



Development of Geotourism Module Focusing on the Historical Aspects of the Unesco Global Geopark Area (Uggp) Ijen Banyuwangi

¹Triana Kartika Santi, ²Wisnu, ³Andrik Purwasito, ⁴Balthasar Watunglawar,
⁵Mahfud, ⁶Riztika Widyasari,

Universitas 17 Agustus 1945 Banyuwangi

Abstract

Objective : The purpose of developing the Geotourism Module in the UNESCO Global Geopark (UGGp) Ijen Banyuwangi area is to increase understanding and appreciation of the geological and historical richness of the area, expand environmental education and awareness, empower local communities, and ensure conservation and sustainable management of natural resources. With this approach, it is hoped that geotourism in UGGp Ijen can develop sustainably, provide maximum benefits to local communities, and preserve the geological and historical richness for future generations.

Design/methodology/approach : This study uses a qualitative method with thematic analysis to understand the development of the Geotourism Module in the UNESCO Global Geopark (UGGp) Ijen Banyuwangi area. The subjects of the study included local communities, tourism managers, tourists, and historians and geologists, with data collected through in-depth interviews, observation, and documentation. Analysis was carried out through data transcription, coding, and triangulation to ensure validity. This study also complies with ethics with participant consent and data confidentiality. The expected results are an understanding of the integration of history in geotourism as well as recommendations for sustainable development and empowerment of local communities.

Findings: Research on the Geotourism Module at UGGp Ijen Banyuwangi shows that integrating historical elements in this module enriches tourists' understanding of the area's geological and historical richness. This module offers an educational tourism experience that connects history with geology, increases environmental education and awareness, and empowers local communities through training and economic opportunities. In addition, the module supports conservation and sustainable management by implementing responsible tourism practices, maintaining a balance between tourism visits and site preservation. This approach ensures sustainable benefits for the community and the preservation of geological and historical richness.

Research limitations/implications: This study has two main limitations. First, the number of participants interviewed is limited, which may affect the representativeness of the research results. Second, the focus of the study is centered on local government arguments and the analysis is only conducted using thematic analysis. These limitations may affect the depth of understanding of broader perspectives and the variety of data in the study.

Originality/value : This study shows that the geotourism module that focuses on the historical aspects of the UNESCO Global Geopark (UGGp) Ijen Banyuwangi area deepens understanding and appreciation of the geological and historical richness of the area. This module also expands environmental education and awareness, empowers local communities, and supports conservation and sustainable management of natural resources. With this approach, it is hoped that geotourism in UGGp Ijen can develop sustainably,

provide maximum benefits to local communities, and preserve the geological and historical richness for future generations.

Keywords:Geotourism, Sustainable Conservation, Local Empowerment

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Introduction

UNESCO Global Geopark (UGGp) Ijen Banyuwangi is one of the areas with extraordinary geological and historical richness in Indonesia. Located at the eastern tip of Java Island, this area is known for its unique natural phenomena such as Mount Ijen and its blue sulfur crater lake, as well as various geological formations that bear witness to the long history of the earth's evolution. This potential makes UGGp Ijen one of the geotourism destinations that offers high educational value, both in terms of geology and history.

However, one of the main challenges in developing geotourism in the UNESCO Global Geopark (UGGp) Ijen area is the lack of understanding and appreciation of the geological and historical richness that exists. Many tourists tend to only appreciate the visual beauty without understanding the scientific and historical value of these sites, which are an integral part of the area's identity. This lack of appreciation not only reduces the educational potential of geotourism but also hampers conservation efforts. Therefore, there is an urgent need to improve environmental education and awareness, both among tourists and local communities, to ensure that geotourism in the area can develop in a way that supports the preservation and deeper understanding of the geological and historical heritage. Through more focused educational initiatives, geotourism can make a significant contribution to the preservation of natural and cultural resources, while also strengthening the local economy.

Lack of understanding of geological and historical values is a major challenge in harnessing the full potential of geodiversity and geoheritage for sustainable development and geotourism. Recent studies emphasize that geoparks aim to protect geodiversity, educate the public about geological history, and support economic growth through geotourism (Muslim et al., 2022). However, in Indonesia and Africa, problems such as accessibility, inadequate infrastructure, and ineffective management result in the low value of some geological sites and limited geoconservation efforts (Muslim et al., 2022; Ansori et al., 2022; Neto & Henriques, 2022). Geoheritage resources are often not optimally utilized, although sites with high value tend to experience more intensive exploitation (Ruban et al., 2022). To overcome these challenges, it is important to develop specific policies for the sustainable exploitation of geoheritage resources and improve tourism infrastructure, visitor services, and promotion (Muslim et al., 2022; Ruban et al., 2022).

In addition, the involvement of local communities in geotourism development in the UNESCO Global Geopark (UGGp) Ijen area is still limited, even though they are a key element in the long-term success of the initiative. Empowering local communities is not only important to ensure that the economic benefits of tourism can be felt directly by local residents, but is also crucial in maintaining the sustainability of the environment and cultural heritage of the area. Without their active involvement, the full potential of geotourism may not be fully realized. Local communities must be involved in the management and presentation of the historical and geological aspects of the area, so that they are not only passive beneficiaries but also play a role as key actors in directing the development of geotourism. In this way, local communities not only gain economic benefits but also feel ownership and commitment to preserving the existing natural and cultural wealth. This participatory approach can also increase public awareness and knowledge about the importance of preservation, which in turn will strengthen the tourist attraction and sustainability of the management of the area.

Local community involvement in geotourism management at UGGp Ijen is still limited, which is in line with research findings showing variations in community participation in geotourism management at various UNESCO Global Geoparks (UGGp). Although Ijen Geopark has collaborated with rural institutions to develop sustainable geotourism strategies, community involvement remains a challenge, similar to the case of the Natuna Islands geopark which faces budget constraints and lack of education (Mustajadli &

Junriana, 2023). International comparative studies also underline the need for participatory approaches and community skill building to ensure the sustainability of geotourism (Aida Mammadova et al., 2022; M. Hadian et al., 2021). This emphasizes the importance of increasing local participation for the success and sustainability of geotourism initiatives at UGGp Ijen.

The UGGp Ijen area faces significant challenges related to conservation and sustainable management, especially with the increasing number of tourists. Pressure from high tourism activities increases the risk of damage to geological and historical sites in the area. If not managed properly, negative impacts on the environment and cultural heritage can be serious. Therefore, it is very important to develop a geotourism module that not only emphasizes the tourism aspect, but also prioritizes education on conservation and sustainable management. This module should include strategies to protect historical and geological sites, increase environmental awareness among tourists, and ensure that the economic benefits of tourism are enjoyed by local communities without damaging natural resources. With this approach, it is hoped that the development of geotourism in UGGp Ijen can be sustainable and provide long-term benefits to the environment and local communities.

The main challenges in conservation and sustainable management are often influenced by tourist pressure and increased risk of damage. Recent studies have shown that intensive tourism activities can cause significant impacts on geoheritage and biodiversity. Kuttusi Zorlu et al. (2024) emphasize the importance of a balanced conservation-use approach to reduce the risk of damage from overtourism. Magda Pla et al. (2024) develop a risk map to assess the impact of human visits on sensitive species, indicating the need for more focused conservation actions. Shu-Ning Zhang et al. (2024) introduce a method to measure the risk of cultural distortion in heritage sites, which can influence tourist behavior. Meanwhile, S. Sumarmi et al. (2024) discuss the success of a collaborative management model of mangrove forests in Banyuwangi, which shows how sustainable ecotourism can support conservation and provide benefits to local communities. These studies highlight the critical challenges in managing natural and cultural resources sustainably amidst tourist pressure and increased risk of damage.

With this background, the development of a Geotourism Module that focuses on the historical aspects of the UNESCO Global Geopark (UGGp) Ijen Banyuwangi area is very important. This module aims to increase understanding and appreciation of the geological and historical richness of the area, improve environmental education and awareness, empower local communities, and ensure the conservation and sustainable management of existing natural resources. Through this approach, it is hoped that geotourism in UGGp Ijen can develop sustainably, provide maximum benefits to local communities, and preserve the geological and historical richness for future generations.

Literature Review

Geological and Historical Wealth

The development of a Geotourism Module that focuses on the historical aspects of the UNESCO Global Geopark (UGGp) Ijen Banyuwangi area is closely related to the geological and historical richness of the area. The Ijen Geopark, which has been recognized as UGGp in 2023, offers significant potential for geotourism and sustainable economic growth in Banyuwangi (Rohaendi et al., 2023). This module is important because the geopark integrates geological, biological, and cultural diversity, which includes very valuable local historical aspects (Hutabarat & Pratiwi, 2022).

The recognition of Ijen as a UGGp underlines the importance of identifying factors that influence visitor numbers and developing effective promotional strategies (Putri & Thamrin, 2023). In this context, the development of a module highlighting the geological and historical richness of the Ijen area not only helps to improve understanding of geotourism aspects, but also contributes to the preservation and education of existing cultural and historical values.

Geoparks serve as instruments for regional development and can be used as a form of geotourism diplomacy for Indonesia (Hutabarat, 2023). Therefore, the development of a geotourism module that emphasizes the history of the Ijen area is also in line with efforts to optimize the utilization and preservation

of the area, as well as increase public awareness of the earth (Rohaendi et al., 2023; Hutabarat & Pratiwi, 2022). By involving local communities and the government, this module supports conservation and local economic development through the promotion of Ijen's geological and historical richness.

Environmental Education and Awareness

The development of a geotourism module that focuses on the historical aspects of the UNESCO Global Geopark (UGGp) Ijen Banyuwangi area is very relevant to efforts to improve environmental education and awareness. The Ijen Geopark in Banyuwangi stands out for its geological, biological, and cultural diversity, and aims to promote conservation, education, and sustainable economic development (Rohaendi et al., 2023). In this context, the potential for educational tourism at the Ijen Geopark geosites is enormous, especially by emphasizing field exploration and tutorial learning (Hasan & Ningrum, 2023).

The UNESCO Global Geopark concept emphasizes the importance of integration between geological heritage, biodiversity, and cultural heritage for sustainable development and community engagement (Hutabarat & Pratiwi, 2022). The needs analysis for the Ijen Geopark module shows that students need interesting and easy-to-understand content, highlighting the importance of developing modules that suit their educational needs (Oktaviani et al., 2023).

This finding emphasizes that the development of a comprehensive and integrated geotourism module with the historical aspects of the Ijen Geopark area is very important. This module will not only increase students' understanding and awareness of the historical and environmental aspects of the Ijen Geopark, but also support the goals of conservation and sustainable development in the area.

Local Community Empowerment

The development of a geotourism module that focuses on the historical aspects of the UNESCO Global Geopark (UGGp) Ijen Banyuwangi area is closely related to the empowerment of local communities. The Ijen Geopark integrates geological, biological, and cultural diversity to support conservation, education, and sustainable economic development (Rohaendi et al., 2023; Yasa et al., 2023). The success of geopark management is highly dependent on the active participation and understanding of local communities (Darsiharjo, 2016).

By obtaining UNESCO Global Geopark status in 2023, Ijen Geopark has initiated efforts to identify factors that can increase the number of visitors (Putri & Thamrin, 2023). The development of a geotourism module that focuses on the historical aspects of the area aims to empower local communities by increasing their understanding and concern for the earth and its environment. This not only increases environmental awareness but also encourages local economic growth through effective promotion and maintenance of the site and its surroundings (Rohaendi et al., 2023; Putri & Thamrin, 2023).

Overall, the development of this module is expected to support the empowerment of local communities by involving them in the education and preservation process, which in turn will contribute to the development of sustainable geotourism in the Banyuwangi area.

Educational Tourism Experience

The development of a Geotourism Module that focuses on the historical aspects of the UNESCO Global Geopark (UGGp) Ijen Banyuwangi area is a strategic step to improve the educational tourism experience. The Ijen Geopark, which covers the Banyuwangi and Bondowoso areas, has great potential in geotourism development thanks to its rich geosites, such as Kawah Wurung, which offers in-depth field exploration opportunities (Fuad Hasan & Intan Hayun Ningrum, 2023). Research by Rohaendi et al. (2023) highlights the importance of integrating historical aspects into the geotourism module to increase educational appeal and tourist engagement.

In the context of Ijen Geopark, the development of modules that emphasize local geological heritage, biodiversity, and culture will greatly support education and better understanding of these sites (Leonard Felix Hutabarat & Nuning Indah Pratiwi, 2022). The UNESCO Global Geopark concept encourages

sustainable management with a focus on conservation and economic development involving local communities (Novinda Sabilla Putri & M. Thamrin, 2023). Therefore, geotourism modules integrated with historical elements can enhance the educational tourism experience and promote awareness and preservation of Ijen Geopark.

An effective promotional strategy is also important to attract more visitors and educate them about the historical and geological value of the sites. The development of modules designed with an educational and interactive approach will enrich the visitor experience and raise awareness of the importance of preserving the Ijen Geopark (Fuad Hasan & Intan Hayun Ningrum, 2023).

Conservation and Sustainable Management

The development of a Geotourism Module that focuses on the historical aspects of the UNESCO Global Geopark (UGGp) Ijen Banyuwangi area is an important step in supporting conservation and sustainable management. Recent studies have shown that geotourism development in UGGp, such as the Ijen Geopark in East Java, Indonesia, has made significant contributions to community empowerment and local resource management (IK Mastika et al., 2023).

Ijen Geopark has great potential for education and tourism due to its rich geosites, including the Ijen Acid Crater Lake which is one of the most scientifically valuable sites (S. Permanadewi et al., 2024). The development of a geotourism module that integrates historical aspects can deepen tourists' understanding of the geosite and historical value of the area, as well as raise awareness of the importance of conservation.

Conservation and sustainable management are the main focus in geotourism development efforts. Public facilities play an important role in supporting geotourism, as seen in the Toba Caldera Geopark, where facility improvements are needed to achieve significant impacts (N. Ginting et al., 2021). In the Ijen Geopark, the development of facilities and educational modules integrated with history can improve the quality of the tourist experience while supporting geosite preservation.

The proposed educational initiatives, including geotrails, geotourism activities, illustrated books, and information centers, are concrete steps to promote understanding of geological disasters and earth heritage (Ida Bagus Oka Agastya et al., 2024). Geotourism modules that focus on the historical aspects of the UGGp Ijen area will allow tourists to not only enjoy the natural beauty but also understand the historical and cultural context surrounding the geosite.

This approach is in line with the Sendai framework for disaster risk reduction, which emphasizes the importance of public education and awareness in dealing with geological disasters. By integrating historical aspects into the geotourism module, Ijen Geopark can enhance educational and conservation impacts while empowering local communities to play an active role in management and conservation.

Overall, the development of a Geotourism Module that incorporates historical aspects in the Ijen Geopark has the potential to strengthen sustainable management and conservation, enhance educational tourism experiences, and support local community empowerment through better education and promotion.

Research Methodology

This study uses a qualitative method with a thematic data analysis approach to gain an in-depth understanding of the development of the Geotourism Module that focuses on the historical aspects of the UNESCO Global Geopark (UGGp) Ijen Banyuwangi area. The research location in the UGGp Ijen area involved subjects such as local communities, tourism managers, tourists, and historians and geologists. Data were collected through in-depth interviews, participant observation, and documentation to understand how historical aspects are integrated into geotourism (Creswell, 2014). Data analysis was carried out through transcription, coding, theme identification, grouping, and data triangulation to ensure validity and reliability. This study also ensures research ethics by obtaining participant consent and maintaining data confidentiality (Boden et al., 2019). The expected results are an in-depth understanding of the integration of historical aspects into the Geotourism Module as well as practical recommendations for the development

of sustainable and history-based geotourism, which can also contribute to local community empowerment and conservation of the UGGp Ijen area.

Context And Participants

The development of the Geotourism Module that focuses on historical aspects in the UNESCO Global Geopark (UGGp) Ijen Banyuwangi area, involving various key parties is important to ensure the success and sustainability of the initiative. The following is the division of roles from key informants, principals, and supporters:

1. **Key Informants: Banyuwangi Local Government:** This party plays a central role in policy making and overseeing the development of the Geotourism Module. They are responsible for establishing regulations that support site preservation, providing budgets, and ensuring program integration with regional development strategies. Interviews with officials from the Department of Tourism and Culture and Bappeda will provide insight into the government's vision and policies regarding geotourism development and cultural and historical preservation.
2. **Key Informants: Tourist Visitors:** Visitors are an important source of information about the attractions and their experiences related to the historical and geological aspects of the UGGp Ijen area. Feedback from tourists on how the module enhances their understanding of the rich geology and history, as well as the educational experiences they gain, will help in adjusting and improving the module. Interviews or surveys with visitors can reveal their views on the added value of this geotourism program.
3. **Supporting Informants: Local Community of Banyuwangi:** Local communities, including small business owners, tour guides, and community members, are key supporters in the implementation of the geotourism module. Their involvement is crucial in the management and presentation of the historical and geological aspects of the area. They can also provide input on how the module affects their daily lives and the economic impacts they experience. Interviews with community leaders and local tourism operators will provide perspectives on the challenges and opportunities in integrating this module into the local context.

Collecting information from these three groups will provide a comprehensive picture of the effectiveness and impact of the development of the Geotourism Module at UGGp Ijen Banyuwangi, as well as help formulate better strategies for conservation and sustainable management.

Data Collection And Analysis

The management of UNESCO Global Geopark (UGGp) Ijen in Banyuwangi through pentahelix collaboration involving government, academics, business, communities, and media is very important to maintain the balance between conservation and community empowerment. One effort to support this goal is to develop a geotourism module that focuses on historical aspects in the area. Qualitative approaches, especially through in-depth interviews, can play an important role in ensuring that this module is not only relevant but also responsive to the needs and expectations of various stakeholders.

1. **In-depth Interviews:** To gain a deeper understanding of the needs and expectations of the geotourism module, in-depth interviews were conducted with key informants, such as local government, tourist visitors, and local communities. Participation in these interviews began with an explanation of the purpose of the study and the distribution of a consent letter to ensure that their participation was voluntary and that the information provided would be kept confidential. These semi-structured interviews allowed the researcher to explore the reasons behind the selection of the geotourism module, the expected benefits, and the values and desired impacts of the module's implementation.
2. **Analysis Approach:** During the interviews, participants were also encouraged to share relevant documentation, such as photographs, that illustrated historical and geological aspects of the UGGp Ijen area. Data obtained from these interviews, which typically lasted between 45 and 60 minutes and were audio recorded, were transcribed and analyzed using thematic analysis. This analysis aimed to identify key themes from the collected data, such as similarities and differences in participants' experiences and perceptions of geotourism in the area.

3. **Thematic Application:** With thematic analysis, researchers can evaluate participant responses and find emerging themes, such as the need to improve historical understanding, challenges in conservation, and expectations for the positive impacts of the geotourism module. These findings will be the basis for developing a geotourism module that is not only interesting and educational, but also in line with the goals of sustainable management and conservation at UGGp Ijen. This approach also allows researchers to design modules that are responsive to local needs and support pentahelix collaboration in area management.

Thus, the development of a history-based geotourism module at UGGp Ijen involving a qualitative approach through in-depth interviews can ensure that this module is relevant, educative, and contributes to conservation efforts and empowerment of local communities.

Data Analysis

The Geotourism module that focuses on the historical aspects of the UNESCO Global Geopark (UGGp) Ijen Banyuwangi area can be analyzed through an in-depth qualitative research approach, referring to the thematic analysis methodology detailed by Braun and Clarke (2006). This process involves several steps that are essential to understanding how this module can be developed effectively by utilizing data from various sources.

1. **Data Selection and Socialization:** In the initial phase, relevant data including textual responses, speech, gestures, and images were collected. These responses came from interviews with key informants, tourists, and local communities. These data were then transcribed into written descriptions, which included both spoken and visual texts. Data socialization was conducted by re-reading the data collection to understand the participants' responses in the context and their experiences related to the historical aspects of UGGp Ijen.
2. **Coding and Theme Search:** The next step is coding, where broad codes are developed to identify patterns in the data. This process focuses on highlighting the development of codes that create key patterns related to the history and cultural aspects of the geotourism module. Once codes are developed, themes are searched for among the codes to interpret the patterns emerging in the data. For example, themes might include challenges in integrating historical aspects into the tourism experience or successes in engaging local communities.
3. **Review and Validation of Themes:** Once the key themes have been identified, the next step is to critically review the themes to ensure that the themes identified are significantly reflected in the data and are consistent with the research questions. To address bias and increase the trustworthiness of the analysis, the researcher conducted independent coding and compared the results. The researcher acted as an independent reviewer, discussing contextual issues with fellow researchers to reach consensus. This ensured validity and reliability in the thematic analysis.
4. **Theme Unpacking:** Finally, the identified themes were unpacked and named according to the research findings. This process defines and organizes the themes to be associated with the development of the geotourism module, thus ensuring that the module is not only educational but also meets the needs and expectations of the local community and visitors.

By following these thematic analysis steps, a geotourism module focusing on the historical aspects of UGGp Ijen can be developed to provide in-depth and relevant insights, and support the preservation of local history and culture while managing visitors and conservation sustainably.

Findings

The Geotourism module that focuses on the historical aspects of the UNESCO Global Geopark (UGGp) Ijen Banyuwangi area involves several important factors that play a role in learning and developing geopark-based tourism. Here are five main factors:

1. Geological and Historical Wealth:

The UGGp Ijen area is a site that has extraordinary geological richness, including volcanic formations, crater systems, and unique mineral deposits. The geology of this area not only forms a stunning

landscape but also has significant historical value. For example, volcanic activity in Ijen has affected the lives of local communities for a long time, including the use of sulfur in various traditional industries.

“The UGGp Ijen area is not only known for its stunning volcanic formations and unique crater system, but also for its historical impact on the surrounding community, especially through the use of sulfur in traditional industries.” (Deni, July 3, 2024)

The UGGp Ijen area is famous not only for its stunning volcanic formations and unique crater system, but also for its significant historical impact on the surrounding community through the use of sulfur in traditional industries. The geology of the area, with its abundant sulfur mineral deposits, has shaped not only the stunning landscape but also the social and economic life of the local community for a long time.



Figure a. Researcher Observations at the Kawitan Site

This geological richness provides an important historical context for the Geotourism Module, which links geological phenomena to the cultural and historical development of the community. The module aims to reveal how long-standing volcanic activity and sulfur mining have influenced the social and economic structure of the local community, enriching the educational experience and visitors' understanding of the relationship between geology and local history.

“The rich geology of the Ijen area, including significant sulfur mineral deposits, has shaped the landscape and the social and economic life of local communities for a long time, providing an important historical context for the Geotourism Module.” (Suroso, July 3, 2024)

The rich geology of the Ijen area, with its significant sulfur mineral deposits, has played a crucial role in shaping the landscape and the social and economic life of the local community for a long time, providing an important historical context for the Geotourism Module. The Geotourism Module, which integrates historical aspects, focuses on how geological phenomena, especially volcanic activity at Ijen, have influenced the development of local culture.



Figure b. Interview with the Caretaker of the Kawitan Site

By highlighting the long-term impacts of sulfur mining, this module reveals not only how geology has shaped the physical and economic aspects of the area, but also how this activity has influenced the social and cultural structures of the local community. This allows visitors to gain a deeper understanding of the relationship between geology and history, and how this interaction has shaped the identities and daily lives of the people around the Ijen Geopark.

"The Geotourism module that integrates historical aspects focuses on how geological phenomena such as volcanic activity in Ijen have influenced the development of local culture, including the long-term impact of sulfur mining on people's lives." (Suroso, July 5, 2024)

The Geotourism module that connects Ijen geology with local culture shows the relevance between history and geology. This module highlights the impact of volcanic activity on the economy and society of the community, especially through sulfur mining, which plays an important role in shaping local life. The integration of history and geotourism provides a more holistic understanding of the relationship between natural phenomena and cultural development in the Ijen Area. Thus, this module not only presents the geological aspects but also historical narratives that enrich the tourist experience.

"The importance of the module that combines history with geotourism lies in its ability to link the geological richness of the Ijen Area with relevant historical narratives, showing how volcanic activity has shaped and influenced the economy and social structure of the local community." (Slamet, July 7, 2024)

The Geotourism module that integrates historical aspects focuses on how geological phenomena, such as volcanic activity in Ijen, have influenced the development of local culture, including the long-term impact of sulfur mining on community life, is essential in providing in-depth insights to visitors. The importance of this module lies in its ability to link the geological richness of the Ijen Area with relevant historical narratives, showing how volcanic activity and sulfur mining have not only shaped the physical landscape but also influenced the economy and social structure of the local community. By combining history with geotourism, this module provides a comprehensive context on how geology has played a role in cultural and social development, and how the interaction between geology and history shapes the identity and daily life of the community around the Ijen Geopark.

"The development of a Geotourism Module that takes into account the historical aspects of the UGGp Ijen area aims to convey information about the impact of geology on people's lives, including how sulfur mining since colonial times has played a role in shaping the local economy and culture." (Mahmud, July 10, 2024)

Based on the informants above, it can be explained the relationship between the geology of the UGGp Ijen Area and historical aspects, and how this information can be integrated into the Geotourism Module to provide deeper insight to tourists and the community about the historical and cultural value of geological phenomena in the area. The Geotourism Module that combines historical aspects attempts to link this geological wealth with relevant historical narratives. This involves conveying information about how geological phenomena affect the development of local culture and history. For example, how sulfur mining that has been carried out since colonial times affects the economy and social life of the surrounding community.

Environmental Education and Awareness

By integrating the richness of geology and history into the geotourism module, visitors learn not only about geological processes but also about how humans have interacted with their environment throughout history. This can increase environmental awareness by showing the long-term impact of human activities on the environment and the importance of preserving geology.

"The geotourism module that combines the richness of geology and historical aspects offers more than just an understanding of geological processes; it also opens a window into how humans have interacted with and influenced their environment throughout time. It helps visitors understand the long-term impacts of human activities, raising awareness of the importance of geological preservation." (Mahmud, July 10, 2024)

The geotourism module, which combines rich geology and historical aspects, offers more than just an understanding of geological processes; it also opens a window into how humans have interacted with and influenced their environment over time. By bringing together elements of geology and history, the module not only provides information about natural phenomena, but also shows how human actions have shaped and changed the environment over time. This approach helps visitors understand the long-term impact of human activities on the environment, and effectively raises awareness of the importance of maintaining ecological balance and protecting our geological heritage. In this way, the geotourism module serves as an educational tool that enriches knowledge while encouraging commitment to environmental conservation.

"By combining geological and historical elements in a geotourism module, we not only provide information about natural phenomena, but also show how human actions have shaped and changed the environment over time. This is an effective way to raise awareness of the importance of maintaining ecological balance and protecting our geological heritage." (Maya, July 11, 2024)

By integrating geological and historical elements in the geotourism module, we not only provide information about natural phenomena, but also show how human actions have shaped and changed the environment over time. The integration of geological richness with historical narratives provides a holistic perspective on human interaction with their environment, enriching the understanding of geological processes while highlighting the long-term impacts of human activities. This approach is an effective way to raise awareness of the importance of maintaining ecological balance and protecting our geological heritage, encouraging visitors to have a greater appreciation and commitment to environmental conservation.

"The integration of geological richness and historical narratives in the geotourism module provides a holistic perspective on human interaction with their environment. This approach not only enriches the understanding of geological processes, but also highlights the long-term impacts of human activities, encouraging visitors to have greater appreciation and commitment to environmental conservation." (Reni, July 8, 2024)

Based on the above information statement states that the integration of geological richness and historical narratives in the geotourism module offers a comprehensive perspective on the relationship between humans and their environment. By combining geological and historical aspects, this module not only deepens visitors' understanding of geological phenomena, but also reveals the long-term impacts of human activities on the environment. This approach serves to increase awareness and appreciation of the importance of environmental conservation, encouraging visitors to be more committed to the protection and sustainability of geological heritage.

Local Community Empowerment

The module also plays a role in empowering local communities by involving them in the delivery of information and content creation. Local communities often have deep knowledge of the history and local use of geological resources. By involving them in the development of the module, they can play an active role in promoting the rich history and geology of their area.

"This module provides a fantastic opportunity for local communities to share their deep knowledge of the history and local use of geological resources. By involving them in content creation, we not only value their knowledge, but also strengthen their role as custodians of the geological and historical heritage of their region." (Solikin, July 22, 2024)

This module provides an excellent opportunity for local communities to share their deep knowledge of the history and local use of geological resources, which not only values their expertise but also strengthens their role as custodians of the geological and historical heritage of their region. By involving them in content creation, local communities act not only as observers, but also as key actors in promoting the rich history and geology of their region. This is an important step in empowering them,

recognizing their contributions, and giving them a voice in the narrative that connects the past to the future, creating a dialogue that enriches and preserves cultural and geological heritage.

"Through this module, local communities become not only observers, but also key actors in promoting the rich history and geology of their region. This is an important step in empowering them, recognizing their expertise, and giving them a voice in the narrative that connects the past with the future front." (Badrun, July 7 2024)

Through this module, local communities become not only observers, but also key actors in promoting the historical and geological richness of their area, which is an important step to empower them, recognize their expertise, and give them a voice in the narrative that connects the past to the future. Involving them in the development of the module gives them a platform to express their knowledge and experiences of geological resources, which not only enriches the module with authentic perspectives but also gives the community a sense of ownership and pride in preserving and promoting their historical richness. This approach creates a bridge between local communities and visitors, emphasizing the importance of local contributions in geological conservation and education.

"By involving local communities in the development of the module, we provide them with a platform to express their knowledge and experiences of geological resources. This not only enriches the module with authentic perspectives but also gives the community a sense of ownership and pride in preserving and promoting their rich history." (Hartoyo, July 25, 2024)

Based on the informant's statement, it was stated that involving local communities in the development of the geotourism module gave them the opportunity to share their knowledge and experiences about geological resources. This approach not only enriched the module with authentic perspectives, but also increased the sense of ownership and pride of the community towards the preservation and promotion of their historical and geological wealth. Thus, the involvement of local communities strengthened the educational and conservative value of the module while strengthening the relationship between the community and their cultural heritage.

Conservation and Sustainable Management

In terms of conservation, the geotourism module that focuses on historical aspects can help educate visitors about the importance of preserving geological and historical sites. By presenting in-depth and contextual information, visitors are expected to be more aware of the importance of conservation and sustainable management of the UGGp Ijen area.

"The geotourism module that integrates historical aspects not only provides knowledge about geology, but also teaches visitors about their responsibilities in preserving valuable sites. With in-depth and contextual information, visitors can develop a greater awareness of the importance of conservation and sustainable management in the UGGp Ijen area." (Slamet, July 22, 2024)

Geotourism modules that integrate historical aspects not only provide knowledge about geology, but also teach visitors about their responsibilities in preserving valuable sites, as well as developing greater awareness of the importance of conservation and sustainable management in the UGGp Ijen area.



Figure c. Researcher Observations in the Sadengan Savanna

By combining history and geology, this module helps visitors understand the deep connection between geological and historical heritage and its impact on the environment, motivating them to better appreciate and contribute to conservation efforts. This approach not only enriches the tourist experience but also emphasizes the importance of maintaining the integrity of the Ijen UGGp area for future generations, making it an integral part of conservation and environmental education efforts.

"By integrating history and geology in the geotourism module, we help visitors understand the deep connection between geological and historical heritage, and its impact on the environment. This motivates them to better appreciate and contribute to conservation efforts, raising awareness of the importance of maintaining the integrity of the UGGp Ijen area for future generations." (Sugiono, July 20, 2024)

By integrating history and geology in the geotourism module, we not only help visitors understand the deep connection between geological and historical heritage and its impact on the environment, but also motivate them to better appreciate and contribute to the preservation efforts of the UGGp Ijen area for future generations. The module offers more than just geological information; it creates a narrative that connects history with conservation, educating visitors about the historical and geological value of the area. In this way, visitors are encouraged to play an active role in conservation and sustainable management, making them future guardians of this valuable heritage and strengthening their commitment to environmental preservation.

"This module offers more than just geological information; it creates a narrative that connects history with conservation. By educating visitors about the historical and geological value of the UGGp Ijen area, we encourage them to play an active role in conservation and sustainable management, making them future guardians of this valuable heritage." (Burhan, July 24, 2024)

The Geotourism Module that combines the geological and historical richness of the UGGp Ijen Banyuwangi area serves as a bridge between geological science and historical understanding. With this approach, not only the geological richness is promoted, but also the historical narrative that provides a broader context of how the area has interacted with local communities over time. This supports environmental education, community empowerment, and sustainable conservation, while providing a richer and more informative tourism experience.

2. Environmental Education and Awareness

Geotourism module focusing on the historical aspects of UNESCO Global Geopark (UGGp) Ijen Banyuwangi plays an important role in environmental education and awareness. Ijen area, known for its rich geology and natural beauty, offers a unique opportunity to integrate history learning with environmental awareness through geotourism.

Environmental Education Through Geopark History

The Geotourism Module at UGGp Ijen combines elements of history with environmental learning to enhance visitors' understanding of the relationship between human activity and the geological environment. By highlighting the geological history of the area—including crater formation, volcanic activity, and its impact on local communities—the module serves as an effective educational tool. Through the historical narrative presented in the module, visitors learn about how geological changes can affect ecosystems and human life, as well as the importance of conservation and management of natural resources.

"The Geotourism Module at UGGp Ijen provides an in-depth perspective by combining elements of history and environmental learning, but the challenge lies in how to effectively integrate these two aspects so that the information delivered remains accurate and relevant to visitors from various backgrounds." (Suryanto, July 20, 2024)

The Geotourism Module at UGGp Ijen offers an in-depth perspective by combining elements of history and environmental learning, but the main challenge is ensuring that the integration of these two aspects is carried out effectively so that the information conveyed remains accurate and relevant to visitors from various backgrounds. While the module serves as an effective educational tool by highlighting the geological history and its impact on local communities, there needs to be ongoing evaluation to ensure that the historical narrative conveyed is not only scientifically accurate but also easily understood by visitors who may not have a scientific background. This is important so that the module not only enriches visitors' understanding of the relationship between human activity and the geological environment, but also ensures that the information is accessible and appreciated by a wider audience.

"While the module serves as an effective educational tool by highlighting the geological history and its impact on local communities, there needs to be ongoing evaluation to ensure that the historical narrative conveyed is not only accurate but also easy to understand for visitors who may not have a scientific background." (Roni, July 24, 2024)

This module serves as an effective educational tool by highlighting geological history and its impact on local communities, but it is important to conduct ongoing evaluation to ensure that the historical narrative conveyed is not only accurate but also easily understood by visitors who may not have a scientific background.



Figure c. Researcher Observations in the Osing Kemiren Traditional Village

Using historical narratives to explain the relationship between geological change and human life is a significant step, but the success of this approach depends largely on the module's ability to clearly explain the importance of conservation and natural resource management. The module must be able to connect the complex historical and geological contexts in a way that is accessible to visitors, so that they can understand and appreciate the contribution of conservation to the preservation of natural and cultural heritage.

"Using historical narratives in the module to explain the relationship between geological change and human life is a significant step, however, the success of this approach depends largely on the module's ability to

make visitors clearly understand the importance of conservation and management of natural resources in a complex historical and geological context." (Agus, July 14, 2024)

The conclusion of this statement is that while integrating historical narratives into geotourism modules to explain the relationship between geological change and human life is an important step, the success of this approach depends largely on the module's ability to present information in a clear and understandable manner. To achieve this goal, the module must be able to effectively connect the complex historical and geological context with important messages about conservation and natural resource management, so that visitors can understand and appreciate the long-term impacts of human activity on the environment.

Raising Environmental Awareness

This module also plays a role in increasing environmental awareness by emphasizing the relationship between geological history and current environmental conditions. Geotourism education at UGGp Ijen covers topics such as climate change, the impact of human activities on the geological environment, and the importance of preserving natural areas. By providing insight into how historical and geological changes can affect the environment, this module helps visitors understand their responsibilities in environmental conservation efforts.

"While the module does provide valuable insights into how geological history has affected the environment, the question is how well is this information conveyed to visitors who may not have a scientific background? There is a risk that they may not fully understand the impacts of human activity and climate change that are described." (Yahya, July 25, 2024)

In ensuring that the geotourism modules at UGGp Ijen not only provide valuable insights into the relationship between geological history and the environment but also effectively convey the information to visitors from diverse backgrounds, several solution steps need to be taken. First, it is important to simplify the explanation of the impacts of human activities and climate change by using easy-to-understand language and relevant examples, and integrating visual elements such as infographics and interactive maps. Second, adopting interactive learning approaches, such as guided tours or simulations, can help bridge the gap between theory and practice, so that visitors can more easily relate geological information to real-world applications in environmental conservation. Finally, feedback from visitors should be collected periodically to assess their understanding and adjust the module materials as needed, ensuring that messages about natural area conservation are delivered in an engaging and effective manner.

"The geotourism module is great at highlighting the importance of preserving natural areas, but how effective is it in bridging the gap between theory and practice? Information about geological change and its impact on the environment can be very complex, and the challenge is to make it relevant and easy to understand for all visitors." (Bambang, July 20, 2024)

In order to improve the effectiveness of geotourism modules in bridging the gap between theory and practice and motivating visitors to contribute to environmental conservation, several solutions can be applied. First, the modules need to simplify complex information about geological changes and their impacts by using easy-to-understand approaches, such as real-life case studies, visual diagrams, and interactive activities that are relevant to visitors' daily experiences. Second, it is important to integrate direct action elements into the modules, such as participatory programs that allow visitors to engage in conservation activities during their visit, for example, through volunteer programs or environmental monitoring projects. Third, providing channels for visitors' feedback and reflection on their experiences and how they can apply the knowledge gained in their daily lives will help measure the impact of the modules on behavioral change. With this approach, the modules not only educate about the importance of conservation but also encourage real actions that can strengthen visitors' contributions to environmental conservation.

"Linking geological history to current environmental conditions in this module is a step forward, but to what extent does this module influence visitors' actual actions in terms of conservation? Educating about

the impacts of human activity and climate change is important, but we need to see how this encourages visitors to actively contribute to environmental conservation." (Brodi, July 20, 2024)

Geotourism modules should be optimized to not only provide in-depth information about geological history and environmental impacts, but also to encourage concrete actions in conservation. The solution involves two main steps: first, the modules should simplify and communicate complex information in a more understandable and relevant way, such as using visualizations, case studies, and interactive activities. Second, it is important to integrate participatory elements that encourage visitors to get directly involved in conservation activities, such as volunteer programs or community projects. In this way, the modules will be more effective in not only educating but also motivating visitors to actively contribute to environmental conservation efforts.

Educational Strategy in Geotourism Module

Educational strategies in the Geotourism Module involve the use of a variety of learning methods, including informed guided tours, multimedia educational materials, and interactive activities that focus on historical and environmental aspects. For example, interactive maps and augmented reality (AR)-based applications can be used to illustrate geological changes over time and their impact on the local environment. In addition, the module can include training programs for local tour guides so that they can convey historical and environmental information in an engaging and educational manner.

"While the use of technology such as interactive maps and AR applications in the Geotourism Module offers an innovative way to convey geological and historical information, the challenge is to ensure that these technologies are truly accessible and understandable to all visitors. There is a risk that some visitors may not be able to utilize these features effectively, thereby wasting their educational potential." (Hendi, July 12, 2024)

In addressing the challenges related to the use of technology such as interactive maps and AR applications in the Geotourism Module, as well as ensuring the effectiveness of local tour guide training programs, a comprehensive approach is needed. One solution is to develop tour guide training that focuses not only on technical aspects, but also on inclusive and adaptive communication skills.



Figure d. Researcher's Observation in Osing Kemiren Traditional Village

In addition, the technology used in the module should be designed with a user-friendly interface and provide alternative options for visitors who may have difficulty using advanced features. By combining intensive training for guides and ensuring the accessibility of the technology, we can increase the educational potential of the module and ensure that geological and historical information is effectively conveyed to all visitors, without excluding anyone.

"While training programs for local tour guides aim to improve the quality of delivery of historical and environmental information, it is possible that the training does not cover all the skills needed to adapt to the diverse backgrounds of visitors. Without a truly inclusive approach, the information delivered may not always be effectively received by diverse audiences." (Slamet, July 7, 2024)

InTo ensure the effectiveness of local tour guide training programs, training should be expanded to include broader and more adaptive communication skills. This includes training in information delivery techniques that can be tailored to different visitor backgrounds as well as skills in handling audience-specific questions and needs. With a more inclusive training approach, tour guides will be better able to convey information effectively to all visitors, increasing their understanding and engagement in the geotourism experience.

Impact on Local Communities

Environmental education and awareness built through this module not only benefits visitors but also has a positive impact on the local community. By involving the community in the development and implementation of the module, the local community can increase their knowledge about the importance of environmental conservation and local history. This also opens up opportunities for economic empowerment through sustainable educational tourism. The local community can act as tour guides, educators, and implementers of conservation programs, which in turn strengthens their involvement in the preservation of the UGGp Ijen area.

"Involving local communities in the development and implementation of these environmental education modules is a very positive step. In addition to opening up opportunities for economic empowerment, such as becoming tour guides and educators, this approach also creates a strong sense of ownership of environmental conservation. I believe that when local communities feel involved and empowered, they are more likely to commit to the conservation and management efforts of the Ijen UGGp area, which will ultimately strengthen overall conservation efforts." (Parmadi, July 12, 2024)

Integrating local communities in the development and implementation of environmental education modules is a very positive and solution-oriented strategy. By involving them as tour guides and educators, we not only open up sustainable economic opportunities but also build a deep sense of ownership of environmental conservation efforts. This approach strengthens the relationship between the community and the UGGp Ijen area, and builds important local identity and pride. When communities feel involved and empowered, they are more likely to commit to environmental conservation, which in turn strengthens conservation efforts and increases long-term success. Seeing the direct involvement of the community in conservation provides hope that future conservation efforts will be more sustainable and successful, making this educational module an important step towards more effective environmental management.

"I really appreciate the approach of involving local communities in this environmental education and awareness module. By giving them an active role as tour guides and educators, we are not only promoting environmental conservation but also creating sustainable economic opportunities. This not only strengthens the relationship between the community and the UGGp Ijen area, but also builds local identity and pride. Seeing local communities directly involved in preserving their own environment gives hope that the future of conservation will be more sustainable and successful." (Reihan, July 15, 2024)

PThis approach of actively involving local communities in environmental education and awareness modules is a strategic step that has double benefits. By giving them the role of tour guides and educators, we not only encourage environmental conservation but also create sustainable economic opportunities. This approach strengthens the community's relationship with the UGGp Ijen area and builds local identity and pride. The direct involvement of communities in the preservation of their own environment not only motivates a stronger commitment to environmental management but also increases the likelihood of long-term success in conservation, making it an effective model for more sustainable environmental management.

Recommendations and Future Developments

Optimizing the impact of the Geotourism Module, it is important to continuously update and adapt the educational content to the latest developments in geological and environmental sciences. Further research and collaboration with geologists, environmental educators, and geopark managers can help identify new

trends and effective educational techniques. In addition, the integration of feedback from visitors and local communities can increase the relevance and effectiveness of the module.

"Optimizing the impact of the Geotourism Module depends largely on how well we can adapt to the latest advances in geological and environmental sciences. Regular updates and adjustments to the educational content in line with the latest developments are key to maintaining the relevance and effectiveness of the module. I believe that close collaboration with geologists and environmental educators will go a long way in ensuring that the module is not only informative but also meets the needs of visitors and local communities. Integration of their feedback is also crucial to refine the material and enhance the overall learning experience." (Hendri, July 12, 2024)

In optimizing the impact of the Geotourism Module, it is important to continuously update and adapt the educational content to the latest advances in geological and environmental sciences. A dynamic and ongoing approach to updating the material is key to ensuring that the module remains relevant and effective. Close collaboration with geologists, environmental educators, and geopark managers is essential in identifying the latest trends and innovative educational techniques. In addition, the integration of feedback from visitors and local communities can improve the quality and relevance of the module, making it more tailored to their needs and interests. Thus, this approach not only strengthens the effectiveness of the module in geotourism education but also supports the preservation and sustainable management of geoparks.

"Keeping the Geotourism Module relevant and effective requires a dynamic approach and continuous updating of educational content. I greatly appreciate the efforts to conduct further research and work with geologists and geopark managers to identify innovative educational techniques. Listening to and implementing feedback from visitors and local communities not only improves the quality of the module but also ensures that the information delivered remains fresh and directly relevant to their needs and interests. This is a great way to ensure that the module remains a valuable tool in geotourism education and preservation." (Marwan, July 28, 2024)

Overall, the Geotourism Module that focuses on historical aspects in the UGGp Ijen Banyuwangi area has great potential to educate visitors and the community about the importance of environmental conservation and understanding the relationship between geological history and current environmental conditions. Through a holistic and participatory approach, this module can contribute to more effective conservation efforts and empowerment of local communities.

3. Empowerment of Local Communities

Geotourism module that focuses on the historical aspects of the UNESCO Global Geopark (UGGp) Ijen Banyuwangi area plays an important role in empowering local communities. In this context, the geotourism module not only functions as an educational tool and promotion of the geological history of the area, but also as a means to empower local communities through various mutually beneficial ways.

Improving Local Skills and Knowledge

The Geotourism Module provides training and education to local communities on the historical and geological value of the UGGp Ijen area. The program can include workshops and courses on how to present the history and geological richness to tourists. The knowledge gained enhances the community's storytelling and tourist guiding skills, which in turn strengthens their capacity to engage in the tourism industry professionally.

"I really appreciate the Geotourism Module initiative that provides training and education to local communities about the historical and geological value of the UGGp Ijen area. Programs such as workshops and courses not only teach how to present information effectively to tourists, but also equip communities with important storytelling skills. This directly enhances their ability to engage in the tourism industry more professionally, while strengthening their connection to the local wealth they represent." (Ferdi, July 10, 2024)

The Geotourism Module initiative that provides training and education to local communities on the history and geology of the UGGp Ijen area is invaluable. This program, through workshops and courses, not only teaches effective ways to convey information to tourists but also equips the community with storytelling and tourist guiding skills.



Figure e. Researcher's Observation at TMP Wisma Raga Satria Laut

This approach directly enhances their capacity to play a more professional role in the tourism industry while strengthening their connection to the local wealth they represent. In this way, the module not only expands the community's professional skills but also fosters a sense of pride and ownership of their local heritage, ultimately strengthening their contribution to advancing sustainable tourism in the region.

"The Geotourism module that offers training to local communities on the history and geology of UGGp Ijen is very valuable. I believe that through workshops and courses, communities will not only learn effective ways to convey the richness of geology to tourists, but also improve their skills in guiding tourists. This will not only strengthen their capacity to play a role in the tourism industry but also foster a sense of pride and ownership of their local heritage." (Mardi, July 14, 2024)

The training offered through workshops and courses on the history and geology of UGGp Ijen is invaluable to the local community. The program not only teaches effective ways to convey the richness of geology to tourists but also enhances their skills in guiding tourists professionally. In doing so, the module strengthens the capacity of the community to play a role in the tourism industry and fosters a sense of pride and ownership of their local heritage. This helps ensure that local communities can contribute significantly to sustainable tourism and cultural heritage preservation.

Creation of Economic Opportunities

Integration of historical aspects in the geotourism module, local communities have the opportunity to develop tourism-based businesses, such as providing tour guide services, making historical souvenirs, and developing local products related to the stories and history of the UGGp Ijen area. Income from the tourism sector can significantly increase the local economy.

"The integration of historical aspects into the geotourism module provides an extraordinary opportunity for local communities to develop various tourism-based businesses. With the opportunity to provide tour guide services, create historical souvenirs, and develop local products, the community can utilize the rich history of the UGGp Ijen area effectively. I believe that this step will not only enrich the tourist experience but can also significantly improve the local economy, providing sustainable economic benefits to the community." (Yeni, July 14, 2024)

Integration of historical aspects into the geotourism module opens up extraordinary opportunities for local communities to develop tourism-based businesses, such as tour guide services, making historical souvenirs, and developing local products related to the stories and history of the UGGp Ijen area. This step

not only enriches the tourist experience but also has great potential to significantly improve the local economy.



Figure f. Researcher's Observation at TMP Wisma Raga Satria Laut

By effectively utilizing historical riches, communities can create sustainable economic benefits, while strengthening cultural identity and improving the well-being of the community as a whole. This is a very enthusiastic strategy to optimize the economic potential of the tourism sector and provide a broad positive impact on local communities.

"Seeing how historical aspects are integrated into the geotourism module, I feel very enthusiastic about the potential for developing tourism businesses by local communities. The opportunity to provide tour guide services, create souvenirs that depict history, and create local products based on historical stories of the UGGp Ijen area, is a strategic step to optimize the economic potential of the tourism sector. This can not only increase local income but also strengthen cultural identity and improve the welfare of the community as a whole." (Subhan, July 15, 2024)

The integration of historical aspects into the geotourism module is that it opens up strategic opportunities for local communities to develop various tourism businesses. By providing tour guide services, making historical souvenirs, and creating local products based on historical stories of the UGGp Ijen area, the community can not only optimize the economic potential of the tourism sector but also strengthen cultural identity and improve community welfare. This step has great potential to significantly increase local income and provide sustainable positive impacts for the community.

Strengthening Cultural and Historical Identity

The Geotourism module helps local communities celebrate and preserve their cultural and historical identity. With a focus on historical aspects, communities are given a platform to share local stories and heritage that may have previously been less known. This not only strengthens the sense of pride and cultural identity among locals but also increases their awareness of preserving their historical heritage.

"The Geotourism module makes a great contribution in celebrating and preserving the cultural identity of local communities by highlighting their historical aspects. I really appreciate how this program gives communities a platform to share local stories and heritage that may have previously been less known. This not only strengthens their sense of pride and cultural identity, but also encourages a deeper concern for the preservation of their historical heritage, making them more connected to their past." (Yanto, July 18, 2024)

The Geotourism module makes a significant contribution to celebrating and preserving the cultural identity of local communities by highlighting aspects of their history, providing a platform for communities to share local stories and heritage that may have previously been less known. This program not only strengthens the sense of pride and cultural identity among local residents, but also increases their awareness of the preservation of their historical heritage. By providing opportunities for communities to

share stories and heritage that may have been forgotten, the module supports them to be more active in preserving and celebrating their cultural richness, as well as connecting them more deeply with their past.

"I am very impressed with how the Geotourism Module supports local communities in celebrating and preserving their cultural identity and history. The focus on historical aspects gives communities the opportunity to express stories and heritage that may have been forgotten. This definitely strengthens their sense of pride and encourages them to care more about preserving historical heritage, making them more active in preserving and celebrating their cultural richness." (Sukanto, July 19, 2024)

The program effectively supports local communities in celebrating and preserving their cultural identity and history. With a focus on historical aspects, the module provides an opportunity for communities to share stories and heritage that may have been forgotten, which in turn strengthens their sense of pride and encourages greater awareness of heritage preservation. This makes communities more active in preserving and celebrating their cultural richness, providing a significant positive impact on preserving local cultural identity.

Environmental Conservation and Heritage Preservation

Empowering local communities through geotourism modules contributes to environmental conservation and preservation of geological heritage. Communities involved in geotourism programs tend to be more concerned about protecting geological and historical areas, as they are aware of the economic and cultural value of these heritages. These initiatives can include activities such as cleaning areas, monitoring tourism impacts, and educating about the importance of conservation.

"I really appreciate how empowering local communities through the geotourism module not only supports environmental conservation but also the preservation of geological heritage. When communities are directly involved in the program, they become more concerned about protecting geological and historical areas, thanks to their understanding of the economic and cultural value of these heritages. Initiatives such as cleaning the area and educating about the importance of conservation clearly strengthen their involvement in preserving the environment and local heritage." (Babun, August 4, 2024)

Empowering local communities through geotourism modules not only strengthens environmental conservation efforts but also ensures the preservation of geological heritage in a more sustainable manner. When communities are directly involved in activities such as area clean-up, monitoring tourism impacts, and educating about the importance of conservation, they become more aware of the economic and cultural value of the geological and historical heritage around them. This significantly increases their concern and commitment to protecting and preserving it. By understanding and experiencing the direct benefits of conservation efforts, local communities are increasingly motivated to actively participate in preserving and celebrating their environmental and cultural richness, which ultimately supports the long-term sustainability of the area.

"The empowerment of local communities through the geotourism module is a very positive step for environmental conservation and preservation of geological heritage. I am very impressed with how the involvement of the community in this program makes them more aware of the need to protect geological and historical areas, as they begin to appreciate the economic and cultural value of these heritages. Activities such as monitoring the impact of tourism and conservation counseling show how this initiative strengthens the community's commitment to preserving their environment and cultural heritage." (Yanto, August 12, 2024)

PEmpowering local communities through geotourism modules is an effective strategy in promoting environmental conservation and preserving geological heritage. By increasing community awareness of the economic and cultural value of local heritage, and involving them in activities such as monitoring tourism impacts and conservation outreach, their commitment to environmental and cultural protection is strengthened. This step not only helps to preserve geological and historical areas, but also ensures active community participation in long-term preservation efforts, which ultimately provides sustainable benefits to the environment and local communities.

Increasing Involvement in Decision Making

The Geotourism Module serves as a tool to involve local communities in decision-making processes related to tourism development and management. By involving communities in the planning and implementation of geotourism programs, they have a voice in decisions that affect their daily lives and the environment around them. This leads to more sustainable management that is in line with local needs and aspirations.

"I strongly believe that the Geotourism Module, by involving local communities in decision-making, gives them control over tourism development that directly affects their lives and environment. This is an effective way to ensure that tourism is managed with local needs and aspirations in mind, making it more sustainable and in line with the interests of the community." (Kunto, August 12, 2024)

By involving local communities in decision-making through the Geotourism Module, we not only give them control over tourism development that affects their lives and environment, but also create a more inclusive and responsible approach. When communities are given a voice in planning and implementation, they become more connected to the desired outcomes, ensuring that tourism management is carried out according to local needs and aspirations. This not only improves the sustainability of tourism, but also strengthens the empowerment of communities in creating solutions that are relevant and beneficial for their future.

"I feel that involving local communities in the planning and implementation of geotourism through this module is an important step towards more inclusive and responsible tourism management. By giving them a voice in the decision-making process, this module not only empowers communities but also helps create more relevant and sustainable solutions for the future." (Bagus, August 10, 2024)

Overall, the Geotourism Module that focuses on the historical aspects of the UGGp Ijen Banyuwangi area has great potential in empowering local communities, by improving skills, creating economic opportunities, strengthening cultural identity, supporting conservation, and involving communities in decision-making. Through this approach, sustainable tourism development can be achieved, providing long-term benefits to local communities and preserving the historical and geological richness of the area.

4. Educational Tourism Experience

The Geotourism module that focuses on the historical aspects of the UNESCO Global Geopark (UGGp) Ijen Banyuwangi area is designed to provide a tourism experience that is not only interesting but also educational. In this context, educational tourism experiences are key to increasing visitors' understanding and awareness of the geological and historical values of the area, while strengthening engagement and concern for the preservation of the local environment and culture.

Integration of History in Geotourism Module

This module integrates historical aspects in depth with narratives that describe the development of the UGGp Ijen area from prehistoric times to the present. Emphasis is placed on the history of geological formation, volcanic exploration, and the impact of human history on the landscape. Using interactive maps, digital reconstructions, and guided tours that emphasize local historical stories, this module allows visitors to experience and understand the geological and cultural evolution of the area comprehensively.

"I was very impressed with how this module integrates the history of the UGGp Ijen area, from prehistoric times to the present, in such depth. The narrative presented through interactive maps and digital reconstructions provides a very lively and comprehensive experience for visitors, allowing them to truly understand the geological and cultural evolution that has shaped this area." (Mahmud, August 12, 2024)

The combination of deep historical integration with interactive technology in this module is truly impressive. By presenting a narrative that covers the development of the UGGp Ijen area from prehistoric times to the present, this module offers a lively and comprehensive experience for visitors. The use of interactive maps and digital reconstructions not only enriches the visitor experience but also provides deep

insights into the geological evolution and the impact of human history on the landscape. This allows visitors to feel more connected to the stories that have shaped the area, making this module an effective tool for educating and increasing appreciation of the geological and cultural heritage that exists.

"This modular approach that combines historical aspects with interactive technology such as maps and guided tours is a brilliant move. It not only enriches the visitor experience, but also provides deep insight into the geological history and human impact on the UGGp Ijen landscape, making visitors feel more connected to the stories that have long shaped this area." (Yugito, August 13, 2024)

The innovative approach in this module, which combines historical aspects with interactive technology, provides an effective solution to enhance visitors' understanding and appreciation of UGGp Ijen. By enriching the visitor experience and providing in-depth insights into the geological history and human impacts, the module ensures that visitors not only enjoy their visit but also engage emotionally and intellectually with the heritage of the area. This is an important step in the development of more sustainable and meaningful tourism, which respects and preserves the stories and natural riches that exist.

Conservation and Sustainable Management

In order to ensure sustainability, this module emphasizes the importance of conservation and sustainable management of the UGGp Ijen area. Education about conservation practices, wise use of resources, and the environmental impacts of tourism activities is prioritized. Visitors are encouraged to participate in local conservation activities, such as tree planting programs and area cleanups, linking their educational experiences to practical actions that support the preservation of the area.

"I really appreciate how this module places conservation and sustainable management as a top priority, ensuring that every tourism activity supports the preservation of UGGp Ijen." (Bambang, August 10, 2024)

This module carefully places conservation and sustainable management as a top priority, ensuring that every tourism activity supports the preservation of UGGp Ijen. The in-depth educational approach, especially regarding conservation practices and wise use of resources, greatly inspires visitors to take real action in preserving the area's environment. Initiatives to involve visitors in conservation activities, such as tree planting and cleaning the area, not only enrich their experience but also make their contribution more meaningful and have a positive impact on the preservation of UGGp Ijen.

"The in-depth educational approach to conservation practices and wise use of resources truly inspires visitors to take real action in preserving the environment of the UGGp Ijen area." (Burhan, August 15, 2024)

The in-depth educational approach to conservation practices and wise use of resources in this module effectively inspires visitors to actively participate in preserving the UGGp Ijen environment. By providing in-depth insights into conservation, this module not only motivates visitors to understand the importance of conservation, but also encourages them to get directly involved in conservation activities such as tree planting and cleaning the area. These initiatives make the visitor experience more meaningful and have a real positive impact on the preservation of the area, ensuring that they directly contribute to the sustainability of the UGGp Ijen environment.

"I am impressed with the initiative of this module that invites visitors to be directly involved in conservation activities, such as planting trees and cleaning the area, making their experience at UGGp Ijen more meaningful and have a positive impact." (Slamet, August 23, 2024)

This module initiative that directly involves visitors in conservation activities such as tree planting and cleaning the area is a very effective step in strengthening their experience at UGGp Ijen. By inviting visitors to participate in conservation efforts, this module not only makes their experience more meaningful, but also ensures a real positive impact on the area's environment. This approach helps increase visitors' awareness and commitment to conservation, and supports the sustainability of the UGGp Ijen environment in a sustainable manner.

Evaluation and Improvement

Finally, regular evaluations are conducted to assess the effectiveness of the modules in achieving educational and conservation goals. Feedback from visitors, local communities, and geologists is used to continually refine and update the module content, ensuring that the tourism experience remains relevant and rewarding. The latest research and innovations in geotourism technology are integrated to improve the quality of the experience and advance understanding of the UGGp Ijen area.

"I really appreciate the commitment to regular evaluation of the module. The use of feedback from visitors and local communities, along with input from geologists, demonstrates a dedication to continually improving the quality of education and preservation. This ensures that the module remains relevant and able to meet its stated objectives." (Yeni, August 20, 2024)

Regular evaluation and use of feedback from visitors, local communities, and input from geologists are essential steps in improving the quality of the geotourism module. The commitment to continually update the module with the latest research and technological innovations demonstrates a deep dedication to education and preservation of the UGGp Ijen area. By continually refining the content based on various sources of feedback, the module not only enhances the tourist experience but also deepens our understanding of the area. These steps ensure that the module remains relevant and effective in achieving its stated goals, and makes a significant contribution to the development and preservation of geotourism.

"Regular evaluation and use of feedback from various sources demonstrate a serious effort to improve the geotourism module. By continuously updating the content based on the latest research and technological innovations, the module not only enhances the tourist experience but also significantly advances our understanding of the UGGp Ijen area." (Rahayu, August 21, 2024)

Regular evaluation and use of feedback from various sources, including visitors and local communities, demonstrates a serious effort to improve the geotourism module. By continually updating the content based on the latest research and integrating the latest technology, the module not only enhances the tourism experience but also significantly deepens our understanding of the UGGp Ijen area. This responsive and adaptive approach allows for continuous improvement in the tourism experience while supporting educational and conservation goals more effectively, making it a very impressive tool in advancing knowledge and protection of the area.

"It is impressive how regular evaluation and integration of the latest technology in this module allows for continuous improvement in the tourism experience. Using feedback from visitors and local communities to refine the content demonstrates a responsive and adaptive approach, ultimately supporting education and conservation goals more effectively." (Usman, August 20, 2024)

Regular evaluation and integration of the latest technology in the geotourism module effectively enhances the tourist experience and deepens understanding of the UGGp Ijen area. A responsive approach to feedback from visitors and local communities allows for continuous improvement of the content, supporting educational and conservation goals more effectively, and ensuring the module remains relevant and adaptive to the latest developments.

5. Conservation and Sustainable Management

The Geotourism Module focusing on the historical aspects of the UNESCO Global Geopark (UGGp) Ijen Banyuwangi area plays an important role in conservation and sustainable management. By integrating historical elements into geotourism offerings, the module not only enhances understanding of the historical and geological value of the area but also contributes to conservation and sustainable management efforts.

Preservation of Historical Sites

The historical aspect in the Geotourism Module helps to preserve and promote historical sites in the UGGp Ijen area. The emphasis on local history not only raises awareness of the importance of cultural heritage, but also helps to prevent damage that may be caused by poorly managed tourism activities. Through

informative historical narratives, tourists better understand historical values and become more motivated to support preservation efforts.

"In my opinion, the historical aspect in the Geotourism Module not only enriches the tourism experience with a deep dimension, but is also very important in preserving historical sites in the UGGp Ijen area. By emphasizing local cultural heritage, this module effectively raises awareness of historical value and proactively helps protect these sites from potential damage that could be caused by poorly managed tourism activities". (Bambang, August 14, 2024)

The historical aspect in the Geotourism Module not only adds depth to the tourism experience but also plays a crucial role in the preservation of historical sites in the UGGp Ijen area. With an emphasis on local cultural heritage, the module raises awareness of historical values, enriches tourists' understanding of the importance of historical sites, and directs attention to preservation efforts. This approach effectively prevents damage that may be caused by poorly managed tourism activities, thus ensuring that the sites are maintained and appreciated.

"In my opinion, although the Geotourism Module emphasizes local history in a way that enriches tourists' understanding of the importance of the cultural heritage of the UGGp Ijen area, there is a concern that the narrative may not sufficiently emphasize the impacts of irresponsible tourism. While the module seeks to strengthen appreciation for historical sites and draw attention to conservation efforts, its effectiveness in preventing damage depends on how well the information is translated into more responsible and sustainable tourism practices." (Burhan, August 10, 2024)

While the Geotourism module highlighting local history has successfully enriched tourists' understanding of the importance of cultural heritage in the UGGp Ijen area and built motivation to support the preservation of historical sites, there are concerns that the module may not adequately emphasize the negative impacts of irresponsible tourism. To ensure its effectiveness in protecting cultural heritage and maintaining the sustainability of the area, the information provided must be translated into more responsible and sustainable tourism practices. Without concrete actions from tourists based on this education, the module may not be enough to address the conservation challenges facing the area.

"In my opinion, although the Geotourism Module highlighting local historical aspects seems effective in building motivation for tourists to support the preservation of historical sites in UGGp Ijen, there are potential shortcomings in this approach. The module offers valuable information and education about historical values and the impacts of tourism activities, but its effectiveness in protecting cultural heritage and ensuring the sustainability of the area depends largely on how deeply and practically the motivation is translated into tourist behavior. Without concrete actions taken by visitors based on the information provided, this module may not be enough to address the conservation challenges facing the area." (Mahmud, August 13, 2024)

The Geotourism module that highlights local historical aspects can build motivation for tourists to support the preservation of historical sites in UGGp Ijen, its effectiveness in protecting cultural heritage and ensuring the sustainability of the area depends largely on how well the information is translated into responsible tourism practices. To address the conservation challenges faced, it is important that this module not only provides valuable education but also encourages concrete actions from visitors that can contribute to the preservation of the area.

Sustainable Management

Geotourism modules that integrate historical aspects should be designed with sustainable management principles in mind. This includes regulating visitor numbers, waste management, and wise use of resources. The historical information presented should take into account the environmental impacts of tourism activities and provide guidance on sustainable practices, such as reducing carbon footprints and protecting natural habitats.

"I think that while the Geotourism Module that integrates historical aspects is very important to enrich the tourist experience, its design should place more emphasis on the principles of sustainable management. The historical information presented should not only focus on cultural values, but also provide clear guidance on how to manage waste and resource use wisely, and reduce carbon footprints to protect the surrounding environment." (Kanto, August 19, 2024)

Geotourism modules that integrate historical aspects are essential to enrich the tourist experience, their design needs to emphasize more on sustainable management principles. These modules should not only focus on cultural values, but also provide clear guidance on waste management, wise use of resources, and carbon footprint reduction to protect the surrounding environment. In addition, it is important to include sustainable management principles in depth, such as regulating the number of visitors and protecting natural habitats. Without a strong emphasis on these aspects, although the historical information offered is valuable, preservation efforts may not be fully aligned with the intended environmental preservation goals.

"While the Geotourism Module offers valuable historical information, I feel that this approach needs to be improved by incorporating sustainable management principles in greater depth. The module should consider the environmental impacts of tourism activities and suggest sustainable practices such as regulating visitor numbers and protecting natural habitats. Without a strong emphasis on these aspects, conservation efforts may not be in line with environmental conservation goals." (Bambang, August 20, 2024)

While the Geotourism module provides valuable historical information, its approach still needs improvement by incorporating sustainable management principles more deeply. The module should clearly consider the environmental impacts of tourism activities and recommend sustainable practices, such as visitor numbers and natural habitat protection. Without a strong emphasis on these aspects, conservation efforts pursued through the module may not be effective enough to achieve the overall environmental conservation goals.

Collaboration and Stakeholder Engagement

The development of an effective Geotourism Module requires collaboration between various stakeholders, including local governments, conservation agencies, historians, and local communities. By working together, stakeholders can ensure that the module meets high conservation and management standards, and create a harmonious strategy between heritage preservation and tourism needs. The active involvement of all parties ensures that the geotourism program is not only sustainable but also adaptive to environmental changes and community needs.

"In my opinion, although the development of the Geotourism Module requires collaboration between various stakeholders such as local governments, conservation institutions, historians, and local communities, often these coordination challenges can lead to misalignments in priorities and objectives. Without strong synergy and deep understanding between all parties, although this module is designed to meet conservation standards, its implementation can be less effective in creating a balance between historical heritage preservation and tourism needs." (Yusron, August 13, 2024)

The development of the Geotourism Module requires collaboration between various stakeholders such as local governments, conservation agencies, historians, and local communities, challenges in coordination can often result in misalignment of priorities and objectives. The involvement of various parties is crucial to ensure sustainability and adaptation to environmental changes and community needs, but if the synergy between them is not well managed, it can hinder the achievement of common goals. Without a deep understanding and strong synergy, the module may not be fully effective in creating a harmonious balance between heritage preservation and tourism management, potentially making it less harmonious in addressing existing challenges.

"While the involvement of various stakeholders in the development of the Geotourism Module seems crucial to ensure sustainability and adaptation to environmental changes and community needs, I am concerned

that the challenges in integrating various perspectives could hinder the achievement of common goals. If this collaboration is not managed well, the resulting module may not be fully harmonious in addressing aspects of heritage preservation and effective tourism management." (Dimas, August 19, 2024)

The involvement of various stakeholders in the development of the Geotourism Module is essential to ensure sustainability and adaptation to environmental changes and community needs, the challenges in integrating various perspectives need to be overcome with good collaborative management. To achieve common goals, it is important that this collaboration is managed effectively, with strong synergy and deep understanding between all parties. This will ensure that the resulting module can handle aspects of heritage preservation and tourism management harmoniously and effectively.

DISCUSSION

Geological and Historical Wealth

In the development of ecotourism and geotourism, collaboration between stakeholders plays a crucial role, especially in developing countries as stated by Wondirad et al. (2020) and Hadian et al. (2021). The success of these initiatives depends on effective stakeholder management, which can provide environmental, social, and economic benefits to tourist destinations (Ahmad Salman et al., 2021). This is in line with the importance of leveraging the geological and historical richness of an area to attract tourists and encourage conservation, which in turn supports sustainable development. However, challenges such as corruption, distrust of government, and lack of organized initiatives can hinder successful collaboration (Towner, 2018).

The geological and historical richness of tourist destinations must be well managed to avoid damage and ensure sustainability. Failure to empower and involve local communities can undermine ecotourism efforts and endanger ecosystems and community sustainability (Wondirad et al., 2020). Participatory approaches to geotourism development, while providing significant benefits to local communities, require further skill development to maintain geodiversity (Hadian et al., 2021). To achieve sustainability in tourist destinations, it is important to understand the various interests and power of stakeholder influence (Ahmad Salman et al., 2021). Effective stakeholder collaboration is key to balancing conservation efforts with tourism development, ensuring the long-term sustainability of ecotourism and geotourism initiatives.

Environmental Education and Awareness

Ijen Geopark in Banyuwangi, East Java, has significant value in education and tourism, as stated in a study by S. Permanadewi et al. (2024). The four-step model used in the assessment shows that Ijen Geopark not only has scientific value, but also offers great educational and tourism potential. This emphasizes the importance of integrating geology into the educational framework to increase environmental awareness. Geotourism-based education in Ijen Geopark can provide a deeper understanding of its geosite, helping the community and visitors to better understand the impact of geological changes on the environment and the importance of conservation.

Research by Ida Bagus Oka Agastya et al. (2024) shows that the integration of geological heritage into an educational framework, as implemented in the UNESCO Batur Global Geopark, can strengthen disaster mitigation efforts. This approach proves that the use of geological heritage as an educational medium can increase awareness of disaster risks and the necessary mitigation measures. In the Ijen Geopark, the implementation of a similar approach can strengthen the understanding of the community and visitors about potential geological risks and the steps that can be taken to reduce their impacts.

Local community involvement and resource management are also important factors in sustainable geotourism development in Ijen Geopark, as stated by IK Mastika et al. (2023). Active involvement of local communities can strengthen local capabilities in geotourism management, as well as ensure that the economic and educational benefits of geotourism can be enjoyed fairly. This supports broader environmental awareness and ensures the sustainability of geotourism development in the area.

Finally, the study by H. Reinhart et al. (2023) on the Menoreh Mountains highlights the importance of a strategic approach in geotourism development, including addressing administrative challenges and promoting connectivity between geodiversity, biodiversity, and cultural diversity. This suggests that to ensure the success and sustainability of geotourism initiatives in the Ijen Geopark, it is important to adopt a holistic approach, addressing challenges, and promoting synergies between environmental and cultural aspects. In conclusion, geotourism development in the Ijen Geopark must involve effective education, community engagement, and a strategic approach to ensure long-term benefits for the environment and society.

Local Community Empowerment

Geoparks and geotourism have great potential in socio-economic development in rural areas, especially through empowering local communities. Farsani et al. (2011) explained that this strategy leads to improving community welfare by utilizing local geological and cultural wealth as primary resources. Ijen Geopark in East Java, Indonesia, is a successful example of the implementation of this strategy. Through collaboration with local institutions, Ijen Geopark not only manages geotourism resources sustainably but also empowers local communities to play an active role in the development and management of the geopark (Mastika et al., 2023).

Assessment of twelve geosites in the Ijen Geopark shows their potential in scientific, educational, and tourism aspects, which supports the government's efforts to promote local economic development (Permanadewi et al., 2024). In addition, geological heritage sites serve as effective learning media for disaster risk reduction, as seen in the use of sites in the UNESCO Batur Global Geopark as educational tools for disaster mitigation (Agastya et al., 2024). By developing geotourism trails, educational activities, picture books, and information centers, geoparks can raise public awareness while promoting disaster mitigation actions.

Overall, the implementation of geotourism strategies involving local resources not only creates new job opportunities but also encourages the development of local products and contributes to socio-economic growth in rural areas, showing the importance of empowering local communities in achieving successful geopark development (Farsani et al., 2011).

Educational Tourism Experience

Geotourism in UNESCO Global Geoparks (UGGp) reveals innovative approaches that are essential for education and conservation. In Ijen Geopark, Indonesia, creative efforts in local resource management play a key role in the development of sustainable geotourism. This approach shows how the use of local resources can support tourism sustainability while maintaining ecological and cultural balance. Research by Mastika et al. (2023) shows that wise and innovative management can create sustainable competitive advantages in the geotourism sector. This includes developing infrastructure that supports educational and enjoyable visits, while minimizing negative impacts on the environment.

However, although the geotourism trails at UGGp serve as an effective medium for geoeducation, research by Stolz & Megerle (2022) suggests that there is a need for improvement in design and technology integration. These trails have proven to be useful tools for geological education and increasing environmental awareness, but better design and the use of advanced technology can improve the visitor experience and educational effectiveness. This is important to ensure that visitors not only gain in-depth knowledge but are also actively involved in educational activities.

Addressing ecological concerns is also an important focus of this study. Chen et al. (2022) have developed a tourism ecological safety evaluation system that can reveal spatial and temporal patterns of ecological impacts in geoparks. This system functions to monitor and manage the ecological impacts that may arise from tourism activities, thereby identifying areas that require special attention. With this evaluation system, geotourism management can be carried out better, ensuring that tourism practices do not damage the environment and support conservation efforts.

The COVID-19 pandemic has triggered innovations in geography education, such as the development of the Mobile Virtual Field Trip (M-VFT) application for the Ijen Crater Geosite. Putra et al. (2022) reported that this application, which utilizes 360° auto-stereoscopic and geospatial technology, enables active and independent learning through virtual observation and exploration. This tool is very useful in overcoming the limitations in geography education during the pandemic, allowing visitors and students to gain an immersive educational experience without having to make a physical visit.

Overall, these studies emphasize the importance of balancing tourism development with environmental protection, community engagement, and innovative educational approaches in UGGp. Effective geotourism development requires a harmonious integration of education, conservation, and community empowerment. Initiatives such as creative management of local resources, improved geotourism trail design, ecological impact assessment, and use of virtual technology contribute to the sustainable development and educational value of Ijen Geopark. With a comprehensive and innovative approach, UGGp can continue to develop as a destination that not only offers educational tourism experiences but also contributes to environmental conservation and local community development.

Conservation and Sustainable Management

The Ijen Geopark in Indonesia offers great opportunities for geotourism development, with geological sites that have high value for scientific research, education, and tourism (Permanadewi et al., 2024). This potential is utilized to create an educational tourism experience that combines scientific and cultural aspects. With valuable geological sites, the Ijen Geopark provides visitors with the opportunity to learn about the geological evolution of the area and interact with the unique natural environment. This allows visitors not only to enjoy the natural beauty but also to gain in-depth knowledge about the geological processes that shaped the area.

However, to maximize this potential, geotourism resource management must be carried out effectively, involving close collaboration with local institutions and focusing on creating sustainable competitive advantages (Mastika et al., 2023). This collaboration is important to ensure that geotourism development is in line with local needs and capacities, while maintaining the quality and sustainability of geological sites. By involving local communities in management, the Ijen Geopark can increase local economic benefits, such as job creation and local product development that supports the local economy.

The concept of “Spread Geoparks” proposed by Varriale et al. (2022) suggests the need to extend the impact of UNESCO Global Geoparks (UGGp) beyond their borders to promote sustainable development in surrounding areas. This means that the benefits of geotourism are not only felt within the geopark area itself but can also extend to surrounding communities, by promoting sustainable development practices and supporting local initiatives. This approach helps to improve regional scientific and economic literacy, ensuring that the entire region benefits from geotourism development.

However, geotourism activities are not without risks. They can have negative impacts on local ecosystems if not managed properly. Chen et al. (2022) suggest the use of a tourism ecological safety evaluation system to assess and manage these ecological impacts. This system considers factors such as tourism revenue, environmental protection, and community participation in management, which play a key role in maintaining ecological safety. By implementing this system, negative impacts can be minimized and environmental sustainability can be maintained.

Overall, geotourism development in Ijen Geopark requires a balance between tourism activities and environmental conservation. An approach that involves local community involvement and sustainable management is key to achieving harmonious and sustainable development. The educational tourism experience offered by Ijen Geopark not only provides educational and economic benefits but also strengthens environmental conservation and sustainability efforts. By adopting an inclusive and sustainable approach, Ijen Geopark can serve as a model for geotourism development in other areas, promoting a balance between exploration, education, and environmental preservation.

limitations

The Geotourism module that focuses on the historical aspects of the UNESCO Global Geopark (UGGp) Ijen Banyuwangi area can be linked to theoretical studies on how performing arts can convey messages and shape political narratives, as well as practical implications in building a positive image of politicians. Although the contexts are different, there are parallels in how this geotourism module can use historical and geological narratives to shape visitor perceptions and experiences.

Theoretically, the geotourism module at UGGp Ijen can be viewed as a form of "art performance" that conveys a message about the historical and geological value of the area. Just as performing arts shape political narratives and build positive images, this module aims to educate visitors about the rich history and geology of the area through interesting interpretations. Thus, this module functions as a medium to convey a message about the importance of preserving and understanding the history of geotourism to visitors, similar to how performing arts are used to influence public opinion and shape political images.

In practical terms, the development of this module must consider similar challenges to performing arts research. Limited involvement of local communities in module development may limit the ability to accurately reflect local experiences and perspectives. Furthermore, voluntary participation in module development and evaluation may introduce biases that affect its effectiveness. Therefore, it is important to involve more participants from diverse backgrounds and ensure that the data collected is accurate and representative, to overcome these limitations.

As in performing arts studies that face limitations in the number of participants and the reliability of data, the development of geotourism modules needs to pay attention to limitations in the representation and reliability of the historical and geological information presented. Research and development of the modules should involve the local community more widely and ensure the validity of the information by using credible sources.

By adopting a holistic and inclusive approach, the UGGp Ijen geotourism module can be designed to provide greater impact in education and conservation, while addressing the challenges faced in the context of tourism development and cultural preservation.

Conclusion

The Geotourism Module at UGGp Ijen Banyuwangi is an important tool in enhancing visitors' understanding of the history and geology of the area, while playing a key role in its conservation and sustainable management. By integrating historical elements from prehistory to the present through interactive maps and digital reconstructions, the module not only offers an educational tourism experience but also contributes to conservation by engaging visitors in conservation activities, such as tree planting. The involvement of various stakeholders in the development of this module is crucial to address the challenges of integrating perspectives and ensuring harmonious management between heritage preservation and tourism management. Continuous evaluation and use of the latest technology, as well as feedback from visitors, are essential to maintain the relevance and effectiveness of the module. The module also strengthens the empowerment of local communities by providing training, creating economic opportunities, and strengthening cultural identity. However, its success depends on translating information into responsible tourism practices, regulating visitor numbers, and protecting natural habitats. Effective collaboration between stakeholders is needed to address the challenges of conservation and sustainable tourism management, making it a useful tool in promoting conservation and raising environmental awareness in the area.

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