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Sustainability Awareness Profile of Locational School Students Through ESD-Oriented Project Based Learning

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Abstract: Education in Indonesia seeks to realize sustainable development through the implementation of ESD in Vocational High Schools (SMK). Even though ESD has been attempted in Indonesia, especially in the world of vocational school level education, based on the results of observations in the field, it turns out that learning in the classroom is still not fully directed towards Sustainable Development Education, even though it can actually be integrated well, for example in the science and technology project learning. ESD is very important in building students' mindset and lifestyle in the present and future, so this research was carried out to obtain more concrete information regarding students' sustainability awareness profiles through the integration of ESD in the science project learning, which is deemed to be beneficial. supporting students' sustainability awareness. The researcher carried out a quantitative research approach using the Oneshot case study method through a survey with a random sample of 482 students in 2 vocational schools in Semarang Regency online using a Descriptive Analytical method. The instrument used was a questionnaire with a Likert scale (without neutral options) which was given after the learning process. Through this research, data was obtained that Sustainability Awareness (Sustainability Awareness) in the emotional and behavioral and attitude categories includes the "often done" criteria, but the practice awareness category includes the "rarely done" criteria. Based on the results of this research, it is recommended for vocational school teachers to increase students' awareness of environmental and sustainability issues through the integration of ESD concepts in all subjects as well as hands-on practical programs such as clean-up actions and the art of recycling. Involving local communities as part of the learning process and providing assistance by competent teachers in the field of ESD can also help increase sustainability awareness among vocational school students.

Keywords: ESD; Project Based Learning; Sustainability Awareness

Introduction

Sustainable development is a global issue that is becoming a concern throughout the world (Fathurohman et al., 2023). Development is enhanced by efforts to meet current needs without compromising the ability of future generations to meet their own needs. Education has an important role in increasing public awareness and understanding of sustainable development, especially through the Education for Sustainable Development (ESD) approach (Agbedahin, 2019; Oe et al., 2022). In 2005, the UN declared Sustainable Development Education or what we know as ESD. The aim of developing ESD is to integrate the value of sustainable development in all aspects of learning (Cebrián et al., 2020; Nousheen et al., 2020) in encouraging changes in human resource behavior towards a society that is sustainable, happy and fair for all. The 21st century agenda also states Education is critical for promoting sustainable development

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(Eliyawati et al., 2023; Jihannita et al., 2023), which shows that education is very important for promoting sustainable development. The discussion and formulation of the concept of sustainable development makes it clearer that education is the key to sustainability .(Barth et al., 2007; Holfelder, 2019)

In Indonesia, the implementation of ESD, especially at the school level, is still not fully optimal (Paristiowati et al., 2022). In fact, the environment and sustainability must be a topic given to students from an early age so that they can build awareness of the importance of preserving nature and maintaining a balance between the economy, social and environment. One way to implement ESD is through project-based learning (Bramwell-Lalor et al., 2020; Mathe, 2014; Teff-Seker et al., 2019) which requires students to learn actively by using local resources around them. Vocational school is a secondary education level that is very suitable for implementing project-based learning because it is practical and directly integrated with local industry (Sugiyanto et al., 2020). The government, through its Education Department, has launched Vocational High Schools (SMK) as one of the formal secondary level vocational education institutions that strives to create people with noble character, trained and skilled in the world of work and in the industrial world. In government regulation no. 29 of 1990 also formulated that Vocational School Education aims to prepare students to enter the world of work and develop professional attitudes, which means that the main objective of implementing Vocational School Education is to prepare graduates as prospective workers and develop the existence of children for the benefit of students, the nation and the State, so that thinking and awareness of sustainability among vocational school graduates is very important for their sustainability in the future (Khoiri et al., 2023).

ESD is education that inserts broad knowledge and futuristic insights into the global environment to provide awareness to society to contribute to sustainable development in the present and future (Cassar, 2022). ESD instills thinking about the living needs of the present generation without ignoring future generations. In Indonesia in UUPPLH No. 32 of 2009 article 1 paragraph 3 sustainable development is defined as a conscious and planned effort that combines environmental, social and economic aspects into a development strategy to ensure the integrity of the living environment as well as safety, capability, welfare and quality of life current and future generations (Cassar, 2022). The Ministry of Education states that learning in vocational schools should have an Education for Sustainable Development (ESD) perspective which has three aspects, namely socio-cultural, natural environment and economic (Vilmala et al., 2022). If the values in ESD which include three perspective components are implemented, sustainable development will be achieved (Cassar, 2022).

ESD is an integral part of achieving the 3 pillars of human resource development, namely social development, economic growth and environmental preservation. These three pillars are known as the Three Pillars of ESD, namely: Social and cultural issues related to human rights, human security and peace, understanding of cultural and intercultural diversity, gender equality, health, HIV & AIDS, and governance; The next pillar is the Environment which is related to natural resource issues (energy, agriculture, water, biodiversity), rural development, climate change, sustainable urbanization, disaster prevention and mitigation; and the last is 3) Economics, which is related to issues of poverty reduction, corporate responsibility, accountability, flexibility and reorientation of the market economy (Curren, 2009). Based on the explanation, a conclusion was reached that sustainability awareness is an effort to utilize the environment for development while still protecting and preserving environmental quality so that it is able to support all human needs both now and in the future. Education from a sustainable development perspective basically explains values, where humans are able to understand themselves and other creatures around them and are able to understand the reciprocal relationship between the natural and social environment more clearly (Biasutti & Frate, 2017). The aim of this sustainable development education program is to foster awareness, attitudes and values that can become the basis for the success of sustainable development.

KK should be built early because KK is a very important component to support sustainable development. KK refers to research entitled "Designing Curriculum About Governance and Sustainability in Higher Education: A Case Study" (Cassar, 2022) and is also supported by research entitled "the status on the level of awareness in the concept of sustainable development among secondary school students ", has 3 categories of sustainability awareness, namely: The sustainability practice awareness category is a category that shows students carrying out activities that are directly related to the environment around them on a daily basis in a sustainable and continuous manner; The behavioral and attitude awareness category is a category about the importance of students' awareness in taking action related to environmental issues or the attitudes and habits they carry out daily related to the environment, such as reading about environmental issues, appreciating activities that are good for the environment, recycling, etc.; and The emotional awareness category is a category that shows students' emotional awareness regarding their responsibility for

environmental problems around them, for example students' expressions of disappointment regarding pollution that occurs in the environment (Cassar, 2022) (Cassar, 2022; Hasanah, 2023). One way to foster KK is to carry out teaching and learning activities using an ESD approach and a project-based learning model and choosing topics that are tailored to the three pillars of ESD. This is in line with what is explained by Waltner et al. (2020); Noordin et al. (2010), that the integration of ESD implementation can foster awareness, attitudes and values which can be the basis for making sustainable development a success through learning activities that can improve students' ability to make decisions by considering the long term. long aspects of economics, ecology and equality of all humans (Bertschy et al., 2013; Zguir et al., 2021).

The topic of living creatures and their environment is a suitable topic to study using this approach. Because knowledge about living things and their environment is one of the cognitive domains in environmental literacy and sustainability awareness which will support an understanding of the impact of the interaction of living things socially, culturally and economically as well as with their environment in a sustainable way (Musyafiatun & Hayat, 2022), so that the learning material These "living creatures and their environment" are closely related to our lives, both socio-cultural, environmental and economic life. Project-based learning is an active learning method that involves students being directly involved in the learning process through a real project (Ferreira & Canedo, 2020). In the context of this research, the project must be related to environmental and sustainability issues so that it can increase the sustainability awareness of vocational school students in Semarang Regency. By integrating these three basic concepts, it is hoped that we can create an innovative learning method that can increase the awareness of vocational school students in Semarang Regency.

Method

This research design uses a quantitative approach using a survey (Ghislandi et al., 2020). The type of research used is descriptive to describe the KK profile of vocational school students in Semarang Regency through the integration of ESD in learning-based projects. The concentration of this research is vocational school students in Semarang Regency in 2 sub-districts, namely Bancak and Pabelan sub-districts who have received teaching about environmental and sustainability issues through learning-based projects with ESD integration, so the science project subjects were chosen which included learning content. project based. The sample was taken at simple random as many as 482 respondents.

Data Collection Techniques were collected through an online questionnaire which was distributed to respondents via Google Form (Minnaar & Heystek, 2013) science project teachers at vocational schools and distributed using social media. The questionnaire consists of three parts, namely demographic questions and questions about the level of awareness of sustainability and factors that influence students' attitudes towards the environment. Data analysis uses descriptive statistical techniques such as frequency, proportion, mean, and multiple linear regression analysis to determine what factors influence students' level of concern for the environment. All data will be processed with the help of SPSS software and also analysis from Google forms (Paramitha et al., 2022).

This research design, it is hoped that it can provide an overview of the sustainability awareness profile of vocational school students in Semarang Regency through the integration of ESD in project-based learning and what factors influence students' attitudes towards the environment. The instrument used was a questionnaire with a Likert scale (without neutral options) adopted from research entitled "The Status on the level of environmental awareness in the concept of sustainable development among secondary school students" given to students after completing project-oriented learning activities ESD (Alabi & Jelili, 2023).

KK in this research will be categorized into 3 categories as mentioned previously. The items in the questionnaire used to measure each category are indicated by the numbers listed in table 1.

Table 1. Items to measure Sustainability Awareness in each category

Sustainability Awareness Category	Item
Sustainability practice awareness	2, 3, 13, 17, 23, 27, 28, 36, 37, 38, 39, 41, 43&44
Behavioral and attitude awareness	5,6, 10, 11, 12, 15, 22, 24, 26, 29, 30, 31, 32, 34&35
Emotional awareness	1, 4, 7, 8, 9, 14, 16, 18, 19, 20, 21, 25, 38, 40&42

The Likert scale used is made in checklist form. For data processing purposes, the number of people who chose "Agree" and "Strongly agree" in each category was added up and then presented as a percentage using the Formula 1 (Kusmaryono et al., 2022).

$$\% = \frac{\sum \text{Responden S+Ss}}{\sum \text{Seluruh Responden}} \text{ X } 100\% \quad (1)$$

As information, Number of S+SS respondents: Number of respondents who chose the "agree" and

"strongly agree" options. After obtaining the percentage, the KK profile based on the percentage in each existing category is classified according to Table 2.

Table 2. Percentage of Sustainability Awareness

Percentage	Meaning
0.0 – 39.9	Practices that seldom or dislike to be done
40.0 – 69.9	Practices that are done/happened moderate/medium
70.0 - 100.0	Practices/feelings that are most likely one/happened

Apart from calculating the percentage of responses from respondents, the average score for each indicator in the questionnaire was also calculated. This is done to determine the student's KK level. The student's KK level is shown in Table 3.

Table 3. Level of Sustainability Awareness

Average score	Indicator levels
1.00 – 2.33	Low
2.34 – 3.66	Medium
3.67 – 5.00	High

Result and Discussion

The student's KK profile section is measured using a questionnaire with Google Form facilities which is given after the learning process, namely after the end of semester assessment test during the implementation of the P5 program at school in February - March 2023. The questionnaire used is an adoption from a journal entitled "The status on the level of environmental awareness in the concept of sustainable development among secondary school students" (Olsson et al., 2022). Of the 60 questions, there are 44 survey questions that have been validated and categorized into 3, namely sustainability practice awareness, behavioral and attitude awareness and emotional awareness.

From the survey results, it was found that the distribution of respondent data was that 34% of students lived in rural areas, 32% of students lived in areas close to factories, 20.3% lived in villages where the majority were farmers and foresters, 9.5% lived in the village center city and the rest chose to abstain, which can be seen in Figure 1.

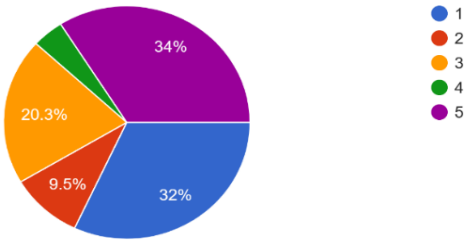

Figure 1. Diagram distribution of respondance

The distribution of respondents among vocational school students in class X was 31.1%, class XI was 31.1% and class XII as much as 37.8% randomly with a random composition of men and women, as seen in Figure 2.

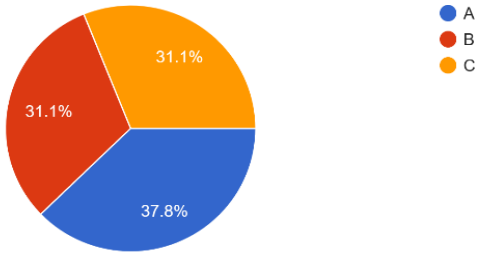

Figure 2. Diagram respondance vocational

The average value for each category from the survey results of respondents to determine students' level of sustainability awareness was also supported by interviews through several online written questions which showed that students' awareness of carrying out sustainable practices was very low. It was found that 7.3% of students strongly agreed and had implemented sustainable practices while the rest answered that they had never embarrassed sustainable practices and did not agree to do so and there were 2.7 who were still hesitant to answer. This means that students still very rarely and never even practice sustainability, meaning that their awareness of sustainable practices is very low, which can be seen in Figure 3.

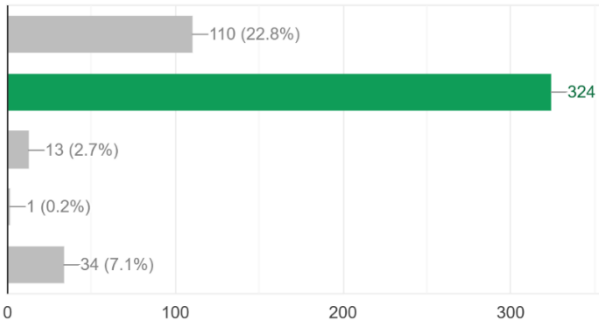

Figure 3. Percentage of implementing sustainability practices

For the behavioral and attitude awareness category, on average, 17% were very concerned, 57.8% were concerned and the rest were still unsure and did not want to answer. From this data, it can be seen that awareness of their behavior and attitudes towards sustainability basically already exists both from an environmental, socio-cultural and economic perspective, but according to them, follow-up on sustainability cannot be done due to many factors such as where they live and educational background.

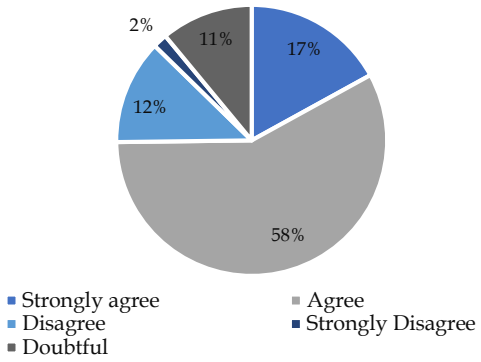

Figure 4. Students' emotional awareness

Meanwhile, students' emotional awareness shows very significant data, more than 92% of them are aware of the importance of sustainability awareness for their future, and only a few have not emotionally thought about sustainability, both in terms of their environment, and they are aware of the importance of sustainability, as well as social culture that needs to be preserved. and of course from an economic perspective, it is necessary to be aware of the sustainability of their career path after graduating from vocational school and think about their economic sustainability as shown in the diagram.

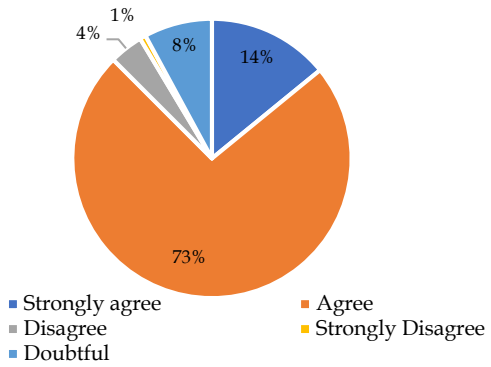

Figure 5. Students' emotional awareness after graduation

Based on the explanation of several diagrams above, a total mean of 2.9 levels of Sustainability Awareness for students at SMK N 1 Bancak class X was obtained, including "medium". As previously mentioned, all the statements above are used to measure sustainability awareness which is grouped into 3 categories, namely Sustainability practice awareness, Behavioral and attitude awareness and Emotional awareness. Figure 6 provides an overview of the sustainability awareness profile of vocational school students in Bancak and Pabelan sub-districts, Semarang Regency.

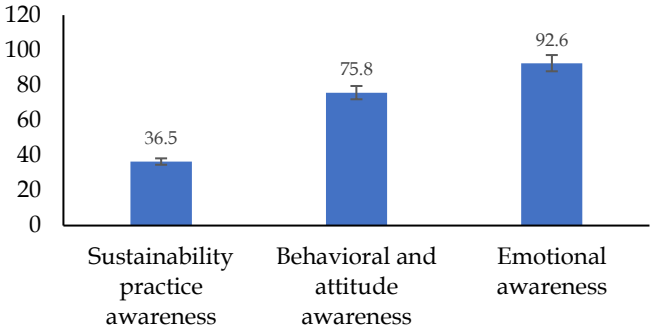

Figure 6. Sustainability awareness profile

So it can be interpreted for each category as in Table 4.

Table 4. Sustainability Awareness Categories

Categories of Sustainability Awareness	Percentage (%)	Interpretasi
Sustainability practice awareness	36.50	Sangat jarang atau tidak pernah dilakukan
Behavioral and attitude awareness	75.80	Selalu dilakukan
Emotional awareness	92.60	Selalu dilakukan

Discussion

Discussion of research results is a form of researcher scholarship. For this reason, the author is expected to be able to reveal in detail and in depth the findings in his research. In this section, the author must refer to previous research results that have been published in scientific journals (especially reputable national or internationally accredited journals). Authors are also advised to refer to research results that have been published in the Education Quality Journal.

The following are several examples of writing references in the body of an article. Writing can be like this, if there are two authors then it is written like this. If there are 4 or more authors, it is written like this. Then, you can also write the name outside the brackets, according to the statement written. Writing references does not need to include the page from the cited reference source. It should be noted that all mentions of names follow the last name of each author cited.

It is hoped that the discussion section can provide new contributions and color to the development of science, especially in the field according to the article written. For this reason, authors are expected to really pay special attention to ensuring that the discussion written is an important part of the overall content of the article, which can improve scientific quality.

Conclusion

Conclusion Based on existing data, it can be concluded that the student's KK level is "medium". With a Sustainability practice awareness percentage of 36.50%, a Behavioral and attitude awareness percentage of 75.80%, and an Emotional awareness percentage of 92.60%. Factor analysis also shows that knowledge about environmental issues, practical experience in maintaining environmental cleanliness and health, positive attitudes towards nature conservation and efficient use of resources as well as assistance from teachers are important factors that influence students' concern for the environment.

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This article was prepared by three authors, i.e N. K, M.S.H and D.S. The author completed this article with collaboration at every stage.

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The authors declare no conflict of interest.

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