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IMPLEMENTATION OF INDUSTRY-BASED INDEPENDENT CURRICULUM AT MUHAMMADIYAH 1 VOCATIONAL SCHOOL, SURAKARTA

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Keywords:	ABSTRACTS	
Keywords: Independent curriculum, Industrial Internship, Vocational School	ABSTRACTS The rapid development of technology that affects the world of industrial technology, on this occasion we conducted research in a school in the city of Surakarta which became one of the places to prepare human resources who will later be involved in the industrial world. The purpose of this study was to find information related to the implementation of an industry-based curriculum at SMK Muhammadiyah 1 Surakarta, obstacles in the implementation of an industry-based curriculum at SMK Muhammadiyah	
	of this industry-based curriculum. We collected data using a qualitative approach by conducting in-depth interviews, direct observation and documentation analysis. The results of this study are that we ge information that the industry-based curriculum is implemented by establishing cooperation between the school and the industry by providing learning materials tailored to the needs of the industry, then the obstacles in implementing this curriculum are limited practical supporting infrastructure that must always be adapted to the rapid development o technology, the ability of teachers who always have to be improved to keep up with new material in accordance with technological developments, and there are some mental students who are not ready with job offers outside the area. Of the several obstacles that exist, the school also tries to overcome these obstacles by making student practice groups to optimize learning time and establishing partners with industry to participate in meeting the needs of infrastructure to support practice, teachers and the industry also always coordinate related to the material that must be adjusted to the needs of the industry, then the mentality and attitude o students who are always prepared to be ready to enter the world of work.	

A. INTRODUCTION

Vocational secondary school is a mid-level educational institution that focuses on developing students' abilities so that they can do a job in a particular field. Vocational secondary schools strive to prepare students to enter the world of work with professional skills and abilities in their fields (Hanafi, 2013)

In the era of globalization and rapid technological development, the need for competent and adaptive human resources is increasingly urgent. The increasingly complex needs in the world of work emphasize that the workforce must have competitive professional abilities. In this case, education is central to achieving the goal of national development, which is to create a generation that has strong character, skills, and high creativity to face challenges in the industrial world (Nurcahyono et al., 2020). With the rapid development of technology and many jobs being replaced by machines, human resources remain important in an industry or company. The industry would be meaningless if it were not supported by the accountable abilities and skills of humans. All the potential of human resources is very influential in the development and progress of an industry in achieving its goals (Siahaan & Meilani, 2019). Quality human resources will determine the progress of a nation in the present and the future, so it is not only the wealth of natural resources, but also human resources that are very influential. Therefore, the quality of education and good human resources will help increase economic growth with the emergence of creative and innovative ideas and increased employment (Khurniawan et al., 2019)

Vocational education plays an important role in preparing skilled and competitive workforce to face the challenges in the industrial world that goes along with the development of technology, science and the industrial era (Akbar et al., 2024). Muhammadiyah 1 Surakarta Vocational High School, as one of the leading vocational education institutions, is committed to producing graduates who not only have theoretical knowledge, but also practical skills that are in line with current industry needs. A school can be said to be successful when it is able to provide knowledge to students so that when they graduate, it is easy for them to be absorbed into industry, the business world or the world of work (Suherman et al., 2022) To achieve this goal, the school has implemented an industry-based curriculum.

To achieve a maximum and quality learning process, a curriculum is needed. This curriculum is a set of rules containing learning objectives, content, and materials that serve as guidelines in the learning process. With this curriculum, learning can help achieve a target, and it is flexible, can be changed according to the conditions of the times, and for now, we are using the independent curriculum. This curriculum focuses on an approach to interests and talents, students are given the opportunity to take subjects according to their passions, so students can focus more and have more time to study according to their passions (Febia Ghina Tsuraya et al., 2022)

An industry-based curriculum is an educational approach that aims to align the learning process in schools with the real needs of the industrial world. This curriculum is designed through collaboration between educational institutions and the industrial sector to ensure that the teaching materials are in line with technological developments and labor market needs. With this approach, students not only learn theory in the classroom, but also gain relevant practical experience through various activities such as industrial classes and internship programs. The implementation of an industry-based curriculum aims to align the learning process with the needs and developments of the industry, so that vocational high school graduates not only have theoretical knowledge, but also relevant practical skills. The collaboration between schools and industry also aims to improve teachers' skills, adjust and develop the curriculum, and help provide facilities and infrastructure that continue to evolve over time. In implementing this curriculum, there needs to be a lot of support from teachers, principals, education offices, local governments, and parents so that the program can achieve a high level of success (Di, 2024).

In recent years, the implementation of the Independent Curriculum has been a major focus of education reform in Indonesia. Numerous studies have discussed the dynamics of implementing this curriculum at various levels of education, from primary school to vocational secondary school. Research by Angga et al., (2022) compared Curriculum 2013 with the Merdeka Curriculum in Primary Schools and found that the Merdeka Curriculum is more flexible and more in line with the educational culture in Indonesia compared to Curriculum 2013. This is in line with the study by Khaerunisa & Aliyyah (2024) which emphasizes that the change in curriculum aims to improve the quality of education and adapt it to the challenges of the 21st century. In addition, research by Susetiyo et al., (2023) reveals that in the context of Society 5.0, primary school teachers are required to have digital skills to support more innovative and interactive learning in the Merdeka Curriculum.

In line with that, other research focuses on how the Merdeka Curriculum is implemented in various educational units, including madrasahs and vocational schools. A study conducted by Hidayati (2023) shows that madrasahs that implement the Free Curriculum innovate in developing their operational curriculum to remain relevant to the challenges of the times. Meanwhile, research by Mujab et al., (2023) reveals that the implementation of the Free Curriculum in vocational high schools faces major obstacles in improving teacher competence and the availability of facilities and infrastructure that are in accordance with industry standards. This finding is reinforced by a study by Lestari et al., (2022) which reveals that the implementation of the Merdeka Curriculum at SMK Negeri 1 Sungai Rotan focuses on project-based learning and blended learning to increase students' readiness for the world of work. In addition, Gusman & Suyadi (2024) highlight the importance of religious education in the Merdeka Curriculum, which plays a role in shaping the character and spirituality of students so that they are not only skilled in academic fields but also have high moral integrity.

On the other hand, several studies have also highlighted the role of technology and local wisdom-based approaches in the implementation of the Merdeka Curriculum. Harahap & Sihombing (2024) found that the integration of technology in physical education in primary schools helps to improve the effectiveness of learning, although there are still obstacles in terms of teachers' readiness for this new approach. In addition, research by Nugraha et al., (2023) shows that the implementation of the Pancasila Student Profile Strengthening Project (P5) based on local wisdom at SMK Negeri 1 Cilegon can help strengthen the cultural values and character of students. Furthermore, Ujiana (2022) highlights the role of Islamic religious education teachers in facing the challenges of implementing the Merdeka Curriculum, where teachers need to improve their understanding of more flexible learning concepts oriented towards strengthening students' character. Thus, various studies show that the Merdeka Curriculum has great potential to improve the quality of education in Indonesia, although it still faces challenges in terms of teacher readiness, infrastructure, and adaptation to local needs.

The program includes various initiatives such as industrial classes, which involve direct teaching from industry practitioners, as well as internship programs that provide opportunities for students to gain real work experience at partner companies. Thus, it is hoped that graduates of SMK Muhammadiyah 1 Surakarta will be highly competitive and ready to contribute effectively in the workplace.

One of the main components in the implementation of an industry-based curriculum is the industrial class and the partnership between vocational schools and industry. In industry classes, students have the opportunity to learn directly from experienced industry practitioners. They are not only taught theory, but are also involved in hands-on practice using equipment and technology commonly used in the workplace and there will be products produced. This aims to provide students with real-life experience, so that they are better prepared to face challenges in the workplace later on (Riswati et al., 2021). School-industry partnerships are implemented in the hope of providing more skills and experience for students so that they are better prepared to enter the world of work. These partnerships involve teachers, students and also guest teachers from industry (Judijanto et al., 2024).

This study aims to evaluate the implementation of an industry-based curriculum at Muhammadiyah 1 Surakarta Vocational High School. This evaluation includes an analysis of the implementation process, the challenges faced, and the efforts made to overcome these obstacles (Ustafiano & Maulana, 2023). The results of this study are expected to provide a comprehensive overview of the effectiveness of industry-based curricula in improving the quality of vocational education. In addition, the findings of this study can also serve as a reference for other vocational education institutions in developing curricula that are relevant to the needs of industry today and in the future.

B. METHOD

This study uses a qualitative approach with a case study design to evaluate the implementation of an industry-based curriculum at SMK Muhammadiyah 1 Surakarta. This approach was chosen to gain an in-depth understanding of the process and results of the implementation of an industry-based curriculum in a specific context. Data collection was carried out through several methods, including in-depth interviews, direct observation, and documentation analysis. Research conducted with a qualitative approach to describe the activities carried out and also to find out the consequences of the activities that have been carried out, with this research an activity or event is designed to be easy to understand (Malahati et al., 2023)

In-depth interviews were conducted with various parties involved in the implementation of the curriculum, such as principals, teachers, students, and representatives from partner industries. These interviews aimed to obtain a comprehensive perspective on the implementation process, the challenges faced, and the efforts taken to overcome these challenges. In addition, the researchers also conducted direct observations in industry classrooms and apprenticeship places to see first-hand how the program is run. These observations include observations of teaching methods, interactions between students and industry practitioners, and the use of relevant equipment and technology.

The results of the study are presented in the form of a comprehensive report, including a detailed description of the process of implementing an industry-based curriculum, the challenges and obstacles faced, the efforts made to overcome these challenges and obstacles, and the impact of this program on students' job readiness. This report is expected to provide useful insights for the development of vocational education that is more effective and responsive to industry needs. With this systematic and comprehensive research method, it is hoped that a clear picture of the implementation of the industry-based curriculum at SMK Muhammadiyah 1 Surakarta can be obtained, as well as constructive recommendations for program improvement and development in the future.

C. RESULT AND DISCUSSION

1. Implementation of the Industry-Based Independent Curriculum at Muhammadiyah 1 Vocational High School in Surakarta

The implementation of this curriculum begins with the admission process for new students in accordance with the decision of the head of the Central Java provincial education and culture office 420/04794. In this PPDB regulation, there are four channels for accepting new students, namely the Zoning, Affirmation, and Prestige channels and the channel for transferring the duties of parents of students. The purpose of implementing this independent curriculum is to recover the abilities and skills of students after online learning due to the Covid 19 pandemic which is considered less effective in delivering learning materials. Therefore, this curriculum focuses on students to be more active in the learning process (Shofia Hattarina et al., 2022).

The implementation of the Industry-Based Independent Curriculum has been the focus of various studies in order to improve the quality of vocational education in Indonesia. Hakim & Nabila (2022) found that the implementation of the Independent Curriculum in Cirebon Regency has a positive impact on improving students' critical and analytical thinking skills, especially through project-based learning which is more flexible and in line with industry needs. In addition, research by Musthofa et al., (2022) confirms that the Independent Curriculum gives schools the flexibility to design a more contextual curriculum, so that graduates can have skills that are more relevant to the world of work. The implementation of this curriculum also allows students to be more active in the learning process, in line with the findings of Dewi et al., (2024) which show that the use of technology in the implementation of the Independent Curriculum can increase student engagement and the effectiveness of industry-based learning.

The implementation of this industry-based independent curriculum is applied in 4 skill programs, namely machining engineering, welding engineering, light vehicle engineering and motorcycle engineering. Each department has objectives and target abilities that must be mastered as well as clear job opportunities.

First, the machining process is to change the shape of a material by cutting and removing it in the form of grinding debris or chips (Rochim, 2013). Machining Engineering aims to equip students with the skills to become mechanical operators who will be able to manage businesses specializing in machine tools, including production, sales, and administration. Job opportunities in this major include working in construction workshops, becoming an entrepreneur in the field of machining, or continuing on to college.

Second, welding is a technique for joining metals by melting the parent metal and filler metal with or without additional metal to produce a continuous metal (Siswanto et al., 2011). The Welding Technique aims to provide skills in the field of welding and also provide innovative and creative attitudes to support work in the field of welding, and for the curriculum that has been implemented, it is based on Indonesian standard work competency standards.

Third, Light Vehicle Engineering aims to equip students with the knowledge, skills and attitudes to be competent in the field of motorcycle electrical, suspension and transmission maintenance and repair.

Fourth, Motorcycle Engineering (Honda) which aims to provide students with the knowledge and skills to identify and repair motorcycles, especially Hondas. This major has a partnership with Astra Honda Authorized Service Station (AHASS), so AHASS provides opportunities for graduates to work in AHASS workshops. However, it is not just about working in a workshop. with the skills provided by the school, students are also prepared to be able to open and manage their own workshop.

In the implementation of learning, it begins with the teacher creating modules that are in accordance with the objectives of each department and which are certainly also adapted to the provisions provided by the industry that collaborates, such as the motorcycle engineering department (Honda) which has to adapt the curriculum to the AHASS workshop. Then for learning in the classroom, it starts with a very good habit, namely fostering a culture of literacy by reading books or magazines that are liked in 5-10 minutes, to increase students' knowledge, and to maintain this culture of literacy, the school also routinely rejuvenates the books in the library. After reading, the teacher greets the students, then leads a prayer, takes attendance, explains the learning objectives, and explains the material to the students. In the scope of vocational high schools, learning does not stop in the classroom but also includes practice outside the classroom, such as in the machine shop, and even more practice hours than theoretical learning in the classroom, because the aim of this curriculum is to improve physical skills in operating machines. When carrying out the practice, the teacher gives an example to the students first. This practical learning method is a student activity in which they demonstrate the material they have learned using their skills. In the demonstration process, they may or may not use a tool (Lahir et al., 2017).

For the learning program, it is not only carried out in the school environment, but also outside the school, namely Field Work Practice. Work practice is an activity carried out by students by being directly involved in the industry according to the field of expertise taken. During the work practice, students are expected to be able to apply the knowledge they have gained in classroom learning or the school engine room. This work practice aims to introduce the field of work and is also expected to train and increase students' skills, and on this occasion students are also expected to be able to adapt to the industrial environment and establish relationships with industry parties. (Kurniawan et al., 2024)

The implementation of the Merdeka Curriculum is a form of innovation in the Indonesian education system that emphasizes flexible, personalized, and project-based learning. A number of studies have examined the implementation of the Merdeka Curriculum at various levels of education and fields of study. Purba et al., (2024) examined the implementation of social studies learning in elementary schools in the Merdeka Curriculum and found that this approach increases student engagement in

learning and allows them to develop critical and analytical thinking skills. These findings are reinforced by Hayati & Azim (2024) who highlight the application of the Merdeka Curriculum in Islamic Religious Education, where the method used emphasizes more flexible project-based and intracurricular learning. In addition, Ndraha et al., (2024) show that the Merdeka Curriculum has a positive impact on the interest of high school students in learning mathematics, with a contribution of 61.5% in increasing motivation and a deeper understanding of mathematical concepts.

In line with this, other studies discuss various challenges and obstacles in the implementation of the Merdeka Curriculum, especially related to the readiness of educators and supporting infrastructure. Dukalang (2023) revealed that one of the main obstacles in implementing the Independent Curriculum in madrasah is the lack of teacher readiness in understanding the concepts and learning methods applied. This was also confirmed by Ahmad & Yusuf (2023), who found that teachers at SMA Negeri 5 Kupang still had difficulty in determining methods that were in accordance with the principles of the Independent Curriculum, especially in describing learning outcomes and learning objectives. In the context of higher education, Pratiwiningtias & Anwar (2024) highlight that the Merdeka Curriculum approach in Islamic education at RA Nashrus Sunnah in Madiun City combines the digitization of learning with Islamic-based character education, but faces obstacles in the integration of technology and the readiness of teaching staff.

In addition to challenges in implementation, several studies have also highlighted the benefits of technology in supporting the Merdeka Curriculum. Handayani et al., (2024) showed that the use of Virtual Reality (VR) technology in biology learning can significantly improve students' conceptual understanding and participation. Meanwhile, Qiftiyah et al., (2024) found that the use of the Wordwall application in learning assessments helps create a more interactive and enjoyable learning experience for students. In the context of character building, Kurniasih et al., (2023) highlighted the importance of the Pancasila Student Profile Strengthening Project (P5) and the Rahmatan Lil Alamin Student Profile (P4R) in shaping students who have strong Islamic and national values in madrasah. Thus, various studies show that although the Independent Curriculum has challenges in its implementation, technology-based and project-based approaches can be solutions to increase learning effectiveness.

Wanti & Chastanti (2023) conducted a case study on the implementation of the Independent Curriculum in elementary schools and emphasized the importance of school readiness in terms of human resources and infrastructure. Although this research was conducted at the primary education level, their findings are relevant to vocational education, as they show that the successful implementation of the Merdeka Curriculum depends heavily on the readiness of schools to provide teaching tools and materials that meet industry standards. This is also supported by research by Fuadi et al., (2023) which highlights that the implementation of the Merdeka Curriculum requires a more flexible and project-based approach to ensure that students gain learning experiences that are in line with the challenges of industry 4.0. This research shows that schools need to adapt to technological developments and changing industrial policies in order for graduates to be ready for the competitive world of work.

Furthermore, research by Musthofa et al., (2022) highlights that the implementation of the Independent Curriculum in madrasah and vocational schools

faces a major challenge in the readiness of educators. They found that the lack of training for teachers to understand the concept and implementation of the Independent Curriculum is often an obstacle to creating effective learning that is in line with industry needs. Hakim & Nabila (2022) also emphasize that this curriculum demands a change in teaching approach, where teachers must be able to facilitate more independent and industry-practice-based learning. Therefore, support from the government and the industrial sector in the form of training and the provision of adequate infrastructure is a crucial factor in the successful implementation of the Merdeka Curriculum in vocational schools.

2. Implementation obstacles

From our observations, there are several obstacles related to the implementation of this industry-based curriculum (1) the limited number of infrastructure facilities that over time must be adjusted to the needs of the industry, which always adapts to the dynamic times, (2) the differences in students' abilities to understand and practice the material that has been studied, which will affect the number of lessons that can exceed the predetermined time. (3) Industrial policies that are constantly changing in line with the rapid pace of development and the ability of teachers who must always be upgraded to keep pace with industry needs. (4) The mentality of students who are not ready to be placed to work outside the Solo Raya area and its surroundings. There are many offers, but on average, students are not ready to be placed to work outside the area.

The availability of facilities and infrastructure is a major challenge in the implementation of the Independent Curriculum. Adam et al., (2024) found that in madrasahs that implement the Community-Based Independent Curriculum, the lack of adequate facilities greatly hampers the effectiveness of learning. Teachers have difficulty in providing practical tools and technology that are in line with industry demands. In addition, Rizki & Fahkrunisa (2022) emphasized that limitations in educational infrastructure are a factor that causes gaps in the achievement of student learning outcomes.

A study by Rasyidi & Idrus (2024) shows that the implementation of the Merdeka Curriculum often faces challenges in the diversity of student abilities. Differences in students' technical skills cause some of them to have difficulty adjusting to industrybased learning. This factor was also confirmed by Adam et al., (2024) who mentioned that variations in student abilities can extend the predetermined learning time.

One of the major challenges in implementing an industry-based curriculum is the rapid change in industrial policy. Sholeh et al., (2024) identified that the lack of communication between schools and industry often causes a mismatch between the curriculum taught and the skills needed in the world of work. Meanwhile, Sihotang & Siregar (2024) emphasized the need for regular curriculum policy updates to remain relevant to the highly dynamic changes in industry.

Many students feel unprepared to work outside their region after graduation. Mantra et al., (2022) show that this psychological barrier often stems from students' lack of experience and mental readiness to face the wider world of work. Another study by Awan et al., (2024) reveals that family factors also play an important role in students' decisions to work outside the region.

3. Efforts taken

The efforts taken to overcome the obstacles to the implementation of an industry-based curriculum at SMK Muhammadiyah 1 Surakarta are (1) the creation of a

student practice group to optimize the ability of all students to carry out practice, because basically this group work is a learning method that focuses on interaction between one another to complete and discuss tasks together (M. Andi Setiawan, 2017) and not only that, the school also establishes partnerships with industry to help meet the needs of infrastructure that is in accordance with industry standards, because basically this group work is a learning method that focuses on interaction between one another to achieve a certain goal (2) In the division of student groups when taking practice exams, teachers also pay attention to students' abilities, by mixing students who have the ability to quickly understand practical material and also students who are slow to understand practical material, so that in the group students who are already proficient can help other friends, so teachers do not run out of time to provide explanations to students in turn. (3) Conduct routine and periodic training with industry partners so that teachers are aware of updates related to the dynamic development of the industry, and then also be able to immediately make curriculum adjustments (4) Organizing Outingclass to companies to introduce the conditions of the world of work, and not only that, the school also makes a program for 12th grade students to also guide 11th grade students when practicing in turns, this is expected to give students a good mentality and attitude in the future.

Research by Susanti (2023) states that group work is an effective learning strategy for improving student understanding. By mixing students who have a quick understanding with those who are slower, learning becomes more interactive and efficient. Rasyidi & Idrus (2024) also add that this method helps reduce academic pressure on students who lack confidence in industry practices. Adam et al., (2024) found that cooperation between schools and industry is very effective in ensuring the availability of practice facilities that meet industry standards. Alawiah & Putri (2023) also highlight that industry assistance in the form of practical tools, internships, and joint training can improve students' skills before they enter the world of work.

Mantra et al., (2022) emphasize the importance of regular training for teachers so that they can keep up with dynamic industry developments. A study by Sholeh et al., (2024) shows that teachers who receive regular training are better able to adapt learning materials to industry needs. In addition, Sihotang & Siregar (2024) emphasize that improving teacher competence plays an important role in bridging the gap between the world of education and the world of work. The outing class program aims to introduce students to the work environment directly. Rizki & Fahkrunisa (2022) found that direct experience in the industry can increase students' mental readiness and reduce their fear of working outside the region. Sihotang & Siregar (2024) also added that a mentoring model between 12th and 11th graders can help accelerate adaptation and increase confidence in industry practices.

D.CONCLUSION

From the research that we have carried out related to the implementation of the industrial curriculum at SMK Muhammadiyah 1 Surakarta, it can be concluded that the school has made maximum efforts to prepare students so that they have the knowledge, skills and character that are ready to contribute to the world of work in accordance with their respective expertise. Then, related to the curriculum, it has also been prepared by the teachers and the industry. The curriculum is always adapted to the times so that the material presented is relevant to the needs of the industry. The efforts taken to

overcome the obstacles in implementing this industry-based curriculum are to establish communication and cooperation between the school and industry.

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