KONFIKS Jurnal Bahasa, Sastra & Pengajaran
p-ISSN: 2355-2638, e-ISSN: 2746-1866, Hal. 77-85 Vol. 12 No. 3, 2025 https://journal.unismuh.ac.id/index.php/konfiks

THE ROLE OF DIGITAL -BASED *PJBL* IN IMPROVING *SOFT SKILLS* INDONESIAN LANGUAGE COMMUNICATION IN SMK

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Abstract

Background study This based on the challenges of the world of work the demanding 21st century graduate of School Intermediate Vocational (SMK) no only own competence technical (hard skills), but also skills soft skills such as communication , work The same team , responsibility answer and solution problem . Study objectives This is explore role Digital- based PjBL (PjBL) in improve participants' soft skills vocational school education . Approach research used is qualitative with technique data collection through interview in-depth , observation participatory , as well as studies documentation . Subject study covering participant educator , teacher, head of expertise program , head schools and partners industry from one of the private vocational schools in Malang City which has implement a Learning Management System (LMS) in learning based project . Data analysis was carried out inductively with focus on meaning experience and meaningfulness implementation PjBL digital- based . Research results show that implementation PjBL digital -based push participant educate become more active , independent , and responsible answer in finish task in a way collaborative . LMS plays a role important in facilitate communication , work process documentation , and reflection learning in a way sustainable . Findings This strengthen view that integration technology in PjBL No only increase effectiveness learning but also strengthens development of participants ' soft skills educate . In a way practical , research This recommend development more curriculum flexible and collaborative between schools and the industrial world to support readiness Work vocational school graduates in the digital era, as well as give implications theoretical that integration technology can strengthen the learning process sharing and collaboration in strengthening soft skills.

Keywords: *learning management system* , digital learning, vocational education , *PjBL*

Abstract

The background of this study is based on the challenges of the 21st century workplace, which requires vocational high school (SMK) graduates to possess not only technical competencies (hard skills) but also soft skills such as communication, teamwork, responsibility, and problem-solving. The objective of this study is to explore the role of digital-based PjBL (PjBL) in enhancing the soft skills of vocational students. The research approach used is qualitative, employing data collection techniques such as in-depth interviews, participatory observation, and documentary analysis. The research subjects include students, teachers, program heads, school principals, and industry partners from one private vocational school in Malang City that has implemented a Learning Management System (LMS) in PjBL . Data analysis was conducted inductively, focusing on the interpretation of experiences and the significance of implementing digital-based PjBL . The results of the study indicate that the implementation of digital-based PjBL encourages students to be more active, independent, and responsible in completing tasks collaboratively. LMS plays an important role in facilitating communication, documenting work processes, and continuous learning reflection. These findings reinforce the view that the integration of technology in PjBL not only improves the effectiveness of learning but also strengthens the development of students' soft skills. Practically, this study recommends the development of a more flexible and collaborative curriculum between schools and the industry to support the work readiness of vocational school graduates in the digital era, as well as providing theoretical implications that the integration of technology can strengthen the process of sharing and collaborative learning in strengthening soft skills.

Keywords: learning management system, digital learning, vocational education, PjBL

Permalink/DOI : https://doi.org/10.26618/p3d7e146

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1. INTRODUCTION

Amidst the current of the Industrial Revolution 4.0 and the acceleration of digital transformation, the landscape of the world of work is experiencing fundamental changes that demand more comprehensive human resource readiness (Soliani et al., 2024). Especially for Vocational High School (SMK) graduates, this challenge is not only related to mastering technical competencies (hard skills), but also the ability to apply soft skills that include effective communication, collaboration, adaptability, and critical and creative thinking (Pandey et al., 2024). Digital-based learning has a significant impact on the development of soft skills of students in SMK as its alignment with industry demands, and its role in preparing students for the world of work in the 21st century today.

Soft skills, such as communication, collaboration, problem-solving, and time management, are crucial for success in the modern workplace (Bell, 2010). Today's industry increasingly values these skills alongside technical competencies (hard skills), as they enable employees to adapt to dynamic work environments and contribute effectively to team goals (Tisa et al., 2024). For vocational high school graduates, developing these skills is crucial to bridge the gap between education and industry expectations (Wardhana et al., 2024) .

Several studies on digital Project-Based Learning (PJBL) have emerged as a quality educational approach, particularly in the 21st-century context, where technology integration and real-world problem-solving are crucial (Hartati et al., 2022) . In this context, digital PJBL is implemented with learner engagement and the development of essential skills such as communication, leadership, and technology adaptability at various levels of education (Kusnandar et al., 2021). This study draws on various previous studies to provide a comprehensive understanding of the benefits and challenges associated with digital Project-Based Learning (Pandey et al., 2024).

Currently, the industrial world is facing rapid changes due to the Industrial Revolution 4.0 and digital transformation, which require workers to possess not only technical skills but also *soft skills* such as communication, collaboration, problem-solving, and technology adaptation (Sugiarti et al., 2021) Furthermore, a project-based learning approach has been proven to improve students' practical skills. With the Merdeka Curriculum policy emphasizing project-based learning and flexibility in teaching methods, the implementation of *PjBL (Problem-Based Learning) is increasingly being implemented.* Digital-based learning is becoming increasingly relevant to address these challenges (Ahmad et al., 2024); (Habibah et al., 2022)

Previous research has extensively discussed the application of PjBL in vocational high school education and its impact on students' *soft skills* . *A study (Tisa et al., 2024) stated that learning with* PjBL can improve *soft skills* . This study has revealed the benefits of PjBL, especially in terms of integrating digital technologies such as LMS and AI-based evaluation applications. Although previous research shows that PjBL can improve *soft skills* , there are not many studies that explicitly examine the implementation of digital-based PjBL in the vocational high school context and its relationship to graduates' work readiness.

Thus, this study has novelty in developing a digital-based PjBL model that is explicitly aimed at improving *soft skills* and measuring its impact on the work readiness of vocational school graduates, such as the use of *Learning Management System* (LMS), identifying successes that support the implementation of *Project* AI-based digital *-based learning* for project evaluation in learning at vocational schools, and compiling recommendations for digital project-based learning models that can be adopted by vocational schools .

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2. METHOD

This study uses a qualitative approach with descriptive methods, aiming to examine in depth the role of digital-based PjBL in improving the soft skills of vocational high school students. This approach is based on the post- positivism paradigm . Still relevant in studies descriptive Because give strong foundation For measure and explain phenomenon in a way empirical and objective , although realize existence limitations in observation human . Paradigm This emphasize the importance of data that can be verified and tested hypothesis in a way systematic , which is suitable For studies that require description factual and quantitative . The descriptive method was chosen to provide a factual, systematic, and comprehensive picture of the policies, programs, and learning processes being studied.

This research was conducted at SMK Muhammadiyah 2 Malang with subjects selected through purposive sampling technique, including the principal, teachers, grade X students majoring in Visual Communication Design, and industry representatives involved in learning. Because SMK Muhammadiyah has implemented digital-based PjBL which has been running for the previous academic year . Data collection was carried out through in-depth interviews conducted for approximately 45 minutes for each informant, observation of the digital-based learning process, as well as analysis of policy documents and program evaluations. Data triangulation was used to increase the credibility of the research findings.

The data analysis technique in this study used thematic analysis through three main stages: data reduction, data presentation, and conclusion drawing. Data from interviews, observations, and documentation were coded and grouped based on key themes such as team collaboration, digital communication, and time management. Data validity was maintained through triangulation of sources and methods, and confirmation of findings through member checks. This approach ensures the validity and authenticity of the data in examining the contribution of digital-based PjBL to strengthening the soft skills of vocational high school students in the context of 21st-century learning.

3. RESULTS AND DISCUSSION

The subjects in this study were 1 person from the principal with the code KS, 1 person from the head of the expertise program with the code (PK), 3 productive teachers with the code (GR), and 15 students of grade XI of the visual communication design expertise program. Data sources were taken based on the results of interviews with the principal/Head of the expertise program, teachers, and the results of student observations showing that the implementation of digital-based project learning made a significant contribution to the development of students' communication soft skills.

Managerial support from the principal and the head of the expertise program revealed that the school strongly supports this learning model.

> *"We encourage teachers to implement digital PjBL, because it effectively builds soft skills needed in the workplace, not just technical skills." (KP/01/03/2025).*

School principals and heads of expertise programs stated that the implementation of digital-based PjBL (Project Learning and Learning) is designed to align with the needs of the workplace. Projects such as creating product promotional content or developing an inventory system using digital tools not only improve technical competency but also hone students' soft skills, particularly in communication, responsibility, and creativity. They also emphasized the importance of encouraging all teachers to adopt digital PjBL, as it has proven effective in shaping students' character and adaptive abilities. This is considered crucial, considering that in the workplace, students will be evaluated not only on technical aspects, but

Permalink/DOI : https://doi.org/10.26618/p3d7e146

also on their professional attitudes and interpersonal skills.

The perceptions of teachers and students in this learning process were stated to be very helpful in increasing motivation and learning outcomes.

"We utilize LMSs like Canva and CapCut to support project stages, helping create reports and video presentations on time, and to train students in responsibility and time management," (GR/02/03/2025).

"Through this project, I got used to working in a team, managing time, and using digital applications to create content." (PS/02/03/2025).

Students and teachers view the use of LMS and digital applications such as Canva and CapCut in digital PjBL as effective in training time management skills, responsibility, teamwork, and the ability to use technology to compile reports and produce presentation content.

A similar response was expressed by the partner industry, which has been hosting the students' internships. An HR representative from a partner company collaborated on recruitment.

" *Students with digital project experience are better prepared for the workplace, particularly in communication, teamwork, and presentation skills. Soft skills such as discipline and initiative are now a key focus for recruitment," (DUDI/03/03/2025*)

The observation data conducted in this study were obtained through classroom observation and document observation, as follows:

Table: 1. Observation Results

Observed Components	Findings
Student engagement in LMS	Most students actively participate in LMS discussions, upload assignments on time, and provide constructive feedback to peers.
Use of LMS features by teachers	Teachers use the LMS to organize project stages, provide assessment rubrics, monitor project progress, and comment on student work.
Collaboration between students	Collaboration occurs in the form of online discussions via LMS and division of tasks in digital projects such as making promotional videos for local MSME products.
Utilization of digital media	Students use a variety of digital tools integrated with the LMS, such as *Google Docs* , *Canva, Capcut* and *Trello* to create and present projects.
Project plan in LMS	The "Local Product Digital Campaign" project has the following stages: market research, digital media design, presentation, and final project reflection.
Student project results	Digital promotional videos, digital flyer designs, infographics, and online presentations using Slide LMS.
Student reflection report	The majority of students wrote that they "learned group work", "became more disciplined", and "got used to managing time and assignments".

The research results show that the implementation of digital-based Project-Based Learning (PjBL) through a Learning Management System (LMS) significantly contributes to improving the soft skills of vocational high school students. This finding supports the views of (Zulyusri et al., 2023) and (Priyambudi et al., 2024) that Project-Based Learning creates an authentic and meaningful learning context, where students are actively involved in real-world problem-solving, team collaboration, and critical reflection. In the context of vocational education, project-based learning not only hones technical competencies but also serves as a platform for developing soft skills, which are highly needed in the workplace.

The implementation of digital-based project learning has been shown to have a positive impact on developing students' learning independence and time management skills, particularly in the

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context of vocational and secondary education, according to findings (Fahlevi, 2022). The use of Learning Management Systems (LMS) such as Moodle, Google Classroom, or Capcut not only provides a medium for accessing project materials and assignments but also creates a fun learning ecosystem and encourages students to be more active in learning. They must be able to manage time, resources, and the learning process independently with guidance from the teacher (Wardhana et al., 2024); (Izzah et al., 2021)

According to Zimmerman (2002) in his journal (Lebens, 2024), effective learners possess self-regulated learning skills, namely the ability to set goals, monitor progress, and independently evaluate their achievements. In the context of digital PjBL, features such as deadline scheduling, task notifications, and project progress tracking encourage students to practice these skills in real-world situations (Fahlevi, 2022).

Furthermore, with predetermined timetables in the LMS and regular teacher monitoring, students are encouraged not only to complete assignments on time but also to break down large projects into smaller, more effective, and efficient time management techniques. This approach reflects the application of metacognitive strategies that support the development of soft skills such as responsibility, discipline, and self-reflection (Elmasari, 2022).

The implementation of digital-based learning also provides flexibility for students to manage their project work hours, indirectly training them to become autonomous learners. This aligns with findings from (Izzah et al., 2021) and (Takizawa et al., 2023), which indicate that PjBL can increase intrinsic motivation and independent learning competencies, especially when combined with digital media that allows control over the learning process.

Digital-based Project-Based Learning (PjBL) has proven effective in improving students' collaboration and communication skills. Through digital platforms such as Learning Management Systems (LMS), students can interact, discuss, and collaborate on projects that require active participation and good coordination. Research has shown that the integration of digital technology in PjBL facilitates constructive online collaboration and communication, increases group productivity, and provides flexibility in distance learning (Ginusti, 2023). According to (Mustamin et al., 2024), PjBL significantly improves students' collaborative skills, especially in communication, teamwork, and problem-solving. However, challenges such as time management and the role of the teacher as a facilitator need to be addressed for the successful implementation of PjBL.

In an educational context, (Dias-Oliveira et al., 2024) stated that the PjBL approach improves students' critical thinking, communication, and teamwork skills in classroom learning. This demonstrates that PjBL can be effectively applied across various disciplines to develop soft skills relevant to the workplace. They emphasize the importance of developing PjBL-based collaboration and communication skills assessment tools to improve the soft skills of vocational school students. This suggests that appropriate evaluation can support the development of these skills in a more structured manner (Rahayu et al., 2021)

Through projects that require the exploration of ideas and the use of various digital tools, students are encouraged to think critically and generate innovative solutions to real-world problems. This has been proven effective in enhancing students' creativity and problem-solving abilities through the application of digital-based PjBL learning (Putra et al., 2024). Learning shows that PjBL significantly improves students' creative thinking skills in the context of subjects taught by teachers through a digital media approach. Through this approach, students are better able to develop original ideas and innovative solutions to complex problems. This

can increase student engagement and the ability to solve problems creatively, as well as develop critical thinking skills (Chen et al., 2022)

In vocational education, digital-based project learning has proven effective in developing soft skills that are highly relevant to the needs of today's workforce. Through involvement in digital projects, students not only gain technical knowledge but also hone communication, collaboration, creativity, and problem-solving skills essential for the Industry 4.0 and 5.0 eras. Research reported by (Hartati et al., 2022) shows that the Project-Based Learning (PjBL) model significantly improves communication, discipline, responsibility, creativity, and collaboration skills in Vocational High Schools (SMK). This approach encourages students to actively engage in complex tasks, thus preparing them for the challenges of the real world of work.

Furthermore, research by (Taufiqur Rahman et al., 2023) revealed that Project-Based Learning (PjBL) has a positive impact on students' work skills in line with the needs of the industrial world, including communication, teamwork, critical thinking, and problem-solving skills. Through project-based learning experiences, students become more confident and prepared to face the dynamics of a professional work environment (Wang et al., 2023). Furthermore, (Syahril et al., 2022) in their study emphasized that the implementation of Project-Based Learning (PjBL) is effective in improving the 4C skills (*Critical Thinking, Communication, Collaboration, and Creativity*) in students at vocational high schools. These skills are considered crucial for adapting to the complexities of modern industry and meeting the demands of the global job market. Thus, the integration of digital Project-Based Learning (PjBL) in the vocational education curriculum is not only in line with the Merdeka Curriculum policy which emphasizes project-based learning and the development of 21st-century competencies, but also equips students with the skills needed to succeed in the ever-evolving world of work (Isfahani, 2022).

4. CONCLUSION

This study shows that the implementation of digital-based Project-Based *Learning* (PjBL) significantly contributes to the development of students' *soft skills* in vocational high schools. Through the integration of digital platforms such as Learning Management Systems (LMS), students are encouraged to actively participate in projects that require collaboration, effective communication, responsibility, creativity, and time management skills. Interviews, observations, and documentation indicate that students involved in digital projects have greater confidence in systematically conveying ideas, are able to work across competencies, and manage tasks independently. Teachers assess that this approach provides space for reflection and strengthens work character through direct experience, while heads of expertise programs emphasize the relevance of the projects to the industrial world. Principals view digital PjBL as a form of vocational learning transformation that is adaptive to the demands of the Industrial Revolution 4.0. Support from industry also strengthens these findings, with the recognition that graduates involved in digital PjBL demonstrate excellence in *soft skills* such as communication, problem-solving, and initiative.

Conceptually and practically, this research makes an important contribution to the development of vocational education in the digital era. The integration of technology in the PjBL model has proven not only to expand access and flexibility in learning but also to be effective in shaping work character that aligns with the needs of the industrial world. This research also strengthens the foundation for implementing digital project-based vocational learning oriented towards strengthening *soft skills* , making it a relevant and adaptive learning strategy in facing the challenges of the 21st century.

Permalink/DOI : https://doi.org/10.26618/p3d7e146

Based on the findings and limitations, several directions for further research need to be considered. First, broaden the scope of the study to include various areas of expertise and locations of vocational high schools (SMK) to obtain a more comprehensive picture. Second, apply a *mixed methods approach* to combine the strengths of qualitative and quantitative analysis. Third, focus the analysis on the influence of digital PjBL on specific *soft skills* such as leadership and self-confidence. Fourth, involve industry more actively in project design to evaluate its impact on graduates' job readiness and competitiveness. These recommendations are expected to strengthen the theoretical and practical foundations for developing future digital-based vocational education policies.

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