

# Environmental Awareness and Sustainable Tourism Perception Among High School Students in the Rowosari District, Kendal Regency Central Java, Indonesia

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## Abstract

This study on environmental awareness and students' perceptions of sustainable tourism was conducted to contribute to the younger generation's awareness of the coastal environment without damaging or sacrificing the local natural and cultural environment. Students, as part of the younger generation, have a strategic role in creating social and environmental change. The purpose of this study was to analyze the relationship between environmental awareness and the perceptions of SMAN 1 Rowosari regarding sustainable tourism in the coastal area of Rowosari District, Kendal Regency. This study used a quantitative research method and a correlational design. There were 125 students who participated in this study by filling out a questionnaire. The data analysis technique used Pearson's correlation to determine the relationship between environmental awareness and students' perceptions of sustainable tourism. Based on the results of this study, it can be concluded that students' environmental awareness is in the moderate category with an average score of 51, while students' perceptions of sustainable tourism are in the high category with an average score of 74. The relationship between environmental awareness and the perceptions of SMAN 1 Rowosari students toward sustainable tourism, with a significance value of  $0.000 < 0.05$ , indicates that there is a significant association between the variables of environmental awareness and students' perceptions of sustainable tourism. The correlation value of 0.336 is classified as weak. These findings suggest that sustainable tourism needs to be integrated into student education, while also considering other factors or the need for further research that may influence students' environmental awareness.

## Introduction Section

Tourism is one of the sectors that contributes significantly to the economic and social development of a region. Coastal areas are popular tourist destinations due to their natural beauty and the appeal of marine tourism activities. However, behind the great economic potential, poorly managed tourism activities can cause various environmental problems such as marine pollution, damage to coastal ecosystems, and a decline in the quality of tourist areas (Ismowati et al., 2022). Therefore, the concept of sustainable tourism is crucial to ensure that economic progress, social well-being, and environmental protection remain in balance. Sustainable tourism is tourism that minimizes the impact on the environment and local culture, and can increase economic benefits for local communities. According to a report from the United Nations World Tourism Organization (UNWTO), the tourism sector contributes around 10% to the global GDP and provides one out of every ten jobs worldwide (UNWTO, 2020).

Sustainable tourism is essentially a development that can meet the demands of tourists and communities to preserve and enhance future development opportunities. In response to the reflection that tourism damage will lead to ecological damage, the importance of sustainable tourism is also reflected in efforts to preserve and promote local cultural heritage. In promoting sustainable tourism, it is necessary to pay attention to the local community as managers of nature tourism who have a stake in the place and the community itself (Dirawan, 2023). The concept of sustainable tourism refers to an approach to tourism development that aims to achieve economic growth and social welfare without damaging or sacrificing the natural and cultural environment. If tourism is not handled wisely, it may trigger problems such as environmental destruction, biodiversity loss, and cultural change (Anggriyani et al., 2022). In this context, the younger generation has an important role in advocating and implementing sustainable tourism practices. In this context, young people hold an important responsibility, as human actions alongside natural factors are significant drivers of environmental change (Sihombing et al., 2021).

One of the tourist destinations located in Rowosari District, Kendal Regency, is a coastal tourist area that still faces challenges in preserving the environment and maintaining the management of the coastal area. As a tourist destination for

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visitors from various regions, the large number of tourists with low environmental awareness has led to a significant amount of litter caused by tourists discarding waste indiscriminately on the beach. This is further compounded by waste originating from the sea and the deforestation of mangrove trees (Haruna et al., 2018). One of the efforts expected to support coastal cleanliness is the development of environmental awareness and students' perceptions of sustainable tourism.

Environmental awareness refers to attitudes and behaviors aimed at preserving and improving the natural environment. It is shaped by cognitive, affective, and behavioral components, namely knowledge and beliefs, emotional responses, and tendencies to act. One of the main causes of environmental degradation is a lack of environmental knowledge. (Narut & Nardi, 2019). In general, half of the Indonesian population has knowledge about the environment (Azima Nana, 2022) however in terms of having an environmentally conscious attitude toward the sustainability of coastal tourist destinations in Kendal Regency, it remains challenging to preserve and maintain the management of these coastal areas.

Students' environmental awareness is still considered low due to several factors, namely their own intentions and those of their teachers (Qodriyanti et al., 2022). Low awareness levels are still evident in the fact that some students still litter at school or outside the school environment. This habit arises because of the low level of environmental awareness among students (Saudah, 2025). An environmental awareness attitude instilled from school age is expected to encourage environmentally friendly behavior in various aspects of life, including in tourism activities. A strong environmental awareness attitude can encourage more responsible behavior in maintaining cleanliness, reducing waste, and supporting ecotourism practices. According to (Nugraha, 2019), education can be defined as the development of individuals or groups that play a role in shaping individual attitudes and actions towards environmental sustainability.

Sustainability education has the fundamental goal of increasing individual awareness of environmental issues and encouraging environmentally responsible behavior (Kartini, 2018). In the educational environment, students are a group with great potential to influence positive change in society through teaching and practical experience (Dap & Rachman, 2023). Education can also be defined as the development of individuals or groups in life and society. Whether large or small, education plays a central role in shaping individuals' attitudes and actions towards environmental sustainability (Asrifan et al., 2020). To foster environmental awareness in the community, education is needed when students are in school, especially high school students (Aris et al., 2021). Schools can teach students to recognize the impact of human attitudes and behavior on the earth in a cyclical life. However, students are expected to acquire basic knowledge that will change their perceptions and behaviors for the better, so that they can act positively towards their surroundings, both as individuals and in relation to other objects (Dewi & Atika Anggraini, 2022).

Perception is something that can influence a person's behavior. Perception is a person's response to an object that determines their behavior towards the object they see (Yulia et al., 2021). Perception is obtained from the process of observation, experience, learning, and knowledge, thereby providing the motivation that causes a person to perform an action to achieve a certain goal. Students can interact with and observe various tourists who may pollute the environment around the coast without knowing the impact of environmental pollution. Community activities, whether they preserve or damage the coastal environment, will shape students' perceptions, as can be seen from the students' own behavior. In addition, students' perceptions of sustainable tourism are also an important factor, because a good understanding of the long-term benefits of sustainable tourism can shape positive attitudes in supporting efforts to preserve the tourism environment (Tumulo, 2022). Students, as part of the younger generation, have a strategic role in creating social and environmental change. Beach tourism that requires special attention to enhance sustainable tourism is the coastal area in Rowosari District, Kendal Regency.

The coastal area in Rowosari District, Kendal Regency, has considerable tourism potential with its natural beauty and biodiversity that can be utilized to support the local economy. One of the beaches that has become a tourist center for destinations in Rowosari District, Kendal Regency, is (Masriah & Susanti, 2020). Every year, the beaches in Rowosari District, Kendal Regency, attract many visitors, including families, community groups, government agencies, and private employees, who usually take advantage of holidays to visit the beaches in Rowosari District, Kendal Regency. Observations show that this causes visitors to litter, including beverage bottles, food wrappers, and other trash, which then scatters along the beach and pollutes the surrounding environment. As a beach tourism area, it requires attention and good management, especially in terms of beach cleanliness (Puspita & Karmini, 2024). This is intended to preserve the beauty of the beach by preventing pollution caused by the local community and visitors to the beach. Therefore, an environmentally conscious attitude is needed, especially among students, the local community, and visitors, in order to preserve and manage the coastal environment in Rowosari District, Kendal Regency. One of the schools located in the coastal area of Rowosari Subdistrict, Kendal Regency, is SMAN 1 Rowosari, which can influence the sustainability of sustainable tourism.

SMAN 1 Rowosari is a school located in a coastal area with great potential to shape students' character to care for the environment and be aware of the importance of sustainable tourism. SMAN 1 Rowosari has students who live in coastal areas, so has great potential for sustainable tourism and student responsibility towards the environment. In an effort to shape this character, SMAN 1 Rowosari provides material on environmental awareness to students in grades X and XI, while in grade XII, material on sustainable tourism is provided. However, there are still shortcomings in the implementation of environmentally conscious behavior among students, which has the potential to affect the success of

environmentallyfriendly tourism development. Therefore, it is important to know how students' attitudes towards the environment and their perceptions of the concept of sustainable tourism.

Based on the above description, this study aims to determine the relationship between environmental awareness and the perceptions of students at SMAN 1 Rowosari regarding sustainable tourism in the coastal area of Rowosari District, Kendal Regency. The results of this study are expected to contribute to the development of environmental education programs and more sustainable tourism development strategies in coastal areas.

## Method

This study employed a quantitative research approach. Quantitative research methods are defined as research methods based on positive philosophy, which are used to conduct research on specific populations or samples (Ummah, 2019). With a correlational research design, which is used to establish a relationship between two or more variables without attempting to influence those variables, so there is no manipulation of variables (Putri et al., 2024). The population in this study consisted of 180 students in grade XI, with the sample selected calculated using the slovin formula with a standard error 5%, resulting in a sample size of 125 respondents. This number of respondents was considered representative enough to obtain data that reflected the population. In this study, offline questionnaires were distributed by filling out questionnaires to all 11th grade students at SMAN 1 Rowosari. Data collection used a questionnaire consisting of 20 questions on the variable of environmental awareness from 6 indicators (energy conservation, mobility and transportation, waste avoidance, recycling, consumerism, conservation) and 29 questions on the variable of students' perceptions of sustainable tourism from 12 indicators (economic feasibility, local feasibility, job quality, social justice, visitor satisfaction, local control, community welfare, cultural richness, physical integrity, biodiversity, resource efficiency, environmental purity).

This study aims to determine the feasibility of the instruments used in data collection, namely through validity and reliability tests. The validity test for this study was conducted on the variable of environmental awareness using a previously developed research instrument (Irma, 2020) that had already been tested for validity, so that in this study the instrument was used directly. Meanwhile, the sustainable tourism variable used an instrument from the journal by (Nafi & Ahmed, 2017), which was translated from English into Indonesian. Consequently, the instrument was revalidated using a sample of 29 students and analyzed through validity and reliability testing, resulting in the findings that the instrument was both valid and reliable.

The data analysis used in this study is descriptive statistical techniques and inferential statistical analysis techniques. Descriptive statistical techniques are used to measure the level of environmental awareness among students and the perceptions of students at SMAN 1 Rowosari towards sustainable tourism. The results of the data will be presented in the form of frequency distribution tables. Inferential statistics is a branch of statistics that provides rules or methods used to predict, estimate, and draw general conclusions. Inferential statistics aims to be a tool for estimating population parameters and testing (Yuniarti, 2022). The inferential analysis in this study uses Pearson's correlation. Pearson's correlation produces a correlation coefficient that serves to measure the strength of the linear relationship between two variables. If the relationship between two variables is not linear, then the Pearson correlation coefficient does not reflect the strength of the relationship between the two variables being studied, even though the two variables have a strong relationship (Hidayanti et al., 2021). The collected data were analyzed using descriptive statistics. The score researcher used for the results of this study can be seen in Table 1 :

**Table 1 Variable Score Interval Criteria Attitude of Concern for the Environment and Sustainable Tourism**

| Score Interval | Class    |
|----------------|----------|
| <33,3          | Low      |
| 33,3 – 66,7    | Moderate |
| 66,7 – 100     | Hight    |

## Result and Discussion

### 1. Environmental Awareness

Environmental awareness is an action or behavior of individuals who strive to prevent damage to the surrounding environmental and repair existing damage to the natural environmental (Nugroho et al., 2022). An environmentally conscious attitude must also be instilled from an early age so that awareness of environmental protection can be formed. One way to shape an environmentally conscious attitude in students is by introducing environmental awareness in education (Satria et al., 2023).

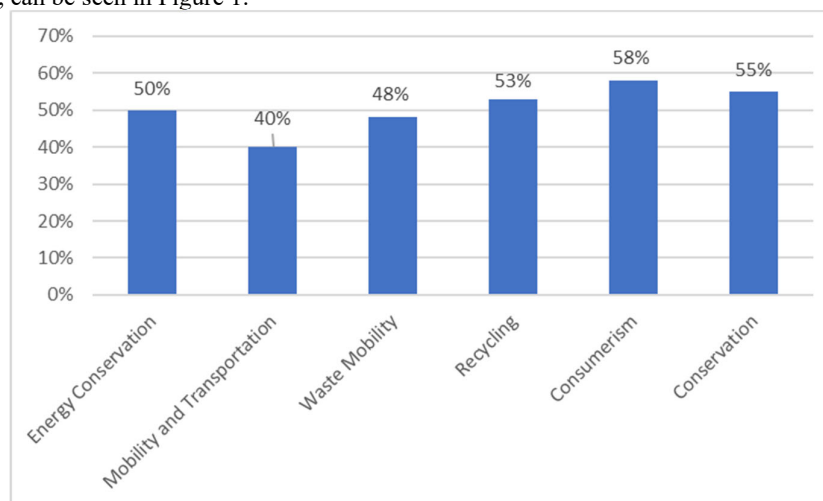
The environmental awareness of students at SMAN 1 Rowosari in this study was measured using a questionnaire consisting of 20 questions and six indicators, namely energy conservation, mobility and transportation, waste avoidance, recycling, consumerism, and conservation. The results of the descriptive analysis of the environmental awareness variable group are presented in Table 2.

**Table 2 The Distribution of Environmental Awareness Attitudes  
of Students at SMAN 1 Rowosari**

| Score Interval                       | Class    | Frequency | Percentage |
|--------------------------------------|----------|-----------|------------|
| <33,3                                | Low      | 11        | 9          |
| 33,3 – 66,7                          | Moderate | 99        | 79         |
| 66,7 - 100                           | High     | 15        | 12         |
| Total                                |          | 125       | 100        |
| Average Score 51 (moderate category) |          |           |            |

Table 2 shows that for the variable of environmental awareness, 11 students were in the low category with a percentage of 9%, 99 students were in the medium category with a percentage of 79%, and 15 students were in the high category with a percentage of 12%. Therefore, it can be concluded that the environmental awareness attitude variable of SMAN 1 Rowosari students, with an average score of 51, falls into the moderate category.

The data on the level of environmental awareness among students at SMAN 1 Rowosari, which consists of six indicators, namely : energy conservation, mobility and transportation, waste avoidance, recycling, consumerism, and conservation, can be seen in Figure 1.



*Figure 1. Environmental Awareness Attitudes of  
Students at SMAN 1 Rowosari for Each Indicator*

Based on Figure 1, the research data was obtained from a questionnaire distributed to 125 students. At the level of the environmental awareness attitude variable, there are 6 indicators with the highest percentage results in the conservation indicator (55%) and consumerism (58%), while the lowest is 40% in the mobility and transportation indicator. The research data on the environmental awareness variable shows that students at SMAN 1 Rowosari have full awareness of maintaining environmental cleanliness and can use resources efficiently, but they have not yet optimally implemented environmentally friendly transportation behaviors. These results are in line with (Sidjabat, 2016) that habits and awareness within students are the main determinants in shaping environmental awareness. Therefore, an alternative environmentally friendly transportation model can be used to encourage students to cycle or walk to school if the distance is short, as cycling is a healthy activity and also prevents pollution. These results also agree with (Setiawati, 2016) that mobility activities at school can be integrated into environmental awareness efforts by encouraging students to walk or cycle to reduce motor vehicle use.

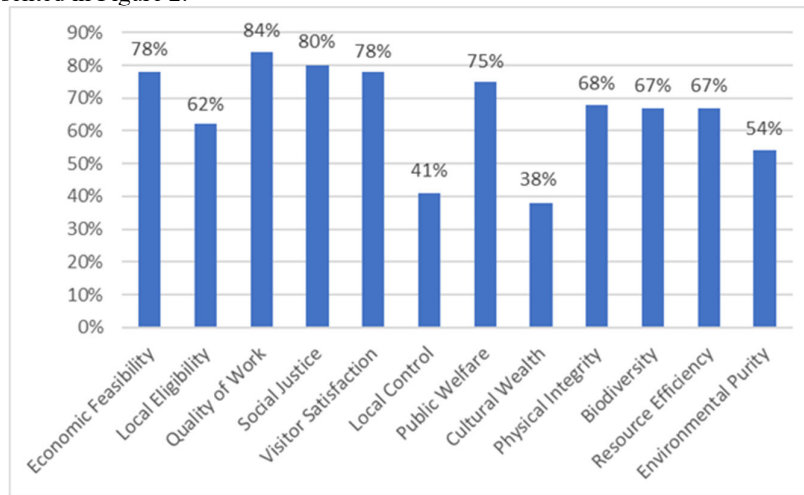
## 2. Students' Perceptions of Sustainable Tourism

Students' perceptions of sustainable tourism were measured using a questionnaire consisting of 29 questions comprising 12 indicators, namely economic feasibility indicators, local feasibility indicators, employment indicators, social justice indicators, visitor satisfaction indicators, local control indicators, community welfare indicators, cultural wealth indicators, physical integrity indicators, biodiversity indicators, resource efficiency indicators, and environmental purity indicators. The results of the descriptive analysis of the group of variables related to students' perceptions of sustainable tourism are presented in Table 3.

**Table 3 The Distribution of Students' Perceptions of Sustainable Tourism at SMAN 1 Rowosari**

| Score Interval                   | Class    | Frequency | Percentage |
|----------------------------------|----------|-----------|------------|
| <33,3                            | Low      | 0         | 0          |
| 33,3 – 66,7                      | Moderate | 36        | 29         |
| 66,7 - 100                       | High     | 89        | 71         |
| Total                            |          | 125       | 100        |
| Average Score 74 (high category) |          |           |            |

Table 3 shows that in the variable of students' perceptions of sustainable tourism in the low category, there were no students in the low category, while 36 students (29%) were in the medium category, and 89 students were in the high category. Thus, it can be seen that the variable of SMAN 1 Rowosari students' perceptions, with an average of 74%, falls into the high category. Students' perceptions of sustainable tourism at SMAN 1 Rowosari, consisting of 12 indicators, namely : economic feasibility, local feasibility, job quality, social justice, visitor satisfaction, local control, community welfare, cultural wealth, physical integrity, biodiversity, resource efficiency, and environmental purity, are presented in Figure 2.



*Figure 2. Students' Perceptions of Sustainable Tourism at SMAN 1 Rowosari for Each Indicator*

Based on Figure 2, the research data was obtained from a questionnaire distributed to 125 students. At the level of student perception of sustainable tourism, there are 12 indicators with the highest percentage on the job quality indicator (84%) and the social justice indicator (80%), while the lowest is on the cultural wealth indicator (38%). The research data shows that SMAN 1 Rowosari students believe that the development of tourism in the coastal area of Rowosari District, Kendal Regency, can have a positive impact on improving the local economy and creating jobs. However, in terms of cultural preservation, many local people and tourists have not fully preserved the local culture. These results are in agreement with (Idrus et al., 2024). That the current young generation, in the context of sustainable tourism development, is only focused on developing the economy and society, while cultural preservation is often neglected. In the development of sustainable tourism in Indonesia, there are young tourists who are highly aware of the economic impact on a tourist destination, so that they are able to provide financial benefits to the local community, including students of SMAN 1 Rowosari who are students who have high perceptions in the economic, social, and environmental aspects of sustainable tourism in the coastal area of Rowosari District, Kendal Regency. These results are also in line with the findings (Nafi & Ahmed, 2017) of that Saint Martin Island is located in Bangladesh, India. From the perspective of young tourists, tourism activities on Saint Martin Island benefit the local population, but the entrepreneurial attitude of the local population comes more from outsiders who get jobs than from the local population.

### 3. Results of the Correlation Test between Environmental Concern Attitude and Students' Perceptions of Sustainable Tourism

This Pearson correlation test was conducted to determine the strength of the relationship between the variables of environmental awareness and students' perceptions of sustainable tourism. Before conducting the Pearson correlation test to determine the relationship between the two variables, a prerequisite test was conducted to determine homogeneity and normality, so that the correlation test could be performed.

**Table 4 Results of the Correlation Test Between Attitudes and Perceptions**

|                         |                     | Environmental Awareness | Sustainable Tourism |
|-------------------------|---------------------|-------------------------|---------------------|
| Environmental Awareness | Pearson Correlation | 1                       | .336**              |
|                         | Sig. (2-tailed)     |                         | .000                |
|                         | N                   | 125                     | 125                 |
| Sustainable Tourism     | Pearson Correlation | .336**                  | 1                   |
|                         | Sig. (2-tailed)     | .000                    |                     |
|                         | N                   | 125                     | 125                 |

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Based on Table 4, the results of the Pearson correlation test show that the correlation ( $r$ ) is 0.336 with a significant value of 0.000 between the variables of environmental awareness and sustainable tourism. Because the significant value is  $< 0.05$ , it can be concluded that there is a significant relationship between the variables of environmental awareness and sustainable tourism. The correlation coefficient is 0.336 and falls into the category of a weak relationship, indicating that although the relationship is weak, there is a significant and unidirectional relationship between the two variables. It can be concluded that there is a significant relationship between environmental awareness and students' perceptions of sustainable tourism, which means that it is important to increase students' environmental awareness in order to improve their perceptions of sustainable tourism. These results are in agreement with (Folinas & Theodore, 2020) that it is important for the community and the younger generation to participate in creating environmentally friendly tourism practices.

By shaping students' environmental awareness towards sustainable tourism in the coastal area of Rowosari District, Kendal Regency, it will have a positive impact on the coastal tourist area, making it more comfortable, cleaner, and preserving the ecosystem. This behavior requires the active contribution of the younger generation and the local community in recognizing the importance of preserving the environment in the coastal tourist area of Rowosari District, Kendal Regency. This is in line with (Ganiem & Pandjaitan, 2020), which states that there needs to be active contributions from local officials and other community members to jointly care for a healthy environment in coastal areas. Therefore, since most students of SMAN 1 Rowosari live in the coastal area and the school itself is located in the coastal area of Rowosari Subdistrict, it plays a crucial role in implementing strategies to instill environmental values and promote sustainable tourism.

## Conclusion and Recommendations

From the results of this study, it can be concluded that the environmental awareness of SMAN 1 Rowosari students is in the moderate category with an average score of 51. The environmental awareness variable also has a high frequency value of 12%, moderate of 79%, and low of 9%. The highest indicator in the environmental awareness variable is the consumerism indicator with a percentage of 58%, and the lowest indicator is the mobility and transportation indicator with a percentage of 40%. The perception of SMAN 1 Rowosari students towards sustainable tourism in the coastal area of Rowosari District, Kendal Regency, falls into the high category with an average score of 74. The variable of student perception towards sustainable tourism also has a high frequency value of 71%, medium 29%, and low 0%. The highest indicator in the variable of student perceptions of sustainable tourism is the job quality indicator with a percentage of 84%, and the lowest indicator is the cultural wealth indicator with a percentage of 38%. The relationship between environmental awareness and the perceptions of SMAN 1 Rowosari students toward sustainable tourism, with a significance value of  $0.000 < 0.05$ , indicates that there is a significant association between the variables of environmental awareness and students' perceptions of sustainable tourism. The correlation value of 0.336 is classified as weak. These findings suggest that sustainable tourism needs to be integrated into student education, while also considering other factors or the need for further research that may influence students' environmental awareness.

As for suggestions that can be given in relation to the above research, it is hoped that schools can improve programs related to environmental education activities such as waste banks, mangrove planting, and community service on the coast in an effort to shape students' character to care for the natural environment around them. In addition, there needs to be collaboration between the government, tourism management, and schools in forming educational tourism programs or environmental training for students in coastal areas.

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