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The Role of the Principal in Implementing the Teaching Factory Program to Improve Students' Competence at Krian 2 Sidoarjo Center of Excellence Vocational High School

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ABSTRACT

This study aims to describe in depth the role of the principal in implementing the Teaching Factory (TeFa) program to improve students' competence at the Center of Excellence Vocational High School Krian 2 Sidoarjo. The research employed a qualitative descriptive approach with data collected through interviews, observations, and document studies. Data analysis was conducted through the stages of data condensation, presentation, and conclusion drawing, with the validity tested using source triangulation, technique triangulation, and member checking. The findings show that the principal's role encompasses three main dimensions: 1) As a manager, the principal plays an active role in planning, implementing, and evaluating the TeFa program by establishing collaboration strategies with business and industry partners, synchronizing the curriculum and facilities, and developing human resources. 2) As a leader, the principal fosters participatory collaboration with teachers, students, and industry partners through open communication, continuous coaching, and cross-sector empowerment. 3) As an innovator, the principal encourages creativity among teachers and students by providing financial support, facilities, and flagship programs such as Krian 2 Vocational High School, Sidoarjo Ready to Work, while integrating enterprise-based learning that serves real customers as a means of competence evaluation.

Thus, the principal's adaptive and visionary role has proven to enhance students' hard skills and soft skills, enabling them to be more prepared for the workforce, further education, and independent entrepreneurship.

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1. INTRODUCTION

Unemployment is a crucial economic issue that affects the social and economic stability of a country. Every nation in the world faces unemployment problems, including Indonesia (Frisnoiry, Sihotang, Indri, & Munthe, 2024).. Based on data released by Statistics Indonesia, the Open Unemployment Rate recorded in August 2023 reached 7.86 million people, which decreased to 7.47 million in August 2024. This decline continued until February 2025, with a total of 7.28 million unemployed individuals. This decrease aligns with the increase in the number of employed people from 139.85 million in 2023 to 145.77 million in February 2025. This indicates a reduction in the number of workers not yet absorbed into the labor market, while the unemployment rate in each city and regency in Indonesia varies. Referring to data from Statistics Indonesia in Sidoarjo Regency, the Open Unemployment Rate has decreased over the past two years, from 8.80% in 2022 to 8.05% in 2023.

Based on the Indonesian Labor Situation Report in August 2024, graduates of Vocational High Schools still dominate as the group with the highest unemployment rate. The unemployment rate of Vocational High School graduates in August 2024 was recorded at 9.01%, a decrease from the previous year's figure of 9.31%. If compared to the total number of unemployed people in Indonesia, which reached around 7.47 million, the number of unemployed Vocational High School graduates can be estimated at around 1.69 million. Several factors contribute to the high unemployment rate among Vocational High School graduates. First, there is a mismatch between skills and the needs of businesses and industries. Although vocational education emphasizes practical expertise rather than theory, many companies still consider the skills of Vocational High School graduates below industry standards. Second, there is a lack of structured and systematic internship programs. Internships should provide real work experience but are often not implemented effectively. Ideally, internships in companies should strengthen students' competencies and introduce them to real workplace environments. Third, there is a lack of soft skills and work readiness. In addition to technical competencies, industries require human resources who possess interpersonal abilities such as communication, leadership, and adaptability to new environments. Soft skills such as honesty, responsibility, politeness, self-confidence, good ethics, and creativity are essential in the industrial workforce (Arifa, 2024).

To improve soft skills and hard skills at the vocational level, collaboration between vocational schools and industries as well as the development of school programs to enhance students' work competencies are needed (Setiawaty, Fahmi, Adisucipto, & Ntt, 2024). Therefore, improving the quality of education in Indonesia must align with the evolving times. This is in line with the fourth goal of the Sustainable Development Goals (SDGs), which is quality education. Quality education is part of the social development pillar of the SDGs framework, emphasizing inclusive and equitable education and promoting lifelong learning opportunities for all (Siahaan, Juli Arianti, & Thalib, 2023). Achieving quality education requires the involvement of multiple parties, including communities and industries, as part of national development efforts.

Schools must have strategic plans to improve students' theoretical knowledge and technical skills. This cannot be separated from the role of leaders within educational institutions, namely the principal's role. The competence of principals is essential to ensure educational goals are achieved. According to the Regulation of the Minister of National Education No. 13 of 2007 concerning the Standards for Principals, principals must possess competencies in personality, managerial ability, entrepreneurship, supervision, and social relations (Maemunah, 2013). Managerial leadership refers to the process of directing and influencing task-related activities of group members to ensure effective performance in achieving organizational goals (Marbawi, 2016). Managerial competence is crucial for principals, as described in the Regulation of the Minister of National Education of the Republic of Indonesia No. 13 of 2007 on Principal Standards, which include: developing school plans, advancing educational institutions according to needs, optimizing available resources, managing changes and school development, managing facilities and infrastructure, maintaining school community relations, managing students, developing curricula, managing finances, overseeing school operations, managing service units, and maintaining school information systems (Yusutria et al., 2022).

One of the programs that can be implemented by principals to improve vocational graduates' employability in business and industry sectors is the Vocational High School – Center of Excellence program. The Center of Excellence designation is granted to schools that pass a rigorous selection

process by demonstrating strong evidence of resource capacity, including the implementation of Teaching Factory programs within or around the school environment (Stenly Akyuwen, Kempa, & Rumfot, 2023).

Teaching Factory (TeFa) is a learning model based on production activities designed to produce goods or services in accordance with the Indonesian National Work Competency Standards and industry standards (PSKP & K. Pendidikan, 2024). The management of Teaching Factory programs in Center of Excellence Vocational High Schools depends heavily on the principal's role as a manager, leader, and innovator in mobilizing all human resources within the school to work collaboratively in running the TeFa learning model. Principals must be able to analyze competencies relevant to specific industries and develop collaborations with businesses and industries as strategic partners for implementing the TeFa learning method (Abinnashih Ibnu, 2024).

Vocational High School Krian 2 Sidoarjo is one of the vocational high schools in Sidoarjo Regency accredited "B", offering five majors: Office Management and Business Services, Visual Communication Design, Industrial Electronics Engineering, Light Vehicle Automotive Engineering, and Motorcycle Business Engineering. Vocational High School Krian 2 Sidoarjo is among the schools that have been designated as a Center of Excellence Vocational High School by the government since 2021 and has implemented an industry-based learning model through the Teaching Factory in each of its departments. The school has become a model in implementing the Teaching Factory learning model in the region. Through the TeFa method, the school has successfully integrated theory and practice in collaboration with industries and companies. Students at Vocational High School Krian 2 Sidoarjo are actively involved in real-world projects relevant to their fields and participate in industrial visits aligned with their respective majors.

Based on a preliminary study with the principal of Vocational High School Krian 2 Sidoarjo, Mr. Indra Wahyu Suliswanto, M.Pd., it was found that the success of the Teaching Factory implementation is greatly influenced by the principal's strategic role in managing and leading the program, particularly in planning, mobilizing, and developing innovations. Therefore, it is important to conduct a study entitled "The Role of the Principal in Implementing the Teaching Factory Program to Improve Students' Competence at Center of Excellence Vocational High School Krian 2 Sidoarjo" in order to describe in depth how the principal's role contributes to improving students' competence, particularly in his capacity as a manager, leader, and innovator.

2. METHODS

In this study, the approach used is a qualitative one. This approach, also known as the naturalistic method, aims to gain a deep and comprehensive understanding of the research object. Its purpose is to draw conclusions that are relevant to the context of time and the ongoing situation (Citriadin, 2020). This approach is used to examine objects in their natural and authentic conditions (Sinaga, 2023). The data collection techniques used to investigate the role of the principal in implementing the Teaching Factory program to improve students' competence at Center of Excellence Vocational High School Krian 2 Sidoarjo include interviews, observations, and document analysis.

This study aims to understand and identify the principal's role in implementing the Teaching Factory program to enhance students' competence at Center of Excellence Vocational High School Krian 2 Sidoarjo. Therefore, the researcher presents the findings as accurately as possible based on data obtained in the field and provides descriptive notes through the observation process while understanding the existing conditions. Data analysis in this study employed the Miles and Huberman model, which consists of three stages: data condensation, data display, and conclusion drawing/verification. Meanwhile, data validity was tested through credibility using technique and source triangulation as well as member checking; transferability, dependability, and confirmability were also ensured.

3. RESULTS AND DISCUSSION

3.1 Results

Based on interviews, observations, and documentation conducted at the Center of Excellence Vocational High School Krian 2 Sidoarjo, it was found that the role of the principal in implementing the Teaching Factory (TeFa) program encompasses three main dimensions: manager, leader, and innovator. These three roles are interconnected and form an adaptive leadership system oriented toward improving students' competence.

A. Principal as a Manager

As a manager, the principal plays an active role in organizing and supervising all Teaching Factory activities to ensure they align with industrial standards. The principal implements the TeFa learning model to strengthen students' competencies and reduce the skill gap between graduates and industry demands. In carrying out this function, the principal has established partnerships with more than 500 industries as a foundation for curriculum synchronization, internship programs, and industrial work practices. The principal ensures that all components of TeFa implementation from planning to evaluation are carried out according to industry standards. The principal also conducts supervision three times a year and continuous informal monitoring to maintain the quality of teaching and learning. Moreover, the principal demonstrates responsiveness and adaptability to school needs while managing facilities and infrastructure in a structured and collaborative manner. Within the management aspect, the principal creates a management system aligned with industrial Standard Operating Procedures, guides and motivates teachers in implementing production-based learning, and ensures that all administrative, reporting, and documentation processes related to industrial collaboration are conducted in an orderly manner.

B. Principal as a Leader

As a leader, the principal demonstrates visionary, inspirational, participatory, and collaborative leadership. The principal builds motivation among teachers and students through regular mentoring and coaching sessions. The participatory leadership style encourages all school members to be actively involved in the development of Teaching Factory programs. The principal fosters a supportive and communicative school climate by providing open discussion spaces among teachers, students, and industry partners. Motivation is given through personal approaches and school-wide gatherings, which strengthens engagement between leaders and school members. Additionally, the principal encourages cross-departmental collaboration as a strategy for integrated project-based learning. Coordination and leadership are carried out dynamically, resulting in a stronger school culture based on industrial values and cooperation. This leadership approach not only strengthens teamwork but also creates a conducive learning environment for developing students' technical and professional competencies.

C. Principal as an Innovator

As an innovator, the principal demonstrates creativity and a forward-looking vision by transforming the Teaching Factory into more than just a place for practice it becomes a productive and economically valuable learning environment. One of the principal's innovations is the flagship (Vocational High School Krian 2 Ready-to-Work Program) which represents the school's commitment to producing highly competent and work-ready graduates. The principal fully supports innovations initiated by teachers and students in each department, provides freedom for experimentation, and continuously improves facilities to meet industrial standards while maintaining an aesthetic and comfortable learning environment. Moreover, the principal exhibits progressive and responsive leadership, ensuring that school programs remain aligned with the needs of the business and industrial sectors. Each innovation initiated by the principal ultimately aims to enhance students' competencies, both in technical (hard skills) and interpersonal (soft skills) aspects.

The findings indicate that the principal's role in managing the Teaching Factory program at Center of Excellence Vocational High School Krian 2 Sidoarjo has been carried out effectively and systematically. The integration of managerial, leadership, and innovative roles has created a comprehensive and significant learning system that successfully improves students' competencies and strengthens the school's collaboration with the industrial world.

3.2 Discussion

Based on the data presentation and research findings obtained in the field as described above, the role of the principal in implementing the Teaching Factory program to improve students' competence particularly in his roles as a manager, leader, and innovator has been carried out effectively and as expected. The success of a school is greatly influenced and determined by many factors, one of the most important being the strategic role of the principal. According to Mulyasa (2007), the role of the principal is often summarized by the acronym EMASLIM, which stands for Educator, Manager, Administrator, Supervisor, Leader, Innovator, and Motivator. However, in this study, the researcher focused on three main roles of the principal namely, manager, leader, and innovator as described below.

A. The Role of the Principal as a Manager in the Implementation of the Teaching Factory Program to Improve Students' Competence at Center of Excellence Vocational High School Krian 2 Sidoarjo

A leader in an educational institution must be able to influence and mobilize all available resources to drive and accelerate the achievement of educational goals and quality. In relation to the principal's role as a manager, a school leader must have appropriate strategies to empower educational personnel through collaboration, provide opportunities for professional development, and encourage their active participation and full support in implementing school programs (Supatmi, Masluyah Suib, 2014). An educational manager must be able to develop well-structured plans, organize program implementation, supervise activities, and evaluate all processes carried out within the educational unit. Managerial competence includes the ability to design short-, medium-, and long-term programs to produce high-quality graduates, as well as the ability to make data-based and needs-driven decisions. Vocational High School graduates are expected to be job-ready, yet in reality, data show that Vocational High School graduates contribute the highest unemployment rate nationally (Ridwan Misbahudin & Asmaul, 2022).

This fact is reflected in the behavior of the principal as a manager who implements the Teaching Factory learning model at Vocational High School Krian 2 Sidoarjo, aiming to minimize the gap between graduates' skills and the demands of the industrial world. According to the Directorate of Vocational Development (2007), Teaching Factory is the integration of the learning process to produce goods and services that add value to the school (Stenly Akyuwen et al., 2023). Implementing the Teaching Factory requires principals to collaborate with industries as relevant partners to assess the quality of vocational education outcomes (Adirmawan, 2022). The Teaching Factory model combines the Competency-Based Training (CBT) approach, emphasizing real tasks performed by students in the school environment and focusing on what a person can do as the outcome of training rather than the number of training sessions completed (Abdullah, 2020). In response to this, the principal has actively established strategic partnerships with more than 500 companies and industrial institutions across various sectors such as automotive, banking, and information technology. These partnerships support curriculum synchronization, teacher competency training, internship placements (PKL), and guest lectures by industry practitioners.

Within the Center of Excellence Vocational High School program, the principal provides guidance, motivation, and direction to teachers and students to achieve shared goals and foster a positive work environment (Nadiya & Andari, 2023). In terms of planning, the principal involves the management team, teaching staff, and heads of

departments in designing the Teaching Factory implementation plan. This plan is developed based on industrial needs and the results of a graduate tracer study showing that alumni with Teaching Factory experience find it easier to secure employment. Consequently, the principal prioritizes improving and expanding the school's business units such as AHASS Motorcycle Workshop, Car Workshop, and Mini Bank, which function as both learning spaces and real industrial practice fields for students. This demonstrates a data-driven, outcome-based management approach. This aligns with Bernard M. Bass's (1985) concept of inspirational motivation (IM) in transformational leadership, where leaders possess a clear and directed vision, communicate plans effectively, and encourage subordinates to be actively involved in achieving shared objectives.

The principal's managerial role in implementation is also evident in empowering all teachers to participate in training and industrial internships to strengthen their professional competence in each Teaching Factory business unit. The principal encourages productive subject teachers to develop Project-Based Learning (PjBL) modules aligned with industrial needs. In practice, teachers collaborate with industry practitioners to design projects, such as assembling electric bicycles and developing digital transaction services in the Mini Bank.

This is consistent with Mulyasa's (2007) statement that a principal, as a manager, must be able to organize subordinates to utilize knowledge, develop human resources, and manage the organization effectively to achieve its vision and mission.

In the evaluation stage, the principal, together with the vice principal for curriculum, systematically supervises learning activities. Evaluations are conducted formally using instructional supervision instruments and business unit reports and informally, through direct observations in each Teaching Factory workshop. The main goal is to ensure that the industrial-based Teaching Factory learning process genuinely enhances students' competencies and replicates real workplace conditions.

Furthermore, the principal integrates a school management information system to support monitoring of Teaching Factory development. This system includes data on graduate employment absorption by industries, financial audits of Teaching Factory units, and competency-based student performance reports. This practice aligns with the Ministry of National Education Regulation No. 19 of 2007, Article 1, which mandates that every educational institution must meet national management standards program planning, implementation, supervision and evaluation, leadership, management information systems, and accountability mechanisms to ensure effective and efficient educational processes. In managing education, efforts to explore, mobilize, and sustain available resources in a balanced and continuous manner are essential to achieving institutional goals through a collaborative work system (Nurtan et al., 2022).

In fulfilling these standards, the principal demonstrates strong managerial capabilities through participatory Teaching Factory program planning that involves the entire school community, particularly in curriculum alignment with industry needs. The principal also uses tracer study data as a foundation for medium- and long-term policy directions and Teaching Factory development to ensure relevance, sustainability, and accurate evaluation of graduate competency indicators in accordance with market demands. The lack of managerial competence among principals is one of the key factors hindering vocational school progress (Asri, Komariah, Meirawan, & Kurniady, 2021).

Thus, the implementation of the Teaching Factory program at Krian 2 Sidoarjo Center of Excellence Vocational High School, under the principal's managerial leadership, reflects compliance with national education management standards not merely as a formality, but as a practice focused on strengthening students' competencies and enhancing graduates' competitiveness to become job-ready and adaptive in the Industry 4.0 and Society 5.0 era

B. The Role of the Principal as a Leader in the Implementation of the Teaching Factory Program to Improve Students' Competence at Center of Excellence Vocational High School Krian 2 Sidoarjo.

Vocational education trains students to be skilled and capable of meeting the demands of the labor market so they can become productive, work independently, and fill available job vacancies in the business and industrial sectors as middle-level workers according to the competencies of their chosen expertise program (Diwangkoro & Soenarto, 2020). The principal is an educator responsible for directing the school and coordinating the efforts of instructors and students to implement effective learning practices (Rifki Solana & Mustika, 2023). As a leader, the principal must be able to provide guidance and supervision to improve the competence of teachers and education staff by fostering two-way communication, setting policy directions, carrying out supervision, serving as a role model, making wise decisions, and guiding subordinates (Chaniago, Nasution, & Sari, 2022). The conditioning of the Teaching Factory (TeFa), particularly the improvement of workshop facilities and infrastructure to align with real industrial work environments, becomes a key factor for achieving the learning objectives of vocational schools (Dudung, 2024). The principal plays an essential role in improving the overall quality of the school, and managerial implementation is reflected through the achievement of institutional goals (Hanim, 2022). The Teaching Factory learning process becomes far more engaging because its practices replicate real industrial activities that produce products and services (Purba, Panjaitan, Hasan, & Ginting, 2024).

Based on the findings in the field, the principal of Center of Excellence Vocational High School Krian 2 Sidoarjo, Mr. Indra Wahyu Suliswanto, M.Pd., in implementing the Teaching Factory, is not only a decision-maker but also a mover who unites all elements of the school. His leadership is neither authoritarian nor centralized, but rather participative and communicative, opening space for discussions and constructive input for developing the Teaching Factory in each department. Students are also encouraged to actively engage in solving problems that arise in the school environment. The Teaching Factory fosters professional human resources in their respective fields, shaping graduates with excellent character who are capable of self-development within the production unit (Kuswanto, Widodo, & Asih Kuswardinah, 2012)..

One form of leadership demonstrated by the principal is his ability to build motivation and internal enthusiasm among teachers and students. As revealed in interviews, the principal consistently conducts teacher development sessions every six months. He also emphasizes the importance of teachers' roles in preparing vocational graduates who are ready to work, not merely ready to be trained, in accordance with the demands of business and industry. Meanwhile, for students, the principal provides understanding from the early stage of school orientation that learning at Vocational High School Krian 2 Sidoarjo is industry-based, demanding professionalism and high discipline. This aligns with the leadership style described by Bernard M. Bass (1985), namely Idealized Influence (II), where leaders must serve as role models for subordinates not only leading but also demonstrating exemplary behavior, being admired, and earning trust. Such leaders are respected not merely for their position but for their integrity, commitment, and decisiveness in realizing the school's vision. This is evident at Vocational High School Krian 2 Sidoarjo through various strategic policies that are not only top-down but also involve the school community democratically. Vocational High Schools have the mission to prepare students to enter the workforce and develop professional attitudes for self-reliance (Marniati, Hidayati, & Mayasari, 2020).

From the perspective of leadership theory, according to Mulyasa (2007), a school principal must possess self-confidence, courage in decision-making, honesty, responsibility, humility, emotional stability, and the ability to foster a healthy and conducive work climate.

As a leader, the principal of Vocational High School Krian 2 Sidoarjo has exemplified these qualities by being a visionary, strengthening internal synergy, maintaining strong relations with business and industry sectors, encouraging cross-department collaboration to solve school problems, and demonstrating a dynamic leadership style meaning that the principal is responsive and flexible in addressing challenges in Teaching Factory learning swiftly and adaptively. Leadership is essentially a process through which a leader directs and influences subordinates using all their capacities (Mashar, Hudallah, & Oktarina, 2023).

Thus, the principal's role as a leader in implementing the Teaching Factory is not merely symbolic or administrative but also operational and strategic. The principal serves as the driving force who maintains enthusiasm, nurtures an industrial work culture within the school, and directs all available resources to achieve graduate competencies aligned with the needs of business and industry. This leadership has ultimately fostered greater industry trust in Vocational High School Krian 2 Sidoarjo graduates, positioning the school as a model for Teaching Factory implementation in East Java. The Teaching Factory in vocational schools not only trains students in hands-on practice but also teaches them to serve clients and solve workplace problems (Maula, Patmanthara, & Elmunsyah, 2021).

C. The Role of the Principal as an Innovator in the Implementation of the Teaching Factory Program to Improve Students' Competence at the Center of Excellence Vocational High School Krian 2 Sidoarjo

In facing the dynamic challenges of 21st-century education, characterized by the rapid advancement of information technology and future competency demands, principals are required not only to be administrative leaders but also to act as innovative drivers capable of providing strategic breakthroughs. The process of transferring technology and skills from medium and large-scale industries has shown that students often do not acquire sufficient practical skills experience (Abdullah, 2020). The principal, as an innovation driver, is someone who can develop new ideas or concepts based on available resources in accordance with the organization's goals to improve educational quality (Handini, Zulkifli, & Hukmi, 2016). Currently, numerous dynamics and emerging phenomena in education demand continuous innovation and renewal. Therefore, principals must engage in creating, improving, and solving various educational problems through innovative programs or projects offered to all members of the school community (Efrilla, 2022). As an educational institution, schools should adapt to the progress of the times in implementing education. A well-planned strategy is one way for schools to continue evolving by setting forward-looking plans and utilizing creative ideas and concepts to achieve their goals (Adirmawan, 2022).

In the context of implementing Teaching Factory (TeFa) learning, the principal's role is crucial in creating adaptive, relevant, and transformative learning. The principal is required to integrate all educational elements with the development and demands of the business and industrial world, as well as technological advancements these aspects are inseparable. In today's era, the competencies needed include soft skills such as independence, discipline, a strong work ethic, and responsibility. Meanwhile, hard skills refer to technical knowledge related to the job (Handini et al., 2016). Thus, the principal's role as an innovator is essential in producing competent graduates who possess both hard and soft skills so that they are well-prepared to face and solve various challenges in the workforce, pursue further education, or even become resilient and competitive entrepreneurs. Principals are also expected to conduct periodic evaluations of planning and program implementation while continuously innovating to improve students' competencies (Nadiya & Andari, 2023).

Based on observations, interviews, and field findings regarding the principal's role in implementing innovation, it can be concluded that the leadership of the principal of

Center of Excellence Vocational High School Krian 2 Sidoarjo is reflected through various strategic policies, learning programs, the development of school business units, and the creation of a modern learning ecosystem aligned with the development of industry and technology.

The principal, Mr. Indra Wahyu Suliswanto, M.Pd., not only innovates through policy-making but also directly engages in technical innovations. One example is transforming the Teaching Factory unit into an actual business unit that serves real customers such as the AHASS Service Post in the Automotive Engineering Department and the Mini Bank in the Office Management Department. These units enable students to gain real-world work experience, not only in technical aspects but also in customer service and management. In addition, the principal introduced a flagship program called (Krian 2 Vocational High School, Sidoarjo Ready to Work), which guides students from grade X to XII in gradually understanding and preparing for the professional world. This program includes industrial visits, fieldwork internships, self-development exams, and community service exams. All these stages form an innovative framework designed by the principal to prepare graduates ready to enter the real workforce. The increasingly complex demands of vocational education leadership, particularly in vocational high schools, require innovation and competitiveness aligned with current industrial standards (Asri et al., 2021).

Furthermore, as an innovator, the principal provides freedom and full support for creative ideas from teachers and departments. For instance, when the Department of Motorcycle Engineering and Business Management proposed developing an electric bicycle as its flagship project, the principal immediately approved and facilitated all necessary tools, materials, and funding. He also initiated an "Auto Contest" program in which students compete to decorate and modify their motorcycles to enhance their aesthetic and commercial value. This aligns with Bernard M. Bass's (1985) concept of intellectual stimulation (IS) leadership, which emphasizes that leaders should encourage subordinates to become innovative and creative by exploring new ways of doing things and seeking new opportunities for learning and growth.

Moreover, the principal of Vocational High School Krian 2 Sidoarjo also pays close attention to the design and aesthetics of the industrial-based learning environment. He ensures that each practice room is comfortable, clean, and meets industrial standards. This can be seen in the Office Management Department laboratory, which has been redesigned into three rooms resembling a professional office environment, complete with facing desks, laptops, and telephones that simulate real corporate settings.

This aligns with Mulyasa's (2007) theory, which states that a principal, as an innovator, must act as a change agent being creative, seeking new ideas, integrating activities, and developing innovative learning models according to current developments. The implementation of Teaching Factory can be reviewed from several aspects, including competency standards, management formation, students, and learning (Diwanggoro & Soenarto, 2020).

Based on the findings and theories above, it can be concluded that the principal of Vocational High School Krian 2 Sidoarjo has maximized innovation in programs, creative works, and facilities by adapting to existing conditions. These innovations are systematically directed toward comprehensively improving students' competencies both hard and soft skills so that graduates of Vocational High School Krian 2 Sidoarjo are ready to face the challenges of the workforce and compete professionally.

Thus, the principal's role as an innovator not only creates new learning systems but also brings a tangible impact on the comprehensive improvement of students' competencies. The innovations implemented by the principal have successfully produced high-quality graduates. This role serves as a crucial foundation in addressing the challenges of vocational education today and in the future.

4. CONCLUSION

Based on the research findings, the following points can be concluded:

1. The Role of the Principal as a Manager in the Implementation of the Teaching Factory Program to Improve Students' Competence at the Center of Excellence Vocational High School Krian 2 Sidoarjo: The principal acts as both a facilitator and an executor in the managerial process of implementing the Teaching Factory program, which includes structured and systematic stages of planning, implementation, and evaluation. In the planning stage, the principal actively establishes partnerships with more than 500 industries as collaborators to support curriculum alignment, teacher competency training, student internships, and industrial guest teacher programs. During the implementation stage, the principal ensures the achievement of industrial standards in facilities and infrastructure, teacher readiness, and curriculum synchronization within the operational Teaching Factory units such as the AHASS Workshop, Automotive Garage, and Mini Bank. Furthermore, in the evaluation stage, the principal conducts regular supervision and monitoring of practical activities to ensure that the Teaching Factory program runs according to plan and effectively enhances students' competencies.
2. The Role of the Principal as a Leader in the Implementation of the Teaching Factory Program to Improve Students' Competence at the Center of Excellence Vocational High School Krian 2 Sidoarjo: As an educational leader, the principal demonstrates a transformational, visionary, participative, and inspirational leadership style. The principal motivates teachers and students through regular coaching and open two-way communication, both formally and informally. The principal also builds cross departmental synergy, encourages collaboration among departments in managing Teaching Factory business units, and acts as a driving force who bridges the aspirations of all school members. This leadership fosters a collaborative, adaptive, and industry oriented school culture that aligns with educational development.
3. The Role of the Principal as an Innovator in the Implementation of the Teaching Factory Program to Improve Students' Competence at the Center of Excellence Vocational High School Krian 2 Sidoarjo: The principal acts as an innovator by introducing various breakthrough programs, developing school business units, updating facilities, and implementing adaptive policies in response to industrial needs and technological advancements. One of the key innovations is the (Krian 2 Vocational School Ready to Work), which prepares students from grades X to XII through industrial visits, internships, Competency Tests, Personal Development Exams, and Community Service Exams. In addition, the principal supports innovative product development in each department by giving teachers the freedom to design industrial practice based learning models. Regarding facilities, the principal encourages the creation of practical learning spaces that are aesthetic, comfortable, clean, and reflect real-world workplace environments. For example, the principal initiated the "Oto Contest", where students compete to modify their motorcycles to increase value, creativity, and aesthetics. All these innovations are directed toward preparing students to become highly skilled, competitive, and job-ready graduates with both hard skills and soft skills.
4. Students' Competence in the Implementation of the Teaching Factory Program at the Center of Excellence Vocational High School Krian 2 Sidoarjo: The implementation of the Teaching Factory program led by the principal has proven to significantly contribute to improving students' technical (hard skills) and non-technical (soft skills) competencies. This improvement is reflected in the students' achievements at the Student Competency Competition at the district level, where the school won the overall championship, as well as in non-technical skills such as communication, discipline, teamwork, and professional work ethics through industry-based learning experiences. Based on the research findings, the Teaching Factory learning model has successfully reduced the gap between vocational school graduates and industry needs. This is further supported by Tracer Study data, which shows that as of June 2024, the number of Vocational High School Krian 2 Sidoarjo alumni who secured employment before receiving their diplomas increased compared to the previous year, 2023.

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