the focus away from singular program outcomes and towards a systemic understanding that empowers informed decision-making. Stufflebeam (1971), as echoed by Tayibnapis (2008), champions a decision-holder-oriented approach. He envisions evaluation as a process of gathering and delivering useful information to empower informed decisions regarding alternative courses of action. Sukardi (2011) further reinforces this idea,

highlighting that the CIPP model is not beholden solely to pre-determined objectives. Instead, it aligns with the committee's definition of educational program evaluation as a tool for both "describing achievement" and "providing information for alternative decision-making."

The CIPP model's versatility extends beyond the realm of education, finding application in management, companies, and various other fields. At its core, it dissects the educational system through four distinct lenses, forming the model's acronym, Context evaluation, Input evaluation, Process evaluation and Product evaluation. This holistic approach allows for a nuanced understanding of the program as a complex system, rather than a singular output. As Sukardi (2011) points out, this systemic perspective informs four crucial decision points, include Planning decisions, Forming decisions, Implementation decisions, and Recycling decisions. While the CIPP model offers distinct advantages, it is not without limitations. Its focus on comprehensive data collection and analysis can be demanding, requiring clear questions, relevant instruments, and skilled interpretation. Additionally, the cyclical nature of the model necessitates an ongoing commitment to evaluation, which may not be feasible in all contexts.

2.4.1 Context Evaluation

Launching a successful program requires a clear understanding of the landscape it will inhabit. Context evaluation shines a light on this crucial landscape, providing insights into unmet needs, target populations, and existing conditions. As Sukardi (2011) emphasizes, it's "a kind of needs analysis," offering a roadmap for formulating program objectives and strategies that truly make a difference. This initial assessment delves into the program's environment, considering factors like cultural values, economic realities, and educational challenges (Daryanto, 2007). By asking key questions like "What needs remain unaddressed?" (Arikunto, 2009), context evaluation ensures the program targets the right issues and has the best chance of success. Ultimately, it shapes critical decisions about the setting, goals, and potential constraints (Mutropin, 2010). This insightful foundation, as exemplified by Hudson et al.'s study (2020), can reveal unforeseen challenges like teacher workload, prompting context-specific adaptations that pave the way for impactful program implementation.

The value of context evaluation extends far beyond mere justification. As Arikunto (2009) highlights, it acts as a guiding light for planning decisions. By asking key questions like "What needs have not been met by the program?" and "Which development goals relate to meeting needs?", context evaluation identifies the specific issues the program should tackle and helps formulate achievable objectives. Tayibnapis (2008) echoes this sentiment, emphasizing that context evaluation lays the groundwork for planning the program's structure, goals, and implementation strategies. Sukardi (2011) further elaborates on the insightful nature of context evaluation. He points out that by uncovering and prioritizing various needs, this process paves the way for formulating relevant and impactful program objectives. This ensures that the program is not simply chasing generic goals, but rather, tailored to address the specific concerns and aspirations of the target population.

It's important to remember that context is not a static entity, but rather a dynamic environment. As Daryanto (2007) explains, it encompasses the bigger picture, including prevalent challenges, economic climate, and prevailing societal values, all of which can influence the types of goals and strategies chosen for the program. Mutropin (2010) further strengthens this point, viewing context evaluation as a form of needs analysis that uncovers not only challenges but also opportunities and constraints within the program's setting. This comprehensive understanding allows for the selection of programs that best fit the available resources and circumstances. This is where examples like the study by Hudson et al. (2020) come in. Utilizing the CIPP model's context phase, they delved into the factors influencing a school-based mindfulness program. By analyzing social, cultural, and organizational aspects, they identified challenges like teacher workload and lack of support. This crucial insight didn't just highlight obstacles, but also paved the way for context-specific adjustments and stakeholder engagement strategies – two invaluable pieces of the implementation puzzle for the program's ultimate success.

2.4.2 Input Evaluation

The second stage of the CIPP model is input evaluation. Evaluation of inputs helps regulate decisions, determine existing sources, what alternatives are taken, what are the plans and strategies for achieving goals, what are the work procedures for achieving them. According to Stufflebeam in Widoyoko (2009), questions related to input lead to solving problems that encourage the holding of the program in question. Input evaluation components include, Human resources, supporting facilities and equipment, Funds or budget and Various procedures and rules are required. According to Tayibnapis (2008) input evaluation helps regulate decisions, determine existing sources, what alternatives are taken, what are the plans and strategies to achieve needs. What is the working procedure to achieve it. Meanwhile, according to Sukardi (2011) input evaluation, provides information about the selected input, strengths and weaknesses, strategies, and designs to realize goals.

According to Daryanto (2007) inputs are facilities/capital/materials and strategic plans set to achieve these educational goals. Meanwhile, according to Mutropin (2010) input evaluation provides information to determine

how to utilize resources in order to achieve project goals and objectives. This evaluation consists of identifying and analyzing: 1) the capabilities of the relevant responsible agencies and groups, 2) various strategies to achieve project objectives, and 3) designs to achieve specific strategies. The information provided in an input evaluation is important information for structuring the specific design in order to achieve the project objectives. For the input phase, previous study about evaluating the investment efficiency of vocational training programs in rural China by Chen et al. focused on assessing the cost-effectiveness of various vocational training programs for rural youth in China, revealed significant variations in efficiency across programs, highlighting the importance of careful resource allocation and program design based on context and target population needs (Chen,et al., 2022).

2.4.3 Process Evaluation

According to Worthen & Sanders in Widoyoko (2009) process evaluation emphasizes three objectives "(1) to detect or predict in procedural design or its implementation during implementation stage, (2) to provide information for programmed decisions, (3) to maintain a record of the procedure as it occurs". Process evaluation is used to detect or predict procedural designs or implementation designs during the implementation phase, provide information for program decisions and as a record or archive of procedures that have occurred. Process evaluation in the CIPP model refers to "what" the activities carried out in the program, "who" is the person in charge of the program, "when" the activities will be completed. Process evaluation includes a collection of assessment data that has been determined and applied in the practice of program implementation. Basically, process evaluation is directed to find out how far the plans that have been implemented in the program have been carried out according to the plan and what components need to be improved.

According to Tayibnapis (2008) process evaluation helps implement decisions. To what extent has the plan been implemented? What to revise? Once these questions are answered, procedures can be monitored, controlled, and improved. Meanwhile, according to Sukardi (2011) process evaluation provides information for evaluators to carry out selected monitoring procedures that may have just been implemented so that strong items can be utilized, and weak items can be eliminated. Process evaluation, as Daryanto (2007) describes, focuses on observing the actual implementation of program strategies and resource utilization in real-world settings. According to Mutropin (2010), its key objectives are: (1) early identification of unforeseen consequences for timely mitigation, (2) continuous monitoring of program performance (fidelity, consistency, and acceptance), and (3) comprehensive documentation of the implementation process. This aligns with Spacciapoli et al.'s (2022) study, which monitored teacher adherence to a culturally responsive math curriculum, identifying areas of fidelity and divergence to inform adjustments and professional development needs for improved program effectiveness. In essence, process evaluation provides crucial insights into how programs unfold in practice, enabling adjustments and ultimately enhancing their impact.

2.4.4 Product Evaluation

Product evaluation stands as the culmination of the CIPP model, serving as the ultimate assessment of a program's effectiveness in achieving its set goals. As Sax emphasizes in Widoyoko's book (2009), this stage empowers project directors and educators with vital data to make informed decisions regarding program continuation, modification, or termination. Tayibnapis (2008) further underscores this purpose, highlighting product evaluation's role in guiding future decisions based on achieved outcomes and program progress. The core questions posed during product evaluation delve into the program's tangible results and their implications for the future. Daryanto (2007) defines it as examining both ongoing and final achievements within the educational system, while Sukardi (2011) emphasizes its role in determining whether program strategies and methods merit continuation, modification, or cessation. This crucial information empowers decision-makers to optimize program effectiveness and maximize positive outcomes.

Numerous studies exemplify the CIPP model's successful application in product evaluation. Bashri et al. (2020) and Uğur et al. (2016) demonstrate its effectiveness in evaluating biology and English preparatory class curricula, respectively, revealing positive results across all CIPP components. Similarly, Jiang and Liu (2021) showcase the positive impact of the CIPP model in constructing a teaching quality evaluation system for a project-based curriculum. However, not all studies paint a uniformly positive picture. Nyoman Gunung and Darma (2019) and Tuna and Başdal (2021) highlight instances where specific CIPP components, such as Input and Process, require improvement despite positive outcomes in other areas. Aslan and Uygun (2019) further emphasize the need for ongoing evaluation, particularly regarding aspects like playtime in preschool settings. Finally, McCormick et al. (2021) provide a compelling example of product evaluation's long-term impact. Their study demonstrates the lasting positive effects of a social-emotional learning program on both academic achievement and behavior in middle school students, reinforcing the program's effectiveness in promoting student well-being and success.

3. Methodology

This study delves into the effectiveness of the Merdeka Curriculum in vocational high schools, employing a robust quantitative approach. To measure its impact, the research utilizes a survey design, relying on closed-ended questions and statistical analysis (Creswell, 2012; Mitchell & Jolley., 2012). This allows for efficient data collection and objective results. The research focuses on vocational high schools within Sumbawa Regency that have implemented the Merdeka Curriculum. The target population encompasses 1,534 students and 303 teachers. However, a representative sample of 310 students and 303 teachers was chosen through simple random sampling for a more manageable yet accurate assessment (Etikan, 2017) and it shown in Table 3.1.

Table 3. 1 *Sampling*

School	Amount	
	Teacher	**Student**
SMKN 1 Sumbawa Besar	99	84
SMKN 2 Sumbawa Besar	63	74
SMKN 1 Lopok	42	49
SMKN 1 Tarano	43	41
SMKN 1 Buer	56	62
Total	**303**	**310**

To gather insights, web-based questionnaires were developed for both students and teachers. These questionnaires address five key areas: demographics, context, input, process, and product, each focusing on a specific aspect of the curriculum's implementation. Additionally, a 5-point Likert scale format is used to gauge respondents' levels of agreement with each statement, enhancing data analysis (Karatas & Fer, 2009) shown in Table 3.2.

Table 3. 2 *Distribution of the question based on evaluation*

Evaluation	Code	Total Items
Context Evaluation	C	9
Input Evaluation	I	6
Process Evaluation	PC	7
Product Evaluation	PD	14
Total		**36**

Ensuring the validity and reliability of the instruments was crucial. Education experts, curriculum specialists, and a Bahasa Indonesia teacher meticulously reviewed the questionnaires to refine their content and language clarity. Moreover, a pilot study was conducted to test the instruments and measure their internal consistency through Cronbach's alpha coefficient (Heale & Twycross, 2015). The results, exceeding 0.9 for both teachers and students, confirmed the high reliability of the instruments. Finally, the data collected through the questionnaires will be analyzed using various statistical methods. Means, medians, and standard deviations will be calculated for teachers' and students' responses, providing a numerical understanding of their perspectives. Additionally, Mann-Whitney U-tests will be employed to compare mean scores between the two groups across each evaluation dimension, revealing potential differences in their opinions (Karatas & Fer, 2009).

By meticulously outlining the research design and methodology, this study lays the groundwork for a comprehensive evaluation of the Merdeka Curriculum's effectiveness. Utilizing validated instruments, appropriate sampling techniques, and rigorous data analysis, the research promises valuable insights into the program's strengths and areas for improvement, ultimately contributing to its successful implementation and student learning. This research flowchart provides a step-by-step guide to the process of conducting a research study, from formulating a research question and identifying relevant literature, to collecting and analyzing data and reporting the findings. This flowchart is designed to help researchers navigate the complex and often challenging process of conducting a research study, and to ensure that all the key steps are followed in a logical and organized manner.

This data analysis method of this study include measurment of instruments are designed as a five-point likert scale, the number value ranging from 1 to 5 was determined for each answer to be able to carry out the analysis. Therefore, the number values used for the options is determined as 5 for "I completely agree", 4 for "I agree", 3 for "I partly agree", 2 for "I disagree" and 1 for "I definitely disagree". The data obtained via the questionnaires were transferred into the computer, and the calculations were made using the SPSS (Statistical Package for Social Sciences) program as the statistical technique. For data analysis, the means, median, and standard deviation of the opinions of the teachers and students were determined. The statistics obtained were transferred into tables by grouping and then interpreted. The Mann-Whitney U-test approach was utilised to analyse the means and median of the opinions acquired from teachers and students using questionnaires in order to determine the solutions to the sub-problems of the research. The details of the instrument and data analysis method are shown in Table 3.3.

Table 3. 3 *Research question, instrument, and data analysis method*

No	Research Question	Instrument (Data)	Data Analysis Method
1.	Whether the Merdeka Curriculum has been effective in terms of Context?	Questionnaire (Quantitative)	Mean, median and standard deviation
2.	Whether the Merdeka Curriculum has been effective in terms of Input?	Questionnaire (Quantitative)	Mean, median and standard deviation
3.	Whether the Merdeka Curriculum has been effective in terms of Process?	Questionnaire (Quantitative)	Mean, median and standard deviation
4.	Whether the Merdeka Curriculum has been effective in terms of Product?	Questionnaire (Quantitative)	Mean, median and standard deviation
5.	Is there a significant difference in mean score opinion between students and teachers about the Merdeka Curriculum in term of Context, Input, Process, and Product?	Questionnaire (Quantitative)	Mann-Whitney U Test

According to Karatas and Fer (2009), for data analysis, the means, frequency, and standard deviation of the opinions of the teachers and students were found. As the questionnaires were designed as a five-point Likert scale, the means of the opinions of the teachers and students were used, and the point intervals were shown in Table 3.4.

Table 3. 4 *Mean interval, data category, and effectiveness category*

Mean Interval	Data Category	Effectiveness Category
1 – 1.79	I definitely disagree	Definitely not effective
1.80 – 2.59	I disagree	Not Effective
2.60 – 3.39	I partly agree	Partly Effective
3.40 – 4.19	I agree	Effective
4.20 – 5	I completely agree	Completely effective

4.   Findings

4.1 Descriptive Statistics

In this research, researchers use descriptive statistics (frequencies, mean score, and standard deviation) to provide an overview of the object under study through the data that has been collected. In this case, descriptive statistics assist researchers in analyzing research questions 1 to 4.

4.1.1 Analyze of the Effectiveness of the Merdeka Curriculum by Its Context

The analysis in this section is to answer the first research statement, namely whether the Merdeka Curriculum has been effective in terms of Context by students and teachers. The analysis results are shown in Table 4.1 and Table 4.2 below.

Table 4. 1 *Effectivess of the merdeka curriculum by its context by teacher*

Item Code	Question	Mean	Median	Standard Deviation	Category
C1	Leaning Objective (LO) in the curriculum meets students' learning needs.	4.17	4.00	.467	Effective
C2	The curriculum has measurable objectives.	4.05	4.00	.733	Effective
C3	The curriculum is balanced well for every skill competency	4.09	4.00	.560	Effective
C4	Learning Objectives refer to Learning Outcomes	4.04	4.00	.752	Effective
C5	The level of the difficulty of the topics in the curriculum complies with their duration	3.79	4.00	.683	Effective
C6	The total curriculum time is sufficient to achieve Learning Outcomes	4.27	4.00	.525	Effective
C7	Learning resources from the curriculum are appropriate to the student's level	4.11	4.00	.878	Effective
C8	Learning resources attract students' attention	4.16	4.00	.657	Effective
C9	The content in the learning resources used is comprehensive	4.05	4.00	.871	Effective
Overall		**4.08**	**4.00**	**.441**	**Effective**

Table 4.1 the effectiveness of the Merdeka Curriculum by its Context by teacher shows that there are eight items with mean score in the range of 3.40 to 4.19, wich indicates that the effectiveness of the Merdeka Curriculum for these eight items is effective. In addition, there was one item with a mean score in the range of 4.20 to 5.00, indicating that the effectiveness of the Merdeka Curriculum for this item was completely effective. However, the study findings for the overall effectiveness of the Merdeka Curriculum by its Context by teacher that was recorded in this part of was 4.08. This indicates that the effectiveness of Merdeka Curriculum was effective. The intervals of the mean score obtained to interpret the result are in accordance with Table 3.4, which is a table regarding the categories of the effectiveness of the implementation of the Merdeka Curriculum.

The analysis also shows that the highest mean score is obtained for the sixth question item (C6) "The total curriculum time is sufficient to achieve learning outcome" with a mean score of 4.27 with a standard deviation of .525. From this analysis, it can be interpreted that the mean score for the sixth question item is at category completely effective. Meanwhile the lowest mean score was item C5 "The level of the difficulty of the topics in the curriculum complies with their duration" with a mean score of 3.79 with standard deviation of .683. From this analysis, it can be interpreted that the mean score for the fifth question item is at category effective. Based on Table 4.1 the standard deviation for all question items is .441, and for each item in the range of .467 to .878. This standard deviation value is relatively low. This means that the distribution of data from the analysis for each question item is focused on the mean score.

Table 4. 2 *Effectiveness of the merdeka curriculum by its context by student*

Item Code	Question	Mean	Standard Deviation	Category
C1	Leaning Objective (LO) in the curriculum meets students' learning needs.	3.52	.714	Effective
C2	The curriculum has measurable objectives.	3.48	1.269	Effective
C3	The curriculum is balanced well for every skill competency	4.45	.665	Completely Effective
C4	Learning Objectives refer to Learning Outcomes	4.23	.871	Completely Effective
C5	The level of the difficulty of the topics in the curriculum complies with their duration	3.94	.760	Effective
C6	The total curriculum time is sufficient to achieve Learning Outcomes	3.10	.997	Partly Effective
C7	Learning resources from the curriculum are appropriate to the student's level	2.81	1.231	Partly Effective

Item Code	Question	Mean	Standard Deviation	Category
C8	Learning resources attract students' attention	3.77	1.071	Effective
C9	The content in the learning resources used is comprehensive	3.90	.778	Effective
	Overall	**3.69**	**.529**	**Effective**

Table 4.2 the effectiveness of the Merdeka Curriculum by its Context by student shows that there are two items with mean score in the range of 2.60 to 3.39, which indicates that the effectiveness of the Merdeka Curriculum for these eight items is partly effective. There are five items with a mean score in the range of 3.40 to 4.19, indicating that the effectiveness of the Merdeka Curriculum for this item was effective. In addition, there were two items with mean scores in the range of 4.20 to 5.00, indicating that the effectiveness of the Merdeka Curriculum for this item was completely effective. However, the study findings for the overall effectiveness of the Merdeka Curriculum by its Context by student that was recorded in this part of was 3.69. This indicates that the effectiveness of Merdeka Curriculum was effective. The intervals of the mean score obtained to interpret the result are in accordance with Table 3.4, which is a table regarding the categories of the effectiveness of the implementation of the Merdeka Curriculum.

The analysis also shows that the highest mean score is obtained for the third question item (C3) "The curriculum is balanced well for every skill competency" with a mean score of 4.45 with a standard deviation of .665. From this analysis, it can be interpreted that the mean score for the third question item is at category completely effective. Meanwhile the lowest mean score was item C7 "Learning resources from the curriculum are appropriate to the student's level" with a mean score of 2.81 with standard deviation of 1.231. From this analysis, it can be interpreted that the mean score for the fifth question item is at category partly effective. Based on Table 4.2 the standard deviation for all question items is .529, and for each item in the range of .665 to 1.269. This standard deviation value is relatively low. This means that the distribution of data from the analysis for each question item is focused on the mean score.

4.1.2 Analyze of the Effectiveness of the Merdeka Curriculum by Its Input

The analysis in this section is to answer the first research statement, namely whether the Merdeka Curriculum has been effective in terms of Input by students and teachers. The analysis results are shown in Table 4.3 and Table 4.4 below.

Table 4. 3 *Effectiveness of the merdeka curriculum by its input by teacher*

Item Code	Question	Mean	Standard Deviation	Category
I1	The materials of the curriculum help the students learn easily	4.07	.720	Effective
I2	The materials of the curriculum attract the students attention	4.03	.866	Effective
I3	The materials of the curriculum have positive effect on the students soft skill	4.03	.580	Effective
I4	The materials of the curriculum have positive effect on the students hard skill	4.17	.672	Effective
I5	The assignments given are in accordance with the students' abilities	4.10	.830	Effective
I6	Tasks during the learning process attract students' interest in learning	3.80	.882	Effective
	Overall	**4.03**	**.435**	**Effective**

Table 4.3 the effectiveness of the Merdeka Curriculum by its Input by teacher shows that all the six items with mean score in the range of 3.40 to 4.19, which indicates that the effectiveness of the Merdeka Curriculum for these six items is effective. The study findings for the overall effectiveness of the Merdeka Curriculum by its Input by teacher that was recorded in this part of was 4.03. This indicates that the effectiveness of Merdeka Curriculum was effective. The intervals of the mean score obtained to interpret the result are in accordance with Table 3.4, which is a table regarding the categories of the effectiveness of the implementation of the Merdeka Curriculum.

The analysis also shows that the highest mean score is obtained for the fourth question item (I4) "The materials of the curriculum have positive effect on the student hard skill" with a mean score of 4.17 with a standard

deviation of .672. From this analysis, it can be interpreted that the mean score for the fourth question item is at category effective. Meanwhile the lowest mean score was item I6 "Task during the learning process attract students' interest in learning" with a mean score of 3.80 with standard deviation of .882. From this analysis, it can be interpreted that the mean score for the sixth question item is at category effective. Based on Table 4.3 the standard deviation for all question items is .435, and for each item in the range of .560 to .882. This standard deviation value is relatively low. This means that the distribution of data from the analysis for each question item is focused on the mean score.

Table 4. 4 *Effectiveness of the merdeka curriculum by its input by student*

Item Code	Question	Mean	Standard Deviation	Category
I1	The materials of the curriculum help the students learn easily	3.71	.633	Effective
I2	The materials of the curriculum attract the students attention	3.81	.535	Effective
I3	The materials of the curriculum have positive effect on the students soft skill	4.03	.401	Effective
I4	The materials of the curriculum have positive effect on the students hard skill	4.06	.620	Effective
I5	The assignments given are in accordance with the students' abilities	4.00	.673	Effective
I6	Tasks during the learning process attract students' interest in learning	3.97	.824	Effective
	Overall	**3.93**	**.529**	**Effective**

Table 4.4 the effectiveness of the Merdeka Curriculum by its Input by student shows that all the six items with mean score in the range of 3.40 to 4.19, which indicates that the effectiveness of the Merdeka Curriculum for these six items is effective. The study findings for the overall effectiveness of the Merdeka Curriculum by its Input by student that was recorded in this part of was 3.93. This indicates that the effectiveness of Merdeka Curriculum was effective. The intervals of the mean score obtained to interpret the result are in accordance with Table 3.7, which is a table regarding the categories of the effectiveness of the implementation of the Merdeka Curriculum.

The analysis also shows that the highest mean score is obtained for the fourth question item (I4) "The materials of the curriculum have positive effect on the student hard skill" with a mean score of 4.06 with a standard deviation of .620. From this analysis, it can be interpreted that the mean score for the fourth question item is at category effective. Meanwhile the lowest mean score was item I1 "The materials of the curriculum help the student learn easily" with a mean score of 3.71 with standard deviation of .633. From this analysis, it can be interpreted that the mean score for the sixth question item is at category effective. Based on Table 4.4 the standard deviation for all question items is .529, and for each item in the range of .401 to .824. This standard deviation value is relatively low. This means that the distribution of data from the analysis for each question item is focused on the mean score.

4.1.3 Analyze of the Effectiveness of the Merdeka Curriculum by Its Process

The analysis in this section is to answer the first research statement, namely whether the Merdeka Curriculum has been effective in terms of Process by students and teachers. The analysis results are shown in Table 4.5 and Table 4.6 below.

Table 4. 5 *Effectiveness of the merdeka curriculum by its process by teacher*

Item Code	Question	Mean	Standard Deviation	Category
PC1	Sufficient exercises are done about each new topic in the curriculum.	4.13	.585	Effective
PC2	The consolidating homework is given to the students about the newly learned topics.	3.79	.735	Effective
PC3	The curriculum enables the students to participate in the course actively.	3.85	.733	Effective
PC4	Formative tests are carried out at each Learning Objective	3.72	.762	Effective
PC5	The curriculum has activities suitable for pair and group work.	4.07	.632	Effective
PC6	The curriculum has activities in which all skills can be applied.	3.69	.775	Effective

Item Code	Question	Mean	Standard Deviation	Category
PC7	During the curriculum, the time spent on solving the students' problems is enough.	4.00	.676	Effective
	Overall	**3.89**	**.375**	**Effective**

The results of the study for the overall effectiveness of the Merdeka Curriculum by its Input by teacher that was recorded in this part of was 3.89, which indicates that the effectiveness of Merdeka Curriculum was effective. The intervals of the mean score obtained to interpret the result are in accordance with Table 3.7, which is a table regarding the categories of the effectiveness of the implementation of the Merdeka Curriculum. The analysis also shows that the highest mean score is obtained for the seven items in Table 4.5, the effectiveness of the Merdeka Curriculum by its Process by Teacher.

The study also reveals that, with a mean score of 4.13 and a standard deviation of.585, the first question item (PC1), "Sufficiency exercises are done about each new topic in curriculum," had the greatest mean score. The analysis indicates that the first question item's mean score falls into the effective category. Item PC6, "The curriculum has activities in which all skills can be applied," had the lowest mean score, with a mean score of 3.69 and a standard deviation of.775. The research indicates that the sixth question item's mean score falls into the effective category.

Table 4.5 indicates that the standard deviation for all question items is.375, with each item falling within the range of.585 to.775. This value of standard deviation is comparatively low. Thus, the distribution of data derived from the examination of every question item is centred around the average score.

Table 4. 6 *Effectiveness of the merdeka curriculum by its process by student*

Item Code	Question	Mean	Standard Deviation	Category
PC1	Sufficient exercises are done about each new topic in the curriculum.	3.87	.421	Effective
PC2	The consolidating homework is given to the students about the newly learned topics.	4.16	.767	Effective
PC3	The curriculum enables the students to participate in the course actively.	4.26	.507	Completely Effective
PC4	Formative tests are carried out at each Learning Objective	3.71	.992	Effective
PC5	The curriculum has activities suitable for pair and group work.	4.19	.738	Effective
PC6	The curriculum has activities in which all skills can be applied.	4.23	.490	Completely Effective
PC7	During the curriculum, the time spent on solving the students' problems is enough.	4.00	.720	Effective
	Overall	**4.04**	**.439**	**Effective**

Table 4.6 the effectiveness of the Merdeka Curriculum by its Process by student shows that there are five items with mean score in the range of 3.40 to 4.19, which indicates that the effectiveness of the Merdeka Curriculum for these eight items is effective. In addition, there were two items with mean scores in the range of 4.20 to 5.00, indicating that the effectiveness of the Merdeka Curriculum for this item was completely effective. However, the study findings for the overall effectiveness of the Merdeka Curriculum by its Process by student that was recorded in this part of was 4.04. This indicates that the effectiveness of Merdeka Curriculum was effective. The intervals of the mean score obtained to interpret the result are in accordance with Table 3.7, which is a table regarding the categories of the effectiveness of the implementation of the Merdeka Curriculum.

The analysis also shows that the highest mean score is obtained for the third question item (PC3) "The curriculum enables the students to participate in the course actively" with a mean score of 4.26 with a standard deviation of .507. From this analysis, it can be interpreted that the mean score for the third question item is at category completely effective. Meanwhile the lowest mean score was item PC4 "Formative tests are carried out at each Learning Objective" with a mean score of 3.71 with standard deviation of .992. From this analysis, it can be interpreted that the mean score for the fourth question item is at category effective. Based on Table 4.6 the standard deviation for all question items is .439, and for each item in the range of .421 to .992. This standard

deviation value is relatively low. This means that the distribution of data from the analysis for each question item is focused on the mean score.

4.1.4 Analyze of the Effectiveness of the Merdeka Curriculum by Its Product

The analysis in this section is to answer the first research statement, namely whether the Merdeka Curriculum has been effective in terms of Product by students and teachers. The analysis results are shown in Table 4.7 and Table 4.8 below.

Table 4. 7 *Effectiveness of the merdeka curriculum by its product by teacher*

Item Code	Question	Mean	Standard Deviation	Category
PD1	The curriculum forms a basis for the students' future needs related to skill competencies.	3.95	.593	Effective
PD2	The curriculum contributes to the students' work related to their fields.	4.22	.597	Completely Effective
PD3	The curriculum motivates the students to learn more.	4.03	.723	Effective
PD4	The project to strengthen the Pancasila student profile (P5) shapes and strengthens student character	3.94	.787	Effective
PD5	The curriculum increases the students' skill competencies.	4.26	.776	Completely Effective
PD6	The curriculum helps students to acquire the habit of learning independently.	4.13	.913	Effective
PD7	The curriculum helps the students to acquire the habit of studying in groups.	4.00	.774	Effective
PD8	The curriculum gives the students the opportunity to use their knowledge.	4.32	.788	Completely Effective
PD9	Changes in increasing students' ability to understand the material are satisfactory	4.20	.827	Completely Effective
PD10	The curriculum prepares students to be ready for future jobs.	4.39	.805	Completely Effective
PD11	The curriculum increases students' enthusiasm to continue their studies.	4.22	.759	Completely Effective
PD12	The curriculum increases students' enthusiasm to continue their carrier as workers.	4.30	.531	Completely Effective
PD13	The curriculum helps students gain knowledge of the skills needed for their field of study	4.08	.741	Effective
PD14	The curriculum helps students gain knowledge of the skills needed for their field of study	4.15	.588	Effective
	Overall	**4.16**	**.496**	**Effective**

Table 4.7 the effectiveness of the Merdeka Curriculum by its Product by teacher shows that there are seven items with mean score in the range of 3.40 to 4.19, which indicates that the effectiveness of the Merdeka Curriculum for these seven items is effective. In addition, there were seven items with mean score in the range of 4.20 to 5.00, indicating that the effectiveness of the Merdeka Curriculum for this item was completely effective. However, the study findings for the overall effectiveness of the Merdeka Curriculum by its Product by teacher that was recorded in this part of was 4.16. This indicates that the effectiveness of Merdeka Curriculum was effective. The intervals of the mean score obtained to interpret the result are in accordance with Table 3.7, which is a table regarding the categories of the effectiveness of the implementation of the Merdeka Curriculum.

The analysis also shows that the highest mean score is obtained for the tenth question item (PD10) "The curriculum prepares student ready for future job" with a mean score of 4.39 with a standard deviation of .805. From this analysis, it can be interpreted that the mean score for the tenth question item is at category completely effective. Meanwhile the lowest mean score was item PD4 "The project to strengthen Pancasila profile (P5) shapes and strengthen student character" with a mean score of 3.94 with standard deviation of .787. From this analysis, it can be interpreted that the mean score for the fourth question item is at category effective. Based on Table 4.7 the standard deviation for all question items is .496, and for each item in the range of .531 to .913. This standard deviation value is relatively low. This means that the distribution of data from the analysis for each question item is focused on the mean score.

Table 4. 8 *Effectiveness of the merdeka curriculum by its product by student*

Item Code	Question	Mean	Standard Deviation	Category
PD1	The curriculum forms a basis for the students' future needs related with skill competencies.	3.90	.964	Effective
PD2	The curriculum contributes to the students' work related with their fields.	3.81	.932	Effective
PD4	The project to strengthen the Pancasila student profile (P5) shapes and strengthens student character	3.94	1.047	Effective
PD5	The curriculum increases the students' skill competencies.	3.48	.913	Effective
PD6	The curriculum helps students to acquire the habit of learning independently.	4.03	.401	Effective
PD7	The curriculum helps the students to acquire the habit of studying in groups.	4.29	.633	Completely Effective
PD8	The curriculum gives the students the opportunity to use their knowledge.	4.10	.690	Effective
PD9	Changes in increasing students' ability to understand the material are satisfactory	4.06	.620	Effective
PD10	The curriculum prepares student ready for future jobs.	4.26	.438	Completely Effective
PD11	The curriculum increases students' enthusiasm to continue their studies.	4.00	.720	Effective
PD12	The curriculum increases students' enthusiasm to continue their carier as worker.	4.06	.760	Effective
PD13	The curriculum helps students gain knowledge of the skills needed for their field of study	4.03	.648	Effective
PD14	The curriculum helps students gain knowledge of the skills needed for their field of study	4.42	.556	Completely Effective
	Overall	**4.00**	**.439**	**Effective**

Table 4.8 the effectiveness of the Merdeka Curriculum by its Product by student shows that there are eleven items with mean score in the range of 3.40 to 4.19, which indicates that the effectiveness of the Merdeka Curriculum for these eleven items is effective. In addition, there were three items with a mean score in the range of 4.20 to 5.00, indicating that the effectiveness of the Merdeka Curriculum for this item was completely effective. However, the study findings for the overall effectiveness of the Merdeka Curriculum by its Product by student that was recorded in this part of was 4.16. This indicates that the effectiveness of Merdeka Curriculum was effective. The intervals of the mean score obtained to interpret the result are in accordance with Table 3.7, which is a table regarding the categories of the effectiveness of the implementation of the Merdeka Curriculum.

The analysis also shows that the highest mean score is obtained for the fourteenth question item (PD14) "The curriculum helps students gain knowledge of the skill needed for their field of study" with a mean score of 4.42 with a standard deviation of .556. From this analysis, it can be interpreted that the mean score for the fourteenth question item is at category completely effective. Meanwhile the lowest mean score was item PD5 "The curriculum increases the students' skill competencies" with a mean score of 3.48 with standard deviation of .913. From this analysis, it can be interpreted that the mean score for the fifth question item is at category effective.

Based on Table 4.8 the standard deviation for all question items is .439, and for each item in the range of .401 to 1.047. This standard deviation value is relatively low. This means that the distribution of data from the analysis for each question item is focused on the mean score. The result of analyses for the descriptive statistics to answer the research question 1-4 is shown in Table 4.9.

Table 4. 9 *Analysis descriptive statistics*

Status	n	Context		Input		Process		Product	
		$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
Teacher	303	4.08	.441	4.03	.435	3.89	.375	4.16	.496
Student	310	3.69	.529	3.93	.529	4.06	.439	4.00	.439

4.2 Inferential Statistic

4.2.1 Normality test

The normality test is carried out to determine whether to use parametric or non-parametric inferential statistics. In this research, the normality test uses Kolmogorov Smirnov. The results of the normality test are shown in Table 4.10 below.

Table 4. 10 *Normality test results*

Mean score of	Status	Kolmogorov-Smirnov[a]		
		Statistic	df	Sig.
Context	Teacher	.147	303	.000
	Student	.212	310	.000
Input	Teacher	.140	303	.000
	Student	.337	310	.000
Process	Teacher	.233	303	.000
	Student	.199	310	.000
Product	Teacher	.149	303	.000
	Student	.208	310	.000

Based on Table 4.10, the results of the normality test show a significant number of .000 for all terms, so it can be said that the data obtained is not normally distributed. Therefore, what is used is non-parametric inferential statistics. Because it uses non-parametric, to interpret the data using the median.

4.2.2 Analyze of the Difference in Mean Score Opinion Between Teacher and Student

This study applied non-parametric statistical inferential Mann Whitney U-test to compare teacher and student data. The Mann Whitney U-test is always used when the requirement of normal distribution for the T-test is not met. To determine if there is a difference between two samples, the rank sums of the two samples are used rather than the means as in the T-test for independent samples. The result of Mann Whitney U-test was shown in Table 4.11.

Table 4. 11 *The Mann Whitney U-test Result*

	Context	Input	Process	Product
Mann-Whitney U	25310.000	44775.000	38310.000	30985.000
Wilcoxon W	73515.000	92980.000	84366.000	79190.000
Z	-9.934	-1.022	-3.994	-7.333
Asymp. Sig. (2-tailed)	.000	.307	.000	.000

Based on Table 4.11, significant value was obtained in term of Context, Process, and Product component of .000, but in term of Input of .307 with Z score of -1.022. Based on these significant values, Ho1, Ho3, and Ho4 are rejected, while Ho2 fails to be rejected. After getting the total ranking of the samples, the next step is to calculate the effect size of the Mann Withney U-test using equation 4.1 below:

$$r = \frac{|z|}{\sqrt{n}}$$

(4.1)

Note: r = effect size; z = z score; n = amount of data

After carrying out calculations, the effect size values for each part are obtained for Context, Process, and Product component of .000, but for Input component of .041. From the result, the Mann Whitney U-test revealed there was statistically significant value in terms of Context of teacher (Md = 4.00, n = 303) and student (Md = 3.56, n = 310), U = 25310.000, ρ = .000, r = .000, in term of Process of teacher (Md = 3.86, n = 303) and student (Md =

4.00, n = 310), U = 38310.000, ρ = .000, r = .000, and in term of Product of teacher (Md = 4.29, n = 303) and student (Md = 4.00, n = 310), U = 30985.000, ρ = .000, r = .000. But the Mann Withney U-test showed that there was not statistically significant in term of Input of teacher (Md = 4.00, n = 303) and student (Md = 4.00, n = 310), U = 44775.000, ρ = .307, r = .041.

5.   Discussion

5.1   Effectiveness of the Merdeka Curriculum by Its Context by Teacher and Student

In this section, the discussion revolves around the effectiveness of the Merdeka Curriculum as seen from the term of Context by teachers and students. Through this study, researchers have developed nine items that represent effectiveness of the Merdeka Curriculum by its Context by teacher and student, which include learning objective, duration of the study, and learning resource. The research results show that the mean score distribution in the term of context for both teachers and students is effective. The effectiveness of the context refers to the favorable conditions and supportive external factors that contribute to the success of a program or policy (Kringos et al., 2015). In assessing the effectiveness of the context, various factors involving social conditions, culture, educational policies and stakeholder dynamics are carefully explored (Hu et al., 2022). The main findings of this research indicate that the context found is supportive and in accordance with the objectives and implementation process of the Merdeka Curriculum.

The factor that causes the Merdeka Curriculum to be effective in terms of context according to teachers and students is the sufficient duration of curriculum implementation, so that it can be implemented well. Apart from that, the curriculum which is centered on improving students' skills is felt directly by students in developing themselves, so that students feel the effectiveness of the Merdeka curriculum which was implemented at that time. This statement is supported by the results of studies from Azis (2018), said that the adequate duration of implementation of the curriculum is an important basis for teachers and students in optimizing the learning process. With sufficient duration, teachers have greater opportunities to explain and explore each aspect of the curriculum, provide space for discussion, and facilitate practical activities that strengthen students' understanding. This creates a conducive learning environment, where material can be well absorbed by students, and complex concepts can be understood in depth (Hanipah et al., 2022). Moreover, the Merdeka curriculum which focuses on developing students' skills directly provides a more meaningful learning experience. Students not only receive knowledge passively but are also invited to apply and hone the skills needed in the real world. In this context, students can experience immediate positive changes in their abilities, creating a sense of achievement and self-satisfaction that can be additional motivation to actively engage in learning.

The importance of the curriculum which focuses on skills development is also reflected in students' ability to identify their own improvements (Quirk, 2018). Through this approach, students can more clearly see the development of their abilities in various areas, such as critical skills, creativity, and collaboration. This awareness of personal progress not only provides students with a better understanding of themselves, but also creates a sense of responsibility for their own learning (Nuraeni & Gunawan, 2022). In addition, the success of the Merdeka Curriculum understood in terms of context is also found from flexible learning resources. Where various learning sources can support the learning process, both from books, the internet, and real things in the environment. This is supported by Jungblut and Lee (2021), stating that diverse learning sources can increase student understanding. Apart from that, Aada (2020) found that through appropriate and diverse learning resources teachers will be better at transferring knowledge and students will understand lessons more easily.

Of course, all of this can be achieved through good communication between teachers and students involved in learning. Apart from that, relevant stakeholders also provide an impression on the effectiveness of curriculum implementation. According to Pas et al. (2015) in contextual analysis, positive aspects such as high community support, rich local culture integrated into the curriculum, and consistency of national education policies contribute to creating an effective environment for program implementation. Same with statemen above, Biddle et al. (2018) said that positive interactions between stakeholders, including collaboration between schools, local governments, and community groups, show that an effective context can strengthen the implementation of educational programs.

5.2 Effectiveness of the Merdeka Curriculum by Its Input by Teacher and Student

In this section, the discussion revolves around the effectiveness of the Merdeka Curriculum as seen from the term of Input by teachers and students. Through this study, researchers have developed six item that represent effectiveness of the Merdeka Curriculum by its Input by teacher and student, which the material in the learning and assignment used to support the implementation of the program. The research results show that the mean score distribution in the term of input for both teachers and students is effective. The factor that causes the Merdeka Curriculum to be effective in terms of input according to teachers and students is that the material used in learning is appropriate. These learning materials can increase students' interest in learning. Apart from that,

this material also supports improving students' hard skills and soft skills. As stated by Reber et al. (2018), learning material that is presented in an interesting way and is relevant to students' daily lives can trigger an increase in their interest in learning. With a creative and interactive approach, students are more likely to be actively involved in learning, creating an environment that stimulates curiosity and exploration. Thus, it can be expected that interesting learning materials will provide a positive boost to students' motivation to learn, help them understand the content better, and stimulate their interest in further learning.

The material presented not only focuses on increasing understanding of concepts, but also effectively develops students' hard skills and soft skills. Through the application of practically oriented material, students can acquire technical skills that are directly related to the subjects studied, increasing their competitiveness in the world of work (Ballesteros et al., 2021). Brata and Mahatmaharti (2020) added that learning approaches that promote collaboration, communication and problem solving can help hone students' soft skills, preparing them to face the challenges of everyday life and achieve success in various contexts. Thus, this material makes a significant contribution to the holistic development of students' hard and soft skills.

Not only is the material appropriate, the tasks given in implementing the Merdeka Curriculum also provide a good level of effectiveness. Where the assignments given can improve students' abilities and attract students' interest in learning. As the results of research conducted by Andrade (2020) found that through appropriate assignments, students are faced with challenges that require the application of the concepts learned in a practical context, allowing them to hone practical and analytical skills. In addition, assignment designs that are interesting and relevant to students' daily lives can spark their interest in learning, create a dynamic learning climate and stimulate curiosity. Thus, it can be revealed that these tasks not only play a role in improving students' abilities, but also help create positive intrinsic motivation towards learning (Fulan & Yu, 2019). The results of this research provide a deeper understanding of how effective input factors can be the key to success in implementing the Merdeka Curriculum.

5.3 Effectiveness of the Merdeka Curriculum by Its Process by Teacher and Student

In this section, the discussion revolves around the effectiveness of the Merdeka Curriculum as seen from the term of Process by teachers and students. Through this research, researchers developed seven items that represent the effectiveness of the Merdeka Curriculum in terms of Process by teachers and students, namely exercises given in learning, assignments during and after learning, individual and group learning activities, and formative tests carried out on each topic. The research results show that the mean score distribution in the term of process for both teachers and students is effective. The research found that the tasks given in the curriculum implementation process were in accordance with the topic of each material and were given with sufficient time. Apart from that, assignments are also given in individual or group form, so that the curriculum implementation process can run in accordance with the Learning Objectives. The importance of designing assignments that are appropriate to the learning topic and implementing careful implementation strategies is very significant in increasing the success of the learning process (Hamdani, 2022). In this context, carefully planned assignments appropriate to the course material not only create opportunities for students to apply the concepts they have learned, but also provide relevant context for deeper understanding (Golden, 2018). Support that, Mikalayeva et al. (2020) said with a strong connection between assignments and learning topics, students can develop a more comprehensive and applicable understanding of the material.

Apart from that, choosing a wise implementation strategy is a key element in achieving a successful learning process (Kitchens et al., 2018). These strategies must consider students' learning styles, level of task complexity, and classroom context. When teachers successfully adapt learning strategies to students' needs, this can stimulate their interest in learning and create high levels of engagement (Whitney et al., 2022). The use of learning methods that are varied and appropriate to student characteristics can also provide opportunities for students to explore various learning styles, support deeper understanding, and build lifelong learning skills. The formative evaluation process, which is an integral part of implementation, has proven to be a highly effective instrument. Research conducted by Journal et al. (2022) found that process evaluations not only provide meaningful feedback to students and teachers but also allow for rapid changes in learning approaches if necessary. The existence of a continuous feedback cycle opens opportunities for continuous improvement in the implementation of the Merdeka curriculum. Apart from that, Gardiner (2020) said that collaboration between teachers and an emphasis on improving students' critical and creative thinking skills through an interdisciplinary approach also adds a positive dimension to the learning process. By encouraging closer interaction between teachers and promoting students' lateral thinking, the Merdeka Curriculum can create a stimulating and enriching learning environment.

5.4 Effectiveness of the Merdeka Curriculum by Its Product by Teacher and Student

In this section, the discussion revolves around the effectiveness of the Merdeka Curriculum as seen from the term of Product by teachers and students. Through this research, researchers developed fourteen items that represent the effectiveness of the Merdeka Curriculum in terms of Product by teachers and students, namely. Through this

research, researchers developed fourteen items that represent the effectiveness of the Merdeka Curriculum in terms of Products by teachers and students, which focus on learning outcomes that increase students' abilities and readiness to continue their studies or work. The research results show that the mean score distribution in the term of product for both teachers and students is effective. Positive results that can be obtained from effective curriculum implementation include thorough preparation to continue into the world of work. By designing a curriculum that considers the needs of the world of work, students can be given the opportunity to develop skills and knowledge that are relevant to the field of work they are interested in (Ritter et al., 2018). Besides that, Kern and Wehmeyer (2021) said in a focused curriculum, learning is not only focused on academic achievement alone, but also includes elements of practical skills needed in the work environment. For example, the curriculum may integrate practical training, collaborative projects, or industrial internships as an integral part of the learning experience. This not only gives students a deeper understanding of the practical application of academic concepts, but also engages them in the real context of work.

In addition, Ritter et al. (2018) said that curriculum that includes aspects of soft skills, such as communication, leadership and teamwork skills, can help students develop interpersonal readiness that is highly valued in the world of work. This can create graduates who are not only technically competent, but also have the ability to adapt to a dynamic work environment and compete effectively in the labor market. So, it can be concluded that the product results from implementing a curriculum that is oriented towards the world of work involve more than just mastery of academic material. Preparation for work through an effective curriculum includes empowering students with relevant skills and knowledge, ensuring that they are ready to face the challenges of the world of work with the necessary confidence and competence.

Apart from preparing for the world of work, the results of the curriculum also increase students' enthusiasm for continuing their studies. The Merdeka Curriculum here has also succeeded in increasing students' interest in continuing their studies. According to Nevenglosky et al. (2018), a successful curriculum can be measured by its ability to increase student interest in continuing their studies. By designing a curriculum that is interesting and relevant to students' daily lives, a learning environment can be created that triggers curiosity and enthusiasm for learning (Wong et al., 2020). Thus, a successful curriculum not only conveys information effectively, but also provides a positive learning experience, helping students realize the value and benefits of continuing education (Aulia, 2019).

The importance of a curriculum that can stimulate students' interest is reflected in the integration of innovative learning methods that suit their learning styles. A curriculum that offers a variety of options, such as research projects, use of technology, or field trips, can provide students with varied learning experiences and support their understanding of a variety of subjects (Xiangqiong, 2019). Thus, a successful curriculum not only provides a foundation of knowledge, but also creates opportunities for students to explore their personal interests and build connections between the subject matter and their career or personal life goals (Barb & Kilicay-Ergin, 2020). In addition, a curriculum that emphasizes developing skills relevant to future needs, such as critical thinking skills, effective communication, and problem solving, can help convince students of the added value gained from continuing their studies (Savitri et al., 2021). Thus, a successful curriculum not only provides conceptual understanding, but also prepares students to face higher academic challenges with confidence and determination.

5.5 Mean Score Opinion Between Teacher and Student About the Implementation of the Merdeka Curriculum in Term of Context, Input, Process, And Product

In this section, the discussion revolves around the fifth research question which is "Is there a significant difference mean score opinion between students and teachers about the Merdeka Curriculum in term of Context, Input, Process, and Product?" This discussion is focused on the difference of mean score opinion of teachers and students that includes the implementation of the Merdeka curriculum in terms of context, input, process, and product.

The results obtained show that there is no difference between teachers and students in terms of input with a small effect size value. Both groups, teachers and students, agreed that the Merdeka curriculum being responsive to student needs was an important aspect of effective input. Research conducted by Sporre (2022) found that a curriculum that integrates the values of the program in a curriculum that is assessed positively by both parties, provides a solid foundation for a more contextual and creative learning experience.

Furthermore, aligned perceptions between teachers and students also include adequate allocation of learning resources. Where learning resources in the form of material can increase students' interest in learning, hard skills and soft skills. This is in line with research conducted by Khan (2015) which found a uniform understanding of the importance of learning resources in achieving learning goals. Apart from that, research conducted by Agustina et al (2020) states that appropriate learning resources can increase understanding in learning. This commonality of view provides a solid foundation for further development and improvement of educational programs that are more adaptive and student oriented.

But, in terms of context, process, and product, it shows that there is a difference in mean score opinion between teachers and students. In terms of context and product teachers tend to give higher mean scores, indicating a greater level of agreement or satisfaction with the Merdeka curriculum compared to students' opinions. But in terms of process students tend to higher mean scores, indicating a greater level of agreement or satisfaction with the Merdeka curriculum compared to teachers' opinion.

According to Indarta et al (2022), the difference in opinion can be caused by the teacher's deeper experience and views regarding curricular aspects, as well as a more comprehensive understanding of learning objectives and methodology. Meanwhile, students may evaluate the curriculum more from the perspective of their direct learning experiences and personal satisfaction. Furthermore, Jiang and Liu, (2021) said that differences in mean opinion scores between teachers and students may also reflect differences in expectations and priorities in the learning context. Teachers, as curriculum designers and implementers, may focus more on structural aspects and learning objectives, while students may assess the curriculum more based on their daily learning experiences (Uğur et al., 2016).

However, the existence of these differences does not cover the fact that the implementation of the Merdeka curriculum in vocational high schools has been implemented effectively. These differences can provide a basis for further reflection and dialogue between teachers and students, allowing identification of areas that may require adjustment or improvement (Hartinah et al., 2019). Coulangeon & Po, (2018) added that the importance of collaboration between teachers and students in designing and evaluating curriculum is becoming increasingly prominent as a step towards more holistic and effective improvements. Awareness of these differences can spark in-depth discussions and build policies that are more inclusive and responsive to students' learning needs and as a valuable opportunity to improve and develop a curriculum that is better and more in line with the expectations of all stakeholders in the learning process.

6. Conclusion

The study examined the effectiveness of the Merdeka Curriculum in vocational high schools, analyzing its strengths and areas for improvement based on teacher and student perspectives. Overall, both groups found the program to be effective across four key areas: context, input, process, and product. Factors like supportive environments and responsive curriculum design contributed to a successful learning atmosphere. Adequate resources, teacher involvement, and continuous feedback loops further strengthened the implementation process. The program also yielded positive outcomes, including increased student achievement, positive changes in behavior, and a more collaborative educational culture. While teachers and students generally agreed on the effectiveness of the Merdeka Curriculum, some differences in their opinions emerged. Teachers tended to be more satisfied with the context and product, while students favored the process. These discrepancies stem from differing perspectives and priorities and can be valuable insights for further development and refinement of the program. Ultimately, the study highlights the success of the Merdeka Curriculum in promoting effective learning and a positive educational environment, while also offering avenues for ongoing improvement and inclusivity.

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Conflict of Interest

Authors declare that there is no conflict of interests regarding the publication of the paper.

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