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Mind Mapping in a Collaborative Learning Model: Strengthening Link-and-Match (8+i) Partnerships in Center of Excellence Vocational Schools

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A B S T R A C T

This study examines the use of mind mapping in a collaborative learning model to strengthen Link-and-Match (8+i) partnerships in a Center of Excellence vocational school. Using a qualitative case study approach, data were collected through observation, in-depth interviews, and document analysis involving school leaders and productive teachers in the Light Vehicle Engineering program at SMK Bhakti Loa Janan, Kutai Kartanegara, Indonesia. The findings show that mind mapping functions as an analytical and collaborative tool to visualize key partnership components, including curriculum alignment, guest teachers, internships (PKL), competency certification, teaching factory, and graduate absorption. The mapped analysis reveals that while partnerships with industry are established through MoUs and several programs have been implemented, gaps remain in the consistent application of project-based learning (PjBL), teaching factory utilization, technology updates, and teacher capacity building. Mind mapping supports stakeholders in identifying implementation gaps and prioritizing improvements to enhance the sustainability and effectiveness of industry collaboration in vocational education.

Keywords
Mind Mapping, Vocational School, Teaching Factory, Industry Partnership, Project-Based Learning (PjBL)

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1. INTRODUCTION

Technological developments in the era of the Industrial Revolution 4.0 and the early stage of Society 5.0 require vocational education in Indonesia to adapt more concretely to the needs of the world of work. Advances in technologies such as Artificial Intelligence (AI), the Internet of Things (IoT), and cyber-physical systems have directly influenced changes in the competencies required of graduates from Vocational High Schools (SMKs), particularly in the industrial and manufacturing sectors. However, the main challenges faced by vocational education are not only related to technological mastery, but also to gaps between school curricula and industry needs, the limited effectiveness of industry partnerships, and the lack of implementation of real-world, project-based learning derived from industry practices.

To address these challenges, stronger collaboration between schools and industry is essential through link and match programs, collaborative learning approaches, and learning innovations that are relevant to real workplace contexts. Vocational curriculum reconstruction should focus on strengthening technical competencies and 21st-century professional skills, including critical thinking, collaboration, communication, and creativity, integrated into industrial work practices. In addition, educators' technological literacy and readiness play a key role in optimizing industry partnerships and in creating vocational learning that is adaptive, contextual, and aligned with workforce demands.

It is important to note that the absorption of Vocational High School (SMK) graduates into the relevant Business/Industry World (DUDI) remains very low. Data on the Open Unemployment Rate (TPT) in Indonesia based on education level in 2022 shows that the highest TPT in 2022 was 9.42% from vocational high schools. A survey by the Central Statistics Agency (BPS) shows that the current absorption of vocational high school graduates is a serious problem and requires an appropriate solution. This figure indicates a persistent mismatch between vocational education outcomes and labor market needs, highlighting the urgency of strengthening link-and-match partnerships between schools and industry to improve graduate employability and policy effectiveness in vocational education. One solution to this problem is to establish a partnership program between vocational high schools and DUDI as the party implementing the absorption of vocational high school graduates. Wahjosumidjo (2011) stated that the partnership will help align program content with skills so that graduates can be recommended according to the skills possessed by students. This aligns with the objectives of the Center of Excellence Vocational High School (SMK PK) program in partnership and systematically and comprehensively aligning the vocational education curriculum with DUDI (Kemendikbudristek, 2021).

Vocational school programs are structured as a learning approach, both preparing students for the world of work and for future well-being, as well as HR strategies and policies targeted to serve various needs in the country and the world (Igberaharha, 2021). In 2019, the SMK Revitalization program focused on procuring physical assistance for SMKs. There were obstacles in the planning process, namely the lack of calculations for analyzing facility and infrastructure needs, constraints on unit price predictions and inventory constraints, and the removal of educational facilities and infrastructure in schools (Muhamad et al., 2021). In 2020, the SMK Revitalization program was transformed into the SMK Center of Excellence (SMK CoE) program, which focuses on developing SMK human resources and is able to influence other schools with incentives for physical and non-physical assistance. The main obstacles in implementation were the lack of assessment of teacher readiness, environmental readiness to collaborate with industry, and facilities and infrastructure for implementing the SMK CoE program (Subandi et al., 2021).

However, pre-research observations revealed various challenges in achieving the objectives of the Vocational High School Vocational Education (SMK PK) program, particularly in implementing link and match. These challenges include a new paradigm requiring all school stakeholders to implement it. However, it is recognized that each region has different characteristics, potential, and human resource capabilities in dealing with change. According to the Indicator Survey Institute, in collaboration with the Ministry of Education and Culture, which conducted a survey entitled "Strengthening Vocational Education," there are obstacles in implementing the SMK PK program, including program preparation, limited time for outreach, and human resource preparation (Januari et al., 2022).

The purpose of the SMK PK program is continuously improving the quality of human resources for vocational high school students in line with current industry needs (Mardi, 2021). Link and match is one of the SMK PK programs aimed at reducing the imbalance between labor availability and industry expectations (supply and demand) (Husein, 2019). The link and match policy is a competency development program for vocational high school students, which is required to prepare graduates according to the needs of the industrial world so they can keep up with the ever-evolving and changing market demands (Rosina, Hani, et al., 2020).

The current challenges in link and match are the need to increase the number of teachers from the workforce, teaching factories, commitment to absorption, and collaboration with the workforce, as these points do not meet the minimum standards implemented by the government (Ahmanda et al., 2022). This is an aspect of link and match that aligns with the results of pre-research observations at SMK Bhakti Loa Janan. The less han optimal readiness and implementation of link and match is due to the fact that some teachers still do not understand the program's objectives, as well as the lack of industry commitment, and the need for increased university support in program innovation and development.

This study's novelty lies in the use of mind mapping as a collaborative and analytical tool to integrate and evaluate the implementation of the Link and Match (8+i) partnership between vocational schools and industry. Unlike previous studies that examine partnership programs separately, this research applies mind mapping to visually and systematically connect curriculum alignment, guest teachers, internships (PKL), certification, teaching factory, technology updates, and graduate absorption. This approach offers a holistic framework for understanding school–industry collaboration and learning innovation.

Research Questions:

1. How is mind mapping applied to map and manage the Link and Match (8+i) partnership between vocational schools and industry?
2. How does mind mapping support the identification of achievements, challenges, and school readiness in implementing industry partnerships?
3. How does mind mapping contribute to collaborative learning and the sustainability of vocational school–industry partnerships?

Given these empirical and theoretical problems, this study aims to produce findings regarding the planning, implementation, supporting factors, and obstacles to the implementation of link and match partnerships at the Center of Excellence Vocational School for Light Vehicle Engineering, SMK Bhakti Loa Janan.

2. METHOD

This research uses a qualitative approach with a case study model. Qualitative research aims to understand phenomena experienced by research subjects, such as behavior, perception, motivation, actions, and so on, holistically, and through descriptive words and language, within a specific, natural context and utilizing various natural methods (Moleong, 2021). The reason the researcher used a case study approach was because the purpose of this research was to interpret the ongoing 8+i link and match partnership. There are eight DUDI

commitments, along with "i" representing possible collaborations with DUDI. The explanation is shown in Figure 1.

Figure 1. Content of the 8+I Link and Match Vocational Schools
(Source: 2022 Center of Excellence Vocational School Program Socialization)

Program implemented through a selection stage, SMK Bhakti Loa Janan became the first school in Kutai Kartanegara Regency to implement the SMK PK Regular Scheme program in 2022. The research subjects included the Principal, Deputy Principal for Curriculum, Deputy Principal for Facilities and Infrastructure, Head of Expertise Concentration, and Productive Teachers of Light Vehicle Engineering Expertise Concentration. The participants were selected using purposive sampling. The reason for selecting respondents was that the subjects were involved in the planning and implementation of link and match partnerships in the SMK PK program. Total number of interviewees are 12 participants with the duration of interview 30-60 minutes.

Data collection was conducted through source triangulation, method triangulation, member checking, and extended participation, including observation data, interviews, and documentation. Observation was used to observe and record directly at the research location, including: a general overview of the activities/programs implementing the link and match policy that have been implemented and are being implemented. Interviews were conducted using a guide on a list of questions that had been prepared beforehand. The interview guide consisted of outlines regarding the planning, implementation, obstacles, and supporting factors of the link and match partnership. The documentation method obtained information from various written sources or documents and photographs.

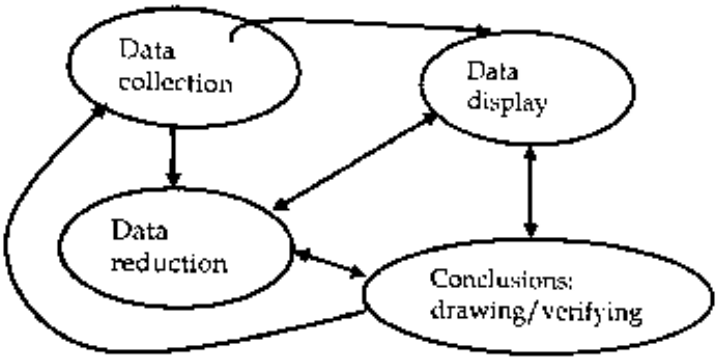

Figure 2. Data Analysis

Data analysis was carried out by adopting the Miles and Huberman model (Sugiyono, 2018) which is shown in Figure 2. The data obtained was then collected and then went through the stages of data collection, data reduction, data presentation, and drawing conclusions, while observing the principles of validity and credibility in qualitative research.

3. RESULTS AND DISCUSSION

In this study, mind mapping was used as an analytical and collaborative mapping tool to visualize, organize, and synthesize the implementation of the 8+i Link and Match partnership between the vocational school and industry partners. Mind mapping was not positioned merely as an instructional strategy in the classroom, but as a conceptual framework and visualization technique to integrate multiple partnership components into a coherent structure. The mind mapping process was conducted by collecting qualitative data from interviews, observations, and document analysis related to curriculum alignment, industrial classes, fieldwork practices (PKL), competency certification, teaching factory, project-based learning, technology updates, teacher training, and graduate absorption. Key themes and relationships identified through data reduction were then mapped visually to show interconnections among the 8+i components, challenges, and outcomes. The resulting mind maps served as:

1. An analytical tool to support thematic analysis by clarifying relationships among partnership elements.
2. A collaborative reflection tool for educators and stakeholders to understand the overall structure, gaps, and strengths of the partnership.
3. A decision-support visualization to identify priority areas for improvement in learning innovation, capacity building, and sustainability of industry collaboration.

Through mind mapping, complex partnership dynamics could be presented in a concise, systematic, and integrative format, supporting clearer interpretation of findings and strengthening the discussion on collaborative learning innovation and partnership management in vocational education.

Table 1. Partnership Program of Bhakti Loa Janan Vocational School with Industry

No	Industry Name	Industry Partnership Program
1	PT Astra Daihatsu Cabang Samarinda	Curriculum Alignment, Guest Teachers, Field Practical, UKK, BKK, Competency Certificates, Development of practical equipment and teaching materials
2	Astra Isuzu Samarinda	Guest Teachers, Field Practical
3	Graha Auto Toyota	Field Practical
4	Serba Mulia Auto	Field Practical
5	UD Truck Samarinda	Field Practical
6	Graha Mulia Auto	Field Practical
7	PT. Mahakam Berlian Sembaya	Field Practical

There are 8 aspects in the link and match partnership (8+i), including: compiling and aligning the curriculum of the world of work, real project-based learning from the world of work (PjBL), the role of teachers/instructors from industry and experts from the world of work, field/industrial work practices, competency certificates, technology updates and teacher/instructor training, teaching factories, and commitment to absorbing graduates.

The implementation of link and match is one of the requirements in submitting the Center of Excellence Vocational School (SMK PK) program, various link and match activities have been carried out at SMK Bhakti Loa Janan, especially in the concentration of Light Vehicle Engineering (TKR) expertise. The readiness of link and match documents is the reason SMK Bhakti Loa Janan submitted the TKR expertise concentration in the SMK PK program in 2022. Table 1 is a list of industries and partnership programs implemented with SMK Bhakti Loa Janan.

3.1. Implementation of Link-and-Match (8+i) Partnership Programs

Documentation data shows that SMK Bhakti Loa Janan has implemented curriculum development and alignment with PT Astra Daihatsu. In addition to documentation, the implementation of curriculum development and alignment at SMK Bhakti Loa Janan is also supported by information from interviews with the Vice Principal for Curriculum.

"The first one for TKR is PT Astra International Daihatsu, both the Daihatsu branch in Samarinda and the Daihatsu in Jakarta. We also have a collaboration, so yesterday the person who provided the link and match material was also from Jakarta." (W/R2/2:5) The curriculum development and alignment process was carried out in 2020, before the school prepared its application for the SMK PK program. All productive teachers and technicians specializing in TKR participated in the curriculum development and alignment activities.

Figure 3. In-House Training Curriculum Activities

The development and alignment of the curriculum resulted in policies related to aligning the school curriculum with industry, implementing guest teacher programs, competency certificates, the Vocational Competency Test (UKK), the mechanism for implementing internships in industry, and the absorption of graduates. These findings are evident in the MoU document and the following interviewee's statement. "More on

curriculum alignment, where we focused more on classroom learning methods and test materials that will be tested during the UKK and the internships in third grade." (W/R7/1:5) Following these activities, a commitment was formed between industry and schools to build sustainable collaboration. This research aligns with Erlinawati's (2020) research, which found that three components (vocational high schools (SMK), the workplace (companies), and the government) must be interconnected to ensure the success of the program. Vocational high schools (SMK) are the most crucial component, as the creativity and innovation of SMK administrators determine the program's success. The next step, the industry's commitment to implementing cooperation is not only done occasionally, but needs to be followed up and will take place continuously, because both schools and DUDI are equally responsible for educational development that has an impact on DUDI (Munthe & Mataputun, 2021).

Industry classes, led by teachers/instructors from industry and experts from the professional world, are one of the link and match programs implemented. Documented data shows a Memorandum of Understanding (MoU) with teachers/instructors from industry, represented by one instructor from each industry collaborating with SMK Bhakti Loa Janan's TKR expertise concentration. The role of teachers/instructors from industry is a minimum of 50 hours per semester per expertise concentration.

Figure 4. Implementation of industrial classes with teachers/instructors from industry

Through the learning program, teachers/instructors from industry are expected to gain new competencies in the ever-evolving automotive technology.

> "One of the competencies expected to develop is the introduction of new technologies provided by guest teachers, both for teachers and students." (W/R1/2:1)

The last industrial class program, led by teachers/instructors from industry and experts from the professional world, was held on November 4, 2022, by PT Astra Daihatsu, and on November 7, 2022, by Isuzu and OTO 2000. The statement from the Head of the TKR Expertise Concentration complemented the statement made by the previous speaker.

> "...so, we invited guest teachers. On November 4th, they were from Daihatsu, and on November 7th, they were from Isuzu and OTO 2000." (W/R4/3:2)

In the same interview, it was explained that PT Astra Daihatsu was implementing an industrial class program on periodic maintenance. Participants included teachers and students of the SMK Bhakti Loa Janan Engineering and Technology (TKR) program. The program was divided into two parts: teacher training by the workshop manager, while students received training from mechanics.

> "The TKR students participated in the training. So, I asked for guest teachers from industry. They asked about the material. I asked for periodic maintenance. The hope was that if the students knew about periodic maintenance when using periodic maintenance tools, for example, two-post and four-post training from SMK PK, they would be able to do it. Personally, I was more confident with the mechanics, who were from industry. Mr. Andi from Daihatsu was the speaker for the teachers, while the students were the mechanics." (W/R4/3:2)

The presence of teachers/instructors from industry provided information on learning, student and teacher training, and inspected the workshop's infrastructure. The results of this study support the research of Amanah et al. (2022), which found that the presence of guest teachers from industry facilitates the use of practice rooms that are set up according to industry standards, provides learning resources from industry, and implements an industry work culture. Through the guest teacher program, the experience gained is also unique, as it provides direct experience with the industrial and industrial sectors, thereby improving the quality of graduates and facilitating student absorption into the workforce (Munthe & Mataputun, 2021).

Figure 5. Implementation of industrial classes at PT. Astra Daihatsu Tbk Samarinda

One change in the Center of Excellence Vocational School program is the implementation of Field Work Internship (PK). Currently, PKL is implemented in grade 11, using the 2013 Curriculum guidelines for six months, using a block system. The implementation of PKL in the SMK PK program will shift to grade 12 for one year, resulting in one year without PKL. This will allow schools to maximize collaboration with industry in proposing PKL implementation, develop PKL schedules to avoid interference with the Vocational Competency Test (UKK) and school exams, and serve as a tool to build student character prior to PKL implementation, ensuring it aligns with program objectives.

Schools must strive to prepare students physically and mentally before implementing direct learning in industry. The design of the internship program to be implemented in grade XII has been outlined in the KOSP (Commission for Industrial Training). So far, the

school has conducted competency mapping and location determination, but is still working on improving the location determination process. The following is a diagram of the internship program planning for SMK Bhakti Loa Janan.

Figure 6. SMK Bhakti Loa Janan internship program planning

The internship program requires significant support from industry to provide guidance and direct learning in the industry, as stipulated in a Memorandum of Understanding (MoU) or cooperation agreement. Industries collaborating with SMK Bhakti Loa Janan are committed to accepting students from SMK Bhakti Loa Janan for internships each year. Research by Ahmanda et al. (2022) revealed that the collaborative process between expertise concentrations in vocational schools regarding internships with industry is carried out through an MoU. Some industries that do not have an MoU use a cooperation agreement. To improve learning in internships, on-site guidance must be part of a well-established process, and schools must be committed to implementing it (Mikkonen, Susanna, et al., 2017). If the guidance process is implemented during internships, both students, schools, and industry will become more aware of the learning objectives of internships.

3.2. Challenges and Readiness Issues in Learning Innovation and Capacity Building

Project-based learning (PjBL) has not yet been fully implemented at SMK Bhakti Loa Janan. In 2021, it was implemented with a project to create electrical panels and a Sienna engine stand. However, after being selected as a Vocational High School (SMK PK), PjBL has not been implemented again. Interview data revealed challenges in developing PjBL lesson plans and a lack of understanding regarding PjBL implementation. The principal explained this in an interview.

> "Well, sometimes there are obstacles, perhaps a lack of human resources and constraints from industry, such as time, because PjBL preparation cannot be completed in a day. This project produces a product, which means it must be evaluated and then produced according to the stages. So, our challenge is that we implemented it in previous years, but the timelines were delayed. For example, at TKR, we made electrical panels and a Sienna engine stand." (W/R1/1:5)

The principal's statement reinforces information regarding the obstacles to PjBL implementation, as also expressed by other sources. The following is an excerpt from the interview.

> "We teachers have limited capabilities. So, the meaning you conveyed, as asked earlier, I don't implement everything. What about the project-based approach? I'd ask the teachers here, even if they're not productive teachers, if they've ever implemented it here." (W/R5/2:2)

Teachers feel they've experienced accelerated access with new education policies. They haven't yet utilized the learning methods recommended by the central government, such as PjBL. Meanwhile, teachers/instructors play a crucial role in PjBL methods. They point students in new directions, expand their thinking by suggesting alternative solutions or commenting on the limitations of their thinking, provide timely feedback on their designs, and facilitate their progress on projects with regular meetings or reflective activities (Zhu et al., 2019). In the problem-solving process, teachers are required to act as "guides" or "coaches," offering guidance or providing suggestions or ideas as needed. It's important for participants (both teachers and students) to learn the ability to use acquired knowledge to solve specific cognitive and practical problems, acquire communication skills, and develop research skills (identifying specific problems, obtaining feedback, observing, conducting experiments, analyzing them, building general and partial hypotheses, summarizing the results) and thinking through the PjBL method (Radkevych et al., 2020).

To improve the quality of vocational school graduates, regular technology update programs and teacher/instructor training are necessary. The material taught includes an introduction to new technologies in the automotive sector, provided directly by the industry. However, since SMK Bhakti Loa Janan was selected as a Vocational High School (SMK PK), the technology update program and teacher/instructor training have not been implemented by the industry. Prior to the SMK PK program, training related to work culture and link and match was conducted. This statement was made by the school principal in an interview.

The lack of regular technology update activities was further supported by statements from other sources. Meanwhile, the school hopes for industry to implement technology update activities and teacher/instructor training, which can be held regularly at SMK Bhakti Loa Janan.

> "The type of collaboration that is expected to be improved relates to recruitment, recruitment from students themselves, absorption of graduates, and also related to updates on the latest technology." (W/R2/2:6)

In line with Irwanto's research (2025), obstacles and efforts in the link and match program include the DUDI's commitment to providing intensive training for teachers to enable them to adopt new technologies and learning methods that align with industry demands. In the future, the school hopes that industry can provide training related to technological developments in

The applied research of vocational schools has resulted in tangible products in the implementation of the Teaching Factory (Tefa) at SMK Bhakti Loa Janan. This is due to the lack of practical equipment supporting the Tefa program, and the lack of effective Tefa management in the TKR expertise concentration, resulting in the lack of a responsible person for the program's implementation. Another reason was identified in an interview with the principal. The Teaching Factory program has not yet been implemented due to a lack of supervision from the person responsible for the implementation.

> "In the TKR department, we are experiencing obstacles. The obstacles are with the instructors or accompanying teachers. In TKR, we sell oil in partnership with Pertamina Lubricant. So, we are given oil, then trained on the manufacturing system and so on, and then market it. They also have to promote it and make sales. While this is beneficial for both students and teachers, the main obstacle lies in the accompanying teachers' lack of monitoring and enthusiasm for implementation." (W/R1/1:6)

This statement echoes and is reinforced by the head of the TKR expertise concentration. In an interview, another reason was identified, namely inadequate equipment, which has prevented the teaching factory from operating at SMK Bhakti Loa Janan. The following is a summary of the interview:

> "The first obstacle is that some equipment is still missing. Special equipment is needed and must be used, but it's not yet available. Secondly, we must be able to implement it routinely, for example, the administration must be running smoothly..." (W/R4/4:3)

One of the reasons for requesting practical equipment in the SMK PK program was to support the implementation of the teaching factory. However, currently, there are obstacles, preventing the teaching factory from running.

Figure 7. Workshop of Teaching Factory

Teaching factory management within the organizational structure involves the principal as the person in charge, director, coordinator, and control (Suhartini, Ratna., 2022). Research by Prasetiyo, Budi. (2020) found a similar obstacle: the constraints encountered in teaching factories in Indonesia are limited resources owned by schools, particularly capital and skilled personnel. Furthermore, research by Roy & Manalu (2019) explains that the first parameter for successful teaching factory implementation is related to management, supported by workshops and labs, training in learning patterns, marketing and promotion, products, human resources, and industrial relations.

The implementation of the Teaching Factory program can run smoothly if the relevant parties, such as educators, education personnel, students, parents/guardians, and school partners (industry and the workplace), have been properly informed about the teaching factory learning pattern. This will lead to a common understanding and effective collaboration (Prasetiyo, Budi, 2020). Continuous coordination regarding the implementation of the teaching factory is needed within all parties within the school institution.

3.3. Partnership Outcomes and Sustainability

The SMK PK program focuses on developing human resources in schools through competency certificates. SMK Bhakti Loa Janan's productive TKR teachers have obtained vocational and pedagogical competency training certificates from industry and government agencies. Documentation shows certifications obtained from industry, including periodic maintenance training certificates from PT Astra Daihatsu and the Samarinda branch of OTO 2000; steering system and power steering training from the Malang Vocational Education Development Center (PPPGTVEDC Malang); EFI System, AC System, and Automatic Transmission training from PT Astra Daihatsu's Jakarta headquarters.

> "…For example, electrical engineering training is a competency improvement training program provided by Astra. A five-day training program means completing 50 hours, which equates to a 50 CP certificate. We recruit instructors from Astra Jakarta, conduct the training and practice at our school, and invite nearby alliance schools in the KUKAR region, including SMK Muhammadiyah Loa Janan, SMK Purwajaya, SMK Sebulu, SMK Geologi Pertambangan, and others." (W/R1/2:2)

Another source also spoke about the implementation of industrial certification by the industry that has signed an MoU with SMK Bhakti Loa Janan, as quoted from the interview below.

> "So far, we've only participated in industry training. For me, it's routine maintenance provided by Daihatsu and OTO 2000." (W/R4/4:3)

Another Competency Certificate was obtained from the National Professional Certification Agency (BNSP) in the form of an assessor certificate, which four productive TKR teachers have obtained. In addition to teachers, technicians also receive training supporting the TKR major. Two technicians have participated in training provided by the Samarinda branch of PT Astra Daihatsu. This finding was obtained during an interview with the school principal.

> "...not only teachers, but technicians have also received training to improve their human resources and mindset. So, the mindset change is achieved through receiving training outside of the workplace." (W/R1/2:2)

Competency certification, in this case, is an effort to ensure that graduates possess skills and competencies aligned with industry needs, thereby increasing competitiveness, validating competencies, and supporting competency alignment (Khomah, et al., 2025). Therefore, it is necessary to improve teacher competency to face future challenges. One factor supporting the success of learning activities is the preparation of productive teachers through internships in industry (Yoto et al., 2020). Productive teachers are required to undertake internships in industry to obtain competency certificates. Internships in productive teachers can increase the relevance of their expertise to developments in science and technology in the industrial and industrial sectors (Yustiana & Mila, 2020). Other efforts to improve teacher professional competence include participating in workshops, training, dual expertise programs, and industrial work practices. Schools can also hold subject teacher meetings from time to time (Ariyanto, 2019).

Industries that have partnered with vocational schools are committed to implementing graduate absorption programs.

> "Almost all are committed, and they always provide information. Until today, Daihatsu is looking for employees. Yesterday, they said, 'Look for alumni, sir.' Until the last year, they didn't find any students because they had all been absorbed by industry. So, we

> also sent graduate data to companies like PAMA, PPA, Trakindo, UT, and Daihatsu to ensure our students are absorbed. We don't even see the Automotive major as being excluded from mining, but there are many applicants there." (W/R1/2:3)

The person in charge of the Special Job Fair (BKK) at SMK Bhakti Loa Janan stated that the BKK was established in early 2021. In terms of graduate absorption, the BKK plays an active role in promoting its graduates and disseminating information to them. However, the commitment to absorbing SMK Bhakti Loa Janan graduates is not clearly stated in the school's MoU with industry, so graduate absorption is only carried out independently if requested by industry through the BKK. In this case, it is necessary to increase the school's efforts in providing efforts for its graduates to be absorbed by the industry, this can be done by increasing cooperation agreements through MoUs as in the research of Munthe & Mataputun (2021) that SMK Negeri 3 Jayapura with DU/DI is also realized in the form of absorption of graduates in industry through MoUs at large-scale DU/DI such as PT Astra Daihatsu which is willing to accept students who have achievements, by using strategies from the results of the study of Baitullah & Wagiran (2019), schools collaborate with industry starting with industrial visits, requesting industrial practice permits, establishing good communication, submitting proposals related to the school's potential in the form of profiles, active participation of schools in school promotion, utilizing the role of teachers from industry, and providing pre-practice learning resources and outsourcing to industry. Through these efforts, schools can improve the competency of graduates. It is hoped that it can build industry confidence in absorbing graduates from SMK Bhakti Loa Janan.

Despite the various achievements, several limitations emerged in this study. These limitations include the fact that the link and match program is an ongoing program that is constantly being updated, resulting in changes and developments. The researchers referred to the 2022 Government-Assisted Workplace-Based Learning Strengthening Guidelines for Vocational School Centers of Excellence. Another limitation relates to the link and match program report; this study was not analyzed because the program report was still being compiled at the time of data collection. Therefore, future research could include program reporting to assess the program's implementation achievements.

However, limitations can also be seen as opportunities. Through this research, institutions can improve regulations and review offers for infrastructure assistance that take environmental conditions and school capacity into account. Schools can expand collaborations, improve the management of the teaching factory program, and enhance educators' skills in PjBL learning by implementing a continuous technology update program. The results of this program also contribute to vocational schools and can be used as a reference in policymaking for institutions, schools, and educators aimed at improving the education system.

4. CONCLUSION

This study found that the implementation of the 8+i *Link and Match* partnership at SMK Bhakti Loa Janan has been carried out through curriculum preparation and alignment with PT Astra Daihatsu, the involvement of industry instructors in industrial classes, the implementation of field work practices (PKL), competency certification, and industry commitment to graduate absorption. These initiatives demonstrate efforts to align vocational education with industry needs. However, challenges remain, particularly in the limited implementation of real project-based learning (PjBL), insufficient technology

updates, limited training for teachers and instructors, and the suboptimal implementation of Teaching Factory programs.

The findings indicate that although access to programs and facilities has accelerated, educators have not fully utilized existing resources to maximize learning outcomes. This suggests the need for stronger coordination and capacity building to ensure that available programs, infrastructure, and partnerships are effectively implemented. The success of the *Link and Match* program requires a more active role from industry partners and local governments, particularly in supporting continuous training, socialization, and technical guidance.

Based on these findings, this study recommends that policymakers use the results as a reference in formulating and improving regulations related to the *Link and Match* program in vocational schools, with a focus on enhancing SMK quality. In addition, it is recommended that infrastructure assistance programs be reviewed to better consider school capacity and environmental conditions. Strengthening industry collaboration, improving teacher competence, and optimizing learning facilities are expected to have a significant positive impact on the quality of vocational education.

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