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Exploration of Environmental Literacy in the Kampung Warna-Warni Jodipan Malang as a Source of Learning for Biology

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Abstract

This research aims to analyze the environmental literacy of the community in Kampung Warna-warni Jodipan (KWJ). Environmental literacy is conducted to determine the community's ability to understand and maintain the environment to ensure its balance and prevent pollution. Knowledge and attitudes are important aspects used to measure environmental literacy. This research was conducted on KWJ community involving 83 people as research samples. Data were collected through questionnaires, interviews, and observations using Google Form. Data analysis used Guttman Scale and Likert Scale. The results of data analysis according to the Guttman Scale with a moderate score range (11-16) showed that the community's knowledge is not yet fully maximal in understanding environmental literacy, but with KWJ, the attitudes shown by the community begin to emerge to maintain and preserve their environment. The results of this research can be used as a learning resource for biology in high school class X. This research can be used as a step to improve understanding of environmental literacy.

Keywords: Environmental Literacy; Knowledge; Attitude; Learning Resources

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INTRODUCTION

Indonesia is one of the countries that has experienced development in the economic field. The creative economy is a combination of creative industries, creative workforce, and creative communities or regions that can provide income and help the economy in Indonesia (Larassaty, 2016). There are many opportunities to improve the economy, one of which is the availability of tourist attractions. Specifically, in the city of Malang, there are advantages in terms of geography and innovative human resources that can be used as capital for developing the economy of the people in Malang (Satria, 2009). One of the programs currently being implemented by the Malang city government is the "Kampung Tematik" program. This program is considered to help improve the economy of Malang (Shofa & Deddi, 2009). Tourist attractions included in the Kampung Tematik are Kampung Topeng, Kampung Glintung, and Kampung Warna-warni Jodipan (KWJ).

Based on the observations conducted in KWJ on January 9th, 2022, the tourism issue currently being experienced is related to environmental maintenance and pollution. According to Fauziah (2020), the location of KWJ near the river causes residents to dispose of trash indiscriminately into the river, which can lead to flooding. In addition, there are also many piles of trash on the riverbank, causing an unpleasant odor. This problem will have an impact on both humans and the environment. The impact on humans is that it can reduce the attraction for tourists to visit and can also affect the health of the local community (Akbar,

2018). Meanwhile, the impact on the environment is that it can cause natural disasters and pollution in the environment.

One solution to overcome this issue could be by developing an environmentally literate community, with a more responsible behavior towards the environment (Maskur & Yusuf, 2019). Various studies that examine environmental literacy have been conducted several times. Research by Sudjono and Wulandari (2020) is an example of such research. From this, it can be seen that research on environmental literacy has been conducted, but it has not been applied as a source of learning for high school biology. In addition, there has been no research on environmental literacy conducted in KWJ. With this research, it can serve as a consideration for researchers to improve the environmental literacy of the KWJ community.

This research is expected to be used as a reference for learning biology. The learning resources will be implemented for high school students in grade X, Base Competency or *Kompetensi Dasar/KD* 3.11 Analyzing environmental change data, causes, and impacts on life and Core Competency or Kompetensi Inti/KI 4.11 Formulating ideas for solving environmental changes occurring in the surrounding environment. Based on the background above, the aim of this study was to analyse the environmental literacy and use the results of this research as a source of learning biology.

METHOD

The research method used in this study is a descriptive approach with a survey research design. The research was conducted in KWJ for 14 days. The sampling technique used was random sampling without stratification. The sample used in the study was limited to adults aged between 18-50 years (Sukaesih, 2017). The research subjects used in this study were 10% of the total population. To avoid questionnaire damage, a tolerance error limit of 10% was tolerated (Virgin et al., 2018). The sample was taken according to the slovin approach, resulting in a sample of 83 residents representing three neighborhoods, namely RT 006, RT 007, and RT 009.

The research process began with the researcher conducting a literature review on the topic to be studied. After conducting the literature review, the researcher conducted an environmental observation. Then, the researcher developed research instruments for data collection. Data collection was carried out by requesting permission from the tourism village management to distribute a Google form via WhatsApp group. In addition, the researcher also conducted interviews with the tourism village management.

The data collection technique used both testing and non-testing methods. The testing method used a knowledge questionnaire adapted from an article titled "*A Multi-country Examination Of The Relationship Between Environmental Knowledge and Attitudes*" (DeChano, 2006). The knowledge questionnaire consisted of 17 items. Meanwhile, the questionnaire on environmental literacy attitudes was adapted from the New Ecological Paradigm (NEP) instrument, which consisted of 15 statement items to determine the level of environmental literacy. The NEP scale has been tested in various studies on the measurement of attitudes and behaviors towards the environment, so it has been proven to be consistent as a measuring tool (Dunlap et al., 2000). The data analysis technique used in this study was descriptive statistical analysis. This meant describing or depicting information related to the collected data for analysis. For the calculation of knowledge data analysis, the Guttman Scale was used, while the Likert Scale was used for attitude items.

According to Hafizh et al (2018), the data calculation is in accordance with the Guttman Scale: (1) Know the score of true and false answers: (a) Correct answer score: 1; Incorrect answer score: 0; (2) Convert to percentage: (a) Correct answer: 100%; (b) Wrong answer: 0%; (3) With a range of values: (a) Less range with score (7-10); (b) Medium range with score (11-16); (c) Good range with score (17).

According to Syofian et al (2020), the attitude assessment rubric can be detailed as follows: (1) Strongly Agree: SA (score 5); (2) Agree: A (Score 4); (3) Doubt: D (Score 3); (4)

Disagree: DA (Score 2); and (5) Strongly Disagree: SD (Score 1). Qualitative data was obtained from the results of interviews and observations by describing and strengthening each discussion.

RESULTS AND DISCUSSION

Based on the data obtained from this study, the results are presented in the form of percentage responses from the environmental knowledge questionnaire of KWJ community. The total number of respondents involved in this study was 83 residents. From the Guttman Scale analysis, it was found that 63 respondents answered correctly with a percentage of 76%. However, there were also respondents who answered incorrectly, about 20 respondents with a percentage of 24%. To determine the distribution of the range of environmental knowledge scores, it is shown in the Table 1.

Table 1. Distribution range of environmental knowledge of the KWJ community

No.	Range	OlD	People	Percentage (%)
1	Less (Score 7-11)	35-50	21	25
2	Medium (Score 12-16)	20-34	61	74
3	Good (Score 17)	19	1	1

Based on the results in table 1, the percentage on the pie chart can be drawn as follows:

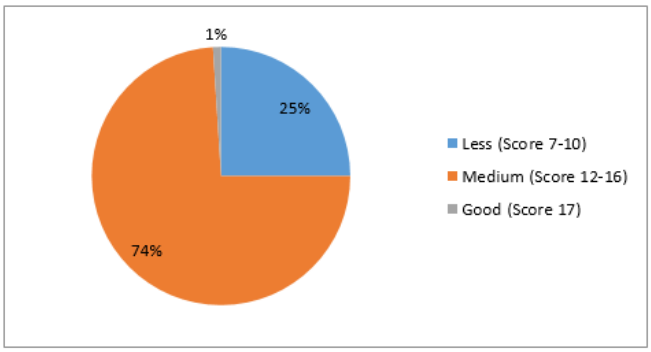

Figure 1. Percentage distribution of environmental knowledge score ranges

Based on Figure 1, it shows the percentage distribution of the range of environmental knowledge scores of KWJ community. The percentage of 25% indicates that around 21 people from the KWJ community aged 35-50 still lack environmental knowledge. The percentage of 74% indicates that around 61 people from the KWJ community aged 20-34 have moderate knowledge. And the percentage of 1% indicates that around 1 person from the KWJ community aged 19 has good knowledge. Based on the results obtained from this study is the percentage of response of the NEP instrument which contains attitudes towards the environment in the KWJ community as follows.

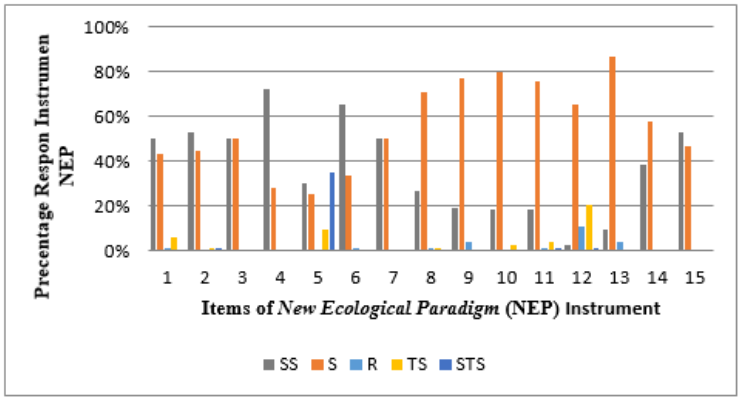

Figure 2. Response percentage of *New Ecological Paradigm* (NEP) instrument items

Based on figure 2, it is found that almost the majority of respondents chose positive responses (strongly agree and agree options). However, there are also respondents who chose negative responses (disagree and strongly disagree options). And only a small number of respondents chose to answer uncertainly. If grouped according to odd and even items, the calculation results of the percentage of NEP instrument responses related to attitudes toward the environment are as follows.

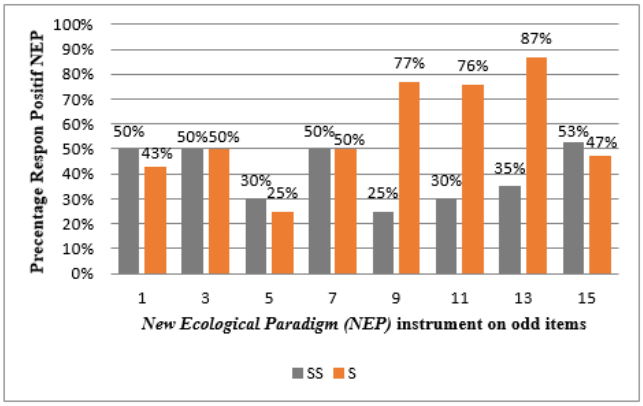

Figure 3. Percentage of positive response of *New Ecological paradigm* (NEP) instrument on odd items

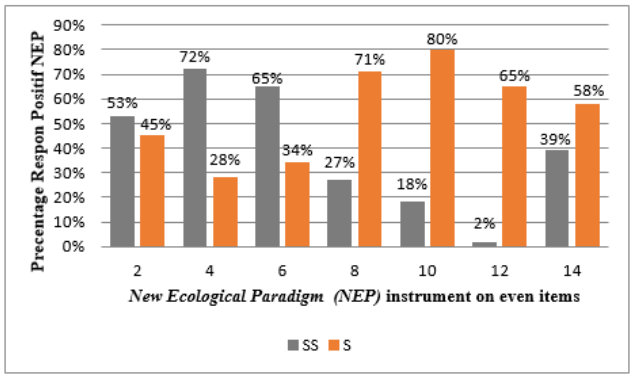

Figure 4. Percentage of positive responses of New Ecological paradigm (NEP) instruments on even items

Based on figures 3 and 4, it can be seen that around 48.5% of the respondents chose positive responses (strongly agree and agree options) on odd items. However, there are also quite a number of respondents who chose positive responses (strongly agree and agree options) on even items, around 46.5%.

Based on the analysis of knowledge data, it was found that 25% of the community aged 35-50 have insufficient knowledge, while 74% of the community aged 20-34 have moderate knowledge. And only 1% of the community aged 19 have good knowledge. According to Martini (2019), this can be due to several factors, including:

Age

Based on the research results, the research sample used was a community aged 18-50 years old. This age range is considered mature enough to gain knowledge acquired from an early age. However, in reality, the age range can also influence a person's literacy understanding. KWJ community members aged 35-50 years old still have a lack of knowledge regarding the environment. Efforts to overcome the lack of knowledge among those aged 35-50 years old can be done by providing basic skills on the utilization of resources in their environment, such as making crafts that can minimize waste in the surrounding environment. For those aged 20-34 years old who have moderate knowledge, this can be addressed by providing counseling on environmental management training in

order to improve their knowledge. Meanwhile, those aged 19 years old already have good knowledge about the environment. This can be used as an example for other communities to influence their environment. For instance, as stated by Mrs. Siti, the wife of Mr. Efendi in RT 007, KWJ residents teach their children to care for the environment. It can be concluded that KWJ communities are capable of teaching things that can cultivate good character in young children. Literacy is important to be applied since childhood in order to reduce misunderstandings related to literacy (Maesaroh et al., 2021).

Education

Based on the research results, it was found that almost the majority of KWJ society has a high school education as their highest education level. This was stated by Mr. Parin, the head of RW 002 in Jodipan Sub-district. He said that most KWJ residents graduated from high school, so this can affect the human resources (HR). Looking at the level of knowledge of the community, it is still moderate, so it can be concluded that the knowledge of KWJ society is not fully maximized, due to their highest education level and their HR that have not been fully fulfilled. People who have a high level of knowledge will affect their attitudes and behaviors to be more friendly towards the environment (Putra, 2017).

Experience

According to the interview with Mrs. Roly, the administrator of RT 006, she said that after becoming a tourist village like now, the community in the village often gets additional events such as environmental socialization from institutions outside the KWJ management, such as from campus students and the local government. This statement describes that the knowledge gained will shape the individual with good character in carrying out daily habits (Anshori, 2014).

Based on the data analysis, almost 48.5% of respondents chose a positive response (strongly agree and agree options) on odd items. According to Lawton (2016) odd items on the NEP instrument reflect that respondents tend to have a pro-environmental attitude. However, there are also many respondents who chose a positive response (strongly agree and agree options) on even items, around 46.5%. Even items on the NEP instrument reflect that respondents have a more dominant attitude towards social paradigm (Lawton, 2016).

Based on the calculated data analysis, it is found that KWJ society tends to have a pro-environmental attitude, although the difference with social paradigm is not significant. According to the interview with Mrs. Aminah, the administrator of RT 009, she said that the community's attitude has started to follow the development towards more mutual cooperation in preserving the environment. The attitude of caring for the environment will have an impact on daily life in their environment, either through decision-making or behavior in maintaining the tourist village environment. The relationship between humans and the environment is circular, which means that whatever humans do to the environment will have an impact back on humans, whether it is good or bad (Ahmadi et al., 2018).

Learning activities would be better if they can be tailored to the students' learning needs, such as learning that is presented with case studies about the surrounding environment (Yeni, 2018). Therefore, the use of learning resources related to nature and the environment is easier for teachers to create different learning activities than before. Learning resources can be said to be effective if they meet several requirements. According to Vitanovi, P. C. & Susilo (2014), learning resources refer to six conditions, including: (1) Clarity of potency. The clarity of potential in this study is the ability of environmental literacy in the KWJ community which is used to manage tourist villages to generate benefits for their communities. (2) Elevance to learning objective. The relevance to the learning objectives contained in the syllabus with KD 3.11 Analyzing environmental changes data, its causes, and impacts on life, and KI 4.11 Formulating problem-solving ideas for environmental changes that occur in the surrounding environment on environmental change materials. This

research provides data on the changes in the environmental conditions of the slum village turning into a tourism village. (3) Clarity of objectives. The object of observation or target of analysis in this study is to analyze the environmental literacy of KWJ community, while the subject of the study is intended for high school students in grade X. (4) Clarity of information disclosed. The clarity of information obtained from this research is in the form of facts that can be developed as a source of learning for the community about environmental literacy. (5) Clarity of exploration guidelines. Students can learn about environmental changes by identifying and solving environmental problems through case studies. (6) Clarity of Expected Outcomes. The expected outcome of this research is that it can be used as a learning resource that fulfills the aspects of the biology learning objectives, including: (a) The cognitive domain can provide knowledge about environmental literacy material. (b) The affective domain can cultivate and develop a caring attitude towards the environment. (c) The psychomotor domain is expected to increase responsiveness and active participation in class discussions related to environmental case studies.

CONCLUSION

Based on this study, conclusions can be drawn that: (1) The knowledge of KWJ residents is not yet fully maximized in understanding environmental literacy, as the knowledge they possess tends to be moderate, resulting in insufficient human resources. However, with the presence of this tourist village, the attitudes shown by the community are beginning to emerge in preserving and maintaining the environment. (2) The results of this study can be used as a source of learning for Biology class X on the topic of environmental change with KD 3.11 Analyzing data on environmental changes, causes, and impacts on life, and KI 4.11 Formulating ideas to solve environmental changes that occur in the surrounding environment on the topic of environmental change.

RECOMMENDATION

It can be concluded that this research can be used as a further step towards the community to improve their understanding of environmental literacy, which can help to enhance the human resources of the local community. Moreover, this research is expected to serve as a reference for biology learning materials.

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