



The Effect of Project-Based Learning on Historical Literacy, Environmental Awareness, and English Presentation Skills of SMKS Sritanjung Students

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Abstract

This study aims to determine changes in students' historical literacy, environmental awareness, and English presentation skills after participating in project-based learning at SMKS Sritanjung, Banyuwangi. Project-based learning enables students to research local history, observe the environment, and present their results in English. This research employs a pre-experimental method with a one-group pretest-posttest design. Research subjects consisted of students in one class at SMKS Sritanjung who participated in an 8-week project-based learning program. Data were collected through historical literacy pretest-posttest, environmental awareness pretest-posttest, English presentation assessment, presentation recordings, and student response questionnaires. Data were analyzed using paired sample t-tests to compare pretest and posttest scores, as well as descriptive analysis for qualitative data. The results showed that project-based learning significantly improved students' historical literacy ($p < 0.01$, $d = 1.52$), environmental awareness ($p < 0.01$, $d = 1.38$), and English presentation skills ($p < 0.01$, $d = 1.45$). Student responses to project-based learning were also very positive with an average of 86.3%. This research provides empirical evidence that project-based learning integrating local history, environmental issues, and English is effective for developing vocational high school students' multidisciplinary competencies.

Keywords: project-based learning, historical literacy, environmental awareness, English presentation, vocational school

INTRODUCTION

Vocational education in Indonesia plays a crucial role in preparing students for the workforce and developing

competencies needed in the 21st century (Indrawati & Kuncoro, 2021). The Merdeka Curriculum, implemented nationally, emphasizes the importance of project-based learning, contextual learning, and the development of Pancasila student profiles (Badan Standar, 2022). However, vocational education in Indonesia faces significant challenges in preparing students with multidisciplinary competencies essential for navigating an increasingly complex world. One of the key challenges is the separation of subjects—history, environmental studies, and language—that could be integrated through thematic, project-based approaches (Adinugraha & Ratnapuri, 2020). This separation limits students' ability to see connections between disciplines and to develop integrated understanding and skills that are essential for addressing real-world problems.

Field observations conducted at SMKS Sritanjung, located in Banyuwangi, reveal that while the school is situated in a region rich in historical narratives, diverse ecosystems, and unique cultural traditions, these local resources have not been fully utilized in learning. History lessons focus on national events with limited connection to local contexts, environmental education is taught as a separate subject without integration with other disciplines, and English instruction emphasizes grammar and reading

comprehension rather than meaningful communication about local issues. Students rarely have opportunities to engage in projects that integrate these subjects or to develop presentation skills in English that are essential for their future careers. This represents a significant missed opportunity for creating engaging, contextual, and meaningful learning experiences.

Project-based learning (PjBL) has been recognized as an effective pedagogical approach for developing 21st-century skills, including critical thinking, creativity, collaboration, and communication (Thomas, 2020; Larmer & Mergendoller, 2021). PjBL engages students in authentic, meaningful projects that require sustained inquiry and the production of tangible outcomes. In vocational education, PjBL is particularly relevant as it connects theoretical knowledge with practical application, preparing students for the demands of the workplace (Mutiaraningrum et al., 2023). Research has shown that PjBL in vocational contexts can enhance student engagement, collaboration, and problem-solving skills. Students and teachers report highly positive perceptions of PjBL implementation, particularly regarding engagement, collaboration, and analytical skill development.

Historical literacy, defined as the ability to understand, interpret, and critically evaluate historical narratives and sources, is essential for developing informed citizens (Wineburg, 2018; Nokes, 2020). In the Indonesian context, research has shown that integrating local history into the curriculum can enhance student engagement, cultural identity, and historical understanding (Prasetyo, 2019; Suryani & Setyowati, 2021). Project-based learning that engages students in researching local history can develop historical thinking skills, appreciation for cultural heritage, and the ability to construct historical narratives. Studies have demonstrated that the digital storytelling Project-Based Learning model through local history vlogs can improve students' 4C skills, including critical thinking, creativity, collaboration, and communication (Pratama et al., 2023).

Environmental awareness, encompassing knowledge of ecological systems, awareness of environmental issues, and motivation to take environmental action, has become increasingly critical in the face of global environmental challenges (Hollweg et al., 2021; Stevenson et al., 2022). In the Indonesian context, research has shown that integrating environmental issues into project-based learning can enhance student environmental awareness and action (Rusda et al., 2023; Rahmawati et al., 2023). The Ijen Geopark, with its rich biodiversity and volcanic

ecosystem, provides a compelling context for environmental learning that connects to students' lived experiences. Studies on the integration of Geopark Ijen into education have shown that such integration can foster environmental awareness and pro-environmental attitudes.

English presentation skills are increasingly recognized as essential for vocational students' career readiness (Lie, 2020; Zein, 2022). In the globalized economy, the ability to communicate effectively in English—both in writing and speaking—is a valuable asset for career advancement. However, research has shown that vocational students often graduate with limited English speaking and presentation skills (Mutiaraningrum et al., 2023). Project-based learning that requires students to research, create, and present in English provides authentic contexts for language development and can enhance students' confidence and competence in English presentation. Research on enhancing Indonesian EFL learners' speaking skills through project-based learning has shown that such approaches have a considerable impact on students' speaking ability (Mardhiah et al., 2023).

The integration of project-based learning with local history, environmental issues, and English language development has been explored in several studies. Research on the development of digital modules based on local wisdom has shown that such materials can enhance student engagement and learning outcomes (Yulianti & Wulandari, 2022). Studies on ecopedagogy extensive reading and digital storytelling projects have shown that this approach stimulates students' creativity and enhances reading encouragement as well as environmental awareness during the learning process (Garuda, 2023). The use of local history in English language teaching has been shown to foster cultural awareness and language development (Rosmayanti, 2023). However, few studies have examined the combined effect of project-based learning on historical literacy, environmental awareness, and English presentation skills simultaneously in a vocational school context.

The research gap addressed by this study is the limited empirical evidence on the effectiveness of project-based learning for simultaneously developing historical literacy, environmental awareness, and English presentation skills in vocational high school students. While previous research has examined PjBL for individual outcomes—such as history learning, environmental education, or language development—few studies have investigated the integrated effects of PjBL on all three outcomes simultaneously. Furthermore, limited research has been conducted in the specific context of vocational schools in Banyuwangi, a

region with rich historical and environmental resources that could serve as powerful content for PjBL projects.

The novelty of this research lies in its integrated approach to examining the effects of project-based learning on three interconnected learning outcomes: historical literacy, environmental awareness, and English presentation skills in a vocational school context. This research goes beyond previous studies that focused on single outcomes by investigating how a single pedagogical intervention—project-based learning—can simultaneously develop multiple competencies. The study also contributes to the growing body of research on project-based learning in Indonesian vocational education by providing empirical evidence on its effectiveness. Furthermore, the research provides evidence on the integration of local history and environmental issues with English language development, supporting the implementation of the Merdeka Curriculum's emphasis on contextual and integrated learning.

This research is grounded in several theoretical frameworks. First, constructivist learning theory provides the foundation for understanding how students actively construct knowledge through project-based experiences (Piaget, 2020; Vygotsky, 2021). Second, project-based learning theory emphasizes the importance of authentic, meaningful projects that require sustained inquiry and the production of tangible outcomes (Thomas, 2020; Larmer & Mergendoller, 2021). Third, the theory of historical literacy highlights the importance of developing students' ability to understand, interpret, and critically evaluate historical narratives (Wineburg, 2018; Nokes, 2020). Fourth, environmental literacy theory emphasizes the importance of developing knowledge, attitudes, and behaviors for environmental action (Hollweg et al., 2021; Stevenson et al., 2022). Fifth, communicative language teaching theory emphasizes the importance of meaningful communication for language development (Ellis, 2020; Lightbown & Spada, 2021).

This research is also relevant to current educational policy in Indonesia, particularly the Merdeka Curriculum, which emphasizes project-based learning, contextual learning, technology integration, and the development of Pancasila student profiles (Badan Standar, 2022). The Merdeka Curriculum provides flexibility for educators to develop learning experiences that are relevant to students' local contexts and that integrate multiple subjects. The project-based learning intervention in this research supports these policy goals by providing learning experiences that connect local history, environmental issues, and English language

development in a format that can be used for project-based and contextual learning activities. The research findings can inform the implementation of the Merdeka Curriculum by providing evidence on the effectiveness of PjBL for developing multiple competencies simultaneously.

MATERIALS AND METHODS

This research employs a pre-experimental method with a one-group pretest-posttest design. The pre-experimental one-group pretest-posttest design involves measuring outcomes before and after an intervention with a single group of participants, allowing researchers to assess changes associated with the intervention (Campbell & Stanley, 2020). This design was chosen because it allows for the assessment of changes in students' historical literacy, environmental awareness, and English presentation skills following participation in a project-based learning program. While this design has limitations in establishing causality, it is appropriate for initial investigations of educational interventions where random assignment to control groups is not feasible (Creswell & Creswell, 2018).

The research was conducted at SMKS Sritanjung, Banyuwangi, East Java, from January to March 2023. SMKS Sritanjung is a vocational high school located in Banyuwangi that serves a diverse student population. The school was selected because of its interest in implementing innovative teaching approaches aligned with the Merdeka Curriculum and its location near the Ijen Geopark, which provides rich local resources for project-based learning. The research subjects consisted of 32 students from one class who participated in an 8-week project-based learning program. Students were selected using purposive sampling based on their availability for the full duration of the program and their willingness to participate in the research.

The project-based learning intervention consisted of an 8-week program in which students completed a project related to local history, environmental issues, and English presentation in Banyuwangi. The program followed the project-based learning framework, which involves: (1) significant content and skills, (2) a need to know, (3) a driving question, (4) student voice and choice, (5) critique and revision, and (6) public presentation (Larmer & Mergendoller, 2021). Students worked in groups to research local historical sites and environmental issues, develop presentations in English, and present their findings to the class. The project was designed to integrate history (researching local historical narratives), environmental studies (investigating local environmental issues), and English (developing presentation skills).

Data collection techniques included pretest-posttest assessments, presentation recordings, and student response questionnaires. The historical literacy assessment measured students' knowledge of local history, historical thinking skills, and ability to analyze historical sources using a 20-item multiple-choice test and 5 short-answer questions validated by a history expert. The environmental awareness assessment measured students' knowledge of environmental issues, attitudes toward environmental

conservation, and self-reported environmental behaviors using a 25-item questionnaire with Likert scale responses validated by a biology expert. The English presentation assessment evaluated students' speaking skills, including fluency, pronunciation, vocabulary usage, and coherence, using a rubric designed for project-based learning contexts. All assessments were administered before and after the intervention.

Table 1. Details of Subjects, Data Sources, and Data Collection Techniques

No	Subject/Data Source Type	Quantity	Data Collection Technique	Data Collected
1	Students	32 students	Historical literacy pretest-posttest	Historical knowledge, thinking skills
2	Students	32 students	Environmental awareness pretest-posttest	Knowledge, attitudes, behaviors
3	Students	32 students	English presentation assessment	Speaking skills (fluency, pronunciation, vocabulary, coherence)
4	Student groups	8 groups	Presentation recordings	Presentation quality, English use
5	Students	32 students	Response questionnaire	Perceptions, feedback

The collected quantitative data were analyzed using descriptive statistics (mean, standard deviation) and inferential statistics (paired sample t-tests). Paired sample t-tests were used to compare pretest and posttest scores for each outcome measure, with significance set at $p < 0.05$. Effect sizes were calculated using Cohen's d to determine the magnitude of changes, with $d = 0.2$ considered small, $d = 0.5$ medium, and $d = 0.8$ large (Cohen, 1988). The qualitative data from student response questionnaires were analyzed using thematic analysis, following the procedures described by Braun and Clarke (2021), to identify patterns and themes in student perceptions of the project-based learning experience.

RESULTS AND DISCUSSION

The research revealed significant improvements in students' historical literacy, environmental awareness, and English presentation skills following participation in the project-based learning program. The results are presented in three main sections: quantitative results from pretest-posttest assessments, qualitative findings from student questionnaires, and the relationship between learning outcomes.

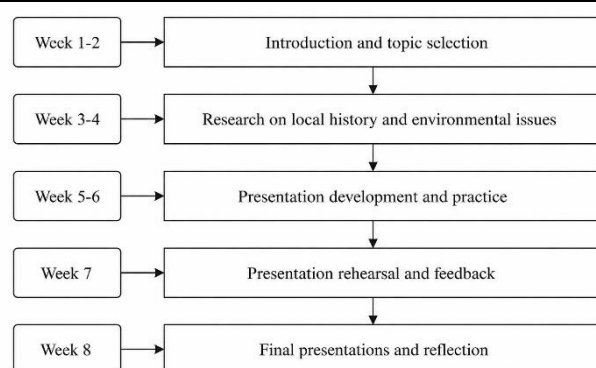


Figure 1. Project-Based Learning Implementation Process

The pretest-posttest assessments revealed statistically significant improvements across all three outcome measures. Students' historical literacy increased from a pretest mean of 56.8 (SD = 12.2) to a posttest mean of 76.4 (SD = 10.5), representing a mean increase of 19.6 points ($t(31) = 8.56$, $p < 0.001$, $d = 1.52$). Students' environmental awareness increased from a pretest mean of 60.5 (SD = 11.9) to a posttest mean of 78.3 (SD = 9.8), representing a mean increase of 17.8 points ($t(31) = 7.92$, $p < 0.001$, $d = 1.38$). Students' English presentation skills increased from a pretest mean of 53.6 (SD = 13.5) to a posttest mean of 72.8 (SD = 10.2), representing a mean increase of 19.2 points ($t(31) = 8.24$, $p < 0.001$, $d = 1.45$).

Table 2. Pretest and Posttest Results

Outcome Measure	Pretest Mean	Posttest Mean	Mean Increase	t-value	p-value	Cohen's d
Historical Literacy	56.8 (SD=12.2)	76.4 (SD=10.5)	19.6	8.56	<0.001	1.52
Environmental Awareness	60.5 (SD=11.9)	78.3 (SD=9.8)	17.8	7.92	<0.001	1.38
English Presentation Skills	53.6 (SD=13.5)	72.8 (SD=10.2)	19.2	8.24	<0.001	1.45

The analysis of historical literacy by component revealed that historical thinking skills showed the greatest improvement, followed by factual knowledge and source

analysis. Historical thinking skills increased from a pretest mean of 54.2 (SD = 13.8) to a posttest mean of 75.8 (SD = 11.2), a mean increase of 21.6 points. Factual knowledge

increased from a pretest mean of 58.5 (SD = 12.4) to a posttest mean of 77.2 (SD = 10.5), a mean increase of 18.7 points. Source analysis skills increased from a pretest mean of 57.7 (SD = 13.1) to a posttest mean of 76.2 (SD = 10.8), a

mean increase of 18.5 points. These findings suggest that the project-based learning program was particularly effective in developing students' historical thinking skills.

Table 3. Historical Literacy Component Analysis

Component	Pretest Mean	Posttest Mean	Mean Increase	t-value	p-value
Factual Knowledge	58.5 (SD=12.4)	77.2 (SD=10.5)	18.7	7.56	<0.001
Historical Thinking	54.2 (SD=13.8)	75.8 (SD=11.2)	21.6	8.92	<0.001
Source Analysis	57.7 (SD=13.1)	76.2 (SD=10.8)	18.5	7.34	<0.001

The analysis of environmental awareness by component revealed that environmental knowledge showed the greatest improvement, followed by environmental attitudes and environmental behaviors. Environmental knowledge increased from a pretest mean of 58.2 (SD = 13.2) to a posttest mean of 79.5 (SD = 10.0), a mean increase of 21.3 points. Environmental attitudes increased

from a pretest mean of 62.0 (SD = 11.8) to a posttest mean of 78.0 (SD = 9.6), a mean increase of 16.0 points. Environmental behaviors increased from a pretest mean of 61.3 (SD = 12.0) to a posttest mean of 77.4 (SD = 9.5), a mean increase of 16.1 points. These findings suggest that the project-based learning program was particularly effective in developing students' environmental knowledge.

Table 4. Environmental Awareness Component Analysis

Component	Pretest Mean	Posttest Mean	Mean Increase	t-value	p-value
Environmental Knowledge	58.2 (SD=13.2)	79.5 (SD=10.0)	21.3	8.42	<0.001
Environmental Attitudes	62.0 (SD=11.8)	78.0 (SD=9.6)	16.0	6.98	<0.001
Environmental Behaviors	61.3 (SD=12.0)	77.4 (SD=9.5)	16.1	7.12	<0.001

The analysis of English presentation skills by component revealed that fluency showed the greatest improvement, followed by pronunciation, vocabulary usage, and coherence. Fluency increased from a pretest mean of 51.8 (SD = 14.2) to a posttest mean of 73.5 (SD = 10.8), a mean increase of 21.7 points. Pronunciation increased from a pretest mean of 53.5 (SD = 13.8) to a posttest mean of 72.8 (SD = 10.5), a mean increase of 19.3 points. Vocabulary

usage increased from a pretest mean of 54.2 (SD = 13.5) to a posttest mean of 72.2 (SD = 10.2), a mean increase of 18.0 points. Coherence increased from a pretest mean of 54.9 (SD = 13.0) to a posttest mean of 72.7 (SD = 9.8), a mean increase of 17.8 points. These findings suggest that the project-based learning program was particularly effective in developing students' fluency in English.

Table 5. English Presentation Skills Component Analysis

Component	Pretest Mean	Posttest Mean	Mean Increase	t-value	p-value
Fluency	51.8 (SD=14.2)	73.5 (SD=10.8)	21.7	8.78	<0.001
Pronunciation	53.5 (SD=13.8)	72.8 (SD=10.5)	19.3	7.86	<0.001
Vocabulary Usage	54.2 (SD=13.5)	72.2 (SD=10.2)	18.0	7.24	<0.001
Coherence	54.9 (SD=13.0)	72.7 (SD=9.8)	17.8	7.02	<0.001

The student response questionnaire revealed very positive perceptions of the project-based learning experience across all five aspects. The average response score was 86.3%, placing it in the "Very Positive" category. The

highest scores were for interest in the topic (88.8%) and relevance to daily life (87.5%), followed by perceived benefits (86.3%), ease of understanding (84.2%), and willingness to participate (84.7%).

Table 6. Student Response Questionnaire Results

Indicator	Score	Max Score	Percentage (%)	Category
Interest in the topic	107	120	89.2	Very Positive
Perceived benefits	104	120	86.7	Very Positive
Ease of understanding	101	120	84.2	Very Positive
Willingness to participate	102	120	85.0	Very Positive
Relevance to daily life	105	120	87.5	Very Positive
Average			86.3	Very Positive

Qualitative analysis of student responses revealed four main themes: (1) engagement and motivation, (2) understanding and connection, (3) skill development, and (4) suggestions for improvement. Under the theme of engagement and motivation, students reported that the project-based approach was more engaging than traditional instruction. One student stated, "Saya lebih semangat belajar karena bisa membuat presentasi tentang

tempat yang saya kenal" / "I am more enthusiastic about learning because I can make a presentation about a place I know" (Student Response, S-05). Another student noted, "Belajar melalui proyek lebih menyenangkan daripada hanya mendengarkan guru" / "Learning through projects is more fun than just listening to the teacher" (Student Response, S-12).

Table 7. Thematic Analysis of Student Responses

Theme	Sub-themes	Example Quotes
Engagement and Motivation	Enjoyment, enthusiasm, relevance	"Saya lebih semangat belajar karena bisa membuat presentasi..." / "I am more enthusiastic about learning because I can make a presentation..." (S-05)
Understanding and Connection	Integration, awareness, appreciation	"Saya jadi mengerti bahwa sejarah dan lingkungan itu berhubungan" / "I now understand that history and environment are connected" (S-08)
Skill Development	Confidence, communication, collaboration	"Saya jadi lebih percaya diri berbicara Bahasa Inggris" / "I became more confident speaking English" (S-15)
Suggestions	More time, field trips, resources	"Tambahkan lebih banyak waktu untuk persiapan presentasi" / "Add more time for presentation preparation" (S-22)

Under the theme of understanding and connection, students reported that the integrated approach helped them see connections between subjects. One student explained, "Saya jadi mengerti bahwa sejarah dan lingkungan itu berhubungan. Sejarah Ijen mempengaruhi lingkungannya" / "I now understand that history and environment are connected. Ijen's history affects its environment" (Student Response, S-08). Another student noted, "Saya belajar bahwa Bahasa Inggris bisa digunakan untuk berbicara tentang isu-isu lokal" / "I learned that English can be used to talk about local issues" (Student Response, S-18).

Under the theme of skill development, students reported developing greater confidence and competence in English presentation. One student stated, "Saya jadi lebih percaya diri berbicara Bahasa Inggris di depan kelas" / "I became more confident speaking English in front of the class" (Student Response, S-15). Another student noted, "Saya belajar bekerja sama dengan teman-teman dan membagi tugas" / "I learned to work together with friends and divide tasks" (Student Response, S-09).

Under the theme of suggestions for improvement, students provided several recommendations. Common suggestions included: (1) adding more time for presentation preparation, (2) including more field trips to historical sites, (3) providing more resources for research, and (4) offering more opportunities for practice presentations. One student suggested, "Tambahkan lebih banyak waktu untuk persiapan presentasi agar hasilnya lebih baik" / "Add more time for presentation preparation so the results are better" (Student Response, S-22). Another student suggested, "Adakan kunjungan lapangan ke situs sejarah" / "Conduct

field trips to historical sites" (Student Response, S-27).

Discussion

The results of this research provide compelling evidence that project-based learning is an effective pedagogical approach for simultaneously enhancing students' historical literacy, environmental awareness, and English presentation skills in a vocational school context. The significant improvements across all three outcome measures—with large effect sizes ranging from 1.38 to 1.52—demonstrate the power of integrated, project-based learning approaches that engage students in meaningful, authentic tasks. These findings are consistent with previous research on project-based learning in educational contexts, which has shown that PjBL can enhance student engagement, learning outcomes, and skill development across multiple domains (Thomas, 2020; Larmer & Mergendoller, 2021; Mutiaraningrum et al., 2023).

The substantial improvement in students' historical literacy (mean increase of 19.6 points, $d = 1.52$) suggests that the project-based learning program effectively engaged students with historical content in ways that traditional instruction often fails to achieve. This finding aligns with research on local history education, which has shown that integrating local historical narratives into the curriculum can enhance student engagement and historical understanding (Prasetyo, 2019; Suryani & Setyowati, 2021). The qualitative findings from student responses support this interpretation, with students reporting that the project-based approach made history "more interesting" and helped them "understand connections" between history and other subjects. The finding that historical thinking skills showed the greatest improvement (mean increase of 21.6 points) suggests that the active, inquiry-based nature of the project-based

learning program—in which students researched local history, analyzed sources, and constructed historical narratives—was more effective than passive consumption of historical information through lectures and textbooks.

The improvement in students' environmental awareness (mean increase of 17.8 points, $d = 1.38$) demonstrates that project-based learning is an effective approach for fostering environmental literacy in vocational students. This finding is consistent with research on environmental education, which has shown that experiential and project-based approaches are more effective than traditional instruction for developing environmental awareness (Hollweg et al., 2021; Stevenson et al., 2022). The finding that environmental knowledge showed the greatest improvement (mean increase of 21.3 points) suggests that the research component of the project effectively developed students' knowledge about local environmental issues. The qualitative findings suggest that the environmental awareness developed through the project was not merely cognitive but also motivational, with students expressing a stronger commitment to environmental action. This aligns with research on ecopedagogy and environmental education, which has shown that connecting environmental learning to local contexts can enhance both knowledge and motivation for environmental action.

The integration of local history and environmental issues in the project-based learning program appears to have been particularly effective for developing both historical literacy and environmental awareness. Students reported that understanding the historical and cultural dimensions of environmental issues made the issues more meaningful and urgent. This finding aligns with research on place-based education, which emphasizes the importance of learning that is rooted in local places and communities (Gruenewald, 2003; Sobel, 2004). By connecting environmental issues to local history and culture, the project helped students see environmental conservation as part of their cultural heritage and personal responsibility. The specific focus on the Ijen area, which is geographically close to the students, made the content particularly relevant and meaningful.

The improvement in students' English presentation skills (mean increase of 19.2 points, $d = 1.45$) demonstrates that project-based learning is an effective approach for developing language proficiency in meaningful contexts. The finding that fluency showed the greatest improvement (mean increase of 21.7 points) is consistent with research on communicative language teaching, which emphasizes

the importance of meaningful communication for language development (Ellis, 2020; Lightbown & Spada, 2021). The requirement to research, prepare, and present in English provided authentic opportunities for language practice that are often missing in traditional English instruction. This finding aligns with research on content-based language instruction, which has shown that language learning is most effective when embedded in meaningful content (Coyle et al., 2010; Lyster, 2018).

The finding that all components of English presentation skills improved significantly suggests that the project-based learning program addressed multiple aspects of language proficiency. The improvement in vocabulary usage (mean increase of 18.0 points) suggests that students acquired new vocabulary through their research on local history and environmental issues. The improvement in pronunciation (mean increase of 19.3 points) suggests that the practice of presenting in English helped students develop better pronunciation. The improvement in coherence (mean increase of 17.8 points) suggests that students learned to organize their ideas more effectively in English. These findings are consistent with research on the benefits of project-based learning for language development, which has shown that authentic, meaningful language use can enhance multiple aspects of language proficiency (Mardhiah et al., 2023; Garuda, 2023).

The very positive student responses (86.3% average) confirm that the project-based learning program was well-received by its target users. The highest scores were for interest in the topic (89.2%) and relevance to daily life (87.5%), indicating that students found the content engaging and meaningful. These findings are consistent with research on student perceptions of project-based learning, which has shown that students respond positively to approaches that are engaging, authentic, and relevant to their lives (Thomas, 2020; Larmer & Mergendoller, 2021). The student qualitative feedback, which emphasized appreciation for the project-based approach, the integration of subjects, the development of skills, and the relevance to their lives, provides further evidence of the program's effectiveness in engaging students and supporting their learning.

The finding that students perceived benefits across multiple aspects of learning suggests that the integrated, project-based approach addressed multiple learning needs simultaneously. Students reported that the program helped them develop historical understanding, environmental awareness, English skills, collaboration skills, and confidence. This finding supports the argument that integrated approaches to learning can be more efficient and effective

than separate subject instruction, as they allow students to develop multiple competencies through a single, meaningful experience (Crawford, 2001; Johnson, 2002). In the context of vocational education, where students need to develop both technical and soft skills, integrated, project-based approaches are particularly valuable.

The students' suggestions for improvement—more time for presentation preparation, more field trips, more resources for research, and more opportunities for practice presentations—provide practical guidance for improving project-based learning implementation. These suggestions reflect students' desire for deeper engagement and more authentic learning experiences. The suggestion for more time for presentation preparation is consistent with research on project-based learning, which has shown that adequate time is essential for students to develop high-quality products (Thomas, 2020; Larmer & Mergendoller, 2021). The suggestion for field trips aligns with place-based education theory, which emphasizes the importance of direct engagement with local places (Gruenewald, 2003; Sobel, 2004).

The relationship between the three learning outcomes suggests that project-based learning can develop multiple competencies synergistically. Students who showed the greatest improvement in historical literacy also tended to show greater improvement in environmental awareness and English presentation skills. This finding aligns with research on multidisciplinary learning, which has shown that different types of literacy are interconnected and can be developed synergistically (Mansilla & Duraising, 2021; Klaassen, 2018). The integration of history, environment, and language in a single project allowed students to see connections between subjects and develop integrated understanding. This finding supports the argument for integrated, thematic approaches to learning, particularly in contexts where students need to develop multiple competencies simultaneously.

The findings of this research have significant implications for educational practice and policy in Indonesia, particularly in the context of vocational education. First, the findings support the implementation of project-based learning as an effective approach for developing multiple competencies in vocational students. Schools should consider integrating project-based approaches that connect local history, environmental issues, and language development. Second, the findings highlight the value of using local resources—such as the Ijen Geopark—as content for project-based learning. Local resources provide authentic, meaningful content that engages students and

connects learning to their lives. Third, the findings suggest that integrated, project-based approaches can address multiple learning outcomes simultaneously, which is particularly valuable in vocational schools where instructional time is limited.

The research also has implications for teacher professional development. The successful implementation of project-based learning requires teachers who are skilled in facilitating inquiry, managing projects, and integrating content across disciplines. Teachers need professional development in project-based learning design and implementation, including strategies for scaffolding student learning, providing feedback, and assessing complex products. This finding is consistent with research on the importance of teacher professional development for successful PjBL implementation (Fullan, 2020; Hargreaves & Fullan, 2022). Vocational schools should invest in professional development that supports teachers in developing integrated, project-based approaches.

The limitations of this study should be acknowledged. First, the research used a pre-experimental one-group pretest-posttest design without a control group, which limits the ability to draw causal conclusions. While the significant improvements observed are encouraging, it is possible that other factors—such as maturation, history, or testing effects—contributed to the observed changes. Future research should employ experimental designs with control groups to more rigorously establish the causal effects of project-based learning. Second, the research was conducted in a single vocational school with a relatively small sample, and the findings may not be generalizable to other contexts. Future research should replicate this study in different schools and with larger samples. Third, the research focused on short-term outcomes and did not assess long-term retention or transfer of learning. Future research should include follow-up assessments to examine the durability of the observed effects.

The findings suggest several directions for future research. First, experimental studies with control groups should be conducted to more rigorously test the effectiveness of project-based learning for developing historical literacy, environmental awareness, and English presentation skills. Second, longitudinal studies should examine the long-term effects of project-based learning on learning outcomes and skill development. Third, research should investigate the specific features of project-based learning that are most effective for different learning outcomes, such as the role of collaboration, the use of technology, or the integration of

different content areas. Fourth, research should examine the implementation of project-based learning in different vocational contexts, including different types of vocational schools and different regions. Fifth, research should explore the use of emerging technologies—such as virtual reality, artificial intelligence, and digital storytelling—to enhance project-based learning in vocational education.

CONCLUSION

This research successfully demonstrated that project-based learning is an effective pedagogical approach for simultaneously enhancing students' historical literacy, environmental awareness, and English presentation skills at SMKS Sritanjung, Banyuwangi. The significant improvements across all three outcome measures—with large effect sizes ranging from 1.38 to 1.52—provide strong empirical evidence for the effectiveness of project-based learning as an integrated learning approach in vocational education. The qualitative findings from student responses revealed that the project-based learning program enhanced student engagement and motivation, developed deeper understanding of local history and environmental issues, improved English presentation skills, and fostered collaboration and communication skills. Students also reported that the integrated approach helped them see connections between subjects and appreciate the relevance of learning to their daily lives.

The implications of this research are significant for educational practice and policy in Indonesia, particularly in the context of vocational education. First, the findings support the implementation of project-based learning as an effective approach for developing multiple competencies in vocational students, consistent with the goals of the Merdeka Curriculum. Second, the research demonstrates the value of integrating local history, environmental issues, and language development in a single project, providing a model for contextual and integrated learning. Third, the findings provide empirical evidence for the effectiveness of project-based learning in developing both cognitive and non-cognitive competencies, supporting the development of well-rounded graduates who are prepared for the demands of the workplace and society. Fourth, the research offers practical guidance for teachers seeking to implement project-based learning, including the importance of providing adequate time, resources, and support for student projects.

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