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Students' Attitudes and Behaviour towards the River and Activities of the Surrounding Communities

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Abstract

Currently, there has been a lot of environmental damage due to human activities. Sand mining is one of the community activities in Indragiri that has caused various damages in the area around the river such as polluted river water, damaged roads due to frequent sand-carrying trucks, landslides due to erosion, and noise due to sand suction machine activities. If no efforts are made to manage the environment sustainably, this situation will get worse in the future. This condition encourages the need for efforts to minimise various environmental damages, one of which is through education. The purpose of this study is to analyse students' attitudes and behaviour towards the river environment so that the results of this analysis can be used as a basis for developing environmental education programs so that the program is right on target and according to needs. This survey research involved 151 students who were taken using purposive sampling. The instrument used was a questionnaire with 35 questions. Data analysis was done with descriptive quantitative. The results showed that; (1) students already have good positive attitudes towards the river; (2) most students already have good behaviour towards the river; (3) there is a relationship between students' attitudes and behaviour towards the river; (4) students already have good attitudes and behaviour towards sand mining activities around the river. However, efforts still need to be made to equip students with the knowledge, skills, values and attitudes needed to contribute more to the preservation of the surrounding river environment

Keywords: *Attitude; Behaviour; River*

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INTRODUCTION

A river is an incision on the earth's surface that is a natural reservoir and distributor of water flow and the material it carries from upstream to downstream of a drainage area, to a lower place and finally empties into the sea (Soewarno, 1991). The availability of water in the river, fertile valleys and natural potential make humans

interested in settling around it. Rivers are one of the natural resources that have versatile functions for human life and livelihoods. Brotowidjoyo et al. (1999) divided rivers into two groups based on their utilisation, namely the utilisation of biological resources and the utilisation of non-biological resources. One example of non-biological resource utilisation in rivers is the use of rivers as sand mining sites.

River utilisation in sand mining activities is also carried out by communities around the Indragiri River. The Indragiri River is the third longest river on the island of Sumatra with a length of ± 550 km which crosses four districts in Riau Province, namely Indragiri Hulu district, Indragiri Hilir district, Pelalawan district and Kuantan Singingi district. Machairiyah et al. (2020) explains that the good and bad of a body of water is strongly influenced by the activities around it. Currently, the utilisation of Indragiri River for sand mining has caused various damages to the environment around the river. Sand mining is a technological effort made by humans to meet the needs of building materials, by changing an environment that will certainly have a negative impact on the typology of the surrounding environmental ecosystem. The impact of sand mining is certain to cause environmental problems that are far greater and wider than short-term profits (Halim et al., 2019). According to Sari (2019), sand mining causes river water conditions to become polluted and damaged roads. The noise caused by sand suction machine activities in the mining also disrupts the lives of residents around the river (Qolbina, 2017). The utilisation of this river will affect the existence of aquatic ecosystem components both structurally and functionally. Triwuri et al. (2018) stated that sand mining that is not managed properly can have a negative impact on the environment. The same thing was also conveyed by Fardhan (2018) that sand mining has an impact on environmental damage if no sustainable environmental management efforts are made.

Seeing the amount of environmental damage around the river due to sand mining activities, it can be said that the knowledge, concern of the community for the river is still quite low, so there needs to be a solution to overcome this problem that is not only by the use of technology and the application of regulations, but the most important is the involvement of education. Providing environmental education is very important (Alhamda & Megawati, 2021) to instill environmental attitudes and behaviours in students considering that they are the future community who will face various environmental damages and challenges. According to Broom (2017), positive attitudes towards the environment should be built from childhood and environmental education should start at an early age. To be able to develop educational programmes that focus on instilling these attitudes and behaviours, an analysis of learners' attitudes and behaviours towards the environment is first needed, so that the development of educational programmes will be targeted and appropriate to the needs (Shafiei & Maleksaeidi, 2020). Measuring people's knowledge, awareness or behaviour will be a key thing to do in the development or evaluation of any programme or intervention. Currently, there is no research on how students' attitudes and behaviours towards Indragiri River and their views regarding sand mining activities in the river. Therefore, this research aims to find out how students' attitudes and behaviours towards the Indragiri river environment and the activities of the surrounding community to serve as a basis for making various policies in all aspects

of life, especially education so that negative environmental impacts in the future can be minimised.

METHOD

This study was conducted from January to April 2024. The research method used was a survey with a cross sectional study design. According to Fraenkel & Wallen (1993), survey research is research by collecting information from a sample by asking them through questionnaires or interviews to describe various aspects of a population. The design of this research is a cross sectional study because researchers only observe phenomena at one specific time. The population in this study were students of MTs Negeri 1 Indragiri Hulu. The research sample is MTs Negeri 1 Indragiri Hulu students. The sampling technique is purposive sampling with the criteria of students who live in villages with riverbank topography. This study uses primary and secondary data types. Primary data collection techniques were carried out using questionnaires and field observations. The secondary data were obtained from various literatures and reports of previous research results. The instrument used was a questionnaire with a total of 35 questions with 25 questions related to students' attitudes and behaviour towards the Indragiri River and 10 questions related to students' attitudes and behaviour towards sand mining activities around the Indragiri River. Questions can be seen in Table 1. The questionnaire was then distributed via google forms.

Table 1. The Questionnaire

No.	**List of Questions**
1	I pay attention to the cleanliness of my neighbourhood
2	I realise that keeping the environment clean is important
3	I realise the importance of keeping the river clean
4	I once participated in a river clean-up activity
5	I try to keep the river environment clean
6	I participate in environmental clean-up activities on my own awareness
7	I prefer to see a clean river environment
8	I really care about the river environment
9	I admonish people who pollute the river environment such as littering
10	I discussed with the villagers about the cleanliness of the neighbourhood around the river
11	I once did a river clean-up activity
12	I think residents already have an awareness of the importance of keeping the river environment clean
13	I think people who pollute the river environment need to be reprimanded/sanctioned
14	I see that the people living around the river preserve the environment around the river
15	I think many residents are polluting the river environment
16	I know how to keep the river clean
17	I do not litter around the river
18	Together with the residents, I keep the river from being polluted
19	I worked together with the community to clean up the river environment

No.	**List of Questions**
20	I think the regulations on river environmental management are well implemented by the government
21	I think the cleanliness of the river is the responsibility of the local community, including myself
22	I think it is bad behaviour to throw garbage in the river
23	I think a damaged and polluted river environment is very dangerous for human life
24	I use river water for my daily needs
25	I realise that a polluted river can threaten human health
26	I am aware of sand mining activities in the river in my neighbourhood
27	I often notice sand mining activities in the rivers around my neighbourhood
28	I learnt that it is necessary to obtain a permit from the government to mine sand in the river
29	I realise that the government needs to play a role in regulating sand mining activities in the river
30	Apart from the government, I know that the community must also play a role in paying attention to sand mining activities in the river
31	I once reprimanded a sand miner who did not have a licence to conduct sand mining activities
32	I know that sand mining activities in rivers have a negative impact on the environment
33	I know that sand mining can cause road damage in the form of landslides
34	I know that sand mining can reduce the quality of river water
35	I know that over-exploiting natural resources such as sand in rivers can lead to a decline in the sustainability of natural resources

The data analysis used to identify students' attitudes and behaviour is descriptive quantitative where the answers to the questionnaire use a likert scale of 1-4. Then, the score is obtained using the following formula by Mahita (2018).

$$\text{Learner score} = \frac{\text{Score obtained}}{\text{Maximum score}} \text{ x } 100\%$$

The scores obtained by students were then categorised according to criteria based on the score intervals as shown in Table 2. Meanwhile, the relationship between students' attitudes and behaviour towards rivers was obtained from SPSS Version 26 using the T-test.

Table 2. Assessment Categories Based on The Respondents' Answers (Mahita, 2018)

Number	**Score Value (%)**	**Criteria**
1	< 60	Less
2	60 - 70	Enough
3	>70 - 80	Good
4	> 80	Very good

RESULT AND DISCUSSION

There are a number of respondents who have filled out the questionnaire distributed through google form. From a total of 35 questions, the students'

environmental attitudes and behaviours towards the river and the surrounding community activities can be analysed.

Students' Attitude towards The River

Attitude is a person's closed response to a stimulus or object (Mustofa et al., 2021) while environmental care attitude is a person's positive or negative support for things that support caring for the environment. Based on the questionnaire analysis, students are known to have a positive attitude towards the environment. In Diagram 1, it can be seen that 77% of students have a very good attitude towards the environment, 21% have a good attitude, 2% are in the moderate category and no students are in the poor category.

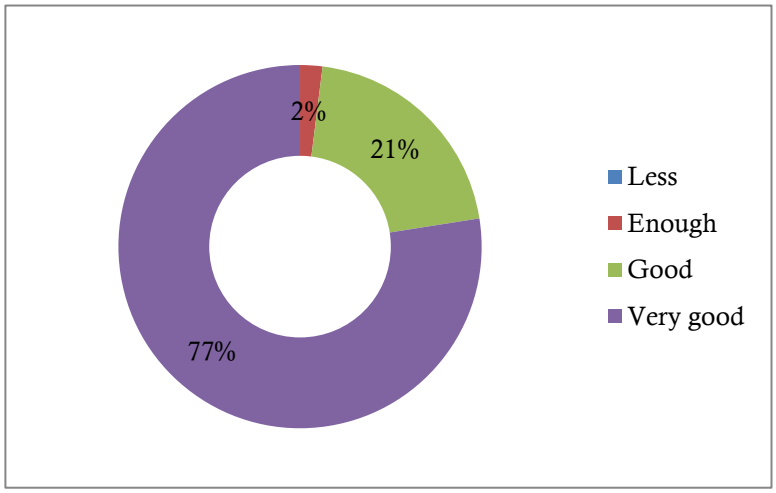

Figure 1. Percentage of Students' Attitudes towards The River

This positive attitude shows that students already have good knowledge about the river and understand how to preserve it. Students already have an awareness to keep the river and the surrounding environment clean, students know how to keep the river clean by not throwing garbage in the river and students agree to provide sanctions or punishment for people who pollute the river. In addition, students also realise the consequences that will arise if the river is polluted and students understand that maintaining the cleanliness of the river and the surrounding environment is a shared responsibility. Chen et al., (2022) stated that someone with good environmental knowledge will produce a positive environmental attitude. The results of research by Al-Nuaimi & Al-Ghamdi (2022) stated that most students agree that their attitude towards sustainability is strongly influenced by curriculum and learning materials, peers, relatives, campus facilities and social media. According to Azwar (2015) there are several factors that influence a person's attitude such as the environment, mass media and personal experience. This is in line with the statement of Aini et al. (2021) that attitudes are influenced by many factors such as parents, school curriculum, and student habits at home.

According to Eagles & Demare (1999), a person's attitude towards the environment is formed through continuous interactions with others, the environment, and culture, where these three components have a greater influence on

one's attitude. Thus, it can be said that if someone's social environment is good, then that individual will also have a good environmental care attitude. If we live in an environment that upholds values and norms of environmental concern, then it is likely that we will have a supportive attitude towards environmental care. Positive attitudes towards the environment can also be formed due to mass media showing facts about environmental issues and various calls to action and solutions to be more environmentally conscious. Not only that, attitudes are also influenced by personal experiences that leave impressions and shape one's attitude. These attitudes can change over time, and susceptibility to attitude change is greater during adolescence (Visser & Krosnick, 1998).

Students' Behavior towards The River

Pro-environmental behaviour is an individual's effort to maintain the environment and minimise activities that can adversely affect the environment (Geiger et al., 2018). It can be seen from students who have participated in gotong royong activities to clean the river with the community, not throwing garbage into the river, reprimanding residents who throw garbage into the river and discussing with the community about river cleanliness. Based on the questionnaire analysis, 46% of students have very good behaviour towards the environment, 38% have good behaviour, 13% have fair behaviour and 3% are in the poor category. From these results, it can be said that most students have been able to take action related to environmental protection around the river, which means that students have been able to apply the knowledge they have gained about the environment to real situations correctly.

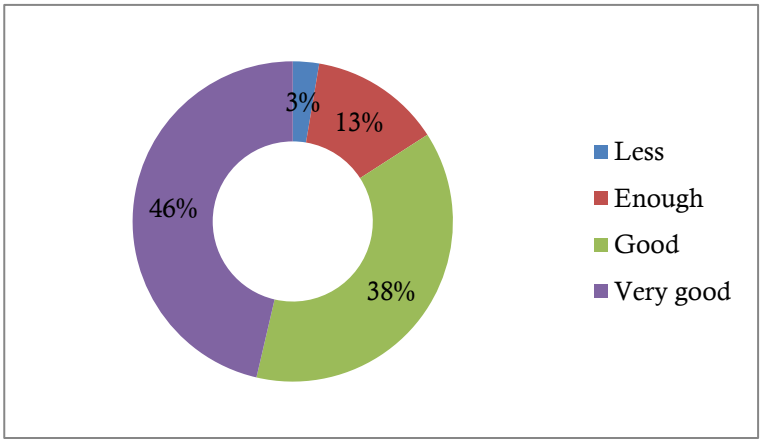

Figure 2. Percentage of Students' Behaviour towards The River

According to Abedi-sarvestani & Shahvali (2008), human behaviour is influenced by beliefs, values and attitudes. This is in line with Sarwono (2012) who revealed that one of the triggers for a behaviour is due to attitude. Attitudes do influence a person's behaviour, but are not automatically realised in action because there are other supporting factors needed such as facilities, experience, motivation and environment. If newly formed behaviour or adopted behaviour is based on

knowledge, awareness and good attitudes, then the behaviour will last a long time and vice versa (Silgo et al., 2007).

Relationship between Students' Attitude and Behaviour towards The River

The relationship between attitudes and student behaviour towards rivers was analysed using the T test. From the results of T test at Table 3, a sig value of 0.000 was obtained, which states that there is a relationship between attitudes and student behaviour towards rivers, meaning that students who have a good attitude have good behaviour towards the river environment. Here it can be said that students have been able to connect what they learn and can apply it in real life.

Table 3. T Test Results

	Paired Differences 95% Confidence Interval of The Difference							
Pair 1 Attitude-Behaviour	**Mean**	**Std. Deviation**	**Std. Error Mean**	**Lower**	**Upper**	**t**	**df**	**Sig. (2-tailed)**
	8.480	9.024	1.805	4.755	12.205	4.699	24	.000

Attitudes have a strong, significant and positive correlation with behaviour (Sparks & Shepherd, 1992; Petty & Briñol, 2010; Suprapti, 2010; Suki, 2013; Sapci & Considine, 2014; Chen et al., 2022). According to Ajzen and Madden (1986), attitudes will influence behavioural intentions, while behavioural intentions in turn shape behaviour. The relationship between explicit and implicit attitudes can influence a person in processing information until behaviour change occurs (Lee et al., 2015). Kollmuss & Agyeman (2002) believe that only by changing an individual's environmental values, intrinsic motivation, and relevant environmental attitudes can individuals generate positive environmental behaviour. However, this relationship between attitude and environmental behaviour varies across studies depending on various factors such as mood, emotion, personality, social pressure, potential, risk or time.

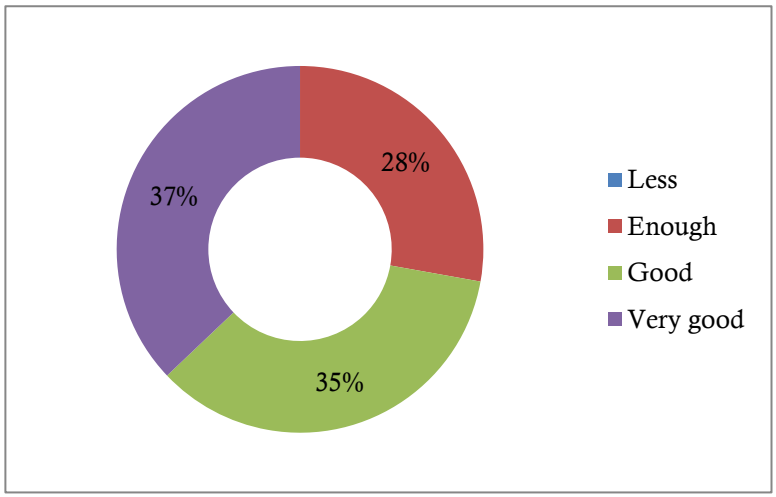

Figure 3. Percentage of Students' Attitudes and Behaviour towards Sand Mining Activities

Students' Attitudes and Behaviour towards Sand Mining Activities

Based on the results of the questionnaire analysis, it is known that students already know the impact of sand mining activities on the river environment. Most students already have positive attitudes and behaviours towards sand mining activities, which means they have knowledge of the negative impacts of sand mining activities on the environment around the river and have made efforts to minimise these impacts. In Diagram 3, it can be seen that 37% of students have very good attitudes and behaviour towards sand mining activities, then 35% are in the good category, 28% are in the sufficient category and none are in the less category.

Students play a crucial role in environmental conservation as they are the main objects of formal education and agents of change. However, efforts still need to be made to equip students with the necessary knowledge, skills, values and attitudes to contribute to a more sustainable world (Chen et al., 2022). What needs to be remembered is that human attitudes and behaviour will determine the good and bad condition of an environment. The way humans treat their environment will have an impact on the quality of human life itself (Hamzah, 2013).

Effects of Sand Mining Activities on the Environment

Mitchell et al., (2016) stated that human activities can cause environmental damage, including sand mining. Sand mining activities can cause pollution of the aquatic environment (Yunus, 2005; Sonak et al., 2006; Rizqan et al., 2016; Akankali et al., 2017; Triwuri et al., 2018; Sari, 2019; Wahyuningtyas, 2020; Mukiat et al., 2021; Yosieguspa et al., 2021; Bawu et al., 2023). Sand mining is a pollutant source that causes the highest damage in the form of smearing and turbidity (Saviour, 2012). According to Yen & Rohasliney (2013), sand dredging causes physical disturbance to sediments that affect suspended solids and increase water turbidity. Turbidity also occurs due to the washing process carried out to separate sand from other elements that produce washing residue in the form of mud and fine sand. According to Saviour (2012), sediments that enter water bodies include suspended soil and sand. Sediments cause the loss of suitable spawning grounds for fish because sediments can cover the substrate so that organisms that need the substrate as a place of life and shelter are disturbed. Not only that, Prawtiwi (2013) stated that turbid river water can block the penetration of sunlight, thus disrupting the primary productivity of phytoplankton. Sun blockage due to turbidity can reduce respiration and photosynthesis activities and block the respiratory organs of aquatic animals (Barman et al., 2019). This will certainly threaten the survival of aquatic organisms in the river (Bawu et al., 2023). Unfortunately, based on research by Nugroho et al., (2022) many people do not pay attention to the level of turbidity of river water because basically the colour of Indragiri river water is not clear or slightly cloudy or brown.

Sand mining can also cause erosion. Nugroho et al., (2022) stated that sand and gravel mining activities along the Indragiri River had caused erosion on the riverbanks. Yudhistira et al., (2011) and Mukiat et al., (2021) also stated that sand mining has a physical environmental impact in the form of landslide-prone cliffs. Erosion according to Yudhistira (2008) is the process of moving soil or rocks from

one higher place to a lower place due to the force of water, wind, or gravity while Arsyad (2006) says erosion is a natural process that is easily recognised, but erosion can be exacerbated by human activities such as sand mining activities. Erosion can occur due to changes in land cover from covered to open land (Yudhistira, 2008). The absence of vegetation cover causes no protection of the soil surface from the impact of rainwater, so that rain grains will fall directly on the ground, so the impact of rainwater on the ground is very large (Suherman et al., 2015). The chance of erosion will be greater with the steeper the slope. Steep slopes will increase the energy of water transport so that the number of soil grains splashed down by the impact of water will be more and more (Nura'ban, 2018).

Research from Sari (2019) and Qolbina (2017) states that sand mining causes many holes in village roads due to excavation by heavy equipment. Mobility carried out by sand transport trucks carried out almost every day also worsens road conditions, damages bridges and worsens air quality (Yudhistira et al., 2011; Wahyuningtyas, 2020; Solekha et al., 2023). In addition, there is also noise caused by the activity of sand suction machines in the mining (Qolbina, 2017). Sand mining activities can also cause the river to silt up. Sand suction carried out in the mining process will cause water to be sucked in. When the sand is collected on the banks of the river, the water carried will flow back into the river with soil particles. This process continues over a long period of time, causing a high concentration of sediment in the water so that the river gradually becomes shallow.

CONCLUSION

From the results of this study, it can be concluded that; (1) students already have a good positive attitude towards the river; (2) most students already have good behaviour towards the river; (3) there is a relationship between students' attitudes and behaviour towards the river; (4) students already have good attitudes and behaviour towards sand mining activities around the river. However, efforts still need to be made to equip students with the knowledge, skills, values and attitudes needed to contribute more to the preservation of the surrounding river environment.

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