

Exploring the Local Potential of the Ngawonggo Partitraan Site: Integrating Ecotourism into Biology Education

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ABSTRACT

This research is a descriptive analysis study that aims to evaluate the local potential of the Ngawonggo Partitraan Site as a learning resource in biology learning at school. Data was collected using a descriptive analysis approach based on the results of interviews and literature review. The interview technique in this study used a SWOT analysis approach (Strengths, Weaknesses, Opportunities, Threats) to identify the advantages and challenges in utilizing the site as teaching material. The results of the literature study, it is known that the Ngawonggo Partitraan Site is a natural historical area that holds significant local potential, especially in terms of biodiversity. The site has various types of high-level plants, medicinal plants, and unique and distinctive types of bamboo. This biodiversity can be utilized as contextual biology learning materials, relevant to the surrounding environment, and in line with curriculum development and 21st century learning needs. Utilization of this local potential is expected to improve the quality of learning and strengthen the link between science and cultural values and local wisdom.

Key word: Biology Learning, Ecotourism, Local Potential, Ngawonggo Partitraan Site

Introduction

Local potential is the ability to process natural and cultural biological wealth to increase the value of local community groups (Pesurnay, 2018). The local potential and wisdom of the area have yet to be fully utilized and incorporated as educational resources within the school curriculum (Sriyati et al., 2021). The utilization of local potential can be directed towards tourism development and the arrival of tourists to get to know local local wisdom, which affects the quality of sustainable tourism that is environmentally friendly (Azam et al., 2018). The environment has the potential to be a source or media for biology learning for students that can be optimized to expand students' knowledge (Situmorang, 2016). The development of ecotourism through the strategic use of local potential involves the integration of three key types of natural diversity: geological diversity (geodiversity), biological diversity (biodiversity), and cultural diversity. This holistic approach aims to foster inclusive economic growth that benefits the local population while adhering to the fundamental principle of conservation. By balancing economic development with environmental protection, ecotourism initiatives can promote sustainable use of natural and cultural resources, ensuring that these valuable assets are preserved for future generations while also enhancing community livelihoods (Jufrida et al., 2018).

Ecotourism is a journey to enjoy local culture in an authentic environment that has the aim of preserving nature in a destination (Lee, 2019). Ecotourism development needs to have a balance between business and environmental interests in maintaining ecological systems with

government support (Baloch et al., 2023). The International Ecotourism Society (TIES) states that the definition of ecotourism is travel by promoting ethics in natural areas with the aim of helping the welfare of local communities that do not rule out environmental conservation. Natural areas that are used as ecotourism must have conditions, namely presenting natural conditions, having understanding related to sustainable learning, having human resources who participate and provide benefits to local communities, there are elements of learning, education and awareness and have management based on environmental conservation ethics to prevent damage (Ouboter et al., 2021).

The management of tourism villages should receive support from formal educational institutions, particularly through integration into subjects like biology (Baroroh, 2020). According to Samal & Dash (2023) Studies on ecotourism emphasize the critical role of effective governance, knowledgeable tour guides, and the influence of psychological, technical, and political factors in maximizing the educational benefits for the community. Successful ecotourism initiatives depend not only on the natural and cultural resources but also on strong management and the ability to engage visitors meaningfully.

In the context of biology education, it is essential for students to develop a comprehensive understanding that goes beyond memorization. They need to grasp both conceptual and procedural knowledge, apply analytical thinking, and use these skills to solve real world problems. Integrating ecotourism into biology learning provides an excellent opportunity for students to connect theoretical concepts with practical experiences, fostering deeper learning and environmental stewardship (Aqil, 2017; Baroroh, 2020). Biology learning is very complex and provides a variety of knowledge and insights for managing local potential ecotourism environments (Sunarsih, 2021). Biology education can take the form of hands on field visits to natural environments, such as ecotourism sites, which tend to engage students more effectively because they connect learning with real-life experiences (Saraswati et al., 2022).

Methods

This research uses a descriptive research method, which aims to describe the utilization of local potential owned by the Pertirtaan Cultural Heritage Site as an ecotourism based learning resource. This study employs a library research approach, gathering data by exploring various sources of information and synthesizing findings from diverse references, including books, scientific journals, and firsthand interviews with researchers engaged in field observations alongside local area managers (Fadli, 2021). This research is a preliminary study, where the main instrument used is the interview. The goal of this interview is to explore data related to the local potential of the area, both in terms of biodiversity, historical value, and development opportunities as an environmentally and culturally based learning media. The list of interviewees and detailed outcomes of the interviews are presented in Table 1.

Ecotourism Development Strategy

Considering the various local potentials offered by the Ngawonggo Partittraan Site, it is essential to conduct a comprehensive SWOT analysis (Table 2). The interview participants were selected from the research sample, namely managers and visitors. This strategic tool is

used to systematically identify and evaluate the site's internal strengths and weaknesses, as well as external opportunities and potential threats. By applying this method, a clearer understanding can be gained regarding how the site can be effectively utilized and developed, particularly in the context of education and ecotourism.

Table 1. Record of Interviews Conducted With Members of the Ngawonggo Village Community

No.	List Of Question
1.	What are the local potentials at the Ngawonggo Partitraan Site?
2.	Based on your opinion, is there local culinary potential at the Ngawonggo Partitraan Site that can attract visitors to come?
3.	What local potential does the Ngawonggo Partitraan site have that can be used as a biology learning resource?
4.	What are the management systems of the Ngawonggo Partitraan Site?
5.	What are the distinctive characteristics that are the main attraction of the Ngawonggo Partitraan Site?
6.	Are there any souvenirs for visitors to buy?
7.	How can I come to the ngawonggo Partitraan Site?
8.	What are the management weaknesses at the Ngawonggo Partnership Site?
9.	Who usually visits the Ngawonggo Partitraan Site and what are their interests?
10.	Are there any traditional ceremonies at the Ngawonggo Partitraan Site?

Table 2. SWOT of Cultural Partitraan Sites Used as Ecotourism

No.	Problems		Supporting Factors	
	Threat (T)	Weaknesses (W)	Strengths (S)	Opportunity (O)
1.	The economic condition of the communities living around these areas remains relatively underdeveloped, mainly due to the lack of diversified sources of income. Limited access to alternative employment opportunities has led to their dependence on traditional livelihoods, which often do not provide sufficient financial stability. This situation highlights the need for sustainable economic development initiatives that can empower the local population and improve their quality of life.	The level of local community involvement, both in terms of quality and quantity, is still inadequate. Many residents have not been actively involved in development initiatives or decision-making processes related to site management. This limited involvement may be due to a lack of awareness, education, or access to relevant information and resources. Increasing community engagement is essential to ensure sustainable development and to foster a sense of ownership and responsibility within local stakeholders.	The natural landscape of the area possesses remarkable aesthetic value, offering stunning scenery and rich biodiversity. This environmental beauty not only enhances the visual appeal of the site but also presents significant potential for ecological education, nature-based tourism, and conservation efforts. The pristine surroundings and unique natural features make it an ideal location for promoting environmental awareness and sustainable development initiatives.	The site has attracted significant interest from international tourists, many of whom are drawn by its cultural heritage, natural beauty, and unique local characteristics. This growing attention from foreign visitors highlights the site's potential as a valuable ecotourism and educational destination. Their presence not only contributes to the local economy but also opens opportunities for cultural exchange and global recognition of the area's local wisdom and environmental significance.

No.	Problems		Supporting Factors	
	Threat (T)	Weaknesses (W)	Strengths (S)	Opportunity (O)
2.	Location security	Not widely known to the public. The site remains relatively obscure and has yet to gain widespread recognition among the general public. Due to limited exposure and promotion, many potential visitors and stakeholders are still unaware of its existence and the unique value it holds. Increasing public awareness through effective marketing strategies and community engagement is essential to unlock the site's full potential and attract broader interest both locally and beyond.	The area is home to a remarkable variety of bamboo species that are distinct from those found in other regions. This unique diversity not only contributes to the ecological richness of the site but also offers valuable opportunities for scientific research, conservation efforts, and educational activities. The presence of these uncommon bamboo varieties enhances the site's appeal as a natural heritage area and supports its potential as a specialized destination for botanists and nature enthusiasts alike.	There has been a growing interest from various non-governmental organizations (NGOs) and media outlets in visiting the site. This increasing attention reflects the recognition of the area's significance in terms of environmental conservation, cultural heritage, and community development. The involvement of NGOs and media not only helps to raise public awareness but also supports collaborative efforts to promote sustainable practices and enhance the site's visibility on a wider scale.
		Currently, the Ngawonggo Partitraan site lacks a dedicated souvenir shop or stall that offers unique, locally crafted items representative of the area. Establishing such a facility could provide visitors with meaningful keepsakes that reflect the cultural and natural identity of the site. Moreover, a souvenir stand could create additional economic opportunities for local artisans and help promote the region's heritage, enhancing the overall visitor experience and supporting community-based tourism development.	Within the site, there is a petirtaan a sacred bathing area believed by the local community to have been used by their ancestors for ritual purification and spiritual cleansing. This site holds deep cultural and historical significance, serving as a symbol of ancestral traditions and sacred practices that have been preserved over generations. The petirtaan not only represents an important heritage site but also offers valuable insights into the spiritual life and customs of the community, making it a meaningful location	The involvement and backing of the local government play a crucial role in the success and sustainability of development initiatives in the area. Active support from government authorities can provide essential resources, policy frameworks, and infrastructure development that empower community projects and promote environmental conservation. Furthermore, government endorsement helps facilitate collaboration among stakeholders, encourages investment, and

No.	Problems		Supporting Factors	
	Threat (T)	Weaknesses (W)	Strengths (S)	Opportunity (O)
			for both cultural education and heritage tourism. The site features several intricate reliefs distributed across different clusters, each with its own unique artistic and symbolic significance. The first cluster, labeled 1A, contains seven relief panels depicting various gods and goddesses, spread over nine distinct sections, illustrating rich mythological narratives. Adjacent to this, cluster 1B includes a pond accompanied by elaborate carvings featuring meander patterns, adding a decorative and symbolic element to the site. Moving to the second cluster, areas 2A and 2B consist of two sequential pools, each adorned with reliefs that represent the concept of the earth's center, alongside additional meander motifs that emphasize continuity and flow. The third cluster is distinguished by a cliff face that showcases more meander reliefs, contributing to the site's overall thematic cohesion through repetitive and meaningful patterns. Finally, the fourth cluster presents reliefs that depict Gana figure	ensures that efforts align with regional planning and cultural preservation goals, thereby enhancing the overall impact and long-term viability of local programs.

No.	Problems		Supporting Factors	
	Threat (T)	Weaknesses (W)	Strengths (S)	Opportunity (O)
			mythical creatures considered as the supports or guardians of the universe in local cosmology. These carvings symbolize strength and protection, highlighting the spiritual importance of this cluster within the broader sacred landscape. Together, these clusters reflect a sophisticated blend of religious iconography and artistic expression that enriches the cultural heritage of the site. The local community refers to this site as Tomboan Ngawonggo, a name that reflects a cherished tradition of hospitality. According to this custom, the site's caretakers warmly welcome visitors by offering a variety of refreshments, ranging from traditional wedang beverages to a selection of snacks and full-course meals. This practice not only serves as a gesture of goodwill but also helps to create a welcoming atmosphere that enhances the overall visitor experience, allowing guests to connect more deeply with the local culture and traditions (empok rice, urap, lodeh, botok).	

Strategy for Leveraging Strengths to Capitalize on Opportunities (SO):

1. The Ngawonggo Partitraan Site is not only rich in cultural heritage but also boasts

significant natural assets, including a diverse range of plant species, many of which are traditionally used for herbal remedies and local beverages such as wedang. This unique combination provides a strong foundation for sustainable development.

2. Actively promote the cultural customs and deep-rooted local wisdom associated with the Partitraan Site, highlighting its distinct heritage as a key attraction for visitors and educational programs.
3. Implement systematic management and documentation of the medicinal plants found within the area, thereby enhancing their value and potential benefits for both community health initiatives and educational purposes.
4. Foster the development of ecotourism at the Ngawonggo Partitraan Site by improving administrative systems and governance structures to ensure effective management and sustainability.
5. Accelerate the implementation of ecotourism programs by fostering strong partnerships and active collaboration among the local community, educational institutions, and government bodies, ensuring broad-based support and shared ownership.
6. Preserve and uphold local wisdom and cultural assets, including the preservation of historical relief sites, as integral components of ecotourism development that aim to improve the social and economic welfare of the surrounding community.
7. Conduct comprehensive inventories of the species present in the area, including cataloging both local and scientific names, or utilizing barcoding technology, to create valuable educational resources and support biodiversity conservation efforts.

Strategies to Address Weaknesses by Leveraging Opportunities (WO):

1. Prioritize the development and improvement of key infrastructure components, such as expanding and organizing visitor parking facilities and implementing efficient entrance management systems. These enhancements will significantly increase site accessibility, streamline visitor flow, and create a more comfortable and well-structured environment for all guests.
2. Establish and upgrade facilities that actively support the growth of ecotourism at the site. This includes creating a dedicated souvenir shop or kiosk that offers authentic, locally-made products unique to the Ngawonggo Partnership Site. Such initiatives not only enrich the visitor experience by providing meaningful keepsakes but also empower local craftsmen and promote the region's cultural heritage.
3. Amplify tourism marketing efforts through strategic use of social media channels. By crafting engaging content and targeted campaigns, the site can raise its profile and attract a more diverse audience, both nationally and internationally. Highlighting the site's unique natural beauty, historical significance, and cultural richness will help broaden its appeal to a global traveler base.
4. Strengthen community ties and increase visibility by actively engaging in cultural events and festivals in Malang City. Participating in these vibrant gatherings allows the Ngawonggo Partnership Site to showcase its heritage to a wider audience, foster cultural pride, and build relationships with other cultural stakeholders and enthusiasts.
5. Build and deepen collaborative relationships with educational institutions and local

government bodies. These partnerships are crucial to securing the necessary support, funding, and expertise required to drive sustainable development initiatives. By working together, these entities can ensure effective governance, resource management, and educational outreach that benefit both the site and the surrounding community.

Strategy of using strengths to deal with threats (ST)

1. Secure active support and involvement from government authorities to ensure the successful implementation and sustainability of development initiatives at the Ngawonggo Partitraan Site. Government backing can provide crucial funding, policy support, and infrastructural improvements that benefit both conservation efforts and community welfare.
2. Motivate and empower the local community to create and produce distinctive souvenirs that reflect the unique cultural and natural identity of the Ngawonggo Partitraan Site. Encouraging local craftsmanship not only preserves traditional skills but also generates additional income and promotes cultural pride.
3. Commit to the conservation and protection of the natural environment surrounding the Ngawonggo Partitraan Site. Preserving biodiversity and maintaining ecological balance are essential for sustaining the site's appeal as an ecotourism destination and safeguarding its long-term viability.
4. Produce a documentary film showcasing the traditional ceremonies and cultural celebrations held at Partitraan Ngawonggo. This visual storytelling can help raise awareness, preserve intangible cultural heritage, and attract interest from wider audiences, both locally and internationally.

Strategies to minimize weaknesses and overcome threats (WT)

1. Enhance promotional efforts to highlight the unique local potential of the Ngawonggo Partitraan Site as a prime ecotourism destination. This can be achieved by implementing improved management practices and elevating the quality of hospitality services to create a more welcoming and memorable experience for visitors.
2. Offer guidance, training, and resources to local communities to help them develop attractive and meaningful souvenirs that leave a lasting impression on tourists. Empowering the community in souvenir management not only supports local entrepreneurship but also strengthens the cultural identity of the site.
3. Promote the welfare of local residents by providing educational programs that encourage active community participation in conservation and environmental protection initiatives. Education plays a vital role in fostering a sense of stewardship and ensuring sustainable management of natural and cultural resources.
4. Establish partnerships with the Provincial Government and the Cultural Office to facilitate access to educational resources tailored to the specific cultural heritage and historical significance of the sites in the area. Collaborative efforts will enhance awareness and appreciation of the region's cultural assets, benefiting both the community and visitors alike (Siahaya et al., 2021).

Results and Discussion

Based on the evaluation of various local potentials in Ngawonggo Village, the findings are summarized in Table 3. This table provides a clear overview of the assessed strengths and resources within the village. It is important to present these results as direct findings, without including the detailed processes such as statistical calculations or hypothesis testing; only the outcomes of these analyses should be reported. To enhance clarity and support the written explanation, research findings can be accompanied by visual aids like tables, charts, and graphs. Each visual element must be properly introduced with a descriptive narrative and followed by an insightful discussion to contextualize the data. Additionally, all tables and figures should adhere strictly to the formatting guidelines set forth for authors to ensure consistency and professionalism in presentation.

The local potential of the Ngawonggo Partitraan Site holds significant promise for development into an ecotourism destination that can also serve as an innovative resource for biology education. With its rich biodiversity, unique plant species, and culturally significant natural features, the site offers valuable hands-on learning opportunities for students. By integrating ecological exploration with educational activities, the site can become a living laboratory where biological concepts such as plant classification, ecosystems, and conservation are taught in a real-world context. This dual function not only promotes environmental awareness and sustainable tourism but also enriches the academic experience by connecting students directly to nature and local wisdom. Students tend to grasp learning material more effectively when they are exposed to real life situations and hands-on experiences (Mau, 2024). Engaging directly with local resources offers students a deeper and more meaningful understanding, particularly in biology, where hands on, experiential learning is essential (Wulandari & Djukri, 2021).

The Ngawonggo Partitraan Site possesses rich local potential that encompasses its natural resources, unique local products, and culturally significant religious sites. This combination makes it an ideal location for ecotourism development, particularly as an educational resource for students. The site is home to a wide variety of medicinal plants traditionally used by the local community and commonly processed into wedhang, a traditional herbal beverage known for its health benefits. In addition to its medicinal flora, the site features an impressive diversity of plant life, including various bamboo species and higher plants, which provide excellent material for hands-on biology education. These natural assets not only enhance ecological awareness but also offer practical learning opportunities related to plant identification, ethnobotany, and sustainable resource use. By integrating local knowledge and environmental education, the Ngawonggo Partitraan Site has the potential to become a valuable outdoor classroom that supports both cultural preservation and student engagement with science. According to Sari et al (2013) stated that learning biology by seeing and feeling real conditions can increase student understanding.

Learning in the classroom needs a special strategy so that the results obtained are maximized (Duha & Nasution, 2021). Learning strategies can be categorized into five types: direct instruction, inquiry-based learning, interactive methods, independent study, and experiential learning (Safida & Hasanah, 2018). Local potential holds significant value as a

source of learning material, particularly when aligned with the unique characteristics of science education.

Table 3. Aspects Local Potential Partitraan Ngawonggo Site

No.	Aspects	Local potential in Ngawonggo Village
1.	Natural Resources	a) The Partitraan Site is strategically located near a natural spring, which the local community actively utilizes for various daily needs. This water source not only supports the surrounding ecosystem but also plays a vital role in the livelihoods and cultural practices of the residents. b) The area boasts a rich and diverse array of plant species, showcasing an impressive variety of flora. This biodiversity not only contributes to the ecological health of the region but also provides valuable resources for traditional medicine, education, and potential ecotourism activities.
2.	Biodiversity	a) The area is characterized by a notably high level of plant diversity, featuring a wide variety of species that contribute to the ecological richness and complexity of the local environment. b) There is a significant variety of rhizome plants present, which play important roles both ecologically and culturally, often being utilized for culinary, medicinal, and traditional purposes. c) The site is home to diverse species of bamboo plants, which not only enhance the landscape's natural beauty but also offer economic and cultural benefits to the local community through their various uses. d) A broad spectrum of medicinal plants thrives in the region, providing valuable natural resources for traditional healthcare practices and offering potential for further research and sustainable utilization in herbal medicine.
3.	Culinary Ingredients	a) The area is rich in various types of tuberous plants, which serve as essential sources of nutrition and are widely cultivated and consumed by the local community. These tubers play a crucial role in traditional diets and agricultural practices. b) There is an abundant variety of kitchen spices found within the region, contributing to the flavorful and diverse culinary traditions of the local people. These spices are not only valued for their taste but also for their medicinal properties and cultural significance. c) The site supports a diverse range of vegetables that are cultivated and harvested by the community, providing important dietary staples and promoting food security. These vegetables also contribute to the overall biodiversity of the area and sustain local agricultural livelihoods.
4.	Art	a) The site is known for its traditional flute performances, which are a vibrant expression of the local cultural heritage. These musical presentations not only entertain but also serve as a means of preserving and passing down ancestral traditions and stories through generations. b) The area features distinctive traditional architecture, showcasing unique design elements and construction techniques that reflect the historical and cultural identity of the community. These structures stand as tangible representations of the region's heritage and contribute to its cultural landscape.
5.	Crafting	Woven bamboo mats, traditionally handcrafted by local artisans, serve both functional and cultural purposes in the community. These mats, made from carefully selected and processed bamboo strips, are used for flooring, wall coverings, and various ceremonial or domestic activities. Beyond their practical use, bamboo matting represents a form of sustainable craftsmanship that reflects the community's deep connection to natural resources and their commitment to preserving traditional skills. The intricate weaving patterns and techniques passed down through generations also add aesthetic value, making them a symbol of local cultural identity and artistic expression.
6.	Religious Ceremony	Traditional ceremonial activities are held throughout Java during each major holiday, reflecting the island's rich cultural and spiritual heritage. These rituals and festivities are deeply rooted in local customs and vary from region to region, often incorporating music, dance, food offerings, and symbolic performances. Whether celebrating religious holidays, harvest festivals, or ancestral commemorations, these ceremonies serve not only as expressions of gratitude and reverence but also as a means of strengthening community bonds and preserving cultural identity. The continuity of these practices highlights the Javanese people's respect for tradition and their commitment to maintaining a harmonious relationship between the spiritual and natural worlds.

By incorporating elements of local wisdom, science learning can be enriched and made more meaningful through the use of diverse instructional models, pedagogical approaches, and innovative teaching strategies (Fawziah et al., 2021). This integration not only fosters a deeper understanding of scientific concepts but also encourages students to connect theoretical knowledge with real life experiences rooted in their own cultural and environmental context (Rachmawati et al., 2024). Leveraging local potential in this way supports contextual learning, promotes critical thinking, and strengthens students' appreciation for both science and their local heritage (Asrial et al., 2021; Susanti et al., 2017). The incorporation of local wisdom into school subjects can be thoughtfully designed and adapted to various teaching approaches, taking into account both the unique characteristics of students and the available local resources (Jufrida et al., 2018).

The Ngawonggo Partitraan Site presents significant local potential for use in biology education, largely due to its favorable geographical characteristics and rich biodiversity (Safida & Hasanah, 2018). The area is home to a wide variety of plant species, including numerous medicinal plants, bamboo, and other ecologically valuable flora. This natural abundance provides an ideal environment for experiential learning, where students can directly observe, study, and engage with biological concepts such as plant classification, ecological interactions, and traditional uses of plants (Rachmawati et al., 2024). By utilizing this site as an outdoor learning resource, educators can connect scientific theory with practical, real world applications rooted in local knowledge and environmental stewardship (Trisianawati et al., 2019). The purpose of integrating local potential, one of which is plants, in school learning is so that students can develop and empower the potential of their respective regions (Andarias et al., 2022). The current state of the Ngawonggo Partitraan Site is illustrated in Figure 1.



Figure 1. Location of Ngawonggo Partitraan Site

Source: Personal Documentation

As illustrated in Figure 1, the biodiversity present at the Ngawonggo Partitraan Site holds great potential to be utilized as an educational resource, particularly within the context of biology learning (Safida & Hasanah, 2018). This natural diversity offers rich, real world content that

can be integrated into the curriculum to make scientific concepts more relevant and engaging for students (Rachmawati & Mukti, 2024). Ideally, the learning process should not only encourage students to observe and study their environment as a subject of academic inquiry but also instill in them a strong sense of environmental responsibility. Through this approach, students are expected to develop an awareness of the importance of conservation and be inspired to take an active role in protecting natural ecosystems from degradation (Samal & Dash, 2023). Ultimately, the integration of local biodiversity into education aims to produce environmentally conscious individuals who contribute to the sustainable preservation of their surroundings (Safida & Hasanah, 2018). The teacher's role is to guide and encourage students to develop a consistent awareness and concern for their environment, such as promoting habits of maintaining cleanliness in the school surroundings and fostering a sense of responsibility toward the conservation of local plants and animals to ensure their sustainability (Sari et al., 2013).

One aspect of biodiversity that can be incorporated into biology lessons at school is the variety of medicinal plants found at the Ngawonggo Partitraan Site. These plants are valued for their therapeutic properties, which are attributed to the natural compounds they contain (Harefa, 2020). The Ngawonggo Partitraan Site is managed by an individual who warmly welcomes every visitor by offering them “wedhang tomboan,” a traditional drink made from medicinal plants. This unique beverage features a variety of local spices and herbs that are characteristic of the area. Some of the key ingredients include ginger (*Zingiber officinale*), black cumin (*Nigella sativa* L.), cinnamon (*Cinnamomum verum*), Moringa leaves (*Moringa oleifera*), cardamom (*Elettaria cardamomum*), cloves (*Syzygium aromaticum* L.), star anise (*Illicium verum*), along with several other aromatic spices. These ingredients not only give the drink its distinctive flavor but also highlight the rich botanical diversity and cultural heritage of the Ngawonggo Partitraan Site (Qorina Fawziah et al., 2021; Safida & Hasanah, 2018) that can be utilized can be seen in Figure 2.



Figure 2. Wedhang tomboan spices

Source: Personal Documentation

As you explore the Ngawonggo Partitraan Site, you will encounter impressive bamboo plants (*Bambusa blumeana*) of considerable size, which are traditionally utilized for making various handicrafts and constructing bridges (Mulia et al., 2022). This diversity presents valuable learning opportunities in biology, particularly in the areas of plant classification, practical uses, and ecological functions within natural ecosystems. Below is an image showcasing the native bamboo species found at the Ngawonggo Partitraan Site.

As shown in Figure 3, this is the ori bamboo (*Bambusa blumeana*). Members of the Poaceae or Gramineae family can be identified by their stem structure some species have hollow stems, like bamboo, while others, such as sugarcane, rattan, and similar plants, possess solid stems. (Mulia et al., 2022). Additional typical characteristics include long, ribbon like leaves with parallel veins that are directly attached to the stem, fibrous root systems, lightweight flowers that easily disperse when carried by the wind, a generally rounded shape, and wind-assisted pollination (Sujarwanta & Zen, 2022). According to research that has been tested, bamboo can be used as a cure for malaria (Sujarwanta & Zen, 2022). The geographical characteristics of the Ngawonggo Partitraan Site, combined with its rich historical narratives and cultural significance, make it a vital location for cultural preservation and development. This site is further enriched by a diverse range of local potentials such as ecological biodiversity and traditional knowledge that provide valuable learning resources (Safida & Hasanah, 2018). These elements can be effectively explored and adapted to align with the capabilities of schools and the creativity of educators, allowing for the implementation of contextual and conservation based learning, in line with the objectives of biology education (Rachmawati, Rohman, Novianti, et al., 2024). To maximize this potential, there is a pressing need for continued research and development initiatives, such as creating teaching materials that integrate local environmental and cultural resources into classroom instruction (Wardani, 2016). Collaboration with local governments is essential to identify and validate which aspects of local potential are most appropriate for educational integration (Susanti et al., 2017). Such partnerships would foster collective awareness and shared responsibility in promoting conservation efforts, ensuring that both cultural heritage and natural ecosystems are preserved for future generations while simultaneously enriching the educational experience (Trisianawati et al., 2019).



Figure 3. Native bamboo species (*Bambusa blumeana*) found at Ngawonggo Site
Source: Personal Documentation

Conclusion

Based on the findings from descriptive analysis, site visits, and interviews conducted with the manager of the Ngawonggo Partitraan Site, it is evident that this location holds

significant potential to be developed within the framework of ecotourism. When viewed through this lens, the site's natural, cultural, and educational resources can be effectively utilized as part of local potential that supports integration into the school curriculum. Specifically, the site offers numerous opportunities to enhance learning experiences by connecting ecological and cultural heritage with classroom instruction. This integration can promote environmental awareness, foster a sense of place, and support the development of conservation-based education particularly in subjects such as biology and social studies. This research makes a significant contribution in two main aspects, namely biology education and ecotourism development. In the context of biology education, the results of this research enrich learning resources by providing relevant empirical data on biodiversity, local ecology, and the interactions between organisms and their environment. This material can be integrated into biology curricula at both the high school and university levels, particularly in topics such as ecosystems, conservation, and biodiversity. Additionally, the locally-based approach used in this research promotes contextual and experiential learning, which has been proven to enhance students' understanding and concern for environmental issues. In the field of ecotourism development, the findings of this research provide a scientific basis for the planning and management of sustainable ecotourism areas. Information on endemic species, ecosystem potential, and the educational value of the studied area can be used as a reference in designing environmental interpretation programs, educational tourism trails, and community involvement. Thus, this research not only contributes to environmental conservation but also promotes community economic empowerment through the development of conservation-based ecotourism.

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