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Implementation of the merdeka curriculum for competency achievement and graduate employability in vocational education

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ABSTRACT

This study aimed to analyze the implementation of the Merdeka Curriculum, students' competency achievement, graduate employment outcomes, and the supporting and constraining factors at Tritech Informatics Private Vocational High School, Medan. A qualitative descriptive case study was conducted using semi-structured interviews with nine purposively selected informants, classroom observations, and document analysis, including students' academic records, Vocational Competency Test (VCT) results (2022–2025), and graduate tracer study data (2022–2024). The findings showed that competency-based learning, authentic assessment, and industry collaboration were effectively implemented. Students' average academic achievement increased from 85.28 to 89.31, while VCT scores improved from 87.97 to 93.54. Tracer study data revealed that 88.8% of graduates engaged in productive activities, with increasing employment rates and occupational relevance. The Merdeka Curriculum contributed positively to competency development and graduate employability, although continuous improvements in teacher competence, learning facilities, and industry partnerships remain essential.



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Introduction

The rapid transformation of industrial technology and the emergence of the Fourth Industrial Revolution have significantly reshaped the competencies required of vocational education graduates. Vocational schools are expected not only to provide occupational knowledge but also to develop adaptable graduates equipped with technical expertise, problem-solving ability, digital literacy, collaboration, and lifelong learning skills. Consequently, vocational education systems worldwide have increasingly adopted competency-based curricula that integrate authentic learning experiences, workplace engagement, and industry collaboration to improve graduates' employability and workforce readiness (Khery et al., 2024; Nurdiyanti et al., 2024). Within this context, curriculum reform has become one of the most strategic approaches for strengthening the quality and relevance of vocational education in response to rapidly changing labor market demands.

In Indonesia, the Merdeka Curriculum represents a major educational reform intended to provide greater flexibility for schools while promoting competency-based, student-centered, and project-oriented learning. The curriculum encourages teachers to design contextual learning experiences that accommodate students' interests, local needs, and industrial developments while emphasizing authentic assessment and character development. Previous studies have reported that the Merdeka Curriculum positively influences classroom engagement,

learning motivation, instructional innovation, and teachers' pedagogical flexibility (Astutik et al., 2024; Umar et al., 2025). In vocational education, the curriculum also strengthens partnerships with industries through workplace internships, project-based learning, and competency certification, thereby supporting the development of work-ready graduates.

Recent literature has increasingly examined various aspects of the Merdeka Curriculum, including teachers' perceptions, instructional implementation, curriculum readiness, digital learning integration, and students' learning experiences (Prasetyo et al., 2024; Putri, 2026; Tapung, 2025). Other studies have focused on competency-based vocational education and industry collaboration as important determinants of graduate employability (Permatasari et al., 2025; Satyawan et al., 2026). Collectively, these studies demonstrate that curriculum flexibility and authentic learning contribute positively to vocational education quality. However, the majority of previous investigations have evaluated curriculum implementation primarily from instructional or pedagogical perspectives without comprehensively linking implementation processes to measurable indicators of students' competency achievement and graduates' post-school employment outcomes.

This limitation reveals an important research gap. Existing studies rarely integrate qualitative evidence regarding curriculum implementation with documentary evidence of students' academic achievement, Vocational Competency Test (VCT) performance, and graduate tracer study outcomes within a single analytical framework. Moreover, limited empirical evidence is available concerning how competency-based curriculum implementation is reflected simultaneously in students' competency development and graduates' labor market integration at the institutional level, particularly in Indonesian private vocational schools. Consequently, a comprehensive understanding of whether curriculum implementation is accompanied by improved competency achievement and employment relevance remains insufficiently explored (Arzety et al., 2026; Susanto et al., 2026).

The present study addresses these gaps by integrating multiple sources of evidence, including interviews, classroom observations, curriculum documents, students' academic records, Vocational Competency Test results, and graduate tracer study data. Rather than evaluating curriculum implementation solely through teachers' or administrators' perspectives, this study examines whether curriculum practices correspond with measurable improvements in competency achievement and graduate employment outcomes (Khastini & Maryani, 2025; Nora et al., 2025; Patahuddin et al., 2024). Therefore, the novelty of this research lies in proposing a comprehensive institutional evaluation model that connects curriculum implementation, students' competency achievement, and graduate employability within a single qualitative case study supported by documentary evidence. This integrated perspective provides richer empirical insights into the effectiveness of competency-based curriculum reform in vocational education.

Based on this background, this study aims to examine the implementation of the Merdeka Curriculum at Tritech Informatics Private Vocational High School, Medan, evaluate students' competency achievement, examine graduate employment outcomes through tracer study data, and identify the supporting and constraining factors influencing curriculum implementation. The findings are expected to contribute to the growing body of knowledge on competency-based vocational education while providing practical recommendations for vocational schools, educational policymakers, and industry partners seeking to strengthen curriculum quality, graduate competence, and workforce relevance in the era of industrial transformation.

Method

This study employed a qualitative descriptive case study design to examine the implementation of the Merdeka Curriculum at Tritech Informatics Private Vocational High School, Medan, and its relationship with students' competency achievement and graduate employment outcomes. A qualitative approach was selected to obtain an in-depth understanding of curriculum planning, learning implementation, competency-based assessment, industry collaboration, and graduate employability within the school's authentic educational context. The study focused on a single vocational school to generate a rich contextual description rather than to produce statistically generalizable findings.

Data were collected through semi-structured interviews, direct classroom observations, and document analysis to ensure comprehensive evidence through methodological triangulation. Nine purposively selected informants participated in the interviews, including the principal, vice principals for curriculum and industry relations, heads of vocational study programs, and productive subject teachers. Documentary evidence comprised the School Operational Curriculum (KOSP), teaching modules, students' academic records, Vocational Competency Test (VCT) results from 2022–2025, and graduate tracer study reports from 2022–2024. These multiple data sources enabled the investigation of curriculum implementation while simultaneously examining trends in students' competency development and graduates' post-school outcomes.

Data analysis followed the interactive model of Miles and Huberman, consisting of data reduction, data display, conclusion drawing, and verification. Interview transcripts, observation notes, and documentary evidence were coded and organized into thematic categories corresponding to the research objectives. Quantitative information derived from students' academic achievement, Vocational Competency Test scores, and graduate tracer study data was analyzed descriptively using frequencies, percentages, and mean scores to support qualitative interpretation rather than inferential statistical testing. The trustworthiness of the findings was ensured through source and method triangulation, cross-checking information across interviews, observations, and documentary evidence, thereby enhancing the credibility, dependability, and confirmability of the study findings.

Results and Discussions

The findings are presented according to the four objectives of this study: (1) the implementation of the Merdeka Curriculum, (2) students' competency achievement, (3) graduate employment outcomes, and (4) the supporting and constraining factors influencing curriculum implementation. The results were generated through triangulation of interviews, classroom observations, school documents, students' academic records, Vocational Competency Test (VCT) results, and graduate tracer study data.

Table 1. The Implementation of the Merdeka Curriculum at Tritech Informatics Private Vocational High School in Medan

Aspect	Main Findings
Curriculum planning	The school prepared the School Operational Curriculum (KOSP), learning outcomes, learning objectives, teaching modules, and competency mapping aligned with vocational characteristics.
Learning implementation	Student-centered learning was implemented through project-based learning, practical activities, problem-solving, presentations, portfolios, and workplace simulations.
Competency assessment	Assessment consisted of diagnostic, formative, and summative assessment emphasizing practical performance, portfolios, projects, internships, and Vocational Competency Tests.
Industry collaboration	Partnerships with industries were conducted through internships, guest instructors, industrial visits, curriculum synchronization, external competency assessors, and graduate recruitment.
Monitoring and evaluation	School leaders continuously monitored teaching implementation, learning administration, classroom activities, assessment practices, and teachers' professional development.

Table 1 demonstrates that the Merdeka Curriculum was implemented comprehensively across planning, learning, assessment, monitoring, and industry collaboration. The curriculum emphasized student-centered learning supported by authentic competency-based assessment and strong partnerships with industry. Continuous monitoring by school management ensured that curriculum implementation remained aligned with vocational education objectives, although improvements in teacher readiness and learning facilities remained necessary.

Table 2. Students' Competency Achievement

Indicator	2022	2023	2024	2025
Average academic achievement	85.28	88.05*	89.31**	
Average Vocational Competency Test score	87.97	89.08	92.81	93.54
Overall competency level	Competent	Competent	Competent	Competent

*Highest average score in 2023 (second semester)

**Average competency achievement reported in this study.

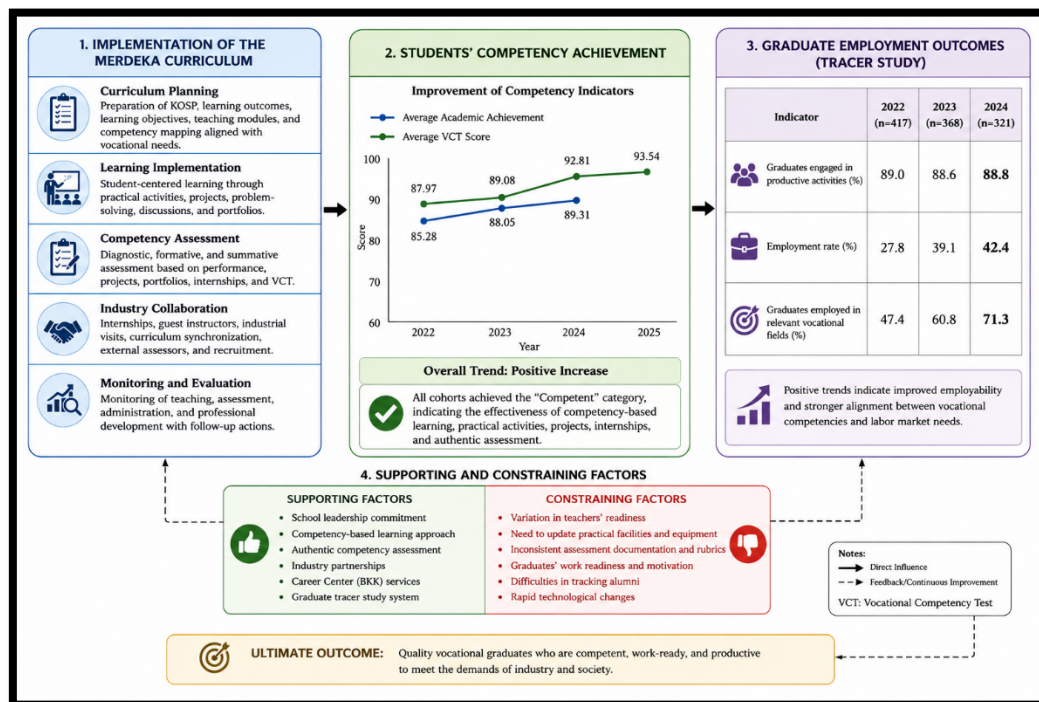
Table 2 shows a consistent improvement in students' competency achievement throughout the implementation of the Merdeka Curriculum. The overall academic achievement increased from 85.28 in 2022 to 89.31 in 2024, while the average Vocational Competency Test score increased steadily from 87.97 in 2022 to 93.54 in 2025. All cohorts achieved the "Competent" category, indicating that competency-based learning, project-based activities, internships, and authentic assessment contributed positively to vocational competence development.

Table 3. Graduate Employment Outcomes (Tracer Study)

Indicator	2022	2023	2024
Total graduates	417	368	321
Graduates engaged in productive activities (%)	89.0	88.6	88.8
Employment rate (%)	27.8	39.1	42.4
Graduates employed in relevant vocational fields (%)	47.4	60.8	71.3

Table 3 indicates positive graduate employment outcomes following the implementation of the Merdeka Curriculum. Based on tracer study data covering 1,106 graduates, approximately 88.8% of graduates participated in productive activities, including employment, entrepreneurship, or further education. The employment rate increased from 27.8% in 2022 to 42.4% in 2024. Furthermore, the proportion of graduates working in occupations aligned with their vocational competencies increased substantially from 47.4% to 71.3%, suggesting stronger alignment between vocational education and labor market demands.

The findings presented in Tables 1–3 indicate that the implementation of the Merdeka Curriculum was associated with improvements in students' competency achievement and graduate employment outcomes. To facilitate a comprehensive understanding of these relationships, Figure 1 summarizes the conceptual linkage among curriculum implementation, competency development, and graduate employability, together with the supporting and constraining factors identified during the study. The figure illustrates how competency-based learning practices, authentic assessment, and industry collaboration contribute to students' competencies, which subsequently strengthen graduates' employment outcomes.

**Figure 1.** Conceptual Relationship between Merdeka Curriculum Implementation, Students' Competency Achievement, and Graduate Employment Outcomes**Table 4.** Supporting and Constraining Factors of Merdeka Curriculum Implementation

Supporting Factors	Constraining Factors
Strong school leadership commitment	Variation in teachers' readiness to implement the curriculum
Competency-based learning approach	Limited updating of practical facilities and equipment
Authentic competency assessment	Inconsistent assessment documentation and rubrics
Industry partnerships	Graduates' work readiness and learning motivation
Career Center (BKK) services	Difficulties in tracking graduate employment data
Graduate tracer study system	Rapid technological changes requiring continuous adaptation

Table 4 summarizes the major factors influencing curriculum implementation. The success of the Merdeka Curriculum was supported by committed school leadership, competency-based learning, authentic assessment, extensive industry collaboration, Career Center services, and systematic graduate tracer studies. Nevertheless,

several challenges remained, particularly variations in teachers' readiness, the need for updated laboratory facilities, graduates' work readiness, and difficulties in maintaining comprehensive graduate tracking systems. These findings indicate that continuous institutional improvement is essential to sustain curriculum quality and strengthen graduate employability.

The findings indicate that the implementation of the Merdeka Curriculum at Tritech Informatics Private Vocational High School, Medan, has been systematically integrated into curriculum planning, student-centered learning practices, and competency-based assessment, continuous monitoring, and extensive industry collaboration. This comprehensive implementation was reflected in the preparation of the School Operational Curriculum (KOSP), competency-oriented teaching modules, project-based learning, workplace internships, and authentic assessment practices. These findings indicate that curriculum implementation extends beyond administrative compliance toward creating an adaptive learning ecosystem that aligns educational practices with industrial expectations. Such results support the competency-based vocational education framework, which emphasizes authentic learning experiences, flexibility, and close collaboration between schools and industry as essential determinants of curriculum effectiveness (Amaruddin et al., 2024; Harjanti et al., 2026; Kartiko et al., 2026).

Students' competency achievement also demonstrated a positive trend throughout the implementation period. The overall academic achievement increased from 85.28 in 2022 to 89.31 in 2024, while the average Vocational Competency Test (VCT) score improved from 87.97 in 2022 to 93.54 in 2025. Although these figures represent different student cohorts rather than longitudinal individual improvement, they consistently indicate enhanced competency performance after the implementation of competency-based learning. This improvement can be attributed to the greater emphasis on project-based activities, practical learning, portfolio development, and authentic assessment, all of which provide students with opportunities to demonstrate practical competence rather than merely theoretical understanding. Previous studies similarly report that competency-based curricula improve students' technical proficiency, problem-solving ability, and workplace readiness by emphasizing experiential learning and continuous performance assessment (Amali et al., 2025; Nurjanah et al., 2024; Supianto et al., 2024).

Another important finding concerns graduate employment outcomes. Tracer study data involving 1,106 graduates revealed that approximately 88.8% of graduates participated in productive activities, including employment, entrepreneurship, or further education. More importantly, the employment rate increased from 27.8% in 2022 to 42.4% in 2024, while the proportion of graduates working in occupations relevant to their vocational specialization increased substantially from 47.4% to 71.3%. These findings suggest that the Merdeka Curriculum contributes not only to competency development within schools but also to graduates' successful transition into the labor market. The integration of workplace internships, guest instructors, external competency assessors, and industrial partnerships appears to reduce the gap between school-based learning and industry requirements. This finding corroborates previous research demonstrating that stronger school-industry collaboration significantly improves graduate employability and occupational relevance in vocational education (Rahmah et al., 2024; Wildan et al., 2025; Yafie et al., 2024).

The qualitative findings further indicate that competency development under the Merdeka Curriculum encompasses both technical competencies (hard skills) and employability competencies (soft skills). Practical learning, project completion, internships, and Vocational Competency Tests strengthened students' technical expertise, whereas teamwork, communication, responsibility, discipline, problem-solving, and professional ethics were embedded throughout classroom instruction and workplace learning. This holistic competency development reflects the growing recognition that vocational graduates require not only occupational expertise but also transferable competencies to remain competitive in rapidly changing labor markets. Similar conclusions have been reported by international vocational education studies, emphasizing that technical competence and soft skills should be developed simultaneously to enhance long-term employability and career adaptability (Habibillah & Sakurai, 2026; Nalle et al., 2025; Syahril et al., 2024).

Despite these positive outcomes, several implementation challenges remain evident. Variations in teachers' readiness, the need to continuously update practical facilities and digital technologies, inconsistencies in assessment rubrics, graduates' work motivation, and difficulties in maintaining comprehensive alumni tracking systems were identified as the principal constraints. These findings indicate that successful curriculum reform depends not only on curriculum design but also on institutional capacity and continuous professional development. Teacher competence remains a critical factor because competency-based education requires educators to function as facilitators, mentors, and authentic assessors rather than traditional knowledge transmitters. Likewise, rapidly evolving industrial technologies require vocational schools to continually modernize learning facilities and strengthen industrial partnerships to maintain curriculum relevance (Amini et al., 2026; Halil et al., 2024; Nabilah & Suyanto, 2025).

This study provides empirical evidence that the implementation of the Merdeka Curriculum is positively associated with improvements in students' competency achievement and graduate employment outcomes within the investigated vocational school. The integration of competency-based learning, authentic assessment, workplace learning, and industry collaboration appears to create an educational environment that better prepares students for employment while simultaneously improving graduate relevance to labor market demands. Nevertheless, sustaining these positive trends requires continuous investment in teacher professional development, learning infrastructure, assessment quality, industrial partnerships, career guidance services, and graduate tracer systems. These findings contribute to the growing body of evidence supporting competency-based vocational education reforms and offer practical implications for policymakers and vocational schools seeking to strengthen graduate employability through curriculum transformation.

Conclusions

The findings indicate that the implementation of the Merdeka Curriculum at Tritech Informatics Private Vocational High School, Medan, has been effectively implemented through competency-based learning, authentic assessment, and industry collaboration. This implementation was accompanied by improvements in students' competency achievement and graduate employment outcomes. However, continuous enhancement of teacher competence, learning facilities, industry partnerships, career guidance, and graduate tracking remains essential to strengthen the quality and sustainability of vocational education.

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