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Living laboratory of regional potential for social studies learning to enhance students' collaboration and communication

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ABSTRACT

Twenty-first-century education emphasizes collaboration and communication as core competencies, yet junior high school social studies learning often remains textual and underutilizes local potential. This study employed a qualitative case study approach at SMPN 1 Wuluhan, Jember Regency, involving social studies teachers and Grade VIII students through participatory observation, semi-structured interviews, documentation, and questionnaires administered to 60 students. Data were analyzed using the Miles, Huberman, and Saldaña model, with validation through triangulation and member checking. The findings reveal that the Wuluhan area—featuring Papuma Beach, Watangan Hill, the Reog Craft Center, and the Charcoal Factory—provides authentic learning experiences that strengthen the link between social studies materials and local realities. A total of 91.6% of students found field activities more meaningful than classroom learning. Collaboration skills improved notably in respecting peers' opinions (85%), while communication skills developed in listening (83%), though confidence in asking questions remained lower (72%). Interviews and observations confirmed that field learning fosters active participation, confidence, and natural social interaction. Supporting factors include diverse local potential, strong student enthusiasm, and community involvement, while inhibiting factors involve weather, transportation, and time constraints. This study concludes that living laboratories are effective in enhancing collaboration and communication skills while also reinforcing cultural identity and learning motivation, provided that implementation is supported by adaptive strategies and multi-stakeholder collaboration.

INTRODUCTION

Education today must prepare students to face global challenges by equipping them with strong collaboration and communication skills. At the junior high school level, learning should depend on teacher-centered methods and provide contextual experiences. The living laboratory is an innovative model that allows students to learn directly from their social, cultural, and geographical environment (Arias et al., 2025). This fits Indonesia's vision of active, creative, and potential-based learning. Wuluhan District has rich natural, social, and cultural resources that have not been fully used in social studies. Therefore, developing a living laboratory-based model is important and relevant.

Social studies plays a central role in shaping civic awareness, critical thinking, empathy, and responsibility. Students learn to analyze social dynamics and diversity while solving problems in their communities. Place-based learning creates deeper engagement, as theory connects with local realities such as culture, economy, and social life (Tran, 2024). It also fosters civic identity and

responsibility, helping students see themselves as agents of change (Perrotta & Hochuli, 2025). Moreover, contextual learning improves motivation and retention because content feels relevant to daily life (Ankori-Karlinsky et al., 2025). This approach also supports culturally responsive and socially inclusive education (Thompson et al., 2025). Therefore, social studies learning that integrates place-based pedagogy can create an empowering space for students to explore society's complexities critically.

In Wuluhan, place-based learning links the curriculum with community practices, creating a "living laboratory" where students, teachers, and communities build knowledge together. This strengthens school-community relations and develops collaboration, negotiation, and problem-solving skills (Vandehey, 2025). It also helps students understand how historical, cultural, and economic forces shape their environment (Perrotta & Hochuli, 2025). When students view their community as a source of knowledge, they feel more respected and empowered (Ankori-Karlinsky et al., 2025). Such learning builds resilience and prepares young people to face complex challenges. Many schools still rely on textbooks and lectures, limiting student involvement and hindering collaboration and communication. Studies show that project-based and field approaches improve 21st-century skills (Kohl et al., 2022). Wuluhan's diverse economy—agriculture, fisheries, and MSMEs—offers opportunities for learning yet has rarely been studied in social studies contexts. This research gap must be addressed.

The socio-cultural traditions of Wuluhan, including cooperation, arts, and community-based economies, enrich learning. Students learn about social structures and cultural values through observation and community involvement. Living laboratories encourage collaborative learning and innovation involving multiple actors (Quaranta et al., 2025). Real experiences help students better understand social concepts and improve communication through discussions and presentations.

International studies show that living laboratories enhance interpersonal skills and problem-solving (Wegener et al., 2024). However, few studies explore their use in junior high school social studies, especially in Indonesia. Most literature discusses them in higher education, technology, or sustainability contexts. At the secondary level, unique challenges and opportunities appear. This study addresses that gap by exploring student experiences, interactions, and communication in living laboratories. Using a qualitative approach contributes to developing social studies education theory and practice in Indonesia.

Based on this context, the present study investigates how Wuluhan District's potential can be integrated as a living laboratory in social studies learning at SMPN 1 Wuluhan, focusing on developing students' collaboration and communication skills through contextual learning experiences. To guide this inquiry, the following research questions are posed: (1) How can using Wuluhan's regional potential as a living laboratory foster junior high school students' collaboration and communication skills?; (2) What forms of contextual learning experiences most effectively support these skills in social studies education? Theoretically, this study advances qualitative research on social studies by integrating local potential with living laboratory pedagogy. It provides insights for teachers, schools, and policymakers to embed regional resources into the curriculum, making learning more meaningful, participatory, and relevant. Furthermore, it promotes sustainable school–community collaboration, creating an educational ecosystem where students learn about society and with and from society.

METHOD

This research uses a qualitative approach with a case study design because it aims to understand social studies' experience and learning process by using the area's potential as a living laboratory at SMPN 1 Wuluhan. The case study was chosen to explore the specific context, i.e., how learners build collaboration and communication skills in environmental-based learning situations. This approach allows researchers to capture phenomena holistically and contextually, in line with the interpretive view that social reality is understood through participant-constructed meanings (D. Rodriguez & Montesdeoca, 2025). In addition, the use of case studies is relevant to explore educational practices that are local and applicable (Haidusek-Niazy & Carpenter, 2025).

The selection of SMPN 1 Wuluhan as the research site was based on its strategic location in Wuluhan District, rich in socio-cultural and natural resources but underutilized in social studies instruction. The school has also pioneered several community-based activities, making it an appropriate context for implementing the living laboratory model. The study involved two social studies teachers and 60 eighth-grade students who had participated in at least two environment-based learning activities, selected purposively to ensure relevance and depth of data.

Data were collected through semi-structured interviews, participatory observations, and documentation. Interviews were chosen for their flexibility in capturing participant perspectives, observations to record authentic collaboration and communication practices, and documentation to provide supporting evidence and triangulation.

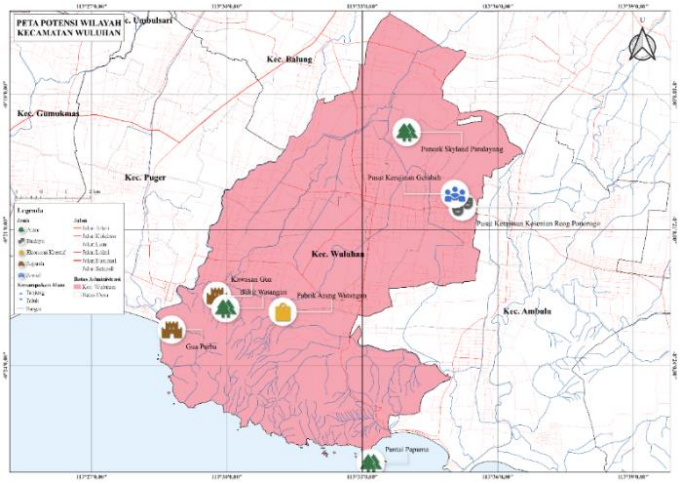

Figure 1. Map of the Potential Distribution of Wuluhan District Area

Data validity was ensured through triangulation and member checking (Wilujeng et al., 2025). Analysis followed the Miles, Huberman, and Saldaña model (Nyamuryekung'e et al., 2025), beginning with data reduction through coding of transcripts and field notes, followed by data display using thematic matrices, and conclusion drawing through verification of recurring patterns. For instance, when analyzing student group projects on local fisheries, coding revealed how students negotiated roles, resolved disagreements, and communicated results—examples that illustrated collaboration and communication skills development in real-world contexts.

RESULTS AND DISCUSSION

Results

Utilization of the Potential of the Wuluhan District Area as a Living Laboratory in Social Studies Learning at SMPN 1 Wuluhan

This study found that the diverse potential of Wuluhan District strongly supports living laboratory-based social studies learning. Natural sites such as Papuma Beach, Watangan Hill, and Watangan Ancient Cave provide opportunities to study physical geography, the environment, and local culture. The Reog Ponorogo handicraft and Metaraman pottery centers serve as resources for exploring socio-cultural values and the creative economy. Meanwhile, the Watangan Charcoal Factory highlights issues of alternative energy and the circular economy, which are relevant to contemporary social studies. Both teachers and students at SMPN 1 Wuluhan affirmed that direct participation in community activities makes learning more contextual and meaningful. The region's potential creates an authentic learning space that effectively connects theory with practice.

However, it should be noted that this study was limited to one school with a relatively small number of participants, so the findings cannot be generalized across different contexts. In addition,

the research only covered a single semester, meaning the long-term impact of the living laboratory approach was not fully captured.

Table 1. Mapping of Regional Potential, Social Studies Learning Activities, and 21st Century Skills

Regional Potential	Social Studies Learning Activities Based on Living Laboratory	Developed 21st Century Skills
Papuma Beach	Study of coastal geography, tourism economy, and cultural rituals	Collaboration: group observation & analysis. Communication: presentations & community interviews.
Watangan Hill	Land use mapping, ecotourism study, and socio-economic analysis	Collaboration: role division (mapping, documentation, analysis). Communication: group discussion & reports.
Skyland Peak Paragliding	Study of tourism activities, interviews with business actors, economic impact analysis	Collaboration: teamwork in interviews & data collection. Communication: asking questions & presenting findings.
Reog Ponorogo Handicraft Center	Study of craft production, cultural and creative economy, artisan interviews	Collaboration: group documentation of production. Communication: interview practice & cultural reports.
Watangan Charcoal Factory	Study of charcoal production, renewable energy, and circular economy	Collaboration: teamwork in environmental analysis. Communication: presenting eco-friendly solutions.
Watangan Ancient Cave	Geoconservation, prehistoric study, rock observation	Collaboration: group exploration & observation. Communication: class discussion & sharing findings.
Metaraman Civilization – Pottery	Study of pottery production, economic system, cultural values	Collaboration: group documentation of artisan work. Communication: interview reports & cultural presentations.

The questionnaire results from 60 students showed a positive response to using local potential as a learning resource. Most students agreed that field learning was more motivating than relying only on textbooks. 88.3% stated that local potential was relevant to social studies materials, and 93.3% felt more enthusiastic about participating in outdoor learning activities. Only a small proportion (6.7%) reported difficulties, mainly due to weather conditions and distance to learning sites. Overall, the data indicate that students view the Wuluhan area's potential as an effective medium to support the achievement of social studies competencies.

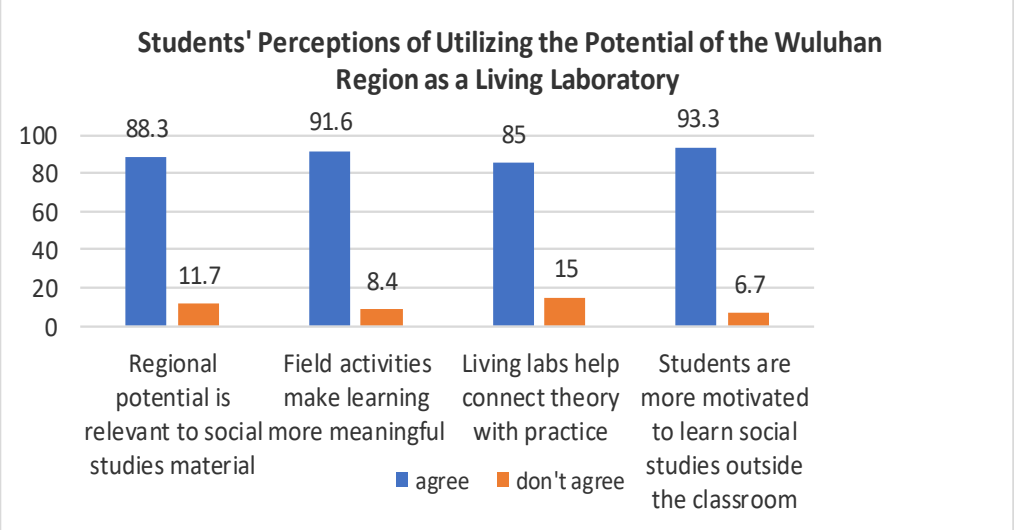

Figure 2. Diagram of Student Perception of the Utilization of the Potential of the Wuluhan Area as a Living Laboratory

The interview results support the quantitative findings. A Grade VIII student shared, “When I studied at Papuma Beach, I could see examples of erosion and fishermen’s activities directly, so I understood faster than reading books.” The social studies teacher explained, “We want children to experience the socio-economic conditions around them, so that social studies learning is no longer abstract.” The local community, such as Reog Ponorogo craftsmen, welcomed these activities, seeing them as opportunities for students to learn while preserving local culture. These insights highlight that collaboration between schools and the community enriches the living laboratory-based learning process.

Field observations analyzed with NVivo revealed three dominant themes: (1) the connection between materials and local reality, (2) increased student participation, and (3) strengthened cultural awareness. For example, at Watangan Hill, students actively created simple land-use maps and discussed the impact of ecotourism. Observational data showed that intensive interactions between students, teachers, and the local community were central to the collaborative learning experience. NVivo’s coding visualization indicated that 65% of field notes emphasized student enthusiasm, 20% highlighted material relevance, and 15% focused on cultural awareness. These findings confirm that living laboratories foster active, interactive, and meaningful learning spaces.

Analytically, these findings support Vygotsky’s concept of social constructivism, in which knowledge is co-constructed through interaction with peers and the environment. They also extend place-based pedagogy by showing that regional potential can operationalize abstract curricular goals. While previous studies Baccarne et al. (2014) emphasized higher education contexts, this study demonstrates that the same principles are transferable to junior secondary education. This theoretical implication strengthens the argument that living laboratories are an instructional strategy and a framework for integrating social constructivist learning with culturally responsive pedagogy. Thompson's et al. (2025) also found that integrating local contexts in learning can improve motivation and collaborative skills. However, previous studies have placed more emphasis on the context of higher education. This research enriches the literature by proving that living laboratory-based learning can be effectively adapted at the junior secondary education level. Thus, these findings contribute to expanding the concept of living laboratories in the context of formal primary-secondary education.

The Process of Implementing Living Laboratory-Based Social Studies Learning in Fostering Students' Collaboration Skills

The implementation of living laboratory-based social studies at SMPN 1 Wuluhan significantly improved student collaboration skills. Activities such as field observations, interviews with local resource persons, group report writing, and simple research presentations trained students to work in small groups with clear role divisions. These experiences helped them practice teamwork, share tasks, and solve problems together. Observations also showed that collaboration developed more strongly when students faced real-life situations in the field, highlighting the value of living laboratories in strengthening cooperative skills.

Observational analysis with NVivo identified four main categories: role sharing, group communication, individual responsibility, and synergy of work results. For example, at Skyland Paragliding Peak, students divided roles into interviewer, note-taker, photographer, and coordinator. Field notes indicated that 72% of students were active in their roles, 18% still needed direction, and 10% tended to be passive. NVivo’s coding visualization showed that “teamwork” emerged as the most dominant theme, accounting for 58% of all data units. These findings enrich collaborative learning theory at the theoretical level by showing that role division and peer negotiation become more authentic in real environments than in classroom simulations. This nuance highlights that living laboratories contribute to practical skills and a deeper understanding of how collaboration emerges as a social process.

These findings are consistent with a study by Keiler (2018), which found that team-based learning experiences can strengthen social interactions and student role sharing. The study's results also support the findings of Morales et al. (2021). who emphasize the importance of an authentic learning environment in forming true collaboration between learners. Thus, living laboratory-based social

studies learning not only improves conceptual understanding, but also provides real experience on how to work together effectively in the field

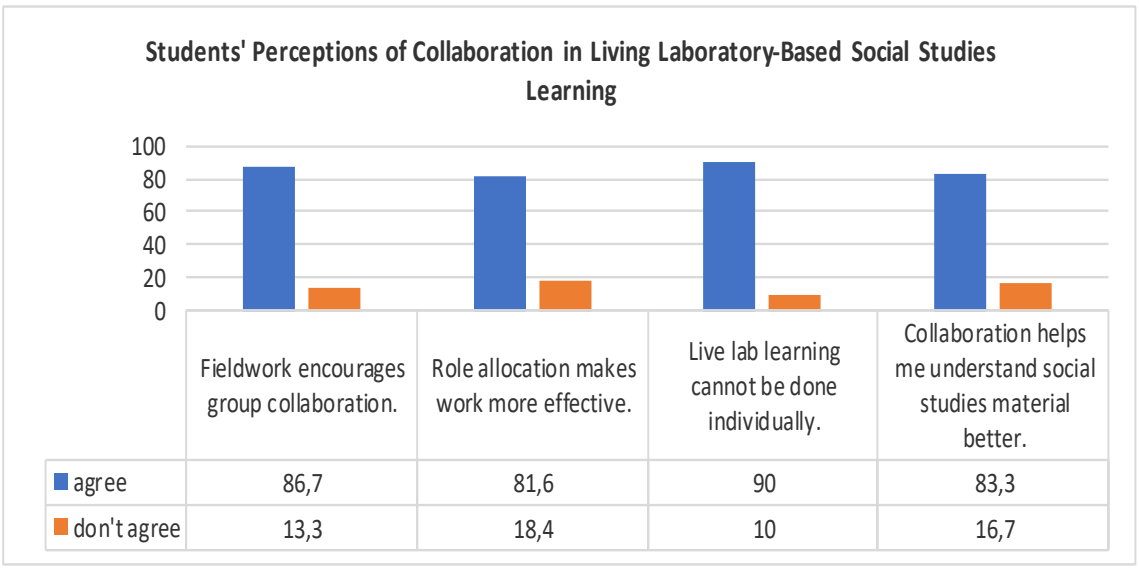

Figure 3. Diagram of Students' Perception of Collaboration in Living Laboratory-Based Social Studies Learning

Students' Communication Experience in Living Laboratory-Based Social Studies Learning Activities

The study found that living laboratories significantly enhance students' communication skills by interviewing fishermen at Papuma Beach, engaging in discussions with Reog Ponorogo artisans, and presenting observation results. These experiences train students to formulate questions, express opinions, and explain findings in formal and informal contexts, providing broader interaction opportunities than conventional classroom learning. Direct involvement with the community also helps build students' confidence.

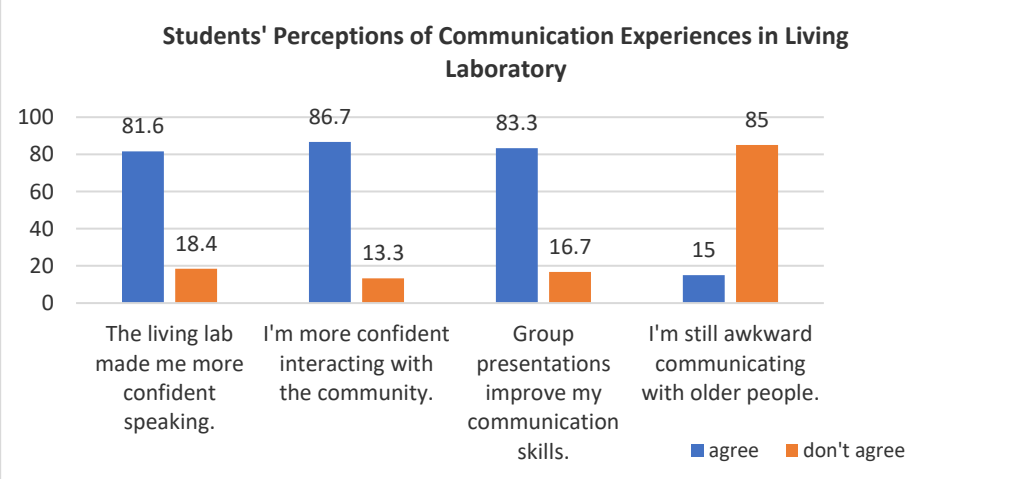

Figure 4. Diagram of Students' Perception of Communication Experience in Living Laboratory

Questionnaire responses from 60 students support these findings: 78.3% reported improved communication, 81.6% noted increased confidence in public speaking, and 86.7% felt braver when interacting with outsiders such as traders or artisans. However, 15% of students still expressed discomfort when speaking with older community members, indicating that while communication skills are developing, continued teacher guidance is necessary to address these challenges.

Interviews with students indicated a marked improvement in communication skills. One student explained, “At first I was afraid to talk to fishermen, but after being accompanied by friends and teachers, I became brave enough to ask about their work.” This illustrates how living laboratory activities encouraged students to be more communicative in their learning process. Another student added, “Presentations in class make me more confident, especially when my friends are listening seriously.” These reflections suggest that student enthusiasm fosters greater confidence. Teachers also confirmed that students’ communication skills developed significantly, as field activities required them to interact with new people. Overall, the interviews highlight that living laboratory-based learning creates authentic situations where students naturally practice communication.

Observational analysis using NVivo identified three key themes in communication development: courage to speak, clarity of delivery, and interaction with the community. For example, at the Metaraman Pottery Craft Center, students confidently asked artisans about the pottery-making process. Field records revealed that 70% of students actively participated in interviews, 20% remained passive, and 10% still struggled to ask questions. NVivo’s coding visualization emphasized that “courage to speak” was the dominant theme, accounting for 55% of the identified data. These findings demonstrate that communication activities within the living laboratory effectively train students to express ideas confidently. Theoretically, these results indicate that communication in living laboratories reflects cognitive development (formulating questions, presenting data) and affective growth (confidence, courage to speak). This supports experiential learning theory (Kolb, 2000) while adapting it to the junior high school context in Indonesia, which has rarely been explored in prior research.

These findings are consistent with the research of Duran (2022), which found that student communication improves significantly through experiential learning. Another study by Dunne et al. (2013) emphasizes that communication skills can be practiced in the classroom and require real interaction with the environment. However, this study adds a new context, namely the use of local potential in Wuluhan, that presents authentic communication with the surrounding community. Thus, this research makes an important contribution by stating that living laboratories effectively foster communication skills at the junior high school level.

Factors that Support and Hinder the Implementation of Living Laboratory in Social Studies Learning

The study revealed that the success of living laboratories at SMPN 1 Wuluhan is driven by the region’s diverse local potential, high student enthusiasm, active community support, and creative teachers who design engaging activities. However, limited time, unfavorable weather, and transportation costs often hinder implementation. Addressing these obstacles requires careful planning and effective mitigation strategies. Questionnaire results support these findings: 91.6% of students identified regional diversity as their primary source of motivation, while 88.3% highlighted teacher support as a key factor for success. Conversely, 70% reported weather conditions and 65% noted transportation costs as significant barriers. These results indicate that although living laboratories provide substantial benefits, overcoming technical constraints remains essential for sustainability.

Interviews with teachers highlighted several challenges in implementing living laboratories. One teacher explained, “The biggest obstacle is time and weather, because sometimes heavy rain delays the field schedule.” Students also expressed similar concerns, noting, “We love learning outside of the classroom, but sometimes we get tired when the location is far away and the cost is not cheap.” These perspectives suggest the need for stronger time management and logistical planning. In contrast, interviews with the surrounding community reflected strong support. For example, a pottery craftsman stated, “We are happy that the school children study here; hopefully,

we can introduce our culture to the younger generation." This indicates that while social support is strong, technical constraints remain a significant challenge.

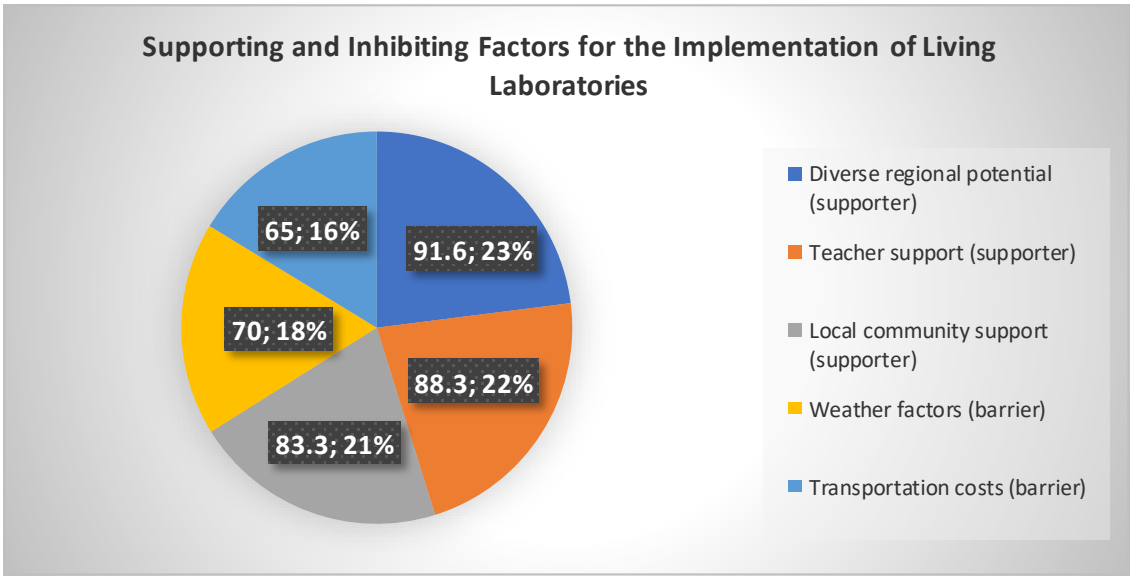

Figure 5. Percentage Chart of Supporting and Inhibiting Factors for Living Laboratory Implementation

NVivo analysis of field observations identified two dominant themes: social support and technical barriers. Social support encompassed community involvement, student motivation, and teacher creativity, while technical barriers involved weather, distance, and cost. Coding results showed that 62% of field records reflected supporting factors, while 38% highlighted obstacles. Although supportive elements were more dominant, barriers remain significant and require adaptive strategies. For instance, teachers sometimes addressed weather constraints by moving field activities into classroom simulations. These findings align (Mulà & Tilbury, 2025), who argue that the success of living laboratories depends on social support and cross-stakeholder collaboration, while funding and time constraints are universal challenges. This study contributes new insights from the context of Indonesian junior high schools, especially in regions with abundant local potential but limited access, underscoring the importance of collaborative strategies among schools, communities, and local governments to sustain living laboratories.

The study also emphasizes how utilizing the potential of Wuluhan District as a living laboratory significantly contributes to social studies learning at SMPN 1 Wuluhan. Data from questionnaires, interviews, observations, and NVivo thematic coding show that real environment-based learning enhances collaboration and communication skills. Most students scored highly in collaboration, particularly in respecting peers' opinions (85%), while listening was the strongest communication skill (83%). However, confidence in asking questions was relatively lower (72%), highlighting the need for strategies to strengthen student self-assurance. Interviews indicated that students were more motivated when working in groups, while teacher observations confirmed that discussions developed naturally in a respectful environment. NVivo analysis identified four major themes: collaboration in living laboratories, communication in authentic contexts, implementation challenges, and teacher strategies supported by the environment.

Overall, the findings confirm that social studies is not merely knowledge transfer but a process of developing 21st-century skills through contextual learning. Field activities at Papuma Beach, Watangan Hill, the Reog Ponorogo craft center, and the Watangan Charcoal Factory demonstrated how collaboration and communication flourish through authentic practices tied to local potential. Teacher and community support further strengthened the process, though time and transportation challenges remained. This study concludes that living laboratories rooted in local

resources can serve as innovative models of social studies learning, aligning with curriculum goals and fostering students' collaboration, communication, and socio-cultural awareness.

A methodological limitation of this study is that data were collected mainly through interviews, questionnaires, and observations without longitudinal tracking. Thus, while immediate impacts on collaboration and communication are evident, the sustainability of these skills over time remains uncertain. Future studies could employ mixed methods or comparative designs across multiple schools to broaden validity.

Discussion

Utilization of the Potential of Wuluhan District as a Living Laboratory in Social Studies Learning

The findings of this study show that the potential of Wuluhan District can be effectively used as a living laboratory for social studies learning. Papuma Beach, Watangan Hill, and pottery craft centers provide contextual learning experiences that connect theory with local realities. This supports Baccarne et al. (2014) who argue that living laboratories help students connect knowledge with real practice, and Thompson et al. (2025), who stress the importance of local spaces for experiential learning. Morales et al. (2021) also found that outdoor learning increases student engagement compared to traditional classrooms. However, Zhang et al. (2020) warn against romanticizing local potential without considering socio-economic challenges.

Using local potential also strengthens students' cultural identity through interaction with traditions and community activities. These results align with Keiler (2018), who found that field-based learning increases socio-cultural awareness, and Arefin et al. (2021), who noted its role in building environmental responsibility. Sors et al. (2019) further emphasize that collaboration with local communities expands students' understanding of creative economy practices. However, Kayes (2002) showed that location-based learning may fail if not systematically designed, highlighting the need for careful curriculum planning.

Regional potential also increases student motivation in social studies. This supports Duran (2022), who found higher enthusiasm in authentic contexts, and le Brasseur (2023), who confirmed that direct interaction with the environment raises engagement. At the same time, Tannenbaum and Wolfson (2022) cautions that poorly organized field-based learning may cause burnout. Mulà and Tilbury (2025) suggest that collaboration between schools and communities can reduce these barriers, underlining the importance of clear activity structures.

This study also highlights weather, transportation costs, and location distance limitations. These challenges echo Mulà and Tilbury (2025), who noted technical barriers as the main obstacles, and Zhang et al. (2020) who stressed the role of accessibility. However, Thompson et al. (2025) suggest that digital simulations can reduce such barriers, while Dunne et al. (2013) emphasize school policy support in overcoming logistical issues. These findings confirm Vygotsky's social constructivism, which emphasizes social interaction in knowledge building. Baccarne et al. (2014) and Morales et al. (2021) show that real contexts enrich student interaction, while Zhang et al. (2020) warn against reducing living laboratories to "educational tourism." Carter et al. (2022) also stresses the need for critical reflection after fieldwork. Thus, this study suggests that living laboratories at the junior high school level can integrate cognitive, affective, and psychomotor learning dimensions.

In conclusion, using Wuluhan District's potential as a living laboratory contributes to contextual learning, increases motivation, and strengthens students' cultural identity. These results confirm the importance of synergy between schools, communities, and the local environment. However, technical barriers such as access, weather, and cost require innovative solutions. Theoretically, this study contributes to the development of social studies education by positioning the living laboratory as a bridge between social constructivist theory, place-based learning, and culturally responsive pedagogy. Methodologically, it highlights the challenges of implementing such models at the secondary level, suggesting the need for further longitudinal and comparative studies. This study, therefore, supports and extends previous literature on the relevance of living laboratories, particularly at the junior high school level in regions with rich local potential.

The Process of Implementing Living Laboratory-Based Social Studies Learning in Fostering Collaboration Skills

Implementing living laboratory-based social studies learning emphasizes group work, role division, and problem-solving in authentic contexts. At SMPN 1 Wuluhan, students showed the ability to divide tasks fairly, such as during observations at Papuma Beach and Watangan Hill. These findings align with studies showing that project-based learning strengthens collaboration (Darling-Hammond et al., 2020; Jackson & Bridgstock, 2021). when facing obstacles, such as bad weather, students adapted by relocating interviews, proving that contextual learning encourages more authentic collaboration than classroom discussions.

Collaboration in the living laboratory also fostered responsibility and leadership. Research has shown that field-based collaboration often triggers natural leadership absent in traditional settings (Creighton, 2004; Perez et al., 2011). Observations revealed that some students voluntarily led groups, directed peers, and made decisions without teacher instruction, highlighting the complex social dynamics that support skill development. Student interviews further confirmed that collaborative activities-built confidence and comfort. Global studies also report that field-based collaboration increases motivation and ownership of learning (López-Gopar et al., 2022; Voogt et al., 2013). SMPN 1 Wuluhan students shared that group involvement made them braver in expressing opinions, even if initially passive. Living laboratories strengthen not only academic but also psychosocial aspects.

However, collaboration was not without challenges. Some groups struggled with conflicts like uneven role distribution or differing opinions. Literature confirms that such conflicts are natural and can become opportunities for learning problem-solving if appropriately managed (Johnson et al., 2000). Teachers acted as facilitators, ensuring conflicts were handled constructively. These findings contribute to understanding how collaborative skills emerge through structured tasks and unplanned social negotiations in authentic environments. This nuance extends prior literature by showing that conflict and adaptation are part of skill development, particularly in secondary-level students. In conclusion, living laboratory-based social studies learning at SMPN 1 Wuluhan fostered collaboration and built 21st-century social skills. While teacher support remains necessary to manage group dynamics, the real-world context accelerated the development of cooperation, tolerance, and shared responsibility among students.

Students' Communication Experience in Living Laboratory-Based Social Studies Learning

Students' communication experience in living laboratory-based social studies learning is characterized by increased listening, speaking, and presentation skills. Questionnaire data showed that listening skills achieved the highest scores, which is consistent with global research that field learning strengthens students' ability to understand messages from a variety of sources (Carlson et al., 2013; Scherer et al., 2021). At SMPN 1 Wuluhan, students listen to resource persons such as Reog craftsmen or Papuma fishermen with great attention, then record important information to be presented in class.

Students' speaking skills develop through the practice of interviews and group discussions. Field interviews encourage students to ask questions even with initial embarrassment. This aligns with studies showing that authentic communication experiences strengthen students' confidence in speaking (Heorhievska, 2021; S. L. Rodriguez et al., 2024). The results of interviews with SMPN 1 Wuluhan students show that the courage to ask questions increases when groups support them. Thus, communication develops through social interaction based on collective support.

Students' presentation abilities are also improved when they utilize authentic data from the field. Research proves that real evidence-based presentations make students more confident and communicative (Bergey & Ranellucci, 2021; Wilcox et al., 2024). Students of SMPN 1 Wuluhan presented reports with photos and field notes, which made the presentation more convincing and engaging for the audience. This shows that student communication is stronger when supported by authentic experiences rather than mere theory. However, student communication still has weaknesses in the aspect of having the courage to ask external sources. The lowest questionnaire score was found in the indicator of courage to ask, which is in line with other research that psychological barriers, such as shyness, are still communication barriers for junior high school students (Murphy, 2023; Zhao et al., 2025). Teachers need to continue to train students with scaffolding strategies so that they are more confident.

These findings extend existing communication studies by highlighting how local sociocultural contexts (e.g., interacting with artisans and fishermen) provide authentic practices and create unique affective challenges. This suggests that communication pedagogy must incorporate cultural sensitivity alongside skill development. Thus, SMPN 1 Wuluhan students' communication experiences can significantly develop through the living laboratory. However, the courage to ask questions remains a weakness that needs to be strengthened through further pedagogical interventions.

Supporting and Inhibiting Factors of Living Laboratory Implementation in Social Studies Learning

The main supporting factor for implementing the living laboratory is the potential of the Wuluhan area, which is rich in contextual learning resources. This is strengthened by the support of the community, who are willing to be resource persons, and the involvement of teachers as facilitators. Similar research also confirms that the success of living laboratories is greatly influenced by social environmental support (López-Gopar et al., 2022; Mohammadhosseini et al., 2021). The findings at SMPN 1 Wuluhan show that collaboration between schools, communities, and the physical environment creates a sustainable learning ecosystem.

In addition to external support, internal factors such as student motivation play an important role. Previous studies have shown that contextual learning increases students' intrinsic motivation because they feel learning is relevant to daily life (Kim & Kim, 2021; Wilcox et al., 2024). Students of SMPN 1 Wuluhan showed high enthusiasm in participating in field activities, despite facing limited facilities. This shows that intrinsic motivation can be the primary driver of the success of living laboratories. However, the inhibiting factor cannot be ignored either. The main obstacles include limited access to transportation, weather, costs, and limited learning time. This is consistent with research that emphasizes that logistical barriers constitute a significant challenge in the implementation of field-based learning (Vassiloudis, 2024). However, these barriers can be a means of learning if managed with a reflective and adaptive approach.

Another challenge is teachers' readiness to design living laboratory-based activities. Several studies highlight that teachers often struggle to integrate social studies materials with local contexts (Hadar et al., 2020; Ponijan et al., 2025). At SMPN 1 Wuluhan, although teachers play the role of facilitators, limitations are still found in exploring innovative methods. This shows the need for more intensive teacher training to maximize local potential as a learning resource.

Local potential, community support, student motivation, and the role of teachers are supporting factors for implementing the living laboratory at SMPN 1 Wuluhan. Meanwhile, the main obstacles lie in the logistical aspect and pedagogical readiness. This research strengthens the global literature while offering a new perspective on the context of junior secondary education in rural Indonesia. This study, therefore, shows that the sustainability of living laboratories depends on two dimensions: (1) material resources (transport, funding, time) and (2) pedagogical readiness (teacher training, curriculum integration). Theoretically, this adds to living laboratory literature by linking logistical and pedagogical constraints, which are often studied separately.

Methodological Limitations and Implications

While the results of this study provide important insights, several methodological limitations should be noted. First, the research focused only on one school (SMPN 1 Wuluhan) during one semester, which limits the generalizability of findings. Second, as a qualitative case study, the emphasis is on depth rather than breadth; broader surveys across districts are needed to test applicability. Third, this study focused on collaboration and communication skills, leaving out other 21st-century skills such as critical thinking or creativity.

Despite these limitations, the study contributes theoretically by extending place-based learning and social constructivist frameworks into the context of Indonesian junior high schools. Practically, it suggests that integrating regional potential into the curriculum can enhance student motivation, collaboration, and communication.

Future research could employ longitudinal approaches to track skill development over multiple years, conduct comparative studies across different regions, and explore digital simulations as supplements when logistical barriers occur. Policymakers and curriculum designers may consider

formalizing living laboratory models to align with the vision of active, contextual, and culturally grounded learning in Indonesia.

CONCLUSION

This study concludes that the potential of Wuluhan District can be effectively utilized as a living laboratory to enhance social studies learning at SMPN 1 Wuluhan. Local natural and cultural sites provide authentic contexts that connect theory with practice, strengthen cultural identity, increase motivation, and foster social awareness. Living laboratory-based learning develops students' collaboration skills through cooperative field activities and improves communication through peer and community interactions. Careful planning and teacher facilitation enable successful implementation despite technical and psychological challenges. Theoretically, this study enriches the literature on living laboratories in junior secondary education, and practically, it offers a locally rooted model for strengthening students' collaboration and communication skills in line with 21st-century learning needs.

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