p-ISSN 2460-0768 e-ISSN 2597-6044 *GeoEco, Vol. 10, No 2. July 2024 Page. 271-286*
https://doi.org/10.20961/ge.v10i2.86707 https://jurnal.uns.ac.id/GeoEco/article/view/86707

IMPLEMENTATION OF THE IJEN GEOPARK EDUCATION PROGRAM IN SCHOOLS TO SUPPORT SUSTAINABLE DEVELOPMENT

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ARTICLE INFO

Article History
Received : 24/05/24
Revised : 06/06/24
Accepted : 26/07/24

Citation:
Hartanti, T.S.H.W., Bachri, S., Masruroh, H., Mutia, T., And Sumarmi., (2024) Implementation Of The Ijen Geopark Education Program In Schools To Support Sustainable Development. GeoEco. Vol. 10, No.2.

ABSTRACT

Collaboration between Ijen Geopark and school has been identified as a significant driver in advancing sustainable development in Bondowoso. Research conducted aimed to explore how the integration of The Ijen Geopark education program within school contributes to sustainable development in the region. Employing a qualitative approach with a descriptive method, data collection encompassed observation, interview, and documentation. Key informants included the Ijen Geopark Manger and representative from schools. Findings from the study revealed several outcomes: 1). The implementation of the Ijen Geopark education program, which is comprised some initiatives such as:a).Geopark goes to School, b). Integration of Ijen Geopark subject material, c). Geopark Corner, d). School goes to Geopark, and e) establishment of Ijen Geopark Ambassadors.2). Challenges were identified, particularly regarding partnerships at the high school/vocational school level.3). The impact of the program was delineated, highlighting increased understanding among students regarding the interplay between humans and the environment, heightened awareness regarding the importance of nature conservation career prospects in natural sciences, environmental studies, and nature conservation. It is hoped that this educational program will be sustainable and have an impact on schools and impactful.

Keywords: *Educational Program; Sustainable Development, School*

INTRODUCTION

Environment and humans are a system that cannot be separated in forming a relationship that affects each other. Humans are dependency on their environment, both physical and social environment. Humans as the main subject for their environments need the process of interaction with it. The global crisis that occurred lately, can estimate the world view of humans interacting with the environment. During the view point puts humans as the center of the universe. This causes human to desire to carry out activities such as exploitation to meet their daily needs, without regard to environmental sustainability (Fatria,

Priadi , Artanti, & Alhamda, 2024). This is a big responsibility for the world to continue to preserve the existing environment within the goals of sustainable development.

Sustainable development goals are a continuation and refinement of the Millennium Development Goals (MDGs) which have been implementing during the 2000-2025 period. SDGs (Sustainable Development Goal) are a refinement of the previous global development agenda, because the development commitment does not only focus on human development, but also environmentally friendly economic development and environmental development. (Alisjahbana & Murninigtyas, 2018). It is hoped that these development goals can be implemented.

Implementation of sustainable development is a concrete step for the country to safeguard its resources so that they can survive into the future. Sustainable development is a development concept that takes into account vital factors in all aspects of life, the main of which is fulfilling the sustainability of life for future generations. (Puttrawandi K, Hidayat, & Husni, 2022).

Sustainable development Goals (SDGs), namely (1) no poverty; (2) no hunger; (3) healthy and prosperous; (4) good education; (5) gender equality; (6) clean water and sanitation; (7) clean and renewable energy; (8) employment and economic growth; (9) innovation and infrastructure; (10) equality; (11) sustainable settlement area; (12) environmentally-aware consumption and production; (13) climate change and control; (14) marine ecosystem; (15) land ecosystem; (16) peaceful and just; (17) partnership for village development; and (18) dynamic village institutions and adaptive village culture (Wirahayu, Utomo, & Handoyo, 2022).

Contribution to sustainable development goals, namely the agenda of environmental knowledge and development towards the protection and development of geological diversity which has meaning as geological heritage through geological parks or geoparks (Kusumabratha & Suwardi inside, Hardoyo, Muhammad, & Tukiman, 2016). Efforts to preserve and maintain all forms of geological heritage to obtain sustainable benefits through the development of an Earth Park or Geopark (Hazar, Sumarmi, Astina, & Shrestha, 2024).

Indonesia has many Geoparks, 10 of which have been recognized by UNESCO as UNESCO Global Geoparks, the 10 Geoparks are; Lake Toba Area, Ciletuh Geopark, Belitong Geopark, Gunung Sewu Geopark, Mount Batur Area, Rinjani Geopark, Ijen Geopark, Maros Pangkep Geopark, Merangin Geopark and Raja Ampat Geopark.

East Java Has 2 Geoparks united by UNESCO Global Geopark, namely Gunung Sewu Geopark and Ijen Geopark. The Gunung Sewu Geopark covers the Pacitan, Wonogiri and Gunung Kidul areas, while the Ijen Geopark covers 2 regencies, namely Bondowoso and Banyuwangi. This discussion is devoted to the Ijen Geopark in the Bondowoso area.

In accordance with the meaning of a Geopark, namely preserving the Earth and improving the welfare of society, the development of a Geopark aims to realize the preservation of geological heritage (Geoheritage), diversity (Geodiversity). Biological diversity (Biodiversity) and cultural diversity are carried out jointly between the government and interest managers through conservation, education and sustainable development efforts as well as socio-economic empowerment of the community. Through, Geopark management and the Sustainable Development Goals (SDGs) application method as an inspirable part make the development regulations and fulfillment of adequate infrastructure. Those are integrated community development which involve the synergy of 5 elements, namely : Government, community, Business Entities, Academics (educational elements) and media. (Buku Pintar Ijen Geopark Wilayah Bondowoso Chapter 2, 2022). The 5 synergies are community-based development, community based tourism should be implement by the government, because it will give resilience to the community to participate and survive (Nofrion, Purwanto, Utomo, & Aziz, 2023). Management with the principle of community based on tourism is also in accordance with the principles of sustainable tourism development (Wirahayu, Yuswanti Ariani; Purwito, H; Insani, Nailul, 2019). Geopark management currently requires human resources who have the capability and acceptability of natural and cultural resources in the region (Insani, Narmaditya, Habibi, & Ramadhoan, 2023). Thus, the community has the big

role to manage their environment such how they conserve their environment (Masruroh, Sumarmi, & Rosyida, 2022).

In order to realize community-based on environmental conservation, it continues to survive and be sustainable regarding geological, biological and cultural conservation. The Ijen Geopark in the Bondowoso area has programs that must be implemented. A program is set of planned activities directed at bringing about defined and identified change through and identified audience. In this case, it shows that the program has two important components, namely a documented plan, and actions that are consistent with the documentation contained in the plan (Munthe, 2015).

Planning to achieve this goal is also supported by sustainable development that Ijen Geopark has an educational program. Education can be interpreted as a process of learning activities for each individual or group whose aim is to improve the quality of thought patterns, knowledge and develop the potential of each individual. (Finthariasari, Febriansyah, & Pramadeka, 2020). Education is a learning process that has the aim of developing students' personal potential and a good learning process. (Nugroho, Harmastuti, & Uminingsih, 2017)

To realize the development of Geoparks in preserving geology, biodiversity and cultural diversity in order to achieve sustainable development goals in Bondowoso, the participation of all parties is required, one of which is the education unit. The participation of educational units in making the Ijen Geopark is a form of participation in the development of tourist areas through education. In this case, educational participation is schools at all levels of education starting from kindergarten, elementary school, middle school, and high school/vocational school in Bondowoso, especially in supporting sustainable development by implementation of the Ijen Geopark education program. Reflecting on this, the author was interested in conducting research "Implementation of the Ijen Geopark educational program in schools to support sustainable development". Previous research conducted by Samadi & Munandar (2024) had researched about objective of developing a sustainable tourism assessment instrument in the context of ecological resilience on Pari Island, DKI Jakarta. While, this research carried out the

implementation of the Ijen Geopark education program in schools, where the obstacles and impacts are supporting by the sustainable development in Bondowoso.

Contain experimental settings, data collection, data analysis, statistical testing, assumptions, and experimental authority. In contrast, qualitative research must cover research settings, including place, number, and criteria of respondents, sampling techniques, data collection procedures, validation procedures, coding, interpretation, and data presentation or data analysis techniques. Formula writing must follow international notation and symbol standards, followed by references if quoted from others.

MATERIALS AND METHODS

The research method is descriptive qualitative. This type of qualitative descriptive research displays data as it is without manipulation or their treatments. There are 2 data used, namely primary data and secondary data. Primary data collection techniques in this research are trough observation, interviews and documentation. Secondary data was obtained from various sources and record or document archives available at the research location. The data obtained was checked for the validity of the data used, namely credibility, transferability, dependability and confirmability. (Mekarisce, 2020. Data analysis uses data reduction analysis, data presentation and drawing conclusion (Miles & Huberman, 2014). The informants in this research are the Ijen Geopark Manager and the School. The Ijen Geopark includes the daily management of Ijen Geopark Bondowoso (Head of daily implementation, geology expert, biology experts, cultural experts, environmental experts, economic empowerment experts, community education experts, the secretariat team, namely data managers, geoproduct, and geo tourism). The school includes; Principal and deputy principal of curriculum, deputy head of public relation and deputy head of students affairs (kindergarden of Kemala Bhayangkari, elementary school of Dabasah 3, junior high school of 3 Bondowoso, senior high school of 1 and Vocational high school 4 Bondowoso). The subject in this research focused on human data sources, namely people which can provide information regarding the management of the Ijen Geopark education program for schools in Bondowoso. The parameters used are to

focus on what educational programs are implemented by Ijen Geopark in schools, the obstacles and impacts on students.

RESULTS AND DISCUSSION

Based on the research result, documentation sources for secondary data regarding the research location were obtained. The research location is in Ijen Geopark Institute and schools in the Ijen Geopark Bondowoso area. The Ijen Geopark area can be described as follows: Ijen Geopark covers 2 regencies, namely Bondowoso and Banyuwangi (see **Figure 1**). Administrative area with an area of 4723 Km^2. Ijen Geopark has the longest coastline in East Java, namely 175.8 Km, resulting in abundant marine and fisheries resources. Ijen Geopark is divided into lowland and highland areas. The lowland area is an agricultural area, especially rice which has long been known as the rice granary area in East Java Province. Then, the highland area is a plantation that produces coffee as a superior commodity. The caldera stretches for 20 Km, making this area fenced with mountains dominated by the potential of Mount Ijen, which is best known for the geological phenomena of Blue Fire and the acidic water of Crater Lake in the world (Bappeda Bondowoso, 2019). Ijen Geopark is located in Banyuwangi Regency on the north and west sides. (Ulum & Setyani, 2022).

In the Ijen Geopark area there are 21 geological sites (geo site), 6 bio site and 18 culture sites that have been developing. This development starts from a local scale to an international scale. Based on the Decree of the Regent of Bondowoso number 188.45/941/430.4.2/2020 concerning the determination of the delineation of the Ijen Geopark for the Bondowoso region, the Ijen Geopark for the Bondowoso region has a total of 17 sites which are devided into 10 (Bondowoso, 2018) geological sites (geo site), 2 biological sites (bio sites), and 5 cultural sites which is spread across 14 sub districts in Bondowoso. The 17 sites are in Ijen Crater, Blawan Hot Water Complex, Blawan lava, Gentongan Waterfall, Plalangan Lava Flow, Ijen Megasari Caldera Wall Landscape Site, and So'on Solor Rock Park as a geo site, the Pelangi Forest and Bondowoso Coffee as bio sites, as well as the Butha Sumber Canting Cave structure, the Maskuning Kulon Megalithic Site, Singo Ulung and the Coffee Picking Dance as cultural sites (Buku Pintar Ijen Geopark Wilayah

Bondowoso Chapter 2, 2022). The existence of these historical sites, realizing the importance of maintaining and making these assets have value, both historically and culturally, must also increase social value so that people know the meaning of ancestral relics Geo-bio culture sites which have very high economic value in promoting the welfare of local people (Mastika, Harsono, Khristianto, Oktawirani, & Hutama, 2023).

The map of the Ijen Geopark Bondowoso area can be presented in the following image

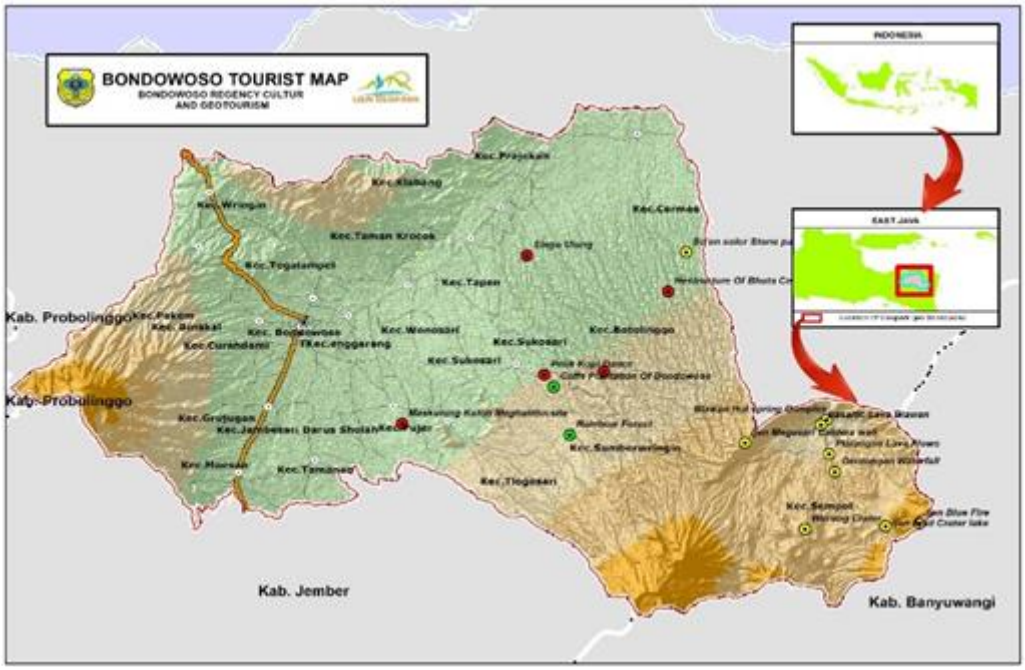


Figure 1. Location Of Ijen Geopark
source: Bondowoso Tourism Maps, 2018

Based on the result of interviews with Ijen Geopark, it was found that Ijen Geopark has 3 main programs, namely; 1). Conservation, 2). Education and 3). Sustainable development and socio-economic empowerment of the community, where the program was developed by Pentahelix concept. The concept that involves the synergy of 5 elements, namely; Government, community, Business Entities, Academic (educational elements) and media. The emphasis of this research is on the educational element. The Ijen Geopark management concept starts from 1). Planning, 2). Implementation and 3). Evaluation. The planning was began with the preparation of a draft program by the Ijen Geopark daily management and then submitted it to local

government office for approval. Then, the implementation program is carried out when it is approved by the local government. After the program is implemented, an evaluation is needed to the programs that have done.

In order to the Ijen Geopark management program to be realized, human resources are needed as the activator in influence the local potential management and resources in the area. Management emphasized based on the community, including the educational world that support the development and preservation of Ijen Geopark towards sustainable development, especially in the Ijen Geopark Bondowoso area. The Ijen Geopark program which involves the educational world is in the second program, namely the education program. The education program in developing Ijen Geopark is divided into 4 policies, namely:

1. Determination of local
2. Content (Mulok) of Ijen Geopark in learning curriculum of School Education Units (Elementary, Middle School, High School and Equivalent)
3. Establishment of Geopark Corners in educational institutions
4. Providing the educational tour packages
5. Research object facilities for related scientific fields (universities)

Based on the results of interviews with Ijen Geopark and schools, the following is a presentation of the implementation of the Ijen Geopark education program in schools:

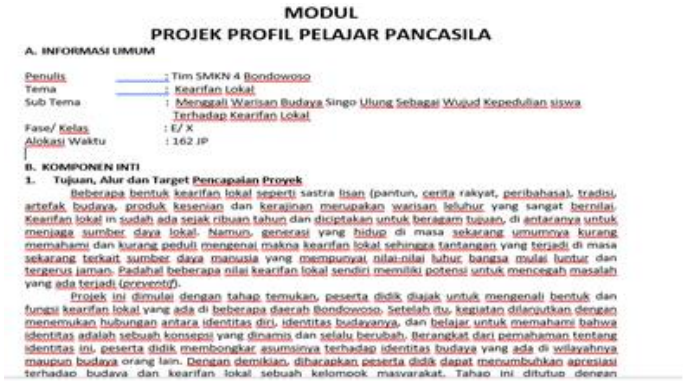
1. Geopark goes to school

   Geopark goes to school is an educational program which socialized by Ijen Geopark, including in the form of FGD (Focus Group Discussion), technical guidance on integration in subject, providing material to students, etc (**Figure 2**). The aim of this socialization is as a development strategy to increase the potential of Ijen Geopark both in terms of tourism, education and environmental preservation as well as collaborating in developing effective and sustainable strategies.

Figure 2. Photo of the technical guidance for integrating Ijen Geopark
Source: Documentation of SMAN 1 Bondowoso

2. Subject Integration of Ijen Geopark material.

The subejct integration of Ijen Geopark material is presented in the lesson plans/teaching modules used, for the K13 curriculum the integration of material in the local content subject (Mulok) and/or arts and culture material. While, for the independent curriculum the integration of material in the *Panc asila* Students Profile Strengthening Projects (Proyek Penguatan Profil Pelajar Pancasila/P5) has the theme of local wisdom. The main material of Ijen Geopark includes 3 main things, namely geological material, biological material and cultural material. Integrating Ijen Geopark material in school can contribute to the formation of students character, students understanding of the environment and culture, especially in preserving their geological, biological and cultural heritage, as well as preparation become responsible citizens and contribute to sustainable development. **Figure 3** and **Figure 4** is the module that integrated in the P5 material on the local wisdom theme.



MODUL
PROJEK PROFIL PELAJAR PANCASILA

A. INFORMASI UMUM

Penulis : Tim SMKN 4 Bondowoso
Tema : Kearifan Lokal
Sub Tema : Menggali Warisan Budaya Singo Ulung Sebagai Wujud Kepedulian siswa Terhadap Kearifan Lokal
Fase/ Kelas : E/ X
Alokasi Waktu : 162 JP

B. KOMPONEN INTI

1. Tujuan, Alur dan Target Pencapaian Proyek

Beberapa bentuk kearifan lokal seperti sastra lisan (pantun, cerita rakyat, peribahasa), tradisi, artefak budaya, produk kesenian dan kerajinan merupakan warisan leluhur yang sangat bernilai. Kearifan lokal in sudah ada sejak ribuan tahun dan diciptakan untuk beragam tujuan, di antaranya untuk menjaga sumber daya lokal. Namun, generasi yang hidup di masa sekarang umumnya kurang memahami dan kurang peduli mengenai makna kearifan lokal sehingga tantangan yang terjadi di masa sekarang terkait sumber daya manusia yang mempunyai nilai-nilai luhur bangsa mulai luntur dan tergerus jaman. Padahal beberapa nilai kearifan lokal sendiri memiliki potensi untuk mencegah masalah yang ada terjadi (preventif).

Projek ini dimulai dengan tahap temukan, peserta didik diajak untuk mengenali bentuk dan fungsi kearifan lokal yang ada di beberapa daerah Bondowoso. Setelah itu, kegiatan dilanjutkan dengan menemukan hubungan antara identitas diri, identitas budayanya, dan belajar untuk memahami bahwa identitas adalah sebuah konsepsi yang dinamis dan selalu berubah. Berangkat dari pemahaman tentang identitas ini, peserta didik membongkar asumsinya terhadap identitas budaya yang ada di wilayahnya maupun budaya orang lain. Dengan demikian, diharapkan peserta didik dapat menumbuhkan apresiasi terhadap budaya dan kearifan lokal sebuah kelompok masyarakat. Tahap ini ditutup dengan

Figure 3. Screenshot of the P5 module on the local wisdom theme
Source: Documentation of Vocational High School of 4 Bondowoso

Figure 4. Photo of Ijen Geopark integrated in the P5 subject with the local wisdom theme of the Singo Ulung dance
Source: kindergarden of Kemala Bhayangkari Bondowoso

3. Ijen Geopark Corner

In the kindergarten, elementary and middle school levels have created a corner of the Ijen Geopark. The aim of creating the Ijen Geopark corner at school is for environmental education, especially more knowledge about geology, biology and culture in the Ijen. The result is found that the most popular program applied in the school was Geopark Corner because it is easy to do. Geopark area. It is created to encourage the students' knowledge about the character formation, skills development and encouraging creativity and innovation. **Figure 5** sketchs the implementation of the Ijen Geopark corner.

Figure 5. Ijen Geopark corner
Source: elementary school of Dabasah 3

4. School Goes to Geopark

The school can join the educational tour packages that provided by Ijen Geopark (School to Geopark program) to know the real Ijen Geopark directly.

The aim of this educational tour package is to provide a better understanding of the environment, geology, ecology and biodiversity, besides, to increase the awareness of protecting and preserving the natural environment that is very important. **Figure 6** is the implementation of school goes to Geopark.

Figure 6. School Goes to Geopark
Source: Documentation of Junior High School of 3 Bondowoso

5. Ijen Geopark Ambassador

Students who want to be effective ambassadors (**Figure 7**), they must have good leadership, communication skills and also highly dedicated to preserve the environment and natural resources. Students are expected to be the agent of positive change in promoting Ijen Geopark, especially in terms of

preserving geological, biological and cultural heritage.

Based on the interview with Ijen Geopark's management and schools.

Figure 7. Ijen Geopark Ambassador
Source: elementary school of Dabasah 3

The obstacles in implementing the Ijen Geopark education program for schools were partnership with schools under provincial authority such as senior high school and vocational high schools and equivalent because schools could not implement policies without direction from province. Meanwhile, the school also has problem about partnership with Ijen Geopark because there is no appeal from policy makers, such the provincial education office. Hopefully, the implementation that have hold in schools related to the demands of the independent curriculum is based on student needs, namely student-centered learning by providing real examples. So, students can understand the teacher explanation, because the curriculum is applied to integrate the subject learning of P5 with the theme of local wisdom. The obstacles result faced in the Ijen Geopark education program for schools can be presented in **Table 1**.

Tabel 1. Constraint faced by schools in implementing the Ijen Geopark education program

NO	School	Constraint
1	TK	-
2	SD	-
3	SMP	-
4	SMA/SMK	Partnership with Ijen Geopark because there was no appeal from policy makers (Provincial Education Office)

Source: Summary of interviews with the school and Ijen Geoparks' management

From this table it can be concluded that the obstacles to this educational program are partnership with Ijen Geopark makers (Provincial Education Office) because there was no appeal from policy The Implementation impact of the Ijen Geopark education program.

Based on the summary of interviews with the school, the Ijen Geopark education program for the school have positive impact on students, namely;

1. Students increase in understanding the relationship between humans and environment and also increase the awareness of nature conservation that is very importance.
2. It can help students understanding in developing their geological knowledge, biological knowledge and cultural heritage. Besides, increasing their sense of pride in the environment around them.
3. It Can develop student insight into potential careers in the fields of natural science, environment and nature conservation. The following picture is the process of interview with the school.

CONCLUSIONS

The implementation of Ijen Geopark education program in schools shows a positive contribution in supporting sustainable development in Bondowoso. Through, this educational program students gain deeper knowledge about the importance of preserving geological, biological and cultural heritage which is beneficial for students in preserving their heritages.

The obstacle faced by schools is partnerships, especially for schools that are under provincial authority such as Senior high school and the equivalent.

The impact of the Ijen Geopark program on schools has a positive impact, such as increasing the student understanding of the relationship between humans and the environment. Also, it increased the awareness of nature conservation and giving the students understanding about geological, biological and cultural heritage. Besides, it increased their senses of pride in surrounding them and develop their horizons. Then, Students can develop their potential careers in the fields of natural sciences, environment and nature conservation. Based on the implementation of the Ijen Geopark education program in schools, it is recommended to increase partnerships

between schools, especially those under provincial authority such as high schools and equivalent, with various related parties. This is important to support and expand the positive impact of this program, which has been proven to increase students understanding of the relationship berteen humans and the environment, awareness of nature conservation, and understanding of geological, biological and cultural heritage.

ACKNOWLEDGMENTS

Thank you to the team of promoters, advisor and the Ministry of Education, Culture, Research and Technology for providing the Indonesian Education Scholarship (Beasiswa Pendidikan Indonesia) that gives opportunity to the author until this article completed.

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