UNIVERSITAS LAMBUNG MANGKURAT

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[JPII] Submission Acknowledgement

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To: Arif Sholahuddin <arif.science.edu@ulm.ac.id>

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Students' Caring Attitudes to Wetland Environment: A Case of Environmental Education in Banjar District Indonesia

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Schools in Indonesia have been conducted environmental education programs through both curriculum activities and schools' environmental programs. However, there was no sufficient data about the effectiveness of the programs. This study aims to identify the junior high school students' caring attitudes to the wetland environment (CATWE) as the education outcome. The Six Junior High Schools were chosen as probability sampling areas classified as urban, middle, and rural areas schools of Banjar District with total samples of 354 students aged 12-14 years. The CATWE data were collected using a valid and reliable questionnaire with the content validity ratio of 1, inter-rater reliability of 100%, and Cronbach's alpha of 0.72. This study found that most of the students care for the wetland environment. The highest score of the CATWE indicator was responsible; meanwhile, the lowest was hard work. Even though all the indicators have reached a care category, there were no differences in the CATWE of the three school areas. These findings indicate that the school area was not the main determining variable of the effectiveness of environmental caring attitude education. It is necessary to investigate deeply the effectiveness of the school environmental program "Adiwiyata", outside classroom activity, and the role of family in environmental education.

Keywords: environmental education, caring attitude, wetlands, school area, sustainability

INTRODUCTION

The The phenomenon of ecosystem damages such as pollution, global warming to climate change as an impact of economic and industrial activities, were experienced by societies worldwide. It relates to the lack of human awareness of the environment and attitudes to sustainable development (Rachmatullah et al., 2020). Accordingly, it demands the role of education which aims to enable individuals to assimilate the values, the basic concepts and the practical knowledge which will help them to an awareness of environmental problems, build behaviour accordingly and thus give a useful contribution to safeguard the environment (Aarnio-Linnanvuori, 2019; Edsand and Broich, 2020; García et al., 2019; Nkoana, 2019). Refers to the Oxford Dictionary, caring relates to adjective words of concerned, attentive, thoughtful, solicitous, responsible, and considerate. In this study, caring attitude refers to human attitudes towards the environment in the form of a tendency to maintain and preserve it. The environmental caring attitude consists of indicators of hard work, respect to health and cleanliness, wise, and responsibilities (Adawiah, 2018; Breckler, 1984). This attitude is part of the individual characters that will lead to providing pro-environmental behaviour.

Development of environmental character including caring attitude to the environment has been to be strengthened by the Indonesian government by issued of Presidential Regulation No. 87 of 2017. In order to form the expected character, it has to include the three dimensions, including moral knowing, moral feelings such as self-perception, empathy, love kindness, self-control, and moral action (Lickona, 2012). Accordingly, the embedding character must begin with knowledge about a character. Knowledge about what is the caring environmental attitude will cause someone to have this attitude. Therefore, he/she needs to learn content knowledge closest to the students in order to increase their understanding. Caring attitudes to the environment that was formed will be manifested in the form of behaviour. It is repeated until internalized and characterized to be a character. In other words, attitude is someone's tendency to do real action. In the long term, it will be expected to reduce environmental damage in the future (Boca and Saraçlı, 2019; Dimante et al., 2016).

Environmental education in Indonesian schools has been carried out in an integrated form with subjects matter (Siswanto et al., 2019; Tim Adiwiyata Tingkat Nasional/TATN, 2011) especially natural sciences and social sciences. Besides, several schools have been conducting practical activities to instil a caring culture of the environment for all school residents such as the green school or "adiwiyata school program" since 2006. Adiwiyata school program was aimed to make school residents responsible for protecting and managing the environment through good school governance in supporting sustainable development. Four aspects have to exist in the "adiwiyata school program" were environmentally sound policies, implementation of an environment-based curriculum, participatory environment based activities, and management of environmentally friendly supporting facilities (TATN, 2011). However, how are the school environmental education programs effective to improve the caring attitude to the environment? There is a lack of evaluation data provided for very heterogeneous regions like Indonesia. Only some research has been carried out in certain cities with subjects of students with different levels of education to investigate their attitudes towards common environmental problems (Iswari and Utomo, 2017; Riastini et al., 2019; Sidauruk, 2013). Even though more data are needed in order to plan and improve environmental education properly.

The integration of characters with subject matters is believed as an effective way to build students' characters through education (Dimante et al., 2016; Vesely at al., 2020). In this case, the teacher plays an important role due to pedagogical management to build students' character, including a caring attitude to the environment (Aarnio-Linnanvuori, 2019). Even, the new challenge for the teacher is to utilize information technology as an effective way in improving students' environment awareness (Jorgenson et. al., 2019; Ozdemir and Alkabbanie, 2017; Šorytė and Pakalniškienė; 2019).

The ultimate goal of environmental education is not only to equip knowledge, but also to shape the students' positive attitude and behavior to the environment. This certainly requires a long time and continuous habituation so that their caring attitudes will be characterized as expected behavior (Bergman, 2015; Isdaryanti et al., 2018; Lickona, 2012; Sholahuddin et al., 2018; Turkmen, 2013). Previous research has shown that contribution of the knowledge is smaller than the real environmental problem-solving activities outside the classroom such as exploring the environment around students, exploring of the environmental values of local wisdom and using the environmental social issues (Alon and Tal, 2017, Boca and Saraçlı, 2019; Ntanos et al., 2018; Tekakpınar and Tezer 2019).

Environmental education in Indonesia actually has the right strategy by combining the strengthening of knowledge and habituating of

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• contain urgency (importance) to research
• contain a carrying capacity in the form of supporting data and facts
• contain a preliminary study as a basis for the importance of the research conducted
• contain a GAP ANALYSIS Departing from the preliminary study, analysis of published articles formulated in the Gap analysis
GAP ANALYSIS refers to articles published in various internationally reputable journals to emphasize the novelty of research.
• clear limitation of research objectives

environmental behavior in daily school activities. Unfortunately, many teachers found some difficulties to implement learning activities outside the classroom by involving the community related to the environment. It is due to the tightness of the curriculum, time, and financial availability. However, how the impact of environmental education on students' attitudes and behaviors toward the environment, only a little research reported and showed inconsistent data. Some others showed that external factors such as the school environment did not significantly affect students' environmental care attitudes (Iswari and Utomo, 2017; Siswanto et al., 2019) while the other indicated that these factors have no effect (Meilinda at al., 2017; Riastini et al., 2019). It means that the achievement of environmental education has left the problems.

This current study examined students' caring attitude to the wetland environment (CATWE) of Junior High School Students of Banjar District South Kalimantan Indonesia. Geographically, Banjar District is one of the Indonesian areas that has a large low-lying area or a wetland area comprises a river environment, a swamp environment, a freshwater environment, a brackish water environment or salt including areas of marine water the depth of which at low tide does not exceed six metres that are always flooded throughout the year (Sya'ban et al., 2017, Wetland International, n.d). This ecosystem has been faced the degradation threat of both its quantity and quality (Adeleke, 2019; Fianko and Dodd, 2018; Syam'ani et al., 2018; Tosca et al., 2011; Wetland International, n.d). Besides, the inclusion of locally relevant topics is considered an essential underpinning of effective environmental education and requires flexible curricula for programs that span large geographic areas (Bergman, 2015). Further, the integration of environmental education in the classroom to environmental stewardship projects has increased students' eco-impact (Bergman, 2015). The CATWE in this study represents one's attitude to the wetland environment in the form of attitudes towards certain behaviours related to the environment and actions taken in order to preserve the environment. This study aimed to (1) analyze the students' CATWE categories and its differences between junior high school students in different areas (urban, middle and rural areas), and (2) describe Students' CATWE based on its indicator. The finding of the current study is important to design and evaluate school environmental education as an effort to keep the sustainability of the wetland environment.

METHODS

This study implemented triangulated mixed-methods (Creswell, 2012) to obtain information about the CATWE of junior high school (JHS) students of Banjar District Indonesia. The population was 2,741 grade VII students from the 64 State Junior High Schools. The six representative schools samples were drawn using the area of probability sampling which comprise of Martapura Public Middle School 1 and Martapura Public Middle School 2 represent urban area schools; Gambut 1 Public Middle School and Astambul 1 Public Middle School represents middle area schools; and Aranio Public Middle School 1, and Sungai Tabuk State Middle School 1 represents suburban area schools. Total students participating as the sample were 354 aged between 12 to 13 years.

The questionnaire for measuring the CATWE consists of 37 items of the statement with modified Likert's type of four alternative answers: strongly agree, agree, less agree, and disagree. Indicators of the CATWE include (1) *Hard work*: working hard to protect river ecosystems, working hard to preserve swamp ecosystems, fighting spirit to save nature, and working together to solve wetland environmental problems, (2) *Respect to health and cleanliness*: disposing of garbage in its place, cleaning the classroom, maintaining and controlling of household waste, closing water reservoirs and maintaining drinking water wells, (3) *Wise*: reducing air pollution and water pollution, saving water usage, turning off lights when it is not in use, and felling select trees, and (4) *Responsibilities*: protecting and caring for animals, protecting and caring for plants, protecting natural resources and maintaining ecosystem balance.

The questionnaire was validated by five experts and judged as valid with a content validity ratio (CVR) 1 (Cohen and Swerdlik, 2010), inter-rater reliability index of 100% (Borich, 2003) and Cronbach's Alpha of 0.72. Also, interviews were conducted voluntarily to six student samples to verify and elaborate students' opinions about their caring attitudes to the wetland environment within twenty minutes per student. The interviews were then transcribed and analyzed to be triangulated with the quantitative data.

Based on the distribution of questionnaire scores, criteria for students' environmental caring attitudes were categorized as follows: score ≥ 112 is care; 75 - 111 is care enough, and 37-74 is careless. While the score categories of each indicator were categorized as follows: score ≥355 is care, 237-354 is care enough, and 118-236 is careless. ANAVA test also conducted to know the difference of students' environmental caring attitude to the wetland environment between junior high school students from different school areas by using SPSS version 23.

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- contain detailed research stages
- Each stage is explained and analyzed by what method
- Data analysis must be with clear references
- The research instruments used were elaborated to the data analysis technique
- It is hoped that there will be a modification in the stages of research from sources referred by the researcher

RESULTS AND DISCUSSION

Table 1 shows the distribution of a caring attitude to the wetland environment by the school areas of Banjar District JHS's students. The highest score of the CATWE was achieved by JHS's students in middle area schools, while JHS's students in an urban and rural area have the same level of caring attitude. Based on Table 1, it can be said that most of the students in all schools observed care for the wetland environment, and none of them did not interest in the wetland environment.

Table 1. Environmental Caring Attitude of JHS's Students to the Wetland Environment by the school areas

School Areas	Percentage by Category (%)		
	Care	Care enough	Careless
Urban	75.4	24.6	0
The middle	82.0	18.0	0
The edge	75.4	24.6	0
Average	**77.6**	**22.4**	**0**

Table 2 shows the CATWE by indicators of JHS' students in Banjar District. The lowest score of the CATWE indicator is hard work, while the highest is responsibility. However, students in all the school areas have CATWE in the care category on all indicators (hard work, respect for health and cleanliness, wise and responsible). Each school area consists of 118 students, with a total sample of 354. All the data were homogeneous (Table 3) and normally distributed (Table 4) where p value (sig.) > 0.05. Then the one-way Anova test by using SPSS version 23 also obtained a significance value of 0.769 > 0.05 (Table 5). It means that there was no difference between the CATWE between students in different school áreas

Table 2 The Caring Attitude to Wetland Environmental of JHS' Students by Indicators

Indicators	School Area					
	Urban		Middle		Rural	
	Score	Category	Score	Category	Score	Category
Hard work	373.3	Care	370.8	Care	375.5	Care
Respect for Health and Cleanliness	381.8	Care	395.5	Care	390.0	Care
Wise	383.6	Care	376.5	Care	369.5	Care
Responsible	401.8	Care	405.0	Care	401.8	Care
Average	**385.1**	**Care**	**387.0**	**Care**	**384.2**	**Care**

Table 3. Test of data homogeneous

Levene Statistic	df1	df2	Sig.
1.782	2	351	.170

Tabel 4 Test of data normality

	Groups	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Score of Caring attitude	Urban	.077	118	.085	.984	118	.169
	Middle	.065	118	.200*	.980	118	.070
	Rural	.074	118	.162	.981	118	.085

Table 5 ANAVA Test

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	81.870	2	40.935	.262	.769
Within Groups	54774.992	351	156.054		
Total	54856.862	353			

The Students' CATWE: Categories and its differences between school areas

Table 1 showed that the majority of students, 77.6% care about, and none of them in all the school areas did not have an interest in a wetland environment. Students in all the school areas have the same CATWE. This fact illustrates the success of environmental caring character education as the cumulative impact of curriculum implementation in both elementary and junior high school levels. Because, attitudes develop through the stages of receiving, responding, valuing, organization until characterization and requires continuous habituation in a long period (Bergman, 2015; Lickona, 2012; Turkmen, 2013). Indonesia's national curriculum has undergone reform such as strengthening and integration of environmental education in subjects (Siswanto et al., 2019;

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- •Tables or graphs (one selected) must represent different results
- • The results of data analysis must be strong in answering the analysis gap
- •Display of results other than those narrated in table-graph-image-modeling
- •The research novelty has not been clear enough
- • It is recommended not to repeat the references in the introduction, using previous research findings.
- • References used should be taken from reputable journals.

It is necessary to explain the specifications of the findings in this study that show

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2. The pictures/tables must not be consecutive

TATN, 2011). Based on the subject content scope, natural science, and social science subjects discuss mostly the environment compared to the others. Even the learning approach in elementary schools uses an integrated webbed by utilizing the environment as a learning resource.

The finding also proved that formal education over a long period since elementary to the first year of the secondary school played an important role in changing the students' CATWE. Although in general students have achieved good attitudes as the impact of national curriculum implementation, they still need to strengthen students' CATWE in order to keep environmental sustainability, especially for 22.4 % late. There are educational factors that influence the success of environmental education including institution policy, curriculum, learning method, academic culture (Susongko and Afrizal, 2018; Ikhsan et al., 2019), individual motivation factors (Michelsen and Fisher, 2017). Even though knowledge has a very weak relationship on students' environmental behavior (Otto and Pensini, 2017).

This research found that the school area did not influence the students' CATWE (Table 4). This finding in line with Sidauruk's report (2013) that students' environmental care behaviours all of the area (urban, middle, rural) in Medan city Indonesia showed equally good category. No differences in CATWE showed that environmental education including wetland environmental knowledge is relatively good in all the schools' área. Theoretically, good knowledge about the objects of the wetland environment will foster a person's attitude towards the environment, which leads to building positive behaviour as well. Therefore, environmental education in the lower education level will provide a provision and foundation for strengthening caring attitudes for further level. Rabgay (2018) stated that understanding is the key to strengthening attitudes, including CATWE. Therefore, good CATWE might be influenced by the accessibility of information technology. Students can access information related to the environment at any time and place via the internet or social media. Besides, it is hypothesized that other schools' environmental programs (e.g. green school and healthy school) have been carried out well and have influenced significantly to students' CATWE. Therefore, school área was not a determining variable for students to build their CATWE.

Based on the researcher's observations to the three participating schools with different areas, they have implemented a school-based environmental program "Adiwiyata" but their difference is only at the program level. In urban region area JHS 1 Martapura has been conducted at "mandiri level" (autonomous level) since 2015 meanwhile, JHS 2 Martapura has been conducted at the national level since 2016. Middle area schools JHS 1 Gambut and 1 Astambul have conducted national-level programs since 2017 and 2016 respectively. Rural area school JHS 1 Aranio has been conducted provincial level since 2018 meanwhile JHS 1 Sungai Tabuk has been conducted district-level program since 2017. Even though the Adiwiyata level programs, as well as schools' areas, differ between them, they did not show a significant difference in students' CATWE. It means that the level of Adiwiyata, as well as the school area, was not the main factor affecting the level of students' CATWE.

The finding above is in line with the finding of previous studies that external factors such as the school environment were not significantly affecting students' environmental care attitude (Meilinda et al., 2017; Riastini et al., 2019). The internal factors such as self-motivation is the main reason why students want to care about the environment (Aliman et al., 2019). Nevertheless, difference finding was reported by other researchers (Iswari and Utomo, 2017; Siswanto et al., 2019) that students of schools that have implemented the Adiwiyata program have a higher level of environmental knowledge, affective and skills.

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Adiwiyata program level should indicate the schools' level of the environmental culture growing successively from the district, provincial, national, and autonomous levels (TATN, 2011). Different levels of Adiwiyata program may also indicate environmental culture as well as the completeness level of supporting facilities for daily activities as environmentally friendly schools. The school facilities such as providing trash bins based on the type of waste, greenhouse, hydroponics, composting, drainage, mushroom houses, medicinal plants, cleaning service activities every week and et cetera. Another most prominent school's facility is the ownership of the school environmental education software-updated. By assuming that all the affecting factors were equally good between the participating schools so they also have equally good CATWE (Rabgay, 2018). In this case, the program level should be a differentiator for CATWE because of the different levels of Adiwiyata due to different schools' environmental cultures. This finding provides a contradictory fact with the aim of the Adiwiyata program.

Accordingly, it is necessary to conduct further research to investigate the extent to which the quality and intensity of the CATWE through the different levels of the Adiwiyata program. It also needs to be elaborated on the influence of other factors that might have an impact on the CATWE as the synergy of environmental education with various school's activities as well as activities outside the school. Students not only need sufficient environmental knowledge and its sustainability but also motivation from the closest people such as family and school residents in order

to have positive behaviour to the environment (Ntanos, et al., 2018; Šorytė and Pakalniškienė, 2019; Vesely, et al., 2020). Even, social and cultural factors, as well as values that are believed by students, can influence their attitudes and behavior towards the environment (Chisholm, et al., 2016; Rachmatullah, et al., 2020) that someone with the lower socioeconomic level tends to lead the egocentric value of the environment. It is still a serious environmental problem in Indonesia.

Students' CATWE based on Its Indicators

Based on Table 2 from the four indicators (hard work, respect to cleanliness and health, responsibility, wise), the lowest achievement of students' wetland environment caring attitude is a hard work indicator while the highest is responsibility. However, overall all students of JHS in the different areas have reached the CATWE in caring category. The examples of students' caring attitude according to the interview was described below.

Hard work

Hard work relates to maintain and preserve the environment to reach the lowest achievement of the students' CATWE. Even though in general this attitude has reached the caring category. The following are the attitudes of hard work according to students when they were interviewed.

Researcher : Do you feel worried if the waste from our houses is directly streamed into the river?
Students : Yes. Because it may pollute the river ecosystem.
All the six interviewed students answered "No".

Researcher : Do you think that the liquid waste from the plywood factory can be streamed into the river directly?
Students : No. Because it contains hazardous chemicals from plywood processing so it will poison our body.
All the six interviewed students answered "No".

Researcher : Do you think that people who live in "lanting houses" (floating houses) can throw the trash directly into the river?
Students : No. Because it will pollute the river (a student argues that because inorganic waste is not easily decomposed).
All the six interviewed students answered "No".

Researcher : Do you care when you see people dump the sasirangan liquid waste into rivers?
Students : No. Because it does not cause odor or floating garbage in the river.
Other students : Yes I do. Because It may cause a bit of pollution.
In this case, three students who were interviewed answered care, while the others responded uncaringly.

Almost all the students also realized that residual waste from industrial activities in South Kalimantan must not be disposed into rivers, whether waste from smalls or large scales industries because they were dangerous for living things. It certainly relates to the environmental knowledge they have learned through the subject matter. This finding was supported by Fatimah and Adawiyah (2017) that the attitude of JHS students towards the river was categorized as good, which was manifested by always trying to protect the river ecosystem. Meanwhile, the role of family and people around them were less in instilling the environmental caring attitude (Adawiyah, 2018). But, responding to the statement regarding the disposal of liquid waste from "sasirangan" (the traditional cloth of Banjarese) family industry which was directly steamed into the river, the students were still doubtful whether this would pollute the river. It is suspected that students have not seen by themselves how the process happens in the Sasirangan home industry. A similar situation was reported by Mratihatani and Susilowati (2013) that most people considered that the disposal of waste from making batik (traditional cloth of Javanese) in the Pekalongan Central Java river was considered harmless. Barghi et al., (2017) stated that deviant actions towards nature that have become culture are indeed difficult to overcome.

Responsibility

In this current study responsibility is the indicator with the highest score from the other four indicators. Students of the middle area schools have the highest score; meanwhile, the urban and rural area has the same score. Responsibility indicator consists of four aspects, namely protecting and caring for animals, protecting and caring for plants, protecting natural resources, and maintaining the equilibrium of the ecosystem. Below is one part of the interviews.

Researcher : Do you think that the conservation of the Bekantans is important?
Students : Yes. Because in order to preserve and prevent them from extinction as well as keep our ecosystem equilibrium.
Researcher : Do you think that the mangrove plants have an effect on our environment?
Students : Yes. It can avoid abrasión and become a habitat as well as food for animals?
All the six interviewed students stated that it is needed to preserve both proboscis as well as their habitats.

In the case of animal caring, students gave a positive response to the preservation of the endemic animal of South Kalimantan, "Bekantan" (proboscis monkey). Proboscis itself is an endemic animal of South Kalimantan, whose population is

currently threatened because its original habitat has been damaged. The students were well aware that "Bekantan" is almost extinct. Although many students claimed that they had never seen "Bekantan" directly, Atmoko (2010) said that the rehabilitation of proboscis monkeys is expected to improve the number and population of proboscis monkeys and can attract the attention of tourists to visit. As such, it can increase the income of the local community. "Bekantan" indeed requires rehabilitation, especially for proboscis monkeys that were illegally maintained by people. The facts, according to Fuad et al., (2019) it was caused by the students' understanding of resources and its impact on their life so lead to increase their motivation to keep them.

Respects to cleanliness and health

Respects to cleanliness and health indicators consist of five aspects, namely disposing of the garbage in its place, maintaining clean classrooms, closing water reservoirs, maintaining drinking water wells, and handling household waste. Based on Table 2 it can be seen that students' CATWE on the indicators of respect for cleanliness and health was categorized as care.

Researcher : If you finish eating and drinking, do you always throw garbage into the trash can?

Students : Yes. Because it is in order to keep our environment clean and healthy.

Researcher : Do you process and separate vegetable waste left over from the household to be a fertilizer?

Students : No. I have no experience in the microbiological process of organic waste.

All the interviewed students answered that they have no experience in microbiological process, but two of them often heap organic waste directly into the soil around the house so that the soil becomes fertile. The household leftover vegetables or organic waste can be made a compost material. The composting can be accelerated by adding an effective microorganism EM4 activator.

Wise

The wise indicator consists of five aspects, namely reducing air pollution, reducing water pollution, saving water usage, turning off lights when not in use, and cutting down trees selectively. The highest score was obtained in the urban area followed by middle and rural areas (**Table 2**).

Researcher : Do you think that a good way to open the new land in peatlands área is by burning the galam forest?

Students : No. Because burning the forest will cause smog and air pollution.

Researcher : If there is an action to refuse forest burning on a large scale to open new land, will you support the action?

Students : Yes I will.

All the six students answered Yes, but if they will take part in the demonstration, they are still in doubt to be involved.

One of the wise attitudes expressed by students relates to the traditional opening farming field by burning the grass and "galam" (*Melaleuca cajuputi Roxb*) forest. It is a cheap and economical way, but the habituation should be stopped because it may cause the peat forest fire and air pollution. South Kalimantan has the lowest air quality index in Kalimantan by 91.41 (Sulaeman, et al. 2020), even though it still in good quality index. Students also agree to use "jukung" a traditional boat for affordable distance transportation in the water area because this transportation does not use fuel as energy sources so it will reduce air pollution. Riyandeni and Kusumantoro (2013) also found that 82.5% of respondents agree to design public transportation on the river. This finding is in line with Dimante, et al. (2016) that 68.1% of students who have studied natural science are wiser in protecting the environment.

Based on the discussion above, in general students' CATWE are in a good category and must be improved continuously in the future. Strengthening CATWE must also be done through activities outside the classroom by involving the wetland environmental activities of communities. Because, this activity provides a greater role in strengthening knowledge, attitudes, behavior of students towards the environment and even their ability to solve the problems (Aliman, et al., 2019; Barbaro and Pickett, 2016; Otto and Pensini, 2017).

The learning experience outside the school becomes a memorable experience therefore it motivates students to involve deeply in learning activities because learning is usually conducted at limited classrooms (Amahmid et. al, 2019; Ntanos et al., 2018; Olgun, 2018; Tekakpınar and Tezer 2019; Wallace, 2019). Students can practice their knowledge directly, such as planting trees, cleaning up trash, and putting it into the trash bin according to hazardous, inorganic, and organic categories.

It need to drives collaboration of many resources in supporting environmental education including the curriculum, environment and society (Sulaeman et al. 2020; Asri et al, 2020). Lkaher and Gan (2020) suggested that schools have to engage their several stakeholders as school-state-community partnerships to cultivate the students' and community's environmental citizenship, school-business partnerships to improve the physical infrastructure, and also assisted the promotion of education for sustainability in the school.

CONCLUSION

Environment education in Indonesia conducted in integration with the subject matter of science and social studies. Schools are also encouraged by the government to conduct environmental-based school programs "Adiwiyata" in grade levels from the district, province, national to autonomous level. This environmental education aims to instil environmental caring attitude early. This study found that 77.6% of students' CATWE in the care category while the last 22.4% in the care enough category. Responsibility is the indicator with the highest score of the CATWE; meanwhile, the lowest is the hard work indicator. Although, overall indicators have reached an average score in the care category including respect for health and cleanliness and wise. There are no differences in students' CATWE between three different school areas (urban, middle, and rural areas). Basically JHS students have a good caring attitude towards the wetland environment, but it still needs to be improved in the future. These results also indicate that the school area is not the main determining variable of an environment caring attitude. It might be caused by good accessibility of the environmental knowledge in this digital era as well as supporting school environment programs. But, it needs to be evaluated why the level of the "Adiwiyata" school environmental program in schools is not able to distinguish the development of students' environmental culture.

Further research may investigate affecting factors of the effectiveness of the school environmental program "Adiwiyata", outside classroom activity and the role of family in environmental education. Finally, it is necessary to develop environmental education patterns that are integrated classroom activity and real experiences outside the classroom to strengthen the formation of caring attitudes and behaviors towards the wetland environment.

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Students' Caring Attitudes to Wetland Environment: A Case of Environmental Education in Banjar District Indonesia

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Schools in Indonesia have been conducted environmental education programs through both curriculum activities and schools' environmental programs. However, there was no sufficient data about the effectiveness of the programs. This study aims to identify the junior high school students' caring attitudes to the wetland environment (CATWE) as the education outcome. The Six Junior High Schools were chosen as probability sampling areas classified as urban, middle, and rural areas schools of Banjar District with total samples of 354 students aged 12-14 years. The CATWE data were collected using a valid and reliable questionnaire with the content validity ratio of 1, inter-rater reliability of 100%, and Cronbach's alpha of 0.72. This study found that most of the students care for the wetland environment. The highest score of the CATWE indicator was responsible; meanwhile, the lowest was hard work. Even though all the indicators have reached a care category, there were no differences in the CATWE of the three school areas. These findings indicate that the school area was not the main determining variable of the effectiveness of environmental caring attitude education. It is necessary to investigate deeply the effectiveness of the school environmental program "Adiwiyata", outside classroom activity, and the role of family in environmental education.

Keywords: environmental education, caring attitude, wetlands, school area, sustainability

INTRODUCTION

The The phenomenon of ecosystem damages such as pollution, global warming to climate change as an impact of economic and industrial activities, were experienced by societies worldwide. It relates to the lack of human awareness of the environment and attitudes to sustainable development (Rachmatullah et al., 2020). Accordingly, it demands the role of education which aims to enable individuals to assimilate the values, the basic concepts and the practical knowledge which will help them to an awareness of environmental problems, build behaviour accordingly and thus give a useful contribution to safeguard the environment (Aarnio-Linnanvuori, 2019; Edsand and Broich, 2020; García et al., 2019; Nkoana, 2019). Refers to the Oxford Dictionary, caring relates to adjective words of concerned, attentive, thoughtful, solicitous, responsible, and considerate. In this study, caring attitude refers to human attitudes towards the environment in the form of a tendency to maintain and preserve it. The environmental caring attitude consists of indicators of hard work, respect to health and cleanliness, wise, and responsibilities (Adawiah, 2018; Breckler, 1984). This attitude is part of the individual characters that will lead to providing pro-environmental behaviour.

Development of environmental character including caring attitude to the environment has been to be strengthened by the Indonesian government by issued of Presidential Regulation No. 87 of 2017. In order to form the expected character, it has to include the three dimensions, including moral knowing, moral feelings such as self-perception, empathy, love kindness, self-control, and moral action (Lickona, 2012). Accordingly, the embedding character must begin with knowledge about a character. Knowledge about what is the caring environmental attitude will cause someone to have this attitude. Therefore, he/she needs to learn content knowledge closest to the students in order to increase their understanding. Caring attitudes to the environment that was formed will be manifested in the form of behaviour. It is repeated until internalized and characterized to be a character. In other words, attitude is someone's tendency to do real action. In the long term, it will be expected to reduce environmental damage in the future (Boca and Saraçlı, 2019; Dimante et al., 2016).

Environmental education in Indonesian schools has been carried out in an integrated form with subjects matter (Siswanto et al., 2019; Tim Adiwiyata Tingkat Nasional/TATN, 2011) especially natural sciences and social sciences. Besides, several schools have been conducting practical activities to instil a caring culture of the environment for all school residents such as the green school or "adiwiyata school program" since 2006. Adiwiyata school program was aimed to make school residents responsible for protecting and managing the environment through good school governance in supporting sustainable development. Four aspects have to exist in the "adiwiyata school program" were environmentally sound policies, implementation of an environment-based curriculum, participatory environment based activities, and management of environmentally friendly supporting facilities (TATN, 2011). However, how are the school environmental education programs effective to improve the caring attitude to the environment? There is a lack of evaluation data provided for very heterogeneous regions like Indonesia. Only some research has been carried out in certain cities with subjects of students with different levels of education to investigate their attitudes towards common environmental problems (Iswari and Utomo, 2017; Riastini et al., 2019; Sidauruk, 2013). Even though more data are needed in order to plan and improve environmental education properly.

The integration of characters with subject matters is believed as an effective way to build students' characters through education (Dimante et al., 2016; Vesely at al., 2020). In this case, the teacher plays an important role due to pedagogical management to build students' character, including a caring attitude to the environment (Aarnio-Linnanvuori, 2019). Even, the new challenge for the teacher is to utilize information technology as an effective way in improving students' environment awareness (Jorgenson et. al., 2019; Ozdemir and Alkabbanie, 2017; Šorytė and Pakalniškienė; 2019).

The ultimate goal of environmental education is not only to equip knowledge, but also to shape the students' positive attitude and behavior to the environment. This certainly requires a long time and continuous habituation so that their caring attitudes will be characterized as expected behavior (Bergman, 2015; Isdaryanti et al., 2018; Lickona, 2012; Sholahuddin et al., 2018; Turkmen, 2013). Previous research has shown that contribution of the knowledge is smaller than the real environmental problem-solving activities outside the classroom such as exploring the environment around students, exploring of the environmental values of local wisdom and using the environmental social issues (Alon and Tal, 2017, Boca and Saraçlı, 2019; Ntanos et al., 2018; Tekakpınar and Tezer 2019).

Environmental education in Indonesia actually has the right strategy by combining the strengthening of knowledge and habituating of

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• clear limitation of research objectives

environmental behavior in daily school activities. Unfortunately, many teachers found some difficulties to implement learning activities outside the classroom by involving the community related to the environment. It is due to the tightness of the curriculum, time, and financial availability. However, how the impact of environmental education on students' attitudes and behaviors toward the environment, only a little research reported and showed inconsistent data. Some others showed that external factors such as the school environment did not significantly affect students' environmental care attitudes (Iswari and Utomo, 2017; Siswanto et al., 2019) while the other indicated that these factors have no effect (Meilinda at al., 2017; Riastini et al., 2019). It means that the achievement of environmental education has left the problems.

This current study examined students' caring attitude to the wetland environment (CATWE) of Junior High School Students of Banjar District South Kalimantan Indonesia. Geographically, Banjar District is one of the Indonesian areas that has a large low-lying area or a wetland area comprises a river environment, a swamp environment, a freshwater environment, a brackish water environment or salt including areas of marine water the depth of which at low tide does not exceed six metres that are always flooded throughout the year (Sya'ban et al., 2017, Wetland International, n.d). This ecosystem has been faced the degradation threat of both its quantity and quality (Adeleke, 2019; Fianko and Dodd, 2018; Syam'ani et al., 2018; Tosca et al., 2011; Wetland International, n.d). Besides, the inclusion of locally relevant topics is considered an essential underpinning of effective environmental education and requires flexible curricula for programs that span large geographic areas (Bergman, 2015). Further, the integration of environmental education in the classroom to environmental stewardship projects has increased students' eco-impact (Bergman, 2015). The CATWE in this study represents one's attitude to the wetland environment in the form of attitudes towards certain behaviours related to the environment and actions taken in order to preserve the environment. This study aimed to (1) analyze the students' CATWE categories and its differences between junior high school students in different areas (urban, middle and rural areas), and (2) describe Students' CATWE based on its indicator. The finding of the current study is important to design and evaluate school environmental education as an effort to keep the sustainability of the wetland environment.

METHODS

This study implemented triangulated mixed-methods (Creswell, 2012) to obtain information about the CATWE of junior high school (JHS) students of Banjar District Indonesia. The population was 2,741 grade VII students from the 64 State Junior High Schools. The six representative schools samples were drawn using the area of probability sampling which comprise of Martapura Public Middle School 1 and Martapura Public Middle School 2 represent urban area schools; Gambut 1 Public Middle School and Astambul 1 Public Middle School represents middle area schools; and Aranio Public Middle School 1, and Sungai Tabuk State Middle School 1 represents suburban area schools. Total students participating as the sample were 354 aged between 12 to 13 years.

The questionnaire for measuring the CATWE consists of 37 items of the statement with modified Likert's type of four alternative answers: strongly agree, agree, less agree, and disagree. Indicators of the CATWE include (1) *Hard work*: working hard to protect river ecosystems, working hard to preserve swamp ecosystems, fighting spirit to save nature, and working together to solve wetland environmental problems, (2) *Respect to health and cleanliness*: disposing of garbage in its place, cleaning the classroom, maintaining and controlling of household waste, closing water reservoirs and maintaining drinking water wells, (3) *Wise*: reducing air pollution and water pollution, saving water usage, turning off lights when it is not in use, and felling select trees, and (4) *Responsibilities*: protecting and caring for animals, protecting and caring for plants, protecting natural resources and maintaining ecosystem balance.

The questionnaire was validated by five experts and judged as valid with a content validity ratio (CVR) 1 (Cohen and Swerdlik, 2010), inter-rater reliability index of 100% (Borich, 2003) and Cronbach's Alpha of 0.72. Also, interviews were conducted voluntarily to six student samples to verify and elaborate students' opinions about their caring attitudes to the wetland environment within twenty minutes per student. The interviews were then transcribed and analyzed to be triangulated with the quantitative data.

Based on the distribution of questionnaire scores, criteria for students' environmental caring attitudes were categorized as follows: score ≥ 112 is care; 75 - 111 is care enough, and 37-74 is careless. While the score categories of each indicator were categorized as follows: score ≥355 is care, 237-354 is care enough, and 118-236 is careless. ANAVA test also conducted to know the difference of students' environmental caring attitude to the wetland environment between junior high school students from different school areas by using SPSS version 23.

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- contain detailed research stages
- Each stage is explained and analyzed by what method
- Data analysis must be with clear references
- The research instruments used were elaborated to the data analysis technique
- It is hoped that there will be a modification in the stages of research from sources referred by the researcher

RESULTS AND DISCUSSION

Table 1 shows the distribution of a caring attitude to the wetland environment by the school areas of Banjar District JHS's students. The highest score of the CATWE was achieved by JHS's students in middle area schools, while JHS's students in an urban and rural area have the same level of caring attitude. Based on Table 1, it can be said that most of the students in all schools observed care for the wetland environment, and none of them did not interest in the wetland environment.

Table 1. Environmental Caring Attitude of JHS's Students to the Wetland Environment by the school areas

School Areas	Percentage by Category (%)		
	Care	Care enough	Careless
Urban	75.4	24.6	0
The middle	82.0	18.0	0
The edge	75.4	24.6	0
Average	**77.6**	**22.4**	**0**

Table 2 shows the CATWE by indicators of JHS' students in Banjar District. The lowest score of the CATWE indicator is hard work, while the highest is responsibility. However, students in all the school areas have CATWE in the care category on all indicators (hard work, respect for health and cleanliness, wise and responsible). Each school area consists of 118 students, with a total sample of 354. All the data were homogeneous (Table 3) and normally distributed (Table 4) where p value (sig.) > 0.05. Then the one-way Anova test by using SPSS version 23 also obtained a significance value of 0.769 > 0.05 (Table 5). It means that there was no difference between the CATWE between students in different school áreas

Table 2 The Caring Attitude to Wetland Environmental of JHS' Students by Indicators

Indicators	School Area					
	Urban		Middle		Rural	
	Score	Category	Score	Category	Score	Category
Hard work	373.3	Care	370.8	Care	375.5	Care
Respect for Health and Cleanliness	381.8	Care	395.5	Care	390.0	Care
Wise	383.6	Care	376.5	Care	369.5	Care
Responsible	401.8	Care	405.0	Care	401.8	Care
Average	**385.1**	**Care**	**387.0**	**Care**	**384.2**	**Care**

Table 3. Test of data homogeneous

Levene Statistic	df1	df2	Sig.
1.782	2	351	.170

Tabel 4 Test of data normality

	Groups	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Score of Caring attitude	Urban	.077	118	.085	.984	118	.169
	Middle	.065	118	.200*	.980	118	.070
	Rural	.074	118	.162	.981	118	.085

Table 5 ANAVA Test

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	81.870	2	40.935	.262	.769
Within Groups	54774.992	351	156.054		
Total	54856.862	353			

The Students' CATWE: Categories and its differences between school areas

Table 1 showed that the majority of students, 77.6% care about, and none of them in all the school areas did not have an interest in a wetland environment. Students in all the school areas have the same CATWE. This fact illustrates the success of environmental caring character education as the cumulative impact of curriculum implementation in both elementary and junior high school levels. Because, attitudes develop through the stages of receiving, responding, valuing, organization until characterization and requires continuous habituation in a long period (Bergman, 2015; Lickona, 2012; Turkmen, 2013). Indonesia's national curriculum has undergone reform such as strengthening and integration of environmental education in subjects (Siswanto et al., 2019;

Commented [L3]: RESULTS AND DISCUSSION
- •Tables or graphs (one selected) must represent different results
- • The results of data analysis must be strong in answering the analysis gap
- •Display of results other than those narrated in table-graph-image-modeling
- •The research novelty has not been clear enough
- • It is recommended not to repeat the references in the introduction, using previous research findings.
- • References used should be taken from reputable journals.

It is necessary to explain the specifications of the findings in this study that show

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2. The pictures/tables must not be consecutive

TATN, 2011). Based on the subject content scope, natural science, and social science subjects discuss mostly the environment compared to the others. Even the learning approach in elementary schools uses an integrated webbed by utilizing the environment as a learning resource.

The finding also proved that formal education over a long period since elementary to the first year of the secondary school played an important role in changing the students' CATWE. Although in general students have achieved good attitudes as the impact of national curriculum implementation, they still need to strengthen students' CATWE in order to keep environmental sustainability, especially for 22.4 % late. There are educational factors that influence the success of environmental education including institution policy, curriculum, learning method, academic culture (Susongko and Afrizal, 2018; Ikhsan et al., 2019), individual motivation factors (Michelsen and Fisher, 2017). Even though knowledge has a very weak relationship on students' environmental behavior (Otto and Pensini, 2017).

This research found that the school area did not influence the students' CATWE (Table 4). This finding in line with Sidauruk's report (2013) that students' environmental care behaviours all of the area (urban, middle, rural) in Medan city Indonesia showed equally good category. No differences in CATWE showed that environmental education including wetland environmental knowledge is relatively good in all the schools' área. Theoretically, good knowledge about the objects of the wetland environment will foster a person's attitude towards the environment, which leads to building positive behaviour as well. Therefore, environmental education in the lower education level will provide a provision and foundation for strengthening caring attitudes for further level. Rabgay (2018) stated that understanding is the key to strengthening attitudes, including CATWE. Therefore, good CATWE might be influenced by the accessibility of information technology. Students can access information related to the environment at any time and place via the internet or social media. Besides, it is hypothesized that other schools' environmental programs (e.g. green school and healthy school) have been carried out well and have influenced significantly to students' CATWE. Therefore, school área was not a determining variable for students to build their CATWE.

Based on the researcher's observations to the three participating schools with different areas, they have implemented a school-based environmental program "Adiwiyata" but their difference is only at the program level. In urban region area JHS 1 Martapura has been conducted at "mandiri level" (autonomous level) since 2015 meanwhile, JHS 2 Martapura has been conducted at the national level since 2016. Middle area schools JHS 1 Gambut and 1 Astambul have conducted national-level programs since 2017 and 2016 respectively. Rural area school JHS 1 Aranio has been conducted provincial level since 2018 meanwhile JHS 1 Sungai Tabuk has been conducted district-level program since 2017. Even though the Adiwiyata level programs, as well as schools' areas, differ between them, they did not show a significant difference in students' CATWE. It means that the level of Adiwiyata, as well as the school area, was not the main factor affecting the level of students' CATWE.

The finding above is in line with the finding of previous studies that external factors such as the school environment were not significantly affecting students' environmental care attitude (Meilinda et al., 2017; Riastini et al., 2019). The internal factors such as self-motivation is the main reason why students want to care about the environment (Aliman et al., 2019). Nevertheless, difference finding was reported by other researchers (Iswari and Utomo, 2017; Siswanto et al., 2019) that students of schools that have implemented the Adiwiyata program have a higher level of environmental knowledge, affective and skills.

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Adiwiyata program level should indicate the schools' level of the environmental culture growing successively from the district, provincial, national, and autonomous levels (TATN, 2011). Different levels of Adiwiyata program may also indicate environmental culture as well as the completeness level of supporting facilities for daily activities as environmentally friendly schools. The school facilities such as providing trash bins based on the type of waste, greenhouse, hydroponics, composting, drainage, mushroom houses, medicinal plants, cleaning service activities every week and et cetera. Another most prominent school's facility is the ownership of the school environmental education software-updated. By assuming that all the affecting factors were equally good between the participating schools so they also have equally good CATWE (Rabgay, 2018). In this case, the program level should be a differentiator for CATWE because of the different levels of Adiwiyata due to different schools' environmental cultures. This finding provides a contradictory fact with the aim of the Adiwiyata program.

Accordingly, it is necessary to conduct further research to investigate the extent to which the quality and intensity of the CATWE through the different levels of the Adiwiyata program. It also needs to be elaborated on the influence of other factors that might have an impact on the CATWE as the synergy of environmental education with various school's activities as well as activities outside the school. Students not only need sufficient environmental knowledge and its sustainability but also motivation from the closest people such as family and school residents in order

to have positive behaviour to the environment (Ntanos, et al., 2018; Šorytė and Pakalniškienė, 2019; Vesely, et al., 2020). Even, social and cultural factors, as well as values that are believed by students, can influence their attitudes and behavior towards the environment (Chisholm, et al., 2016; Rachmatullah, et al., 2020) that someone with the lower socioeconomic level tends to lead the egocentric value of the environment. It is still a serious environmental problem in Indonesia.

Students' CATWE based on Its Indicators

Based on Table 2 from the four indicators (hard work, respect to cleanliness and health, responsibility, wise), the lowest achievement of students' wetland environment caring attitude is a hard work indicator while the highest is responsibility. However, overall all students of JHS in the different areas have reached the CATWE in caring category. The examples of students' caring attitude according to the interview was described below.

Hard work

Hard work relates to maintain and preserve the environment to reach the lowest achievement of the students' CATWE. Even though in general this attitude has reached the caring category. The following are the attitudes of hard work according to students when they were interviewed.

Researcher : Do you feel worried if the waste from our houses is directly streamed into the river?
Students : Yes. Because it may pollute the river ecosystem.
All the six interviewed students answered "No".

Researcher : Do you think that the liquid waste from the plywood factory can be streamed into the river directly?
Students : No. Because it contains hazardous chemicals from plywood processing so it will poison our body.
All the six interviewed students answered "No".

Researcher : Do you think that people who live in "lanting houses" (floating houses) can throw the trash directly into the river?
Students : No. Because it will pollute the river (a student argues that because inorganic waste is not easily decomposed).
All the six interviewed students answered "No".

Researcher : Do you care when you see people dump the sasirangan liquid waste into rivers?
Students : No. Because it does not cause odor or floating garbage in the river.
Other students : Yes I do. Because It may cause a bit of pollution.
In this case, three students who were interviewed answered care, while the others responded uncaringly.

Almost all the students also realized that residual waste from industrial activities in South Kalimantan must not be disposed into rivers, whether waste from smalls or large scales industries because they were dangerous for living things. It certainly relates to the environmental knowledge they have learned through the subject matter. This finding was supported by Fatimah and Adawiyah (2017) that the attitude of JHS students towards the river was categorized as good, which was manifested by always trying to protect the river ecosystem. Meanwhile, the role of family and people around them were less in instilling the environmental caring attitude (Adawiyah, 2018). But, responding to the statement regarding the disposal of liquid waste from "sasirangan" (the traditional cloth of Banjarese) family industry which was directly steamed into the river, the students were still doubtful whether this would pollute the river. It is suspected that students have not seen by themselves how the process happens in the Sasirangan home industry. A similar situation was reported by Mratihatani and Susilowati (2013) that most people considered that the disposal of waste from making batik (traditional cloth of Javanese) in the Pekalongan Central Java river was considered harmless. Barghi et al., (2017) stated that deviant actions towards nature that have become culture are indeed difficult to overcome.

Responsibility

In this current study responsibility is the indicator with the highest score from the other four indicators. Students of the middle area schools have the highest score; meanwhile, the urban and rural area has the same score. Responsibility indicator consists of four aspects, namely protecting and caring for animals, protecting and caring for plants, protecting natural resources, and maintaining the equilibrium of the ecosystem. Below is one part of the interviews.

Researcher : Do you think that the conservation of the Bekantans is important?
Students : Yes. Because in order to preserve and prevent them from extinction as well as keep our ecosystem equilibrium.
Researcher : Do you think that the mangrove plants have an effect on our environment?
Students : Yes. It can avoid abrasión and become a habitat as well as food for animals?
All the six interviewed students stated that it is needed to preserve both proboscis as well as their habitats.

In the case of animal caring, students gave a positive response to the preservation of the endemic animal of South Kalimantan, "Bekantan" (proboscis monkey). Proboscis itself is an endemic animal of South Kalimantan, whose population is

currently threatened because its original habitat has been damaged. The students were well aware that "Bekantan" is almost extinct. Although many students claimed that they had never seen "Bekantan" directly, Atmoko (2010) said that the rehabilitation of proboscis monkeys is expected to improve the number and population of proboscis monkeys and can attract the attention of tourists to visit. As such, it can increase the income of the local community. "Bekantan" indeed requires rehabilitation, especially for proboscis monkeys that were illegally maintained by people. The facts, according to Fuad et al., (2019) it was caused by the students' understanding of resources and its impact on their life so lead to increase their motivation to keep them.

Respects to cleanliness and health

Respects to cleanliness and health indicators consist of five aspects, namely disposing of the garbage in its place, maintaining clean classrooms, closing water reservoirs, maintaining drinking water wells, and handling household waste. Based on Table 2 it can be seen that students' CATWE on the indicators of respect for cleanliness and health was categorized as care.

Researcher : If you finish eating and drinking, do you always throw garbage into the trash can?

Students : Yes. Because it is in order to keep our environment clean and healthy.

Researcher : Do you process and separate vegetable waste left over from the household to be a fertilizer?

Students : No. I have no experience in the microbiological process of organic waste.

All the interviewed students answered that they have no experience in microbiological process, but two of them often heap organic waste directly into the soil around the house so that the soil becomes fertile. The household leftover vegetables or organic waste can be made a compost material. The composting can be accelerated by adding an effective microorganism EM4 activator.

Wise

The wise indicator consists of five aspects, namely reducing air pollution, reducing water pollution, saving water usage, turning off lights when not in use, and cutting down trees selectively. The highest score was obtained in the urban area followed by middle and rural areas (**Table 2**).

Researcher : Do you think that a good way to open the new land in peatlands área is by burning the galam forest?

Students : No. Because burning the forest will cause smog and air pollution.

Researcher : If there is an action to refuse forest burning on a large scale to open new land, will you support the action?

Students : Yes I will.

All the six students answered Yes, but if they will take part in the demonstration, they are still in doubt to be involved.

One of the wise attitudes expressed by students relates to the traditional opening farming field by burning the grass and "galam" (*Melaleuca cajuputi Roxb*) forest. It is a cheap and economical way, but the habituation should be stopped because it may cause the peat forest fire and air pollution. South Kalimantan has the lowest air quality index in Kalimantan by 91.41 (Sulaeman, et al. 2020), even though it still in good quality index. Students also agree to use "jukung" a traditional boat for affordable distance transportation in the water area because this transportation does not use fuel as energy sources so it will reduce air pollution. Riyandeni and Kusumantoro (2013) also found that 82.5% of respondents agree to design public transportation on the river. This finding is in line with Dimante, et al. (2016) that 68.1% of students who have studied natural science are wiser in protecting the environment.

Based on the discussion above, in general students' CATWE are in a good category and must be improved continuously in the future. Strengthening CATWE must also be done through activities outside the classroom by involving the wetland environmental activities of communities. Because, this activity provides a greater role in strengthening knowledge, attitudes, behavior of students towards the environment and even their ability to solve the problems (Aliman, et al., 2019; Barbaro and Pickett, 2016; Otto and Pensini, 2017).

The learning experience outside the school becomes a memorable experience therefore it motivates students to involve deeply in learning activities because learning is usually conducted at limited classrooms (Amahmid et. al, 2019; Ntanos et al., 2018; Olgun, 2018; Tekakpınar and Tezer 2019; Wallace, 2019). Students can practice their knowledge directly, such as planting trees, cleaning up trash, and putting it into the trash bin according to hazardous, inorganic, and organic categories.

It need to drives collaboration of many resources in supporting environmental education including the curriculum, environment and society (Sulaeman et al. 2020; Asri et al, 2020). Lkaher and Gan (2020) suggested that schools have to engage their several stakeholders as school-state-community partnerships to cultivate the students' and community's environmental citizenship, school-business partnerships to improve the physical infrastructure, and also assisted the promotion of education for sustainability in the school.

CONCLUSION

Environment education in Indonesia conducted in integration with the subject matter of science and social studies. Schools are also encouraged by the government to conduct environmental-based school programs "Adiwiyata" in grade levels from the district, province, national to autonomous level. This environmental education aims to instil environmental caring attitude early. This study found that 77.6% of students' CATWE in the care category while the last 22.4% in the care enough category. Responsibility is the indicator with the highest score of the CATWE; meanwhile, the lowest is the hard work indicator. Although, overall indicators have reached an average score in the care category including respect for health and cleanliness and wise. There are no differences in students' CATWE between three different school areas (urban, middle, and rural areas). Basically JHS students have a good caring attitude towards the wetland environment, but it still needs to be improved in the future. These results also indicate that the school area is not the main determining variable of an environment caring attitude. It might be caused by good accessibility of the environmental knowledge in this digital era as well as supporting school environment programs. But, it needs to be evaluated why the level of the "Adiwiyata" school environmental program in schools is not able to distinguish the development of students' environmental culture.

Further research may investigate affecting factors of the effectiveness of the school environmental program "Adiwiyata", outside classroom activity and the role of family in environmental education. Finally, it is necessary to develop environmental education patterns that are integrated classroom activity and real experiences outside the classroom to strengthen the formation of caring attitudes and behaviors towards the wetland environment.

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2. For books, please refer to the original/primary book reference no matter the date.

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Sikap Peduli Siswa terhadap Lingkungan Lahan Basah: Kasus Pendidikan Lingkungan di Kabupaten Banjar Indonesia

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Sekolah-sekolah di Indonesia telah melaksanakan program pendidikan lingkungan baik melalui kegiatan kurikuler maupun program lingkungan sekolah. Namun, tidak ada data yang memadai tentang efektivitas program tersebut. Penelitian ini bertujuan untuk mengidentifikasi sikap peduli terhadap lingkungan lahan basah (SPLLB) siswa SMP sebagai hasil dari pendidikan lingkungan. Enam SMP terpilih sebagai sampel melalui metode probability sampling area yang masing-masing mewakili klasifikasi sekolah perkotaan, pertengahan, dan pinggiran di Kabupaten Banjar. Jumlah sampel total 354 siswa yang berusia 12-14 tahun. Data SPLLB dikumpulkan dengan menggunakan kuesioner yang valid dan reliabel. Penelitian ini menemukan bahwa sebagian besar siswa peduli terhadap lingkungan lahan basah. Tidak ada perbedaan dalam SPLLB dari tiga kelompok sekolah dengan wilayah dan level program "adiwiyata" yang berbeda. Temuan ini menunjukkan bahwa wilayah sekolah dan tingkat program "adiwiyata" bukan merupakan variabel penentu utama efektivitas pendidikan sikap peduli lingkungan. Skor tertinggi dari indikator SPLLB adalah bertanggung jawab; sedangkan skor terendah adalah indikator kerja keras. Meskipun, semua indikator telah mencapai kategori peduli. Perlu dilakukan penyelidikan secara menyeluruh tentang keefektifan program lingkungan sekolah "Adiwiyata", kegiatan di luar kelas, dan peran keluarga dalam pendidikan lingkungan.

Kata kunci: pendidikan lingkungan, sikap peduli, lahan basah, wilayah sekolah, keberlanjutan

PENDAHULUAN

Masyarakat di seluruh dunia telah mengalami kerusakan ekosistem seperti polusi, pemanasan global, dan perubahan iklim sebagai dampak dari kegiatan ekonomi dan industri. Masalah tersebut berkaitan dengan kurangnya kesadaran manusia terhadap lingkungan dan sikap terhadap pembangunan berkelanjutan (Rachmatullah et al., 2020), termasuk lingkungan lahan basah.

Kabupaten Banjar merupakan salah satu wilayah di Indonesia yang memiliki dataran rendah atau lahan basah yang cukup besar. Lahan basah adalah daerah yang tergenang atau jenuh oleh air permukaan atau air tanah pada frekuensi dan durasi yang cukup untuk menopang, dan yang dalam keadaan normal mampu mendukung suatu kelaziman vegetasi yang biasanya beradaptasi untuk hidup dalam kondisi tanah jenuh. Lahan basah ini terdiri dari lingkungan sungai, lingkungan rawa, lingkungan air tawar, lingkungan air payau, atau garam, termasuk wilayah perairan laut yang kedalamannya saat air surut tidak melebihi enam meter, yang tergenang air sepanjang tahun (Halabisky et al. , 2016; Sya'ban et al., 2017).

Ekosistem lahan basah ini telah menghadapi ancaman degradasi baik kuantitas maupun kualitasnya di banyak negara, termasuk Indonesia (Adeleke, 2019; Fianko & Dodd, 2018; Syam'ani et al., 2018). Di Cina, sekitar 91% lahan basah telah dikonversi untuk pengembangan pertanian pada tahun 2005, yang mengakibatkan hilangnya rata-rata 27% lahan basah setiap sepuluh tahun (Song, Wang, Du, Liu, Zeng & Ren, 2014). Degradasi juga terjadi secara signifikan di lahan basah pesisir (Cui et al., 2018).

Lahan basah menyediakan berbagai kebutuhan hidup manusia seperti makanan, pengembangbiakan dan pembibitan, energi, air, dan pengaturan iklim. Dengan demikian, degradasi lahan basah mengancam keamanan ekologi dan pembangunan daerah yang berkelanjutan (Costanza et al., 2014). Oleh karena itu, perlu untuk meningkatkan kesadaran setiap orang untuk melindungi lahan basah secara berkelanjutan.

Berdasarkan kondisi di atas, diperlukan peran pendidikan yang bertujuan agar individu mampu mengasimilasi nilai-nilai, konsep dasar, dan pengetahuan praktis yang akan membantu mereka pada kesadaran akan masalah lingkungan, membangun perilaku yang sesuai dan dengan demikian memberikan kontribusi yang bermanfaat untuk menjaga keselamatan lingkungan (Aarnio-Linnanvuori, 2019; Edsand & Broich, 2020; García dkk., 2019; Nkoana, 2019). Mengacu pada Oxford Dictionary, caring berhubungan dengan kata sifat seperti *concerned (peduli), attentive (perhatian), thoughtful (bijaksana), solicitous (kuatir), responsible (tanggung jawab), and considerate (penuh perhatian)*. Dalam kajian ini, sikap peduli mengacu pada sikap manusia terhadap lingkungan yang berupa kecenderungan untuk memelihara dan melestarikannya. Sikap peduli lingkungan terdiri dari indikator kerja keras, menghargai kesehatan dan kebersihan, bijaksana, dan tanggung jawab terhadap lingkungan (Adawiah, 2018; Fitriyana & Sholahuddin, 2019; Gericke et al., 2019). Sikap merupakan bagian dari karakter individu yang akan mengarahkan pembentukan perilaku peduli terhadap lingkungan (*pro-environmental behavior*).

Pembinaan karakter siswa, termasuk sikap kepedulian terhadap lingkungan telah diperkuat oleh pemerintah Indonesia dengan dikeluarkannya Peraturan Presiden Nomor 87 Tahun 2017. Pembentukan karakter tertentu yang diharapkan, harus melibatkan tiga dimensi yaitu dimensi pengetahuan, dimensi perasaan seperti persepsi diri, empati, cinta, kebaikan, pengendalian diri, dan dan dimensi tindakan moral (Lickona, 1991). Karenanya, penanaman karakter harus dimulai dengan pengetahuan tentang karakter yang diharapkan. Pengetahuan tentang bagaimana sikap peduli lingkungan akan menyebabkan seseorang memiliki sikap tersebut. Oleh karena itu, seseorang perlu mempelajari pengetahuan isi (*content knowledge*) yang paling dekat dengan siswa untuk meningkatkan pemahamannya. Sikap peduli terhadap lingkungan yang terbentuk ini selanjutnya akan diwujudkan dalam bentuk perilaku. Hal ini berlangsung secara terus menerus hingga terinternalisasi dan terkarakterisasi menjadi sebuah karakter. Dengan kata lain, sikap adalah kecenderungan seseorang untuk melakukan tindakan nyata. Dalam jangka panjang, terbentuknya perilaku peduli ini diharapkan dapat mengurangi kerusakan lingkungan di masa depan (Boca & Saraçlı, 2019; Dimante et al., 2016). Pendidikan lingkungan di sekolah-sekolah di Indonesia dilaksanakan secara terintegrasi dengan materi pelajaran (Tim Adiwiyata Tingkat Nasional/TATN, 2011), khususnya IPA dan IPS. Selain itu, beberapa sekolah telah melaksanakan kegiatan praktek untuk menanamkan budaya peduli lingkungan kepada seluruh warga sekolah, seperti program sekolah hijau atau sekolah "adiwiyata" sejak tahun 2006. Program sekolah adiwiyata bertujuan agar warga sekolah bertanggung jawab menjaga dan mengelola lingkungan melalui tata kelola sekolah yang baik dalam mendukung pembangunan berkelanjutan. Empat aspek yang harus ada dalam program sekolah "adiwiyata" adalah kebijakan berwawasan lingkungan, penerapan kurikulum berbasis lingkungan, kegiatan berbasis lingkungan partisipatif, dan pengelolaan sarana penunjang ramah lingkungan (TATN, 2011). Namun demikian, bagaimana efektivitas Program pendidikan lingkungan sekolah untuk

meningkatkan sikap peduli lingkungan? Sangat sedikit data tentang evaluasi efektivitas program yang ada tersebut untuk daerah yang sangat heterogen seperti Indonesia. Hanya beberapa penelitian telah dilakukan di kota-kota tertentu dengan tingkat pendidikan siswa yang berbeda dalam rangka menyelidiki sikap mereka terhadap permasalahan lingkungan (Iswari & Utomo, 2017; Riastini et al., 2019; Sidauruk, 2013). Padahal sebenarnya dibutuhkan lebih banyak data guna merencanakan dan meningkatkan pendidikan lingkungan secara benar khususnya pada kawasan lahan basah.

Integrasi karakter dengan materi pelajaran diyakini sebagai cara yang efektif untuk membangun karakter siswa melalui pendidikan (Dimante et al., 2016; Vesely di al., 2020). Dalam hal ini guru berperan penting dalam mengelola aspek pedagogis dalam rangka membangun karakter siswa, termasuk sikap peduli terhadap lingkungan (Aarnio-Linnanvuori, 2019). Tantangan baru bagi guru saat ini adalah bagaimana memanfaatkan teknologi informasi sebagai salah satu cara yang efektif untuk meningkatkan kesadaran siswa terhadap lingkungan (Jorgenson et al., 2019).

Pendidikan lingkungan di Indonesia pada dasarnya telah memiliki strategi yang tepat dengan memadukan pengetahuan dan pembiasaan perilaku lingkungan dalam kegiatan di sekolah sehari-hari. Sayangnya, banyak guru yang mengalami kesulitan dalam melaksanakan kegiatan pembelajaran di luar kelas dengan melibatkan masyarakat terkait lingkungan. Hal ini karena ketatnya kurikulum, waktu, dan ketersediaan finansial. Namun, bagaimana dampak pendidikan lingkungan terhadap sikap dan perilaku siswa terhadap lingkungan, hanya sedikit penelitian yang telah dilaporkan dan menunjukkan data yang tidak konsisten. Hasil penelitian sebelumnya menunjukkan bahwa faktor eksternal seperti lingkungan sekolah berpengaruh secara signifikan terhadap sikap peduli lingkungan siswa (Iswari & Utomo, 2017), sedangkan hasil penelitian lainnya menunjukkan bahwa faktor tersebut tidak berpengaruh secara signifikan (Meilinda dkk., 2017; Riastini dkk. , 2019). Fakta ini menunjukkan bahwa capaian atau dampak pendidikan lingkungan masih menyisakan permasalahan.

Dimasukkannya topik lokal yang relevan (seperti lingkungan lahan basah) dianggap sebagai fondasi penting dari pendidikan lingkungan yang efektif dan memerlukan kurikulum yang fleksibel untuk program yang dapat menjangkau wilayah geografis yang luas dengan keanekaragamannya. Lebih lanjut, mengintegrasikan pendidikan lingkungan di kelas dengan proyek pengelolaan lingkungan di luar kelas terbukti mampu meningkatkan dampak lingkungan bagi siswa (Bergman, 2015).

Penelitian ini mengkaji sikap peduli terhadap lingkungan lahan basah (SPLLB) siswa SMP di Kabupaten Banjar Kalimantan Selatan, Indonesia. SPLLB dalam penelitian ini merepresentasikan sikap seseorang terhadap lingkungan lahan basah berupa sikap terhadap perilaku tertentu yang berkaitan dengan lingkungan dan tindakan yang dilakukan untuk melestarikan lingkungan. Penelitian ini bertujuan untuk (1) menganalisis kategori SLBB siswa dan perbedaannya antar siswa SMP dengan wilayah yang berbeda (perkotaan, pertengahan, dan pinggiran), dan (2) mendeskripsikan SLBB siswa berdasarkan indikatornya. Temuan studi ini merupakan informasi penting untuk merancang dan mengevaluasi pendidikan lingkungan di sekolah dalam rangka untuk menjaga kelestarian lingkungan lahan basah.

METODE

Penelitian ini menerapkan desain *an explanatory sequential mixed methods* (Creswell, 2012) untuk memperoleh informasi tentang SPLLB siswa Sekolah Menengah Pertama (SMP) di Kabupaten Banjar Indonesia. Tahapan penelitian diawali dengan pengumpulan data kuantitatif menggunakan kuesioner dan kemudian pengumpulan data kualitatif melalui wawancara untuk menjelaskan atau menguraikan hasil kuantitatif.

Populasi penelitian ini adalah 2,741 siswa kelas VII dari 64 Sekolah Menengah Pertama Negeri. Enam sekolah perwakilan sampel ditentukan dengan menggunakan teknik pengambilan sampel *area probability sampling*. Sampel sekolah terdiri dari SMP Negeri 1 Martapura, dan SMP Negeri 2 Martapura mewakili sekolah wilayah perkotaan; SMP Negeri Gambut 1 dan SMP Negeri 1 Astambul mewakili SMP Negeri wilayah pertengahan; dan SMP Negeri 1 Aranio, dan SMP Negeri 1 Sungai Tabuk mewakili sekolah di daerah pinggiran. Setiap wilayah sekolah terdiri dari 118 siswa, dengan total sampel 354 yang berusia antara 12 hingga 14 tahun.

Kuesioner pengukuran SPLLB terdiri dari 37 item pernyataan dengan empat alternatif jawaban tipe Likert yang dimodifikasi: sangat setuju, setuju, kurang setuju, dan tidak setuju. SPLLB mencakup empat indicator yaitu (1) *Indikator kerja keras.* Bekerja keras untuk melindungi ekosistem sungai, bekerja keras untuk melestarikan ekosistem rawa, semangat juang untuk menyelamatkan alam, dan bekerja sama untuk memecahkan masalah lingkungan lahan basah. (2) *Indikator menghargai kesehatan dan kebersihan.* Membuang sampah pada tempatnya, membersihkan ruang kelas, memelihara dan mengendalikan sampah rumah tangga, menutup bak penampungan air dan memelihara sumur air minum. (3) *Indikator bijaksana.* Mengurangi polusi udara dan polusi air, menghemat penggunaan air,

mematikan lampu jika tidak digunakan, dan menebang pohon tertentu. (4) *Indikator bertanggung jawab.* Melindungi dan merawat hewan, melindungi dan merawat tumbuhan, melindungi sumber daya alam dan menjaga keseimbangan ekosistem (Fitriana & Sholahuddin, 2019; Gericke et al., 2019).

Kuesioner divalidasi oleh lima ahli dan dinilai valid dengan rasio validitas isi, CVR (*content validity ratio*) = 1 (Cohen & Swerdlik, 2013), indeks reliabilitas antar penilai 100% (Borich, 2003), dan alpha Cronbach sebesar 0,72. Selain itu, wawancara dilakukan secara sukarela kepada enam sampel siswa untuk memverifikasi dan menjelaskan pendapat siswa tentang sikap peduli mereka terhadap lingkungan lahan basah dalam waktu dua puluh menit per siswa. Wawancara kemudian ditranskrip dan dianalisis untuk Triangulasi dengan data kuantitatif.

Berdasarkan distribusi skor angket, sikap peduli lingkungan terhadap lingkungan lahan basah siswa dikategorikan menjadi tiga yaitu skor ≥ 112 adalah peduli; 75 - 111 cukup peduli, dan 37-74 tidak peduli. Sementara itu untuk kategori skor tiap indikator diategorikan sebagai berikut: skor ≥355 adalah peduli, 237-354 cukup peduli, dan 118-236 tidak peduli. Uji ANOVA juga dilakukan untuk mengetahui perbedaan sikap peduli siswa terhadap lingkungan lahan basah antara siswa SMP dari wilayah sekolah yang berbeda menggunakan SPSS versi 23.

RESULTS AND DISCUSSION

Tabel 1 menunjukkan bahwa distribusi sikap peduli terhadap lingkungan lahan basah (SPLLB) berdasarkan wilayah sekolah SMP di Kabupaten Banjar. Skor SPLLB yang tertinggi dicapai oleh siswa SMP di daerah pertengahan, sedangkan untuk SMP di wilayah pusat kota dan pinggiran memiliki skor SPLLB tidak berbeda atau memiliki level SPLLB ynag sama.

Tabel 1. Sikap Peduli terhadap Lingkungkungan Lahan Basah Siswa SMP berdasarkan Wilayah Sekolah

Wilayah Sekolah	Persentase Berdasarkan Kategori (%)		
	Peduli	Cukup Peduli	Tidak Peduli
Perkotaan	75.4	24.6	0
Pertengahan	82.0	18.0	0
Pinggiran	75.4	24.6	0
Rerata	**77.6**	**22.4**	**0**

Berdasarkan Tabel 1 dapat dikatakan bahwa sebagian besar siswa di semua sekolah peduli terhadap lingkungan lahan basah, dan tidak ada siswa yang tidak peduli atau tidak tertarik dengan lingkungan lahan basah.

Table 2 menunjukkan SPLLB siswa SMP di Kabupaten Banjar berdasarkan indikator.

Tabel 2 Sikap Peduli terhadap Lingkungan Lahan Basah Siswa SMP berdasarkan Indikator

Indikator	Wilayah Sekolah					
	Perkotaan		Pertengahan		Pinggiran	
	Skor	Kategori	Skor	Kategori	Skor	Kategori
Kerja Keras	373,3	Peduli	370,8	Peduli	375,5	Peduli
Menghargai Kesehatan dan Kebersihan	381,8	Peduli	395.5	Peduli	390,0	Peduli
Bijaksana	383,6	Peduli	376,5	Peduli	369,5	Peduli
Bertanggung jawab	401,8	Peduli	405,0	Peduli	401,8	Peduli
Rerata	**385,1**	**Peduli**	**387,0**	**Peduli**	**384,2**	**Peduli**

Berdasarkan Tabel 2, skor terendah indikator SPLLB adalah kerja keras, sedangkan yang tertinggi adalah indikator bertanggung jawab. Namun siswa di semua wilayah memiliki SPLLB pada kategori peduli pada semua indikator (kerja keras, menghargai kesehatan dan kebersihan, bijaksana dan bertanggung jawab).

Semua data telah diuji homogenitasnya dengan menggunakan *Lavene Test* dan menghasilkan data seperti yang disajikan dalam Tabel 3.

Table 3. Uji Homogenitas Data

Levene Statistic	df1	df2	Sig.
1.782	2	351	.170

Berdasarkan pada hasil uji *Lavene Test* di atas, menunjukkan bahwa semua data adalah homogen.

Selain itu data juga dianalisis normalitas distribusinya dengan menggunakan uji *Kolmogorov-Smirnov* and *Shapiro-Wilk Test* seperti yang disajikan dalam Tabel 4.

Tabel 4 Uji Normalitas Data

	Groups	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Skor Sikap Peduli	Perkotaan	.077	118	.085	.984	118	.169
	Pertengahan	.065	118	.200*	.980	118	.070
	Pinggiran	.074	118	.162	.981	118	.085

Uji *Kolmogorov-Smirnov* and the *Shapiro-Wilk* test di atas menunjukkan bahwa p-value (sig.) > 0.05. Hal bermakna bahwa dara terdistribusi secara normal.

Data yang homogen dan normal tersebut di atas, kemudian dilakukan uji *ANOVA Satu Arah* dengan menggunakan SPSS versi 23 menhasilkan data seperti yang disajikan dalam Tabel 5.

Tabel 5 Uji ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	81.870	2	40.935	.262	.769
Within Groups	54774.992	351	156.054		
Total	54856.862	353			

Berdasarkan uji ANOVA di atas diperoleh nilai signifikansi sebesar 0,769> 0,05. Artinya tidak ada perbedaan antar SPLLB siswa antar wilayah sekolah yang berbeda

SPLLB Siswa: Kategori dan Perbedaannya antar Wilayah Sekolah

Tabel 1 menunjukkan bahwa sebagian besar siswa, 77,6%, peduli, dan tidak ada siswa di semua wilayah sekolah yang tidak tertarik atau tidak peduli pada lingkungan lahan basah. Siswa di semua wilayah sekolah memiliki SPLLB yang sama. Fakta ini menggambarkan keberhasilan pendidikan karakter peduli lingkungan sebagai dampak kumulatif implementasi kurikulum di tingkat SD dan SMP. Karena sikap berkembang melalui penerimaan, tanggapan, penilaian, pengorganisasian, karakterisasi, sehingga membutuhkan pembiasaan secara terus menerus dalam jangka waktu yang lama. Pengetahuan siswa melalui pembelajaran telah mendukung sikap peduli terhadap lingkungan lahan basah karena terdapat interaksi yang positif antara pengetahuan dan sikap. Namun, pengetahuan dan sikap tidak selalu menghasilkan perilaku yang diharapkan (De Pauw, Van Petegem, 2013; Marcos-Merino, Corbacho-Cuello, & Hernández Barco, 2020). Kebiasaan, keteladanan, dan motivasi berkelanjutan di lingkungan sekolah, keluarga, dan masyarakat secara bersama-sama yang akan mengarah pada pembentukan perilaku positif terhadap lingkungan lahan basah. Kurikulum nasional Indonesia telah mengalami reformasi seperti penguatan dan integrasi pendidikan lingkungan pada mata pelajaran (TATN, 2011). Berdasarkan cakupan isi mata pelajaran, mata pelajaran IPA dan IPS lebih banyak membahas tentang lingkungan dibandingkan dengan mata pelajaran lainnya. Bahkan pembelajaran di sekolah dasar menggunakan pendekatan tematik terintegrasi (integrated webbed) dengan memanfaatkan lingkungan sebagai sumber belajar.

Penemuan ini juga membuktikan bahwa pendidikan formal dalam kurun waktu yang lama dari SD hingga tahun pertama sekolah menengah pertama berperan penting dalam mengubah SPLLB siswa. Meskipun siswa telah mencapai sikap yang baik sebagai dampak dari implementasi kurikulum nasional, namun tetap perlu diperkuat SPLLB mereka untuk menjaga kelestarian lingkungan, terutama bagi 22,4% siswa yang tersisa. Terdapat faktor pendidikan yang mempengaruhi keberhasilan pendidikan lingkungan, antara lain kebijakan institusi, kurikulum, metode pembelajaran, dan budaya akademik (Susongko & Afrizal, 2018; Ikhsan et al., 2019), dan faktor motivasi individu (Michelsen & Fisher, 2017) meskipun pengetahuan memiliki hubungan yang rapuh terhadap perilaku lingkungan siswa (Otto & Pensini, 2017).

Hasil penelitian ini menemukan bahwa wilayah sekolah tidak mempengaruhi SPLLB siswa (Tabel 4). Hal ini sejalan dengan laporan Sidauruk (2013) bahwa perilaku peduli lingkungan siswa di berbagai daerah (perkotaan, pertengahan, pedesaan) di kota Medan Indonesia menunjukkan kategori yang sama baik. Tidak ada perbedaan SPLLB di semua wilayah sekolah menunjukkan bahwa (1) Pendidikan lingkungan, termasuk pengetahuan lingkungan lahan basah, relatif baik di semua area sekolah. (2) Pemahaman adalah kunci untuk memperkuat sikap, termasuk SPLLB (Rabgay, 2018). Oleh karena itu, pendidikan lingkungan pada jenjang pendidikan yang lebih rendah akan memberikan bekal dan landasan lebih lanjut untuk memperkuat sikap peduli. Pemahaman siswa dapat mempengaruhi SPLLB yang baik, dan hal itu bergantung pada aksesibilitas teknologi informasi pendukung. Saat ini, siswa dapat mengakses informasi terkait

lingkungan kapan pun dan di mana pun melalui internet atau media sosial. (3) Program lingkungan sekolah lain (misalnya sekolah hijau dan sekolah sehat) diduga telah dilaksanakan dengan baik dan secara signifikan mempengaruhi SPLLB siswa. Oleh karena itu, wilayah sekolah bukan merupakan variabel penentu bagi siswa untuk membangun SPLLB mereka.

Berdasarkan observasi peneliti terhadap tiga sekolah yang terlibat penelitian dengan wilayah berbeda, mereka telah melaksanakan program lingkungan berbasis sekolah, "Adiwiyata", namun perbedaannya hanya pada level program. Di wilayah perkotaan, SMPN 1 Martapura telah melaksanakan Program Adiwiyata pada level mandiri sejak 2015. Sementara itu, SMPN 2 Martapura telah melaksanakan Program Adiwiyata pada level nasional sejak tahun 2016. Sekolah-sekolah di wilayah Pertengahan SMPN 1 Gambut dan SMPN 1 Astambul telah melaksanakan Program Adiwiyata pada tingkat nasional masing-masing sejak tahun 2017 dan 2016. Sekolah pinggiran SMPN 1 Aranio sudah melaksanakan Program Adiwiyata pada tingkat provinsi sejak 2018 sedangkan SMPN 1 Sungai Tabuk sudah melaksanakan Program Adiwiyata pada tingkat Kabupaten sejak 2017. Walaupun level Program Adiwiyata dan wilayah sekolah, berbeda antara mereka, namun tidak menunjukkan perbedaan yang signifikan dalam SPLLB siswa. Artinya level Adiwiyata dan wilayah sekolah bukan merupakan faktor utama yang mempengaruhi tingkat SPLLB siswa.

Temuan di atas sejalan dengan temuan penelitian sebelumnya bahwa faktor eksternal seperti lingkungan sekolah tidak berpengaruh secara signifikan terhadap sikap peduli lingkungan siswa (Meilinda et al., 2017; Riastini et al., 2019). Faktor internal seperti motivasi diri menjadi alasan utama siswa ingin peduli terhadap lingkungan (Aliman et al., 2019). Akan tetapi, temuan yang berbeda dilaporkan oleh peneliti lain bahwa siswa sekolah yang telah melaksanakan program Adiwiyata memiliki tingkat pengetahuan, afektif dan keterampilan lingkungan yang lebih tinggi (Iswari & Utomo, 2017).

Tingkatan atau level program Adiwiyata seharusnya menunjukkan tingkat budaya lingkungan sekolah yang berkembang secara berturut-turut dari tingkat kabupaten, provinsi, nasional, dan otonom (TATN, 2011). Tingkatan program Adiwiyata yang berbeda juga dapat menunjukkan perbedaan budaya lingkungan dan tingkat kelengkapan sarana penunjang kegiatan sehari-hari sebagai sekolah ramah lingkungan. Fasilitas sekolah tersebut antara lain menyediakan tempat sampah berdasarkan jenis sampah, greenhouse, hidroponik, pengomposan, drainase, rumah jamur, tanaman obat, kegiatan bersih-bersih setiap minggu, dan lain-lain. Fasilitas sekolah lain yang paling menonjol adalah kepemilikan perangkat lunak pendidikan lingkungan sekolah-ter-*aupdate*. Dengan asumsi bahwa semua faktor yang mempengaruhinya sama baiknya di antara sekolah yang berpartisipasi, maka mereka juga memiliki SPLLB yang sama baiknya (Rabgay, 2018). Dalam hal ini, level program seharusnya menjadi pembeda untuk SPLLB karena perbedaan level Adiwiyata menunjukkan budaya lingkungan sekolah yang juga berbeda. Temuan ini memberikan fakta yang kontradiktif dengan tujuan program Adiwiyata.

Oleh karena itu, perlu dilakukan penelitian lebih lanjut untuk menyelidiki sejauh mana kualitas dan intensitas pembinaan SPLLB melalui berbagai tingkatan program Adiwiyata. Perlu juga dijabarkan faktor-faktor lain yang mungkin mempengaruhi SPLLB sebagai bentuk sinergi pendidikan lingkungan dengan berbagai kegiatan sekolah dan kegiatan di luar sekolah. Siswa membutuhkan pengetahuan dan wawasan terkait keberlanjutan lingkungan yang cukup serta motivasi dari orang terdekat, seperti keluarga dan warga sekolah, agar memberikan pengaruh positif terhadap lingkungan (Ntanos et al., 2018; Vesely et al., 2020). Bahkan faktor sosial budaya dan nilai-nilai yang diyakini siswa juga dapat mempengaruhi sikap dan perilakunya terhadap lingkungan. Seseorang dengan tingkat sosial ekonomi yang lebih rendah cenderung mengarah pada nilai egosentris lingkungan (Chisholm et al., 2016; Rachmatullah et al., 2020). Kondisi ini masih menjadi masalah lingkungan yang serius di Indonesia.

SPLLB Siswa Berdasarkan Indikatornya

Berdasarkan Tabel 2 dari empat indikator (kerja keras, menghargai kebersihan dan kesehatan, tanggung jawab, bijaksana), pencapaian terendah sikap peduli lingkungan lahan basah siswa adalah indikator kerja keras sedangkan yang tertinggi adalah tanggung jawab. Namun, secara keseluruhan semua siswa SMP di berbagai wilayah yang berbeda telah mencapai SPLLB dalam kategori peduli. Contoh sikap peduli siswa Berdasarkan hasil wawancara dijelaskan di bawah ini.

Kerja keras

Kerja keras berkaitan dengan menjaga dan melestarikan lingkungan mendapatkan capaian terendah dalam SPLLB siswa, meskipun secara umum sikap ini sudah masuk kategori caring. Berikut adalah sikap kerja keras siswa saat diwawancarai.

Peneliti : Apakah anda merasa kuatir jika limbah dari rumah kita langsung dialirkan ke sungai?

Siswa : Ya. Karena dapat mencemari ekosistem sungai.

Keenam siswa yang diwawancarai menjawab "Tidak".

Peneliti : Menurut Anda, apakah limbah cair pabrik kayu lapis bisa langsung dialirkan ke sungai?

Siswa : Tidak. Karena mengandung bahan kimia berbahaya hasil pengolahan kayu lapis sehingga akan meracuni tubuh kita.

Keenam siswa yang diwawancarai menjawab "Tidak".

Peneliti : Menurut Anda, apakah masyarakat yang tinggal di "rumah lanting" (rumah terapung) bisa langsung membuang sampah ke sungai?

Siswa : Tidak. Karena akan mencemari sungai (siswa berpendapat karena sampah anorganik tidak mudah terurai).

Keenam siswa yang diwawancarai menjawab "Tidak".

Peneliti : Apakah anda peduli bila melihat orang membuang limbah cair sasirangan ke sungai?

Siswa : Tidak. Karena tidak menimbulkan bau atau sampah yang mengapung di sungai.

Siswa lain: Ya, Karena dapat menyebabkan sedikit polusi.

Dalam hal ini, tiga siswa yang diwawancarai menjawab peduli, sedangkan yang lainnya menjawab tidak peduli.

Hampir semua siswa juga menyadari bahwa limbah sisa kegiatan industri di Kalimantan Selatan tidak boleh dibuang ke sungai, baik limbah industri skala kecil maupun besar, karena berbahaya bagi makhluk hidup. Hal tersebut tentunya berkaitan dengan pengetahuan lingkungan yang telah mereka pelajari melalui materi pelajaran. Adawiyah (2018) mendukung temuan ini bahwa sikap siswa SMP terhadap sungai dikategorikan baik yang diwujudkan dengan selalu berusaha menjaga ekosistem sungai. Meskipun, peran keluarga dan orang-orang disekitarnya kurang dalam menanamkan sikap peduli lingkungan. Terkait pembuangan limbah cair industri keluarga sasirangan yang langsung dibuang ke sungai, para siswa masih ragu apakah akan mencemari sungai. Diduga siswa belum melihat secara langsung bagaimana proses yang terjadi di industri rumah tangga Sasirangan. Hal serupa dilaporkan oleh Mratihatani & Susilowati (2013) bahwa sebagian besar masyarakat menganggap pembuangan limbah dari pembuatan batik (kain tradisional Jawa) di sungai Pekalongan Jawa Tengah dianggap tidak berbahaya

Bertanggung jawab

Dalam penelitian ini, bertanggung jawab merupakan indikator SPLLB dengan skor tertinggi dari keempat indikator lainnya. Siswa sekolah di wilayah pertengahan memiliki nilai tertinggi; sedangkan wilayah perkotaan dan pinggiran memiliki skor yang sama. Indikator bertanggung jawab terdiri dari empat aspek: melindungi dan merawat hewan, melindungi dan merawat tumbuhan, melindungi sumber daya alam, dan menjaga keseimbangan ekosistem. Di bawah ini adalah salah satu bagian dari wawancara.

Peneliti : Menurut Anda, apakah konservasi bekantan itu penting?

Siswa : Ya. Karena untuk melestarikan dan mencegah kepunahan sekaligus menjaga keseimbangan ekosistem kita.

Peneliti : Menurut Anda apakah tanaman mangrove mempengaruhi lingkungan kita?

Siswa : Ya. Dapat menghindari abrasi dan menjadi habitat sekaligus makanan bagi hewan.

Keenam siswa yang diwawancarai menyatakan bahwa perlu dilakukan pelestarian baik bekantan maupun habitat mereka.

Dalam masalah pemeliharaan hewan, siswa memberikan respon positif terhadap kelestarian satwa endemik Kalimantan Selatan Bekantan (monyet *Proboscis*). *Proboscis* merupakan hewan endemik Kalimantan Selatan yang populasinya saat ini terancam karena habitat aslinya telah rusak. Para siswa sangat sadar bahwa Bekantan hampir punah. Namun, banyak siswa yang mengaku belum pernah melihat Bekantan secara langsung. Bekantan memang membutuhkan rehabilitasi, khususnya bekantan yang dipelihara secara ilegal oleh masyarakat. Menurut Fuad et al. (2019), sikap siswa tersebut disebabkan oleh pemahaman siswa terhadap sumber daya dan pengaruhnya terhadap kehidupan sehingga meningkatkan motivasi mereka untuk memeliharanya.

Menghargai kebersihan dan kesehatan

Indikator menghargai kebersihan dan kesehatan terdiri dari lima aspek: membuang sampah pada tempatnya, menjaga kebersihan ruang kelas, menutup penampungan air, memelihara sumur air minum, dan menangani sampah rumah tangga. Berdasarkan Tabel 2 terlihat bahwa SPLLB siswa pada indikator menghargai kebersihan dan kesehatan termasuk dalam kategori peduli.

Peneliti : Jika selesai makan dan minum, apakah anda selalu membuang sampah ke tong sampah?

Siswa : Ya. Karena itu untuk menjaga kebersihan dan kesehatan lingkungan kita.

Peneliti : Apakah Anda mengolah dan memisahkan limbah sayuran yang tersisa dari rumah tangga untuk dijadikan pupuk?

Siswa : Tidak. Saya tidak memiliki pengalaman dalam proses mikrobiologi sampah organik.

Semua siswa yang diwawancarai menjawab bahwa mereka tidak memiliki pengalaman proses mikrobiologi, namun dua di antaranya sering menumpuk sampah organik langsung ke dalam tanah di sekitar rumah agar tanah menjadi subur. Sisa sayuran atau sampah organik rumah tangga bisa dijadikan bahan kompos. Pengomposan dapat dipercepat dengan menambahkan aktivator mikroorganisme EM4 yang efektif.

Wise

Indikator bijaksana terdiri dari lima aspek: mengurangi polusi udara, mengurangi polusi air, menghemat penggunaan air, mematikan lampu saat tidak digunakan, dan menebang pohon secara selektif. Skor tertinggi diperoleh di wilayah perkotaan, diikuti oleh wilayah pertengahan dan pinggiran (Tabel 2).

Peneliti : Menurut Anda, apakah cara terbaik untuk membuka lahan baru di areal lahan gambut adalah dengan membakar hutan Galam?

Siswa : Tidak. Karena pembakaran hutan akan menyebabkan kabut asap dan polusi udara.

Peneliti : Jika ada aksi menolak pembakaran hutan secara besar-besaran untuk membuka lahan baru, apakah Anda akan mendukung aksi tersebut?

Siswa : Ya, saya akan mendukung.

Keenam siswa itu menjawab "Ya", tetapi mereka masih ragu untuk dilibatkan jika mereka ambil bagian dalam demonstrasi.

Salah satu sikap bijak yang diungkapkan siswa terkait dengan pembukaan lahan pertanian tradisional dengan cara membakar rumput dan galam (*Melaleuca cajuputi Roxb*hutan). Cara tersebut memang murah dan ekonomis, namun kebiasaan itu harus dihentikan karena dapat menyebabkan kebakaran hutan gambut dan pencemaran udara. Kalimantan Selatan memiliki indeks kualitas udara terendah di Kalimantan sebesar 91,41 (Sulaeman, dkk. 2020), meskipun masih dalam indeks kualitas yang baik. Siswa juga setuju untuk menggunakan jukung, yaitu perahu tradisional untuk transportasi jarak yang wajar di kawasan perairan, karena transportasi ini tidak menggunakan bahan bakar sebagai sumber energi sehingga mengurangi pencemaran udara. Riyandeni & Kusumantoro (2013) juga menemukan bahwa 82,5% responden setuju untuk merancang angkutan umum di sungai. Temuan ini sejalan dengan Dimante et al. (2016) bahwa 68,1% siswa yang pernah belajar IPA lebih bijak dalam menjaga lingkungan.

Berdasarkan pembahasan di atas, secara umum SPLLB siswa berada pada kategori baik dan harus terus ditingkatkan kedepannya. Penguatan SPLLB juga harus dilakukan melalui kegiatan di luar kelas dengan melibatkan masyarakat karena kegiatan ini memberikan peran yang lebih signifikan dalam memperkuat pengetahuan, sikap, dan perilaku siswa terhadap lingkungan bahkan kemampuannya dalam memecahkan masalah (Aliman et al., 2019; Barbaro & Pickett, 2016; Otto & Pensini, 2017).

Pengalaman belajar di luar sekolah menjadi pengalaman yang tak terlupakan sehingga dapat memotivasi siswa untuk terlibat secara mendalam dalam kegiatan pembelajaran. Sebab, pembelajaran selama ini biasanya dilakukan di ruang kelas yang terbatas (Amahmid et al., 2019; Ntanos et al., 2018; Olgun, 2018; Tekakpınar & Tezer 2019). Siswa juga dapat mempraktekkan ilmunya secara langsung, seperti menanam pohon, membersihkan sampah, dan membuangnya ke tempat sampah sesuai kategori berbahaya, anorganik, dan organik.

Perlu untuk mendorong kolaborasi semua sumber daya untuk mendukung pendidikan lingkungan, termasuk kurikulum, lingkungan, dan masyarakat (Sulaeman et al. 2020; Asri et al., 2020). Alkaher & Gan (2020) menyarankan agar sekolah melibatkan beberapa pemangku kepentingan sebagai suatu kemitraan antara sekolah-negara-masyarakat untuk menumbuhkan siswa dan masyarakat sebagai warga yang berwawasan lingkungan, kemitraan sekolah-bisnis untuk meningkatkan infrastruktur fisik, dan membantu promosi pendidikan untuk sekolah keberlanjutan.

KESIMPULAN

Pendidikan lingkungan di Indonesia dilaksanakan secara terintegrasi dengan mata pelajaran terutama IPA dan IPS. Sekolah juga didorong oleh pemerintah untuk melaksanakan program sekolah berbasis lingkungan "Adiwiyata" dalam berbagai tingkatan mulai dari tingkat kabupaten, provinsi, nasional hingga mandiri. Pendidikan lingkungan ini bertujuan untuk menanamkan sikap peduli lingkungan sejak dini. Penelitian ini menemukan bahwa 77,6% SPLLB siswa dalam kategori peduli sedangkan 22,4% sisanya dalam kategori cukup peduli. Tidak ada perbedaan SPLLB siswa di antara tiga wilayah sekolah yang berbeda (perkotaan, pertengahan, dan pinggiran). Hasil ini menunjukkan bahwa wilayah sekolah bukan merupakan variabel penentu utama sikap peduli lingkungan. Hal tersebut mungkin disebabkan oleh aksesibilitas pengetahuan tentang lingkungan yang baik di era digital ini dan mendukung program lingkungan sekolah. Tanggung jawab merupakan indikator dengan skor SPLLB tertinggi, sedangkan yang paling rendah adalah indikator kerja keras. Meskipun demikian, secara keseluruhan semua indikator telah mencapai skor rata-rata pada kategori peduli, termasuk indikator menghargai kesehatan dan kebersihan dan indikator bijaksana. Berdasarkan temuan ini dapat dikatakan bahwa siswa SMP di Kabupaten Banjar memiliki sikap peduli terhadap lingkungan lahan basah yang baik, namun masih perlu ditingkatkan kedepannya. Selain itu perlu dievaluasi mengapa tingkat atau level program lingkungan sekolah "Adiwiyata" tidak mampu membedakan SPLLB siswa. Penelitian selanjutnya dapat menyelidiki faktor-faktor efektifitas program lingkungan sekolah "Adiwiyata", kegiatan diluar kelas, dan peran keluarga dalam pendidikan lingkungan. Akhirnya, perlu dikembangkan pola pendidikan lingkungan yang terintegrasi antara kegiatan kelas dan pengalaman nyata di luar kelas untuk memperkuat pembentukan sikap dan perilaku peduli terhadap lingkungan lahan basah.

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Authors : **A. Sholahuddin, R. Fitriyana, M. F. Sya'ban, I. K. Sadiqin**

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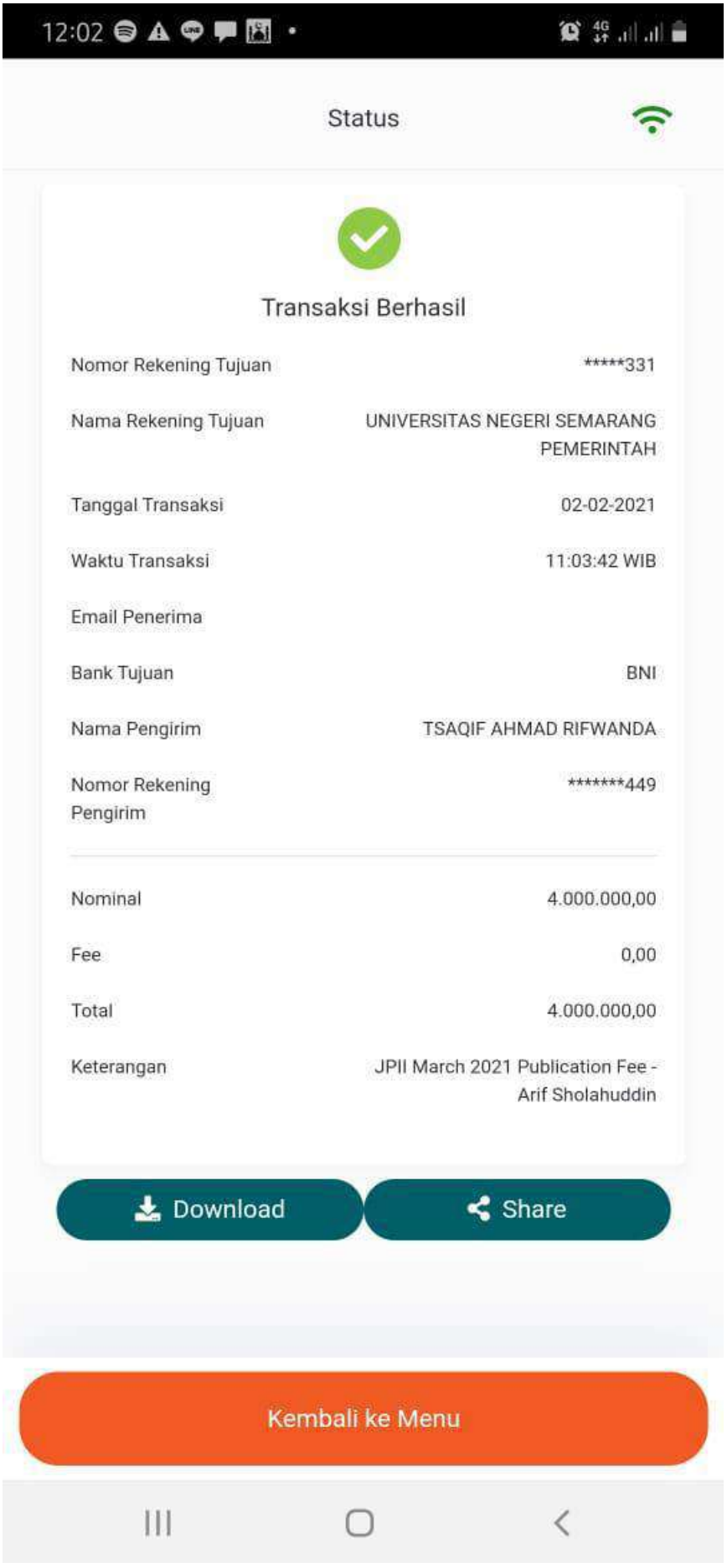
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Students' Caring Attitudes to Wetland Environment: A Case of Environmental Education in Banjar District Indonesia

Arif Sholahuddin[1,a], Rezky Fitriyana[2], Muhammad Fuad Sya'ban[2], Ikhwan Khairu Sadiqin[3]

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Schools in Indonesia have been conducted environmental education programs through both curriculum activities and schools' environmental programs. However, there was no sufficient data about the effectiveness of the programs. This study aims to identify the junior high school students' caring attitudes to the wetland environment (CATWE) as the education outcome. The Six Junior High Schools were chosen as probability sampling areas classified as urban, central, and rural areas schools of Banjar District with total samples of 354 students aged 12-14 years. The CATWE data were collected using a valid and reliable questionnaire. This study found that most of the students care for the wetland environment. There were no differences in the CATWE of the three school areas. These findings indicate that the school area and the level of the "Adiwiyata" program were not the primary determining variable of environmental caring attitude education effectiveness. The highest score of the CATWE indicator was responsible; meanwhile, the lowest was hard work. Even though all the indicators have reached a care category. It is necessary to thoroughly investigate the effectiveness of the school environmental program "Adiwiyata," outside classroom activity, and family role in environmental education.

Keywords: environmental education, caring attitude, wetlands, school area, sustainability

INTRODUCTION

Societies worldwide have experienced ecosystem damages such as pollution, global warming, and climate change as an impact of economic and industrial activities. It relates to the lack of human awareness of the environment and attitudes to sustainable development (Rachmatullah et al., 2020), including the wetland environment.

Banjar District is one of the Indonesian areas that has a sizeable low-lying area or a wetland area. Wetland is inundated or saturated area by surface or groundwater at a frequency and duration of sufficient to support, and that under normal circumstances do support a prevalence of vegetation typically adapted for life in saturated soil conditions. It comprises a river environment, a swamp environment, a freshwater environment, a brackish water environment, or salt, including areas of marine water the depth of which at low tide does not exceed six meters that are flooded throughout the year (Halabisky et al., 2016; Sya'ban et al., 2017).

This ecosystem has been faced the degradation threat of both its quantity and quality in many countries, including Indonesia (Adeleke, 2019; Fianko & Dodd, 2018; Syam'ani et al., 2018). In China, around 91% of wetlands had been converted for agricultural development by 2005, resulting in an average loss of 27% wetland area every ten years (Song et al., 2014). Degradation also occurs significantly in coastal wetlands (Cui et al., 2018).

Wetlands provide various necessities for human life such as food, spawning and nursery, energy, water, and climate regulation. Thus, the wetlands' degradation is threatening ecological safety and sustainable regional development (Costanza et al., 2014). It is necessary to raise awareness of everyone to protect wetlands sustainably.

Accordingly, it demands the role of education, which aims to enable individuals to assimilate the values, the basic concepts, and the practical knowledge which will help them to an awareness of environmental problems, build behavior accordingly and thus give a useful contribution to safeguard the environment (Aarnio-Linnanvuori, 2019; Edsand & Broich, 2020; García et al., 2019; Nkoana, 2019). Refers to the Oxford Dictionary, caring relates to adjective words of concerned, attentive, thoughtful, solicitous, responsible, and considerate. In this study, a caring attitude refers to human attitudes towards the environment in the form of a tendency to maintain and preserve it. The environmental caring attitude consists of hard work, respect for health and cleanliness, wise, and responsibilities indicators (Adawiah, 2018; Fitriyana & Sholahuddin, 2019; Gericke et al., 2019). This attitude is part of the individual characters that will lead to providing pro-environmental behavior.

The development of characters, including students' caring attitude to the environment, was strengthened by the Indonesian government by issuing Presidential Regulation No. 87 of 2017. To form the expected character, it must include the three dimensions, including moral knowing, moral feelings such as self-perception, empathy, love, kindness, self-control, and moral action (Lickona, 1991). Accordingly, the embedding character must begin with knowledge about a character. Knowledge about what is the caring environmental attitude will cause someone to have this attitude. Therefore, he/she needs to learn content knowledge closest to the students to increase their understanding. Caring attitudes to the environment that was formed will be manifested in the form of behavior. It is repeated until internalized and characterized to be a character. In other words, attitude is someone's tendency to do real action. In the long term, it will be expected to reduce environmental damage in the future (Boca & Saraçlı, 2019; Dimante et al., 2016).

Environmental education in Indonesian schools has been carried out in an integrated form with subject matters (Tim Adiwiyata Tingkat Nasional/TATN, 2011), especially natural sciences and social sciences. Besides, several schools have been conducting practical activities to instill a caring culture for all school residents, such as the green school or the "Adiwiyata" school program since 2006. The "Adiwiyata" school program was aimed to make school residents responsible for protecting and managing the environment through good school governance in supporting sustainable development. Four aspects have to exist in the "adiwiyata" school program were environmentally sound policies, implementation of an environment-based curriculum, participatory environment-based activities, and management of environmentally friendly supporting facilities (TATN, 2011). However, how are the school environmental education programs effective to improve the caring attitude to the environment? There is a lack of evaluation data provided for very heterogeneous regions like Indonesia. Only some research has been carried out in certain cities to students with different education levels to investigate their attitudes towards common environmental problems (Iswari & Utomo, 2017; Riastini et al., 2019; Sidauruk et al., 2013) even though more data are needed to plan and improve environmental education correctly especially on the wetland area.

The integration of characters with subject matters is believed as an effective way to build students' characters through education (Dimante et

al., 2016; Vesely et al., 2020). In this case, the teacher plays a vital role in pedagogical management to build students' character, including a caring attitude to the environment (Aarnio-Linnanvuori, 2019). The new challenge for the teacher is to utilize information technology as an effective way to improve students' environment awareness (Jorgenson et al., 2019).

The ultimate goal of environmental education is to equip knowledge and shape the students' positive attitudes and behavior toward the environment. This goal certainly requires a long time and continuous habituation so that their caring attitudes will be characterized as expected behavior (Bergman, 2015; Isdaryanti et al., 2018; Lickona, 1991). Previous research has shown that contribution of the knowledge is smaller than the real environmental problem-solving activities outside the classroom, such as exploring the environment around students, exploring the environmental values of local wisdom, and using the environmental social issues (Alon & Tal, 2017, Boca & Saraçlı, 2019; Ntanos et al., 2018; Tekakpınar & Tezer 2019).

Environmental education in Indonesia has the right strategy by combining knowledge and habituation of environmental behavior in daily school activities. Unfortunately, many teachers found some difficulties in implementing learning activities outside the classroom by involving the community related to the environment. It is due to the tightness of the curriculum, time, and financial availability. However, how the impact of environmental education on students' attitudes and behaviors toward the environment, only a little research reported and showed inconsistent data. The other showed that external factors such as the school environment significantly affect students' environmental care attitudes (Iswari & Utomo, 2017), while the other indicated that these factors did not significantly affect (Meilinda et al., 2017; Riastini et al., 2019). It means that the achievement of environmental education has left the problems.

The inclusion of locally relevant topics is considered an essential underpinning of effective environmental education and requires flexible curricula for programs that span large geographic areas with their diversity. Further, integrating environmental education in the classroom to environmental stewardship projects has increased students' eco-impact (Bergman, 2015).

The previous studies described above (Iswari & Utomo, 2017; Meilinda et al., 2017; Riastini et al., 2019; Sidauruk et al., 2013) have investigated students' caring attitudes towards the environment in the context of the general environment. This current study examined students' caring attitude to the wetland environment (CATWE) of Junior High School Students of Banjar District South Kalimantan, Indonesia. The CATWE in this study represents one's attitude to the wetland environment in the form of attitudes towards certain behaviors related to the environment and actions taken to preserve the environment. Junior high schools in Banjar District are spread from remote or rural areas to urban areas. Differences in areas may provide the differences in habits, developed-values, information accessibility, and even the people's environmental awareness (Ziadat, 2010). This study aimed to (1) analyze the students' CATWE categories and its differences between junior high school students in different areas (urban, central, and rural areas), and (2) describe Students' CATWE based on its indicator. The current study's finding is essential information to design and evaluate school environmental education to keep the sustainability of the wetland environment.

METHODS

This study implemented an explanatory sequential mixed methods design (Creswell, 2012) to obtain information about the CATWE of junior high school (JHS) students of Banjar District Indonesia. The research step is begun by collecting quantitative data using questionnaires and then collecting qualitative data to explain or elaborate on the quantitative results.

The population was 2,741 grade VII students from the 64 State Junior High Schools. The six representative school samples were drawn using the area of probability sampling. The school samples consist of Martapura Public Middle School 1, and Martapura Public Middle School 2 represent urban area schools; Gambut 1 Public Middle School and Astambul 1 Public Middle School represents middle area schools; and Aranio Public Middle School 1, and Sungai Tabuk State Middle School 1 represents suburban area schools. Each school area consists of 118 students, with a total sample of 354 aged between 12 to 13 years.

The questionnaire for measuring the CATWE consists of 37 items of the statement with modified Likert's type of four alternative answers: strongly agree, agree, less agree, and disagree. The CATWE indicators include four indicators. *Hard work indicators: W*orking hard to protect river ecosystems, working hard to preserve swamp ecosystems, fighting spirit to save nature, and working together to solve wetland environmental problems. *Concerning health and cleanliness indicators.* Disposing of garbage in its place, cleaning the classroom, maintaining, and controlling the household waste, closing water reservoirs, and maintaining drinking water wells. *Wise indicators.* Reducing air pollution and water pollution, saving water usage, turning off lights when it is not in use, and felling select trees. *Responsibilities indicators.* Protecting and caring for animals, protecting, and caring for plants, protecting natural resources, and maintaining ecosystem balance (Fitriana & Sholahuddin, 2019; Gericke et al., 2019).

The questionnaire was validated by five experts and judged as valid with a content validity ratio (CVR) 1 (Cohen & Swerdlik, 2013), inter-rater reliability index of 100% (Borich, 2003), and Cronbach's alpha of 0.72. Also, interviews were conducted voluntarily to six student samples to verify and elaborate students' opinions about their caring attitudes to the wetland environment within twenty minutes per student. The interviews were then transcribed and analyzed to be triangulated with the quantitative data.

Based on the distribution of questionnaire scores, the criteria for students' environmental caring attitudes were categorized as follows: score ≥ 112 is caring; 75 - 111 is caring enough, and 37-74 is careless. While each indicator's score categories were categorized as follows: score ≥355 is caring, 237-354 is caring enough, and 118-236 is careless. ANOVA test was also conducted to know the difference in students' environmental caring attitude to the wetland environment between junior high school students from different school areas using SPSS version 23.

RESULTS AND DISCUSSION

Table 1 showed the distribution of a caring attitude to the wetland environment by the school areas of Banjar District JHS's students. The highest score of the CATWE was achieved by JHS students in central area schools, while JHS's students in an urban and rural area have the same caring attitude level.

Table 1. Environmental Caring Attitude of JHS's Students to the Wetland Environment by the school areas

School Areas	Percentage by Category (%)		
	Care	Care enough	Careless
Urban	75.4	24.6	0
The central	82.0	18.0	0
The rural	75.4	24.6	0
Average	**77.6**	**22.4**	**0**

Based on Table 1, it can be said that most of the students in all schools observed care for the wetland environment, and none of them did not interest in the wetland environment.

Table 2 shows the CATWE by indicators of JHS students in Banjar District.

Table 2. The Caring Attitude to Wetland Environmental of JHS' Students by Indicators

Indicators	School Area					
	Urban		Central		Rural	
	Score	Category	Score	Category	Score	Category
Hard work	373.3	Care	370.8	Care	375.5	Care
Respect for Health and Cleanliness	381.8	Care	395.5	Care	390.0	Care
Wise	383.6	Care	376.5	Care	369.5	Care
Responsible	401.8	Care	405.0	Care	401.8	Care
Average	**385.1**	**Care**	**387.0**	**Care**	**384.2**	**Care**

According to Table 2, the lowest score of the CATWE indicator is hard work, while the highest is the responsible indicator. However, students in all the school areas have CATWE in the care category on all indicators (hard work, respect for health and cleanliness, wise and responsible).

All the data were tested their homogeneity by using *Lavene Test* and provided data as presented in Table 3.

Table 3. Test of Data Homogeneous

Levene Statistic	df1	df2	Sig.
1.782	2	351	.170

According to the Lavene test result above, all the data were homogeneous.

Besides, data also were tested their normality of distribution by using *Kolmogorov-Smirnov* and *Shapiro-Wilk Test* as presented in Table 4.

Tabel 4. Test of Data Normality

Groups	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Urban	.077	118	.085	.984	118	.169

The score of Caring attitudes	Central	.065	118	.200*	.980	118	.070
	Rural	.074	118	.162	.981	118	.085

Kolmogorov-Smirnov and the *Shapiro-Wilk* test above indicated that p-value (sig.) > 0.05. It means data were normally distributed.

The homogeneous and normal data were then tested using *the One-Way ANOVA Test* using SPSS version 23 as presented in Table 5.

Table 5. ANOVA Test

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	81.870	2	40.935	.262	.769
Within Groups	54774.992	351	156.054		
Total	54856.862	353			

According to the ANOVA test above, it was obtained a significance value of 0.769 > 0.05. It means that there was no difference between the students' CATWE of different school areas.

The Students' CATWE: Categories and its differences between school areas

Table 1 showed that most students, 77.6%, care about, and none of them in all the school areas did not have an interest in a wetland environment. Students in all the school areas have the same CATWE. This fact illustrates the success of environmental caring character education as the cumulative impact of curriculum implementation in elementary and junior high school levels. Because attitude develops through receiving, responding, valuing, organization, characterization, so it requires continuous habituation in an extended period. Students' knowledge through learning has supported their caring attitude towards the wetland environment because there is a positive interaction between knowledge and attitude. However, knowledge and attitudes do not always necessarily result in the expected behavior (Pauw & Petegem, 2013; Marcos-Merino et al., 2020). Habits, examples, and sustainable motivation in the school environment, family, and community collectively will lead to positive behavior towards the wetland environment. Indonesia's national curriculum has undergone reform such as strengthening and integrating environmental education in subjects (TATN, 2011). Based on the subject content scope, natural science and social science subjects discuss mostly the environment compared to the others. Even the learning approach in elementary schools uses an integrated webbed by utilizing the environment as a learning resource.

The finding also proved that formal education over a long period from elementary to the first year of the secondary school played an important role in changing the students' CATWE. Although students have achieved good attitudes as the impact of national curriculum implementation, they still need to strengthen students' CATWE to keep environmental sustainability, especially for 22.4 % of students late. There are educational factors that influence environmental education success, including institution policy, curriculum, learning method, academic culture (Susongko & Afrizal, 2018; Ikhsan et al., 2019), individual motivation factors (Michelsen & Fisher, 2017) even though knowledge has a fragile relationship on students' environmental behavior (Otto & Pensini, 2017).

This research found that the school area did not influence the students' CATWE (Table 4). This finding is in line with Sidauruk et al. (2013) that the students' environmental care behaviors of the different areas (urban, central, rural) in Medan city Indonesia showed an equally good category. There are no differences in CATWE of all school areas showed that (1) Environmental education, including wetland environmental knowledge, is relatively good in all the schools' area; (2) Understanding is the key to strengthening attitudes, including CATWE (Rabgay, 2018). Therefore, environmental education at the lower education level will provide a further provision and foundation for strengthening caring attitudes. Students' understanding might influence the good CATWE, and it relies on the accessibility of supporting information technology. Now, students can access information related to the environment at any time and place via the internet or social media; (3) It is hypothesized that other schools' environmental programs (e.g., green school and healthy school) have been carried out well and significantly influenced students' CATWE. Therefore, school area was not a determining variable for students to build their CATWE.

Based on the researcher's observations of the three participating schools with different areas, they have implemented a school-based environmental program, "Adiwiyata," but their difference is only at the program level. In urban region area, JHS 1 Martapura has been conducted

at "Mandiri level" (autonomous level) since 2015; meanwhile, JHS 2 Martapura has been conducted at the national level since 2016. Central area schools JHS 1 Gambut and 1 Astambul have conducted national-level programs since 2017 and 2016, respectively. Rural area school JHS 1 Aranio has been conducted at the provincial level since 2018 while JHS 1 Sungai Tabuk has been conducted a district-level program since 2017. Even though the Adiwiyata level programs and schools' areas differ between them, they did not show a significant difference in students' CATWE. It means that the level of Adiwiyata and the school area were not the main factor affecting the level of students' CATWE.

The finding above is in line with previous studies' finding that external factors such as the school environment were not significantly affecting students' environmental care attitude (Meilinda et al., 2017; Riastini et al., 2019). Internal factors such as self-motivation are the main reason for students to care about the environment (Aliman et al., 2019). Nevertheless, a different finding was reported by another researcher that students from schools that have implemented the Adiwiyata program have a higher level of environmental knowledge, affective and skills (Iswari & Utomo, 2017).

Adiwiyata program level should indicate the schools' level of the environmental culture growing successively from the district, provincial, national, and autonomous levels (TATN, 2011). Different Adiwiyata program levels may also indicate environmental culture and the completeness level of supporting facilities for daily activities as environmentally friendly schools. The school facilities include providing trash bins based on the type of waste, greenhouse, hydroponics, composting, drainage, mushroom houses, medicinal plants, cleaning service activities every week, etc. Another most prominent school facility is the ownership of the school environmental education software-updated. By assuming that all the affecting factors were equally good between the participating schools, they also have equally good CATWE (Rabgay, 2018). In this case, the program level should be a differentiator for CATWE because of the different levels of Adiwiyata due to different schools' environmental cultures. This finding provides a contradictory fact with the aim of the Adiwiyata program.

Accordingly, it is necessary to conduct further research to investigate the extent to which the quality and intensity of the CATWE through the different levels of the Adiwiyata program. It also needs to be elaborated on other factors that might impact the CATWE as the synergy of environmental education with various school activities and activities outside the school. Students need sufficient environmental knowledge and sustainability and motivation from the closest people, such as family and school residents, to positively affect the environment (Ntanos et al., 2018; Vesely et al., 2020). Even social and cultural factors and values that students believe can influence their attitudes and behavior towards the environment (Chisholm et al., 2016; Rachmatullah et al., 2020) that someone with a lower socioeconomic level tends to lead the egocentric value of the environment. It is still a severe environmental problem in Indonesia.

Students' CATWE based on Its Indicators

Based on Table 2 from the four indicators (hard work, respect to cleanliness and health, responsibility, wise), the lowest achievement of students' wetland environment caring attitude is a hard work indicator while the highest is responsibility. However, overall, all students of JHS in the different areas have reached the CATWE in the caring category. The examples of students' caring attitude according to the interview was described below.

Hard work

Hard work relates to maintain and preserve the environment to reach the lowest achievement of the students' CATWE. Even though, in general, this attitude has reached the caring category. The following were the attitudes of hard work according to students when they were interviewed.

Researcher: Do you feel worried if the waste from our houses is directly streamed into the river?
Students: Yes. Because it may pollute the river ecosystem.
All the six interviewed students answered "No."

Researcher: Do you think that the plywood factory's liquid waste can be streamed into the river directly?
Students: No. Because it contains hazardous chemicals from plywood processing so it will poison our body.
All the six interviewed students answered "No."

Researcher: Do you think that people who live in "lanting houses" (floating houses) can throw the trash directly into the river?
Students: No. Because it will pollute the river (a student argues that because inorganic waste is not easily decomposed).
All the six interviewed students answered "No".

Researcher: Do you care when you see people dump the sasirangan liquid waste into rivers?
Students: No. Because it does not cause odor or floating garbage in the river.
Other students: Yes, I do because It may cause a bit of pollution.
In this case, three students who were interviewed answered care, while the others responded uncaringly.

Almost all the students also realized that residual waste from industrial activities in South Kalimantan must not be disposed into rivers,

whether waste from smalls or large scales industries because they were dangerous for living things. It certainly relates to the environmental knowledge they have learned through the subject matter. Adawiyah supported this finding (2018) that JHS students' attitude towards the river was categorized as good, manifested by always trying to protect the river ecosystem. Even though, the role of family and people around them were less in instilling the environmental caring attitude. Regarding the disposal of liquid waste from "sasirangan" (the traditional cloth of Banjarese) family industry, which was directly steamed into the river, the students were still doubtful whether this would pollute the river. It is suspected that students have not seen how the process happens in the Sasirangan home industry. A similar situation was reported by Mratihatani and Susilowati (2013) that most people considered waste disposal from making batik (traditional cloth of Javanese) in the Pekalongan Central Java river was considered harmless.

Responsibility

In this current study, responsibility is the indicator with the highest score from the other four indicators. Students from the central area schools have the highest score; meanwhile, the urban and rural area has the same score. Responsibility indicator consists of four aspects: protecting and caring for animals, protecting, and caring for plants, protecting natural resources, and maintaining the equilibrium of the ecosystem. Below is one part of the interviews.

Researcher: Do you think that the conservation of the Bekantans is essential?

Students: Yes. Because to preserve and prevent them from extinction as well as keep our ecosystem equilibrium.

Researcher: Do you think that mangrove plants affect our environment?

Students: Yes. It can avoid abrasion and become a habitat as well as food for animals.

All the six interviewed students stated that it is needed to preserve both proboscis and their habitats.

In animal caring, students gave a positive response to the preservation of the endemic animal of South Kalimantan, "Bekantan" (proboscis monkey). The proboscis is an endemic animal of South Kalimantan, whose population is currently threatened because its original habitat has been damaged. The students were well aware that "Bekantan" is almost extinct. However, many students claimed that they had never seen "Bekantan" directly. "Bekantan" indeed requires rehabilitation, especially for proboscis monkeys that were illegally maintained by people. According to Fuad et al. (2019), the facts caused by the students' understanding of resources and their impact on their lives increase their motivation to keep them.

Respects to cleanliness and health

Respects to cleanliness and health indicators consist of five aspects: disposing of the garbage in its place, maintaining clean classrooms, closing water reservoirs, maintaining drinking water wells, and handling household waste. Based on Table 2, it can be seen that students' CATWE on the indicators of respect for cleanliness and health was categorized as care.

Researcher: If you finish eating and drinking, do you always throw garbage into the trash can?

Students: Yes. Because it is to keep our environment clean and healthy.

Researcher: Do you process and separate vegetable waste left over from the household to be a fertilizer?

Students: No. I have no experience in the microbiological process of organic waste.

All the interviewed students answered that they have no microbiological process experience, but two of them often heap organic waste directly into the soil around the house so that the soil becomes fertile. The household's leftover vegetables or organic waste can be made into compost material. The composting can be accelerated by adding an effective microorganism EM4 activator.

Wise

The wise indicator consists of five aspects: reducing air pollution, reducing water pollution, saving water usage, turning off lights when not in use, and cutting down trees selectively. The highest score was obtained in the urban area, followed by central and rural areas (**Table 2**).

Researcher: Do you think that an excellent way to open the new land in peatlands area is by burning the Galam forest?

Students: No. Because burning the forest will cause smog and air pollution.

Researcher: If there is an action to refuse forest burning on a large scale to open new land, will you support the action?

Students: Yes, I will.

All the six students answered "Yes," but they are still in doubt to be involved if they take part in the demonstration.

One of the wise attitudes expressed by students relates to the traditional opening farming field by burning the grass and "galam" (*Melaleuca cajuputi Roxb*) forest. It is cheap and economical, but the habituation should be stopped because it may cause peat forest fire and air pollution. South Kalimantan has the lowest air quality index in Kalimantan by 91.41 (Sulaeman et al., 2020), even though it still in the good quality index. Students also agree to use "jukung" a traditional boat for reasonable distance transportation in the water area, because this transportation does not use fuel as energy sources so that it will reduce air

pollution. Riyandeni and Kusumantoro (2013) also found that 82.5% of respondents agree to design public transportation on the river. This finding is in line with Dimante et al. (2016) that 68.1% of students who have studied natural science are wiser in protecting the environment.

Based on the discussion above, in general, students' CATWE are in a good category and must be improved continuously in the future. Strengthening CATWE must also be done through activities outside the classroom by involving the communities because this activity provides a more significant role in strengthening students' knowledge, attitudes, and behavior towards the environment and even their ability to solve the problems (Aliman et al., 2019; Barbaro & Pickett, 2016; Otto & Pensini, 2017).

The learning experience outside the school becomes a memorable experience; therefore, it motivates students to involve deeply in learning activities because learning is usually conducted in limited classrooms (Amahmid et al., 2019; Ntanos et al., 2018; Olgun, 2018; Tekakpınar & Tezer 2019). Students can practice their knowledge directly, such as planting trees, cleaning up trash, and putting it into the trash bin according to hazardous, inorganic, and organic categories.

It needs to drive the collaboration of many resources in supporting environmental education, including the curriculum, environment, and society (Sulaeman et al. 2020; Asri et al., 2020). Alkaher and Gan (2020) suggested that schools have to engage their several stakeholders as school-state-community partnerships to cultivate the students' and community's environmental citizenship, school-business partnerships to improve the physical infrastructure, and assisted the promotion of education for sustainability in the school.

CONCLUSION

Environment education in Indonesia is conducted in integration especially with the subject matter of science and social studies. Schools are also encouraged by the government to conduct environmental-based school programs "Adiwiyata" in grade levels from the district, province, national to autonomous level. This environmental education aims to instill an environmentally caring attitude early. This study found that (1) the most of JHS students of Banjar District have a good caring attitude towards the wetland environment. There are no differences in students' CATWE between three different school areas (urban, central, and rural areas). These results indicate that the school area is not the primary determining variable of an environment caring attitude. It might be caused by good accessibility of the environmental knowledge in this digital era and supporting school environment programs; (2) Responsibility is the indicator with the highest score of the CATWE; meanwhile, the lowest is the hard work indicator. Although, overall indicators have reached average scores in the care category, including respect for health and cleanliness and wise. It needs to be evaluated why the level of the "Adiwiyata" school environmental program was not able to distinguish the students' CATWE. Further research may investigate the effectiveness factors of the school environmental program "Adiwiyata", outside classroom activity, and family role in environmental education. Finally, it is necessary to develop environmental education patterns that are integrated classroom activity and real experiences outside the classroom to strengthen the formation of caring attitudes and behaviors towards the wetland environment.

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Students' Caring Attitudes to Wetland Environment: A Case of Environmental Education in Banjar District Indonesia

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Schools in Indonesia have been conducted environmental education programs through both curriculum activities and schools' environmental programs. However, there was no sufficient data about the effectiveness of the programs. This study aims to identify the junior high school students' caring attitudes to the wetland environment (CATWE) as the education outcome. The Six Junior High Schools were chosen as probability sampling areas classified as urban, central, and rural areas schools of Banjar District with total samples of 354 students aged 12-14 years. The CATWE data were collected using a valid and reliable questionnaire. This study found that most of the students care for the wetland environment. There were no differences in the CATWE of the three school areas. These findings indicate that the school area and the level of "Adiwiyata" program were not the primary determining variable of environmental caring attitude education effectiveness. The highest score of the CATWE indicator was responsible; meanwhile, the lowest was hard work. Even though all the indicators have reached a care category. It is necessary to thoroughly investigate the effectiveness of the school environmental program "Adiwiyata," outside classroom activity, and family role in environmental education.

Keywords: environmental education, caring attitude, wetlands, school area, sustainability

INTRODUCTION

Societies worldwide have experienced ecosystem damages such as pollution, global warming, and climate change as an impact of economic and industrial activities. It relates to the lack of human awareness of the environment and attitudes to sustainable development (Rachmatullah et al., 2020), including the wetland environment.

Banjar District is one of the Indonesian areas that has a sizeable low-lying area or a wetland area. Wetland is inundated or saturated area by surface or groundwater at a frequency and duration of sufficient to support, and that under normal circumstances do support a prevalence of vegetation typically adapted for life in saturated soil conditions. It comprises a river environment, a swamp environment, a freshwater environment, a brackish water environment, or salt, including areas of marine water the depth of which at low tide does not exceed six meters that are flooded throughout the year (Halabisky et al., 2016; Sya'ban et al., 2017).

This ecosystem has been faced the degradation threat of both its quantity and quality in many countries, including Indonesia (Adeleke, 2019; Fianko & Dodd, 2018; Syam'ani et al., 2018). In China, around 91% of wetlands had been converted for agricultural development by 2005, resulting in an average loss of 27% wetland area every ten years (Song et al., 2014). Degradation also occurs significantly in coastal wetlands (Cui et al., 2018).

Wetlands provide various necessities for human life such as food, spawning and nursery, energy, water, and climate regulation. Thus, the wetlands' degradation is threatening ecological safety and sustainable regional development (Costanza et al., 2014). It is necessary to raise awareness of everyone to protect wetlands sustainably.

Accordingly, it demands the role of education, which aims to enable individuals to assimilate the values, the basic concepts, and the practical knowledge which will help them to an awareness of environmental problems, build behavior accordingly and thus give a useful contribution to safeguard the environment (Aarnio-Linnanvuori, 2019; Edsand & Broich, 2020; García et al., 2019; Nkoana, 2019). Refers to the Oxford Dictionary, caring relates to adjective words of concerned, attentive, thoughtful, solicitous, responsible, and considerate. In this study, a caring attitude refers to human attitudes towards the environment in the form of a tendency to maintain and preserve it. The environmental caring attitude consists of hard work, respect for health and cleanliness, wise, and responsibilities indicators (Adawiah, 2018; Fitriyana & Sholahuddin, 2019; Gericke et al., 2019). This attitude is part of the individual characters that will lead to providing pro-environmental behavior.

Development of characters, including students' caring attitude to the environment were strengthened by the Indonesian government by issuing Presidential Regulation No. 87 of 2017. To form the expected character, it must include the three dimensions, including moral knowing, moral feelings such as self-perception, empathy, love, kindness, self-control, and moral action (Lickona, 1991). Accordingly, the embedding character must begin with knowledge about a character. Knowledge about what is the caring environmental attitude will cause someone to have this attitude. Therefore, he/she needs to learn content knowledge closest to the students to increase their understanding. Caring attitudes to the environment that was formed will be manifested in the form of behavior. It is repeated until internalized and characterized to be a character. In other words, attitude is someone's tendency to do real action. In the long term, it will be expected to reduce environmental damage in the future (Boca & Saraçlı, 2019; Dimante et al., 2016).

Environmental education in Indonesian schools has been carried out in an integrated form with subject matters (Tim Adiwiyata Tingkat Nasional/TATN, 2011), especially natural sciences and social sciences. Besides, several schools have been conducting practical activities to instill a caring culture for all school residents, such as the green school or "adiwiyata" school program since 2006. Adiwiyata school program was aimed to make school residents responsible for protecting and managing the environment through good school governance in supporting sustainable development. Four aspects have to exist in the "adiwiyata" school program" were environmentally sound policies, implementation of an environment-based curriculum, participatory environment based activities, and management of environmentally friendly supporting facilities (TATN, 2011). However, how are the school environmental education programs effective to improve the caring attitude to the environment? There is a lack of evaluation data provided for very heterogeneous regions like Indonesia. Only some research has been carried out in certain cities to students with different education levels to investigate their attitudes towards common environmental problems (Iswari & Utomo, 2017; Riastini et al., 2019; Sidauruk et al., 2013) even though more data are needed in order to plan and improve environmental education correctly especially on the wetland area.

The integration of characters with subject matters is believed as an effective way to build students' characters through education (Dimante et

al., 2016; Vesely at al., 2020). In this case, the teacher plays a vital role in pedagogical management to build students' character, including a caring attitude to the environment (Aarnio-Linnanvuori, 2019). The new challenge for the teacher is to utilize information technology as an effective way to improve students' environment awareness (Jorgenson et al., 2019).

The ultimate goal of environmental education is to equip knowledge and shape the students' positive attitudes and behavior toward the environment. This goal certainly requires a long time and continuous habituation so that their caring attitudes will be characterized as expected behavior (Bergman, 2015; Isdaryanti et al., 2018; Lickona, 1991). Previous research has shown that contribution of the knowledge is smaller than the real environmental problem-solving activities outside the classroom, such as exploring the environment around students, exploring the environmental values of local wisdom, and using the environmental social issues (Alon & Tal, 2017, Boca & Saraçlı, 2019; Ntanos et al., 2018; Tekakpınar & Tezer 2019).

Environmental education in Indonesia has the right strategy by combining knowledge and habituation of environmental behavior in daily school activities. Unfortunately, many teachers found some difficulties in implementing learning activities outside the classroom by involving the community related to the environment. It is due to the tightness of the curriculum, time, and financial availability. However, how the impact of environmental education on students' attitudes and behaviors toward the environment, only a little research reported and showed inconsistent data. The other showed that external factors such as the school environment significantly affect students' environmental care attitudes (Iswari & Utomo, 2017), while the other indicated that these factors did not significantly affect (Meilinda at al., 2017; Riastini et al., 2019). It means that the achievement of environmental education has left the problems.

The inclusion of locally relevant topics is considered an essential underpinning of effective environmental education and requires flexible curricula for programs that span large geographic areas with their diversity. Further, integrating environmental education in the classroom to environmental stewardship projects has increased students' eco-impact (Bergman, 2015).

The previous studies described above (Iswari & Utomo, 2017; Meilinda at al., 2017; Riastini et al., 2019; Sidauruk et al., 2013) have investigated students' caring attitudes towards the environment in the context of the general environment. This current study examined students' caring attitude to the wetland environment (CATWE) of Junior High School Students of Banjar District South Kalimantan, Indonesia. The CATWE in this study represents one's attitude to the wetland environment in the form of attitudes towards certain behaviors related to the environment and actions taken to preserve the environment. Junior high schools in Banjar District are spread from remote or rural areas to urban areas. Differences in areas may provide the differences in habits, developed-values, information accessibility and even the people's environmental awareness (Ziadat, 2010). This study aimed to (1) analyze the students' CATWE categories and its differences between junior high school students in different areas (urban, central, and rural areas), and (2) describe Students' CATWE based on its indicator. The current study's finding is essential information to design and evaluate school environmental education to keep the sustainability of the wetland environment.

METHODS

This study implemented an explanatory sequential mixed methods design (Creswell, 2012) to obtain information about the CATWE of junior high school (JHS) students of Banjar District Indonesia. The research step is begun by collecting quantitative data using questionnaires and then collecting qualitative data to explain or elaborate on the quantitative results.

The population was 2,741 grade VII students from the 64 State Junior High Schools. The six representative schools samples were drawn using the area of probability sampling. The school samples consist of Martapura Public Middle School 1, and Martapura Public Middle School 2 represent urban area schools; Gambut 1 Public Middle School and Astambul 1 Public Middle School represents middle area schools; and Aranio Public Middle School 1, and Sungai Tabuk State Middle School 1 represents suburban area schools. Each school area consists of 118 students, with a total sample of 354 aged between 12 to 13 years.

The questionnaire for measuring the CATWE consists of 37 items of the statement with modified Likert's type of four alternative answers: strongly agree, agree, less agree, and disagree. The CATWE indicators include four indicators. *Hard work indicators: W*orking hard to protect river ecosystems, working hard to preserve swamp ecosystems, fighting spirit to save nature, and working together to solve wetland environmental problems. *Respect to health and cleanliness indicators.* Disposing of garbage in its place, cleaning the classroom, maintaining and controlling of household waste, closing water reservoirs and maintaining drinking water wells. *Wise indicators.* Reducing air pollution and water pollution, saving water usage, turning off lights when it is not in use, and felling select trees. *Responsibilities indicators.* Protecting and caring for animals, protecting and caring for plants, protecting natural resources and maintaining ecosystem balance (Fitriana & Sholahuddin, 2019; Gericke et al., 2019).

The questionnaire was validated by five experts and judged as valid with a content validity ratio (CVR) 1 (Cohen & Swerdlik, 2013), inter-rater reliability index of 100% (Borich, 2003), and Cronbach's alpha of 0.72. Also, interviews were conducted voluntarily to six student samples to verify and elaborate students' opinions about their caring attitudes to the wetland environment within twenty minutes per student. The interviews were then transcribed and analyzed to be triangulated with the quantitative data.

Based on the distribution of questionnaire scores, the criteria for students' environmental caring attitudes were categorized as follows: score ≥ 112 is caring; 75 - 111 is caring enough, and 37-74 is careless. While each indicator's score categories were categorized as follows: score ≥355 is caring, 237-354 is caring enough, and 118-236 is careless. ANOVA test was also conducted to know the difference in students' environmental caring attitude to the wetland environment between junior high school students from different school areas using SPSS version 23.

RESULTS AND DISCUSSION

Table 1 shows the distribution of a caring attitude to the wetland environment by the school areas of Banjar District JHS's students. The highest score of the CATWE was achieved by JHS students in central area schools, while JHS's students in an urban and rural area have the same caring attitude level.

Table 1. Environmental Caring Attitude of JHS's Students to the Wetland Environment by the school areas

School Areas	Percentage by Category (%)		
	Care	Care enough	Careless
Urban	75.4	24.6	0
The central	82.0	18.0	0
The rural	75.4	24.6	0
Average	**77.6**	**22.4**	**0**

Based on Table 1, it can be said that most of the students in all schools observed care for the wetland environment, and none of them did not interest in the wetland environment.

Table 2 shows the CATWE by indicators of JHS students in Banjar District.

Table 2. The Caring Attitude to Wetland Environmental of JHS' Students by Indicators

Indicators	School Area					
	Urban		Central		Rural	
	Score	Category	Score	Category	Score	Category
Hard work	373.3	Care	370.8	Care	375.5	Care
Respect for Health and Cleanliness	381.8	Care	395.5	Care	390.0	Care
Wise	383.6	Care	376.5	Care	369.5	Care
Responsible	401.8	Care	405.0	Care	401.8	Care
Average	**385.1**	**Care**	**387.0**	**Care**	**384.2**	**Care**

According to Table 2, the lowest score of the CATWE indicator is hard work, while the highest is the responsible indicator. However, students in all the school areas have CATWE in the care category on all indicators (hard work, respect for health and cleanliness, wise and responsible).

All the data were tested their homogeneity by using *Lavene Test* and provided data as presented in Table 3.

Table 3. Test of Data Homogeneous

Levene Statistic	df1	df2	Sig.
1.782	2	351	.170

According to the Lavene test result above, all the data were homogeneous.

Besides, data also were tested their normality of distribution by using *Kolmogorov-Smirnov* and *Shapiro-Wilk Test* as presented in Table 4.

Tabel 4. Test of Data Normality

	Kolmogorov-Smimov[a]			Shapiro-Wilk		
Groups	Statistic	df	Sig.	Statistic	df	Sig.
Urban	.077	118	.085	.984	118	.169

The score of Caring attitude	Central	.065	118	.200*	.980	118	.070
	Rural	.074	118	.162	.981	118	.085

Kolmogorov-Smirnov and the *Shapiro-Wilk* test above indicated that p-value (sig.) > 0.05. It means data were normally distributed.

The homogeneous and normal data were then tested using *the One-Way ANOVA Test* using SPSS version 23 as presented in Table 5.

Table 5. ANOVA Test

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	81.870	2	40.935		
Within Groups	54774.992	351	156.054	.262	.769
Total	54856.862	353			

According to the ANOVA test above, it was obtained a significance value of 0.769 > 0.05. It means that there was no difference between the students' CATWE of different school areas.

The Students' CATWE: Categories and its differences between school areas

Table 1 showed that most students, 77.6%, care about, and none of them in all the school areas did not have an interest in a wetland environment. Students in all the school areas have the same CATWE. This fact illustrates the success of environmental caring character education as the cumulative impact of curriculum implementation in elementary and junior high school levels. Because attitude develops through receiving, responding, valuing, organization, characterization, so it requires continuous habituation in an extended period. Students' knowledge through learning has supported their caring attitude towards the wetland environment because there is a positive interaction between knowledge and attitude. However, knowledge and attitudes do not always necessarily result in the expected behavior (Pauw & Petegem, 2013; Marcos-Merino et al., 2020). Habits, examples, and sustainable motivation in the school environment, family, and community collectively will lead to positive behavior towards the wetland environment. Indonesia's national curriculum has undergone reform such as strengthening and integrating environmental education in subjects (TATN, 2011). Based on the subject content scope, natural science and social science subjects discuss mostly the environment compared to the others. Even the learning approach in elementary schools uses an integrated webbed by utilizing the environment as a learning resource.

The finding also proved that formal education over a long period from elementary to the first year of secondary school played an important role in changing the students' CATWE. Although students have achieved good attitudes as the impact of national curriculum implementation, they still need to strengthen students' CATWE to keep environmental sustainability, especially for 22.4 % of students late. There are educational factors that influence environmental education success, including institution policy, curriculum, learning method, academic culture (Susongko & Afrizal, 2018; Ikhsan et al., 2019), individual motivation factors (Michelsen & Fisher, 2017) even though knowledge has a fragile relationship on students' environmental behavior (Otto & Pensini, 2017).

This research found that the school area did not influence the students' CATWE (Table 4). This finding in line with Sidauruk et al. (2013) that the students' environmental care behaviors of the different areas (urban, central, rural) in Medan city Indonesia showed an equally good category. There are no differences in CATWE of all school areas showed that (1) Environmental education, including wetland environmental knowledge, is relatively good in all the schools' área. (2) Understanding is the key to strengthening attitudes, including CATWE (Rabgay, 2018). Therefore, environmental education at the lower education level will provide a further provision and foundation for strengthening caring attitudes. Students' understanding might influence the good CATWE, and it relies on the accessibility of supporting information technology. Now, students can access information related to the environment at any time and place via the internet or social media. (3) It is hypothesized that other schools' environmental programs (e.g., green school and healthy school) have been carried out well and significantly influenced students' CATWE. Therefore, school área was not a determining variable for students to build their CATWE.

Based on the researcher's observations of the three participating schools with different areas, they have implemented a school-based environmental program, "Adiwiyata," but their difference is only at the program level. In urban region area, JHS 1 Martapura has been conducted at "mandiri level" (autonomous level) since 2015;

meanwhile, JHS 2 Martapura has been conducted at the national level since 2016. Central area schools JHS 1 Gambut and 1 Astambul have conducted national-level programs since 2017 and 2016, respectively. Rural area school JHS 1 Aranio has been conducted at the provincial level since 2018 while JHS 1 Sungai Tabuk has been conducted a district-level program since 2017. Even though the Adiwiyata level programs and schools' areas, differ between them, they did not show a significant difference in students' CATWE. It means that the level of Adiwiyata and the school area were not the main factor affecting the level of students' CATWE.

The finding above is in line with previous studies' finding that external factors such as the school environment were not significantly affecting students' environmental care attitude (Meilinda et al., 2017; Riastini et al., 2019). Internal factors such as self-motivation are the main reason students want to care about the environment (Aliman et al., 2019). Nevertheless, a different finding was reported by another researcher that students of schools that have implemented the Adiwiyata program have a higher level of environmental knowledge, affective and skills (Iswari & Utomo, 2017).

Adiwiyata program level should indicate the schools' level of the environmental culture growing successively from the district, provincial, national, and autonomous levels (TATN, 2011). Different Adiwiyata program levels may also indicate environmental culture and the completeness level of supporting facilities for daily activities as environmentally friendly schools. The school facilities include providing trash bins based on the type of waste, greenhouse, hydroponics, composting, drainage, mushroom houses, medicinal plants, cleaning service activities every week, et cetera. Another most prominent school facility is the ownership of the school environmental education software-updated. By assuming that all the affecting factors were equally good between the participating schools, they also have equally good CATWE (Rabgay, 2018). In this case, the program level should be a differentiator for CATWE because of the different levels of Adiwiyata due to different schools' environmental cultures. This finding provides a contradictory fact with the aim of the Adiwiyata program.

Accordingly, it is necessary to conduct further research to investigate the extent to which the quality and intensity of the CATWE through the different levels of the Adiwiyata program. It also needs to be elaborated on other factors that might impact the CATWE as the synergy of environmental education with various school activities and activities outside the school. Students need sufficient environmental knowledge and sustainability and motivation from the closest people, such as family and school residents, to positively affect the environment (Ntanos et al., 2018; Vesely et al., 2020). Even social and cultural factors and values that students believe can influence their attitudes and behavior towards the environment (Chisholm et al., 2016; Rachmatullah et al., 2020) that someone with a lower socioeconomic level tends to lead the egocentric value of the environment. It is still a severe environmental problem in Indonesia.

Students' CATWE based on Its Indicators

Based on Table 2 from the four indicators (hard work, respect to cleanliness and health, responsibility, wise), the lowest achievement of students' wetland environment caring attitude is a hard work indicator while the highest is responsibility. However, overall all students of JHS in the different areas have reached the CATWE in the caring category. The examples of students' caring attitude according to the interview was described below.

Hard work

Hard work relates to maintain and preserve the environment to reach the lowest achievement of the students' CATWE. Even though, in general, this attitude has reached the caring category. The following were the attitudes of hard work according to students when they were interviewed.

Researcher: Do you feel worried if the waste from our houses is directly streamed into the river?
Students: Yes. Because it may pollute the river ecosystem.
All the six interviewed students answered "No."

Researcher: Do you think that the plywood factory's liquid waste can be streamed into the river directly?
Students: No. Because it contains hazardous chemicals from plywood processing so it will poison our body.
All the six interviewed students answered "No."

Researcher: Do you think that people who live in "lanting houses" (floating houses) can throw the trash directly into the river?
Students: No. Because it will pollute the river (a student argues that because inorganic waste is not easily decomposed).
All the six interviewed students answered "No".

Researcher: Do you care when you see people dump the sasirangan liquid waste into rivers?
Students: No. Because it does not cause odor or floating garbage in the river.
Other students: Yes, I do because It may cause a bit of pollution.
In this case, three students who were interviewed answered care, while the others responded uncaringly.

Almost all the students also realized that residual waste from industrial activities in South Kalimantan must not be disposed into rivers,

whether waste from smalls or large scales industries, because they were dangerous for living things. It certainly relates to the environmental knowledge they have learned through the subject matter. Adawiyah supported this finding (2018) that JHS students' attitude towards the river was categorized as good, manifested by always trying to protect the river ecosystem. Even though, the role of family and people around them were less in instilling the environmental caring attitude. Regarding the disposal of liquid waste from "sasirangan" (the traditional cloth of Banjarese) family industry, which was directly steamed into the river, the students were still doubtful whether this would pollute the river. It is suspected that students have not seen how the process happens in the Sasirangan home industry. A similar situation was reported by Mratihatani & Susilowati (2013) that most people considered waste disposal from making batik (traditional cloth of Javanese) in the Pekalongan Central Java river was considered harmless.

Responsibility

In this current study, responsibility is the indicator with the highest score from the other four indicators. Students of the central area schools have the highest score; meanwhile, the urban and rural area has the same score. Responsibility indicator consists of four aspects: protecting and caring for animals, protecting and caring for plants, protecting natural resources, and maintaining the equilibrium of the ecosystem. Below is one part of the interviews.

Researcher: Do you think that the conservation of the Bekantans is essential?

Students: Yes. Because in order to preserve and prevent them from extinction as well as keep our ecosystem equilibrium.

Researcher: Do you think that the mangrove plants affect our environment?

Students: Yes. It can avoid abrasion and become a habitat as well as food for animals.

All the six interviewed students stated that it is needed to preserve both proboscis and their habitats.

In animal caring, students gave a positive response to the preservation of the endemic animal of South Kalimantan, "Bekantan" (proboscis monkey). The proboscis is an endemic animal of South Kalimantan, whose population is currently threatened because its original habitat has been damaged. The students were well aware that "Bekantan" is almost extinct. However, many students claimed that they had never seen "Bekantan" directly. "Bekantan" indeed requires rehabilitation, especially for proboscis monkeys that were illegally maintained by people. According to Fuad et al. (2019), the facts caused by the students' understanding of resources and their impact on their lives increase their motivation to keep them.

Respects to cleanliness and health

Respects to cleanliness and health indicators consist of five aspects: disposing of the garbage in its place, maintaining clean classrooms, closing water reservoirs, maintaining drinking water wells, and handling household waste. Based on Table 2, it can be seen that students' CATWE on the indicators of respect for cleanliness and health was categorized as care.

Researcher: If you finish eating and drinking, do you always throw garbage into the trash can?

Students: Yes. Because it is in order to keep our environment clean and healthy.

Researcher: Do you process and separate vegetable waste left over from the household to be a fertilizer?

Students: No. I have no experience in the microbiological process of organic waste.

All the interviewed students answered that they have no microbiological process experience, but two of them often heap organic waste directly into the soil around the house so that the soil becomes fertile. The household's leftover vegetables or organic waste can be made a compost material. The composting can be accelerated by adding an effective microorganism EM4 activator.

Wise

The wise indicator consists of five aspects: reducing air pollution, reducing water pollution, saving water usage, turning off lights when not in use, and cutting down trees selectively. The highest score was obtained in the urban area, followed by central and rural areas (**Table 2**).

Researcher: Do you think that an excellent way to open the new land in peatlands area is by burning the Galam forest?

Students: No. Because burning the forest will cause smog and air pollution.

Researcher: If there is an action to refuse forest burning on a large scale to open new land, will you support the action?

Students: Yes, I will.

All the six students answered "Yes," but they are still in doubt to be involved if they take part in the demonstration.

One of the wise attitudes expressed by students relates to the traditional opening farming field by burning the grass and "galam" (*Melaleuca cajuputi Roxb*) forest. It is a cheap and economical, but the habituation should be stopped because it may cause peat forest fire and air pollution. South Kalimantan has the lowest air quality index in Kalimantan by 91.41 (Sulaeman, et al. 2020), even though it still in the good quality index. Students also agree to use "jukung" a traditional boat for reasonable distance transportation in the water area, because this transportation does not use fuel as energy sources so that it will reduce air

pollution. Riyandeni & Kusumantoro (2013) also found that 82.5% of respondents agree to design public transportation on the river. This finding is in line with Dimante et al. (2016) that 68.1% of students who have studied natural science are wiser in protecting the environment.

Based on the discussion above, in general, students' CATWE are in a good category and must be improved continuously in the future. Strengthening CATWE must also be done through activities outside the classroom by involving the communities because this activity provides a more significant role in strengthening students' knowledge, attitudes, and behavior towards the environment and even their ability to solve the problems (Aliman et al., 2019; Barbaro & Pickett, 2016; Otto & Pensini, 2017).

The learning experience outside the school becomes a memorable experience; therefore, it motivates students to involve deeply in learning activities because learning is usually conducted in limited classrooms (Amahmid et al., 2019; Ntanos et al., 2018; Olgun, 2018; Tekakpınar & Tezer 2019). Students can practice their knowledge directly, such as planting trees, cleaning up trash, and putting it into the trash bin according to hazardous, inorganic, and organic categories.

It needs to drives the collaboration of many resources in supporting environmental education, including the curriculum, environment, and society (Sulaeman et al. 2020; Asri et al., 2020). Alkaher & Gan (2020) suggested that schools have to engage their several stakeholders as school-state-community partnerships to cultivate the students' and community's environmental citizenship, school-business partnerships to improve the physical infrastructure, and assisted the promotion of education for sustainability in the school.

CONCLUSION

Environment education in Indonesia is conducted in integration especially with the subject matter of science and social studies. Schools are also encouraged by the government to conduct environmental-based school programs "Adiwiyata" in grade levels from the district, province, national to autonomous level. This environmental education aims to instill an environmental caring attitude early. This study found that (1) the most of JHS students of Banjar District have a good caring attitude towards the wetland environment. There are no differences in students' CATWE between three different school areas (urban, central, and rural areas). These results indicate that the school area is not the primary determining variable of an environment caring attitude. It might be caused by good accessibility of the environmental knowledge in this digital era and supporting school environment programs. (2) Responsibility is the indicator with the highest score of the CATWE; meanwhile, the lowest is the hard work indicator. Although, overall indicators have reached an average score in the care category, including respect for health and cleanliness and wise. It needs to be evaluated why the level of the "Adiwiyata" school environmental program was not able to distinguish the students' CATWE. Further research may investigate the effectiveness factors of the school environmental program "Adiwiyata", outside classroom activity, and family role in environmental education. Finally, it is necessary to develop environmental education patterns that are integrated classroom activity and real experiences outside the classroom to strengthen the formation of caring attitudes and behaviors towards the wetland environment.

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STUDENTS' CARING ATTITUDES TO WETLAND ENVIRONMENT: A CASE OF ENVIRONMENTAL EDUCATION IN BANJAR DISTRICT INDONESIA

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ABSTRACT

Schools in Indonesia have been conducted environmental education programs through both curriculum activities and schools' environmental programs. However, there was no sufficient data about the effectiveness of the programs. This study aims to identify the junior high school students' caring attitudes to the wetland environment (CATWE) as the education outcome. The Six Junior High Schools were chosen as probability sampling areas classified as urban, central, and rural areas schools of Banjar District with total samples of 354 students aged 12-14 years. The CATWE data were collected using a valid and reliable questionnaire. This study found that most of the students care for the wetland environment. There were no differences in the CATWE of the three school areas. These findings indicate that the school area and the level of the "Adiwiyata" program were not the primary determining variable of environmental caring attitude education effectiveness. The highest score of the CATWE indicator was responsible; meanwhile, the lowest was hard work. Even though all the indicators have reached a care category. It is necessary to thoroughly investigate the effectiveness of the school environmental program "Adiwiyata," outside classroom activity, and family role in environmental education.

Keywords: environmental educatio; caring attitude; wetlands; school area; sustainability

INTRODUCTION

Societies worldwide have experienced ecosystem damages such as pollution, global warming, and climate change as an impact of economic and industrial activities. It relates to the lack of human awareness of the environment and attitudes to sustainable development (Rachmatullah et al., 2020), including the wetland environment.

Banjar District is one of the Indonesian areas that has a sizeable low-lying area or a wetland area. Wetland is inundated or saturated area by surface or groundwater at a frequency and duration of sufficient to support, and that under normal circumstances do support a prevalence of vegetation typically adapted for life in saturated soil conditions. It comprises a river environment, a swamp environment, a freshwater environment, a brackish water environment, or salt, including areas of marine water the depth of which at low tide does not exceed six meters that are flooded throughout the year (Halabisky et al., 2016; Sya'ban et al., 2017).

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This ecosystem has been faced the degradation threat of both its quantity and quality in many countries, including Indonesia (Fianko & Dodd, 2018; Syam'ani et al., 2018; Adeleke, 2019). In China, around 91% of wetlands had been converted for agricultural development by 2005, resulting in an average loss of 27% wetland area every ten years (Song et al., 2014). Degradation also occurs significantly in coastal wetlands (Cui et al., 2018).

Wetlands provide various necessities for human life such as food, spawning and nursery, energy, water, and climate regulation. Thus, the wetlands' degradation is threatening ecological safety and sustainable regional development (Costanza et al., 2014). It is necessary to raise awareness of everyone to protect wetlands sustainably.

Accordingly, it demands the role of education, which aims to enable individuals to assimilate the values, the basic concepts, and the practical knowledge which will help them to an awareness of environmental problems, build behavior accordingly and thus give a useful contribution to safeguard the environment (Aarnio-Linnanvuori, 2019; García et al., 2019; Edsand & Broich, 2020; Nkoana, 2020). Refers to the Oxford Dictionary, caring relates to adjective words of concerned, attentive, thoughtful, solicitous, responsible, and considerate. In this study, a caring attitude refers to human attitudes towards the environment in the form of a tendency to maintain and preserve it. The environmental caring attitude consists of hard work, respect for health and cleanliness, wise, and responsibilities indicators (Adawiah, 2018; Fitriyana & Sholahuddin, 2019; Gericke et al., 2019). This attitude is part of the individual characters that will lead to providing pro-environmental behavior.

The development of characters, including students' caring attitude to the environment, was strengthened by the Indonesian government by issuing Presidential Regulation No. 87 of 2017. To form the expected character, it must include the three dimensions, including moral knowing, moral feelings such as self-perception, empathy, love, kindness, self-control, and moral action (Lickona, 1991). Accordingly, the embedding character must begin with knowledge about a character. Knowledge about what is the caring environmental attitude will cause someone to have this attitude. Therefore, he/she needs to learn content knowledge closest to the students to increase their understanding. Caring attitudes to the environment that was formed will be manifested in the form of behavior. It is repeated until internalized and characterized to be a character. In other words, attitude is someone's tendency to do real action. In the long term, it will be expected to reduce environmental damage in the future (Dimante et al., 2016; Boca & Saraçlı, 2019).

Environmental education in Indonesian schools has been carried out in an integrated form with subject matters (Tim Adiwiyata Tingkat Nasional/TATN, 2011), especially natural sciences and social sciences. Besides, several schools have been conducting practical activities to instill a caring culture for all school residents, such as the green school or the "Adiwiyata" school program since 2006. The "Adiwiyata" school program was aimed to make school residents responsible for protecting and managing the environment through good school governance in supporting sustainable development. Four aspects have to exist in the "adiwiyata" school program were environmentally sound policies, implementation of an environment-based curriculum, participatory environment-based activities, and management of environmentally friendly supporting facilities (TATN, 2011). However, how are the school environmental education programs effective to improve the caring attitude to the environment? There is a lack of evaluation data provided for very heterogeneous regions like Indonesia. Only some research has been carried out in certain cities to students with different education levels to investigate their attitudes towards common environmental problems (Sidauruk et al., 2013; Iswari & Utomo, 2017; Riastini et al., 2019) even though more data are needed to plan and improve environmental education correctly especially on the wetland area.

The integration of characters with subject matters is believed as an effective way to build students' characters through education (Dimante et al., 2016; Vesely et al., 2020). In this case, the teacher plays a vital role in pedagogical management to build students' character, including a caring attitude to the environment (Aarnio-Linnanvuori, 2019). The new challenge for the teacher is to utilize information technology as an effective way to improve students' environment awareness (Jorgenson et al., 2019).

The ultimate goal of environmental education is to equip knowledge and shape the students' positive attitudes and behavior toward the environment. This goal certainly requires a long time and continuous habituation so that their caring attitudes will be characterized as expected behavior (Lickona, 1991; Bergman, 2015; Isdaryanti et al., 2018; Yustina et al., 2020). Previous research has shown that contribution of the

knowledge is smaller than the real environmental problem-solving activities outside the classroom, such as exploring the environment around students, exploring the environmental values of local wisdom, and using the environmental social issues (Alon & Tal, 2017; Ntanos et al., 2018; Boca & Saraçlı, 2019; Tekakpınar & Tezer 2019).

Environmental education in Indonesia has the right strategy by combining knowledge and habituation of environmental behavior in daily school activities. Unfortunately, many teachers found some difficulties in implementing learning activities outside the classroom by involving the community related to the environment. It is due to the tightness of the curriculum, time, and financial availability. However, how the impact of environmental education on students' attitudes and behaviors toward the environment, only a little research reported and showed inconsistent data. The other showed that external factors such as the school environment significantly affect students' environmental care attitudes (Iswari & Utomo, 2017), while the other indicated that these factors did not significantly affect (Meilinda et al., 2017; Riastini et al., 2019). It means that the achievement of environmental education has left the problems.

The inclusion of locally relevant topics is considered an essential underpinning of effective environmental education and requires flexible curricula for programs that span large geographic areas with their diversity. Further, integrating environmental education in the classroom to environmental stewardship projects has increased students' eco-impact (Bergman, 2015).

The previous studies described above (Sidauruk et al., 2013; Iswari & Utomo, 2017; Meilinda et al., 2017; Riastini et al., 2019) have investigated students' caring attitudes towards the environment in the context of the general environment. This current study examined students' caring attitude to the wetland environment (CATWE) of Junior High School Students of Banjar District South Kalimantan, Indonesia. The CATWE in this study represents one's attitude to the wetland environment in the form of attitudes towards certain behaviors related to the environment and actions taken to preserve the environment. Junior high schools in Banjar District are spread from remote or rural areas to urban areas. Differences in areas may provide the differences in habits, developed-values, information accessibility, and even the people's environmental awareness (Ziadat, 2010). This study aimed to (1) analyze the students' CATWE categories and its differences between junior high school students in different areas (urban, central, and rural areas), and (2) describe Students' CATWE based on its indicator. The current study's finding is essential information to design and evaluate school environmental education to keep the sustainability of the wetland environment.

METHODS

This study implemented an explanatory sequential mixed methods design (Creswell, 2012) to obtain information about the CATWE of junior high school (JHS) students of Banjar District Indonesia. The research step is begun by collecting quantitative data using questionnaires and then collecting qualitative data to explain or elaborate on the quantitative results.

The population was 2,741 grade VII students from the 64 State Junior High Schools. The six representative school samples were drawn using the area of probability sampling. The school samples consist of Martapura Public Middle School 1, and Martapura Public Middle School 2 represent urban area schools; Gambut 1 Public Middle School and Astambul 1 Public Middle School represents middle area schools; and Aranio Public Middle School 1, and Sungai Tabuk State Middle School 1 represents suburban area schools. Each school area consists of 118 students, with a total sample of 354 aged between 12 to 13 years.

The questionnaire for measuring the CATWE consists of 37 items of the statement with modified Likert's type of four alternative answers: strongly agree, agree, less agree, and disagree. The CATWE indicators include four indicators. *Hard work indicators: W*orking hard to protect river ecosystems, working hard to preserve swamp ecosystems, fighting spirit to save nature, and working together to solve wetland environmental problems. *Concerning health and cleanliness indicators.* Disposing of garbage in its place, cleaning the classroom, maintaining, and controlling the household waste, closing water reservoirs, and maintaining drinking water wells. *Wise indicators.* Reducing air pollution and water pollution, saving water usage, turning off lights when it is not in use, and felling select trees. *Responsibilities indicators.* Protecting and caring for animals, protecting, and caring for plants, protecting natural resources, and maintaining ecosystem balance (Fitriana & Sholahuddin, 2019; Gericke et al., 2019).

The questionnaire was validated by five experts and judged as valid with a content validity ratio (CVR) 1 (Cohen & Swerdlik, 2013), inter-rater reliability index of 100% (Borich, 2003), and Cronbach's alpha of 0.72. Also, interviews were conducted voluntarily to six student samples to verify and elaborate students' opinions about their caring attitudes to the wetland environment within twenty minutes per student. The interviews were then transcribed and analyzed to be triangulated with the quantitative data.

Based on the distribution of questionnaire scores, the criteria for students' environmental caring attitudes were categorized as follows: score ≥ 112 is caring; 75 - 111 is caring enough, and 37-74 is careless. While each indicator's score categories were categorized as follows: score ≥355 is caring, 237-354 is caring enough, and 118-236 is careless. ANOVA test was also conducted to know the difference in students' environmental caring attitude to the wetland environment between junior high school students from different school areas using SPSS version 23.

RESULTS AND DISCUSSION

Table 1 shows the distribution of a caring attitude to the wetland environment by the school areas of Banjar District JHS's students. The highest score of the CATWE was achieved by JHS students in central area schools, while JHS's students in an urban and rural area have the same caring attitude level.

Table 1. Environmental Caring Attitude of JHS's Students to the Wetland Environment by the School Areas

School Areas	Percentage by Category (%)		
	Care	Care enough	Careless
Urban	75.4	24.6	0
The central	82.0	18.0	0
The rural	75.4	24.6	0
Average	77.6	22.4	0

Based on Table 1, it can be said that most of the students in all schools observed care for the wetland environment, and none of them did not interest in the wetland environment.

Table 2 shows the CATWE by indicators of JHS students in Banjar District.

Table 2. The Caring Attitude to Wetland Environmental of JHS' Students by Indicators

Indicators	School Area					
	Urban		Central		Rural	
	Score	Category	Score	Category	Score	Category
Hard work	373.3	Care	370.8	Care	375.5	Care
Respect for Health and Cleanliness	381.8	Care	395.5	Care	390.0	Care
Wise	383.6	Care	376.5	Care	369.5	Care
Responsible	401.8	Care	405.0	Care	401.8	Care
Average	385.1	Care	387.0	Care	384.2	Care

According to Table 2, the lowest score of the CATWE indicator is hard work, while the highest is the responsible indicator. However, students in all the school areas have CATWE in the care category on all indicators (hard work, respect for health and cleanliness, wise and responsible).

All the data were tested their homogeneity by using *Lavene Test* and provided data as presented in Table 3.

Table 3. Test of Data Homogeneous

Levene Statistic	df1	df2	Sig.
1.782	2	351	.170

According to the Lavene test result above, all the data were homogeneous.

Besides, data also were tested their normality of distribution by using *Kolmogorov-Smirnov* and *Shapiro-Wilk Test* as presented in Table 4.

Table 4. Test of Data Normality

	Groups	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
The score of Caring attitudes	Urban	.077	118	.085	.984	118	.169
	Central	.065	118	.200*	.980	118	.070
	Rural	.074	118	.162	.981	118	.085

Kolmogorov-Smirnov and the *Shapiro-Wilk* test above indicated that p-value (sig.) > 0.05. It means data were normally distributed.

The homogeneous and normal data were then tested using *the One-Way ANOVA Test* using SPSS version 23 as presented in Table 5.

Table 5. ANOVA Test

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	81.870	2	40.935		
Within Groups	54774.992	351	156.054	.262	.769
Total	54856.862	353			

According to the ANOVA test above, it was obtained a significance value of 0.769 > 0.05. It means that there was no difference between the students' CATWE of different school areas.

The Students' CATWE: Categories and its Differences between School Areas

Table 1 shows that most students, 77.6%, care about, and none of them in all the school areas did not have an interest in a wetland environment. Students in all the school areas have the same CATWE. This fact illustrates the success of environmental caring character education as the cumulative impact of curriculum implementation in elementary and junior high school levels. Because attitude develops through receiving, responding, valuing, organization, characterization, so it requires continuous habituation in an extended period. Students' knowledge through learning has supported their caring attitude towards the wetland environment because there is a positive interaction between knowledge and attitude. However, knowledge and attitudes do not always necessarily result in the expected behavior (Pauw & Petegem, 2013; Marcos-Merino et al., 2020). Habits, examples, and sustainable motivation in the school environment, family, and community collectively will lead to positive behavior towards the wetland environment. Indonesia's national curriculum has undergone reform such as strengthening and integrating environmental education in subjects (TATN, 2011). Based on the subject content scope, natural science and social science subjects discuss mostly the environment compared to the others. Even the learning approach in elementary schools uses an integrated webbed by utilizing the environment as a learning resource.

The finding also proved that formal education over a long period from elementary to the first year of the secondary school played an important role in changing the students' CATWE. Although students have achieved good attitudes as the impact of national curriculum implementation, they still need to strengthen students' CATWE to keep environmental sustainability, especially for 22.4 % of students late. There are educational factors that influence environmental education success, including institution policy, curriculum, learning method, academic culture (Susongko & Afrizal, 2018; Ikhsan et al., 2019), individual motivation factors even though knowledge has a fragile relationship on students' environmental behavior (Otto & Pensini, 2017).

This research found that the school area did not influence the students' CATWE (Table 4). This finding is in line with Sidauruk et al. (2013) that the students' environmental care behaviors of the different areas (urban, central, rural) in Medan city Indonesia showed an equally good category. There are no differences in CATWE of all school areas showed that (1) Environmental education, including wetland environmental knowledge, is relatively good in all the schools' area; (2) Understanding is the key to strengthening attitudes, including CATWE (Rabgay, 2018). Therefore, environmental education at the lower education level will provide a further provision and foundation for strengthening caring attitudes. Students' understanding might influence the good CATWE, and it relies on the accessibility of supporting information technology. Now, students can access information related to the environment at any time and place via the internet or social media; (3) It is hypothesized that other schools' environmental programs (e.g., green school and healthy school) have been carried out well and significantly influenced students' CATWE. Therefore, school area was not a determining variable for students to build their CATWE.

Based on the researcher's observations of the three participating schools with different areas, they have implemented a school-based environmental program, "Adiwiyata," but their difference is only at the program level. In urban region area, JHS 1 Martapura has been conducted at "Mandiri level" (autonomous level) since 2015; meanwhile, JHS 2 Martapura has been conducted at the national level since 2016. Central area schools JHS 1 Gambut and 1 Astambul have conducted national-level programs since 2017 and 2016, respectively. Rural area school JHS 1 Aranio has been conducted at the provincial level since 2018 while JHS 1 Sungai Tabuk has been

conducted a district-level program since 2017. Even though the Adiwiyata level programs and schools' areas differ between them, they did not show a significant difference in students' CATWE. It means that the level of Adiwiyata and the school area were not the main factor affecting the level of students' CATWE.

The finding above is in line with previous studies' finding that external factors such as the school environment were not significantly affecting students' environmental care attitude (Meilinda et al., 2017; Riastini et al., 2019). Internal factors such as self-motivation are the main reason for students to care about the environment (Aliman et al., 2019). Nevertheless, a different finding was reported by another researcher that students from schools that have implemented the Adiwiyata program have a higher level of environmental knowledge, affective and skills (Iswari & Utomo, 2017).

Adiwiyata program level should indicate the schools' level of the environmental culture growing successively from the district, provincial, national, and autonomous levels (TATN, 2011). Different Adiwiyata program levels may also indicate environmental culture and the completeness level of supporting facilities for daily activities as environmentally friendly schools. The school facilities include providing trash bins based on the type of waste, greenhouse, hydroponics, composting, drainage, mushroom houses, medicinal plants, cleaning service activities every week, etc. Another most prominent school facility is the ownership of the school environmental education software-updated. By assuming that all the affecting factors were equally good between the participating schools, they also have equally good CATWE (Rabgay, 2018). In this case, the program level should be a differentiator for CATWE because of the different levels of Adiwiyata due to different schools' environmental cultures. This finding provides a contradictory fact with the aim of the Adiwiyata program.

Accordingly, it is necessary to conduct further research to investigate the extent to which the quality and intensity of the CATWE through the different levels of the Adiwiyata program. It also needs to be elaborated on other factors that might impact the CATWE as the synergy of environmental education with various school activities and activities outside the school. Students need sufficient environmental knowledge and sustainability and motivation from the closest people, such as family and school residents, to positively affect the environment (Ntanos et al., 2018; Vesely et al., 2020). Even social and cultural factors and values that students believe can influence their attitudes and behavior towards the environment (Chisholm et al., 2016; Rachmatullah et al., 2020) that someone with a lower socioeconomic level tends to lead the egocentric value of the environment. It is still a severe environmental problem in Indonesia.

Students' CATWE based on Its Indicators

Based on Table 2 from the four indicators (hard work, respect to cleanliness and health, responsibility, wise), the lowest achievement of students' wetland environment caring attitude is a hard work indicator while the highest is responsibility. However, overall, all students of JHS in the different areas have reached the CATWE in the caring category. The examples of students' caring attitude according to the interview was described below.

Hard work

Hard work relates to maintain and preserve the environment to reach the lowest achievement of the students' CATWE. Even though, in general, this attitude has reached the caring category. The following were the attitudes of hard work according to students when they were interviewed.

Researcher: Do you feel worried if the waste from our houses is directly streamed into the river?

Students: Yes. Because it may pollute the river ecosystem.

All the six interviewed students answered "No."

Researcher: Do you think that the plywood factory's liquid waste can be streamed into the river directly?

Students: No. Because it contains hazardous chemicals from plywood processing so it will poison our body.

All the six interviewed students answered "No."

Researcher: Do you think that people who live in "lanting houses" (floating houses) can throw the trash directly into the river?

Students: No. Because it will pollute the river (a student argues that because inorganic waste is not easily decomposed).

All the six interviewed students answered "No".

Researcher: Do you care when you see people dump the sasirangan liquid waste into rivers?

Students: No. Because it does not cause odor or floating garbage in the river.

Other students: Yes, I do because It may cause a bit of pollution.

In this case, three students who were interviewed answered care, while the others responded uncaringly.

Almost all the students also realized that residual waste from industrial activities in South Kalimantan must not be disposed into rivers, whether waste from smalls or large scales industries because they were dangerous for living things. It certainly relates to the environmental knowledge they have learned through the subject matter. Adawiyah supported this finding (2018) that JHS students' attitude towards the river was categorized as good, manifested by always trying to protect the river ecosystem. Even though, the role of family and people around them were less in instilling the environmental caring attitude. Regarding the disposal of liquid waste from "sasirangan" (the traditional cloth of Banjarese) family industry, which was directly steamed into the river, the students were still doubtful whether this would pollute the river. It is suspected that students have not seen how the process happens in the Sasirangan home industry. A similar situation was reported by Mratihatani and Susilowati (2013) that most people considered waste disposal from making batik (traditional cloth of Javanese) in the Pekalongan Central Java river was considered harmless.

Responsibility

In this current study, responsibility is the indicator with the highest score from the other four indicators. Students from the central area schools have the highest score; meanwhile, the urban and rural area has the same score. Responsibility indicator consists of four aspects: protecting and caring for animals, protecting, and caring for plants, protecting natural resources, and maintaining the equilibrium of the ecosystem. Below is one part of the interviews.

Researcher: Do you think that the conservation of the Bekantans is essential?

Students: Yes. Because to preserve and prevent them from extinction as well as keep our ecosystem equilibrium.

Researcher: Do you think that mangrove plants affect our environment?

Students: Yes. It can avoid abrasion and become a habitat as well as food for animals.

All the six interviewed students stated that it is needed to preserve both proboscis and their habitats.

In animal caring, students gave a positive response to the preservation of the endemic animal of South Kalimantan, "Bekantan" (proboscis monkey). The proboscis is an endemic animal of South Kalimantan, whose population is currently threatened because its original habitat has been damaged. The students were well aware that "Bekantan" is almost extinct. However, many students claimed that they had never seen "Bekantan" directly. "Bekantan" indeed requires rehabilitation, especially for proboscis monkeys that were illegally maintained by people. According to Fuad et al. (2019), the facts caused by the students' understanding of resources and their impact on their lives increase their motivation to keep them.

Respects to cleanliness and health

Respects to cleanliness and health indicators consist of five aspects: disposing of the garbage in its place, maintaining clean classrooms, closing water reservoirs, maintaining drinking water wells, and handling household waste. Based on Table 2, it can be seen that students' CATWE on the indicators of respect for cleanliness and health was categorized as care.

Researcher: If you finish eating and drinking, do you always throw garbage into the trash can?

Students: Yes. Because it is to keep our environment clean and healthy.

Researcher: Do you process and separate vegetable waste left over from the household to be a fertilizer?

Students: No. I have no experience in the microbiological process of organic waste.

All the interviewed students answered that they have no microbiological process experience, but two of them often heap organic waste directly into the soil around the house so that the soil becomes fertile. The household's leftover vegetables or organic waste can be made into compost material. The composting can be accelerated by adding an effective microorganism EM4 activator.

Wise

The wise indicator consists of five aspects: reducing air pollution, reducing water pollution, saving water usage, turning off lights when not in use, and cutting down trees selectively. The highest score was obtained in the urban area, followed by central and rural areas (**Table 2**).

Researcher: Do you think that an excellent way to open the new land in peatlands area is by burning the Galam forest?

Students: No. Because burning the forest will cause smog and air pollution.

Researcher: If there is an action to refuse forest burning on a large scale to open new land, will you support the action?

Students: Yes, I will.

All the six students answered "Yes," but they are still in doubt to be involved if they take part in the demonstration.

One of the wise attitudes expressed by students relates to the traditional opening farming field by burning the grass and "galam" (*Melaleuca cajuputi Roxb*) forest. It is cheap and economical, but the habituation should be stopped because it may cause peat forest fire and air pollution. South Kalimantan has the lowest air quality index in Kalimantan by 91.41 (Sulaeman et al., 2020), even though it still in the good quality index. Students also agree to use "jukung" a traditional boat for reasonable distance transportation in the water area, because this transportation does not use fuel as energy sources so that it will reduce air pollution. Riyandeni and Kusumantoro (2013) also found that 82.5% of respondents agree to design public transportation on the river. This finding is in line with Dimante et al. (2016) that 68.1% of students who have studied natural science are wiser in protecting the environment.

Based on the discussion above, in general, students' CATWE are in a good category and must be improved continuously in the future. Strengthening CATWE must also be done through activities outside the classroom by involving the communities because this activity provides a more significant role in strengthening students' knowledge, attitudes, and behavior towards the environment and even their ability to solve the problems (Barbaro & Pickett, 2016; Otto & Pensini, 2017; Aliman et al., 2019).

The learning experience outside the school becomes a memorable experience; therefore, it motivates students to involve deeply in learning activities because learning is usually conducted in limited classrooms (Ntanos et al., 2018; Olgun, 2018; Amahmid et al., 2019; Tekakpınar & Tezer 2019). Students can practice their knowledge directly, such as planting trees, cleaning up trash, and putting it into the trash bin according to hazardous, inorganic, and organic categories.

It needs to drive the collaboration of many resources in supporting environmental education, including the curriculum, environment, and society (Asri et al., 2020; Sulaeman et al. 2020). Alkaher and Gan (2020) suggested that schools have to engage their several stakeholders as school-state-community partnerships to cultivate the students' and community's environmental citizenship, school-business partnerships to improve the physical infrastructure, and assisted the promotion of education for sustainability in the school.

CONCLUSION

Environment education in Indonesia is conducted in integration especially with the subject matter of science and social studies. Schools are also encouraged by the government to conduct environmental-based school programs "Adiwiyata" in grade levels from the district, province, national to autonomous level. This environmental education aims to instill an environmentally caring attitude early. This study found that (1) the most of JHS students of Banjar District have a good caring attitude towards the wetland environment. There are no differences in students' CATWE between three different school areas (urban, central, and rural areas). These results indicate that the school area is not the primary determining variable of an environment caring attitude. It might be caused by good accessibility of the environmental knowledge in this digital era and supporting school environment programs; (2) Responsibility is the indicator with the highest score of the CATWE; meanwhile, the lowest is the hard work indicator. Although, overall indicators have reached average scores in the care category, including respect for health and cleanliness and wise. It needs to be evaluated why the level of the "Adiwiyata'' school environmental program was not able to distinguish the students' CATWE. Further research may investigate the effectiveness factors of the school environmental program "Adiwiyata'', outside classroom activity, and family role in environmental education. Finally, it is necessary to develop environmental education patterns that are integrated classroom activity and real experiences outside the classroom to strengthen the formation of caring attitudes and behaviors towards the wetland environment.

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STUDENTS' CARING ATTITUDES TO WETLAND ENVIRONMENT: A CASE OF ENVIRONMENTAL EDUCATION IN BANJAR DISTRICT INDONESIA

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ABSTRACT

Schools in Indonesia have been conducted environmental education programs through both curriculum activities and schools' environmental programs. However, there was no sufficient data about the effectiveness of the programs. This study aims to identify the junior high school students' caring attitudes to the wetland environment (CATWE) as the education outcome. The Six Junior High Schools were chosen as probability sampling areas classified as urban, central, and rural areas schools of Banjar District with total samples of 354 students aged 12-14 years. The CATWE data were collected using a valid and reliable questionnaire. This study found that most of the students care for the wetland environment. There were no differences in the CATWE of the three school areas. These findings indicate that the school area and the level of the "Adiwiyata" program were not the primary determining variable of environmental caring attitude education effectiveness. The highest score of the CATWE indicator was responsible; meanwhile, the lowest was hard work. Even though all the indicators have reached a care category. It is necessary to thoroughly investigate the effectiveness of the school environmental program "Adiwiyata," outside classroom activity, and family role in environmental education.

Keywords: environmental education; caring attitude; wetlands; school area; sustainability

INTRODUCTION

Societies worldwide have experienced ecosystem damages such as pollution, global warming, and climate change as an impact of economic and industrial activities. It relates to the lack of human awareness of the environment and attitudes to sustainable development (Rachmatullah et al., 2020), including the wetland environment.

Banjar District is one of the Indonesian areas that has a sizeable low-lying area or a wetland area. Wetland is inundated or saturated area by surface or groundwater at a frequency and duration of sufficient to support, and that under normal circumstances do support a prevalence of vegetation typically adapted for life in saturated soil conditions. It comprises a river environment, a swamp environment, a freshwater environment, a brackish water environment, or salt, including areas of marine water the depth of which at low tide does not exceed six meters that are flooded throughout the year (Halabisky et al., 2016; Sya'ban et al., 2017).

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This ecosystem has been faced the degradation threat of both its quantity and quality in many countries, including Indonesia (Fianko & Dodd, 2018; Syam'ani et al., 2018; Adeleke, 2019). In China, around 91% of wetlands had been converted for agricultural development by 2005, resulting in an average loss of 27% wetland area every ten years (Song et al., 2014). Degradation also occurs significantly in coastal wetlands (Cui et al., 2018). Wetlands provide various necessities for human life such as food, spawning and nursery, energy, water, and climate regulation. Thus, the wetlands' degradation is threatening ecological safety and sustainable regional development (Costanza et al., 2014). It is necessary to raise awareness of everyone to protect wetlands sustainably.

Accordingly, it demands the role of education, which aims to enable individuals to assimilate the values, the basic concepts, and the practical knowledge which will help them to an awareness of environmental problems, build behavior accordingly and thus give a useful contribution to safeguard the environment (Aarnio-Linnanvuori, 2019; García et al., 2019; Edsand & Broich, 2020; Nkoana, 2020). Refers to the Oxford Dictionary, caring relates to adjective words of concerned, attentive, thoughtful, solicitous, responsible, and considerate. In this study, a caring attitude refers to human attitudes towards the environment in the form of a tendency to maintain and preserve it. The environmental caring attitude consists of hard work, respect for health and cleanliness, wise, and responsibilities indicators (Adawiah, 2018; Fitriyana & Sholahuddin, 2019; Gericke et al., 2019). This attitude is part of the individual characters that will lead to providing pro-environmental behavior.

The development of characters, including students' caring attitude to the environment, was strengthened by the Indonesian government by issuing Presidential Regulation No. 87 of 2017. To form the expected character, it must include the three dimensions, including moral knowing, moral feelings such as self-perception, empathy, love, kindness, self-control, and moral action (Lickona, 1991). Accordingly, the embedding character must begin with knowledge about a character. Knowledge about what is the caring environmental attitude will cause someone to have this attitude. Therefore, he/she needs to learn content knowledge closest to the students to increase their understanding. Caring attitudes to the environment that was formed will be manifested in the form of behavior. It is repeated until internalized and characterized to be a character. In other words, attitude is someone's tendency to do real action. In the long term, it will be expected to reduce environmental damage in the future (Dimante et al., 2016; Boca & Saraçlı, 2019).

Environmental education in Indonesian schools has been carried out in an integrated form with subject matters (Tim Adiwiyata Tingkat Nasional/TATN, 2011), especially natural sciences and social sciences. Besides, several schools have been conducting practical activities to instill a caring culture for all school residents, such as the green school or the "Adiwiyata" school program since 2006. The "Adiwiyata" school program was aimed to make school residents responsible for protecting and managing the environment through good school governance in supporting sustainable development. Four aspects have to exist in the "adiwiyata" school program were environmentally sound policies, implementation of an environment-based curriculum, participatory environment-based activities, and management of environmentally friendly supporting facilities (TATN, 2011). However, how are the school environmental education programs effective to improve the caring attitude to the environment? There is a lack of evaluation data provided for very heterogeneous regions like Indonesia. Only some research has been carried out in certain cities to students with different education levels to investigate their attitudes towards common environmental problems (Sidauruk et al., 2013; Iswari & Utomo, 2017; Riastini et al., 2019) even though more data are needed to plan and improve environmental education correctly especially on the wetland area.

The integration of characters with subject matters is believed as an effective way to build students' characters through education (Dimante et al., 2016; Vesely et al., 2020). In this case, the teacher plays a vital role in pedagogical management to build students' character, including a caring attitude to the environment (Aarnio-Linnanvuori, 2019). The new challenge for the teacher is to utilize information technology as an effective way to improve students' environment awareness (Jorgenson et al., 2019).

The ultimate goal of environmental education is to equip knowledge and shape the students' positive attitudes and behavior toward the environment. This goal certainly requires a long time and continuous habituation so that their caring attitudes will be characterized as expected behavior (Lickona, 1991; Bergman, 2015; Isdaryanti et al., 2018; Yustina et al., 2020). Previous research has shown that contribution of the knowledge is smaller than the real environmental

problem-solving activities outside the classroom, such as exploring the environment around students, exploring the environmental values of local wisdom, and using the environmental social issues (Alon & Tal, 2017; Ntanos et al., 2018; Boca & Saraçlı, 2019; Tekakpınar & Tezer 2019).

Environmental education in Indonesia has the right strategy by combining knowledge and habituation of environmental behavior in daily school activities. Unfortunately, many teachers found some difficulties in implementing learning activities outside the classroom by involving the community related to the environment. It is due to the tightness of the curriculum, time, and financial availability. However, how the impact of environmental education on students' attitudes and behaviors toward the environment, only a little research reported and showed inconsistent data. The other showed that external factors such as the school environment significantly affect students' environmental care attitudes (Iswari & Utomo, 2017), while the other indicated that these factors did not significantly affect (Meilinda et al., 2017; Riastini et al., 2019). It means that the achievement of environmental education has left the problems.

The inclusion of locally relevant topics is considered an essential underpinning of effective environmental education and requires flexible curricula for programs that span large geographic areas with their diversity. Further, integrating environmental education in the classroom to environmental stewardship projects has increased students' eco-impact (Bergman, 2015).

The previous studies described above (Sidauruk et al., 2013; Iswari & Utomo, 2017; Meilinda et al., 2017; Riastini et al., 2019) have investigated students' caring attitudes towards the environment in the context of the general environment. This current study examined students' caring attitude to the wetland environment (CATWE) of Junior High School Students of Banjar District South Kalimantan, Indonesia. The CATWE in this study represents one's attitude to the wetland environment in the form of attitudes towards certain behaviors related to the environment and actions taken to preserve the environment. Junior high schools in Banjar District are spread from remote or rural areas to urban areas. Differences in areas may provide the differences in habits, developed-values, information accessibility, and even the people's environmental awareness (Ziadat, 2010). This study aimed to (1) analyze the students' CATWE categories and its differences between junior high school students in different areas (urban, central, and rural areas), and (2) describe Students' CATWE based on its indicator. The current study's finding is essential information to design and evaluate school environmental education to keep the sustainability of the wetland environment.

METHODS

This study implemented an explanatory sequential mixed methods design (Creswell, 2012) to obtain information about the CATWE of junior high school (JHS) students of Banjar District Indonesia. The research step is begun by collecting quantitative data using questionnaires and then collecting qualitative data to explain or elaborate on the quantitative results.

The population was 2,741 grade VII students from the 64 State Junior High Schools. The six representative school samples were drawn using the area of probability sampling. The school samples consist of Martapura Public Middle School 1, and Martapura Public Middle School 2 represent urban area schools; Gambut 1 Public Middle School and Astambul 1 Public Middle School represents middle area schools; and Aranio Public Middle School 1, and Sungai Tabuk State Middle School 1 represents rural area schools. Each school area consists of 118 students, with a total sample of 354 aged between 12 to 13 years.

The questionnaire for measuring the CATWE consists of 37 items of the statement with modified Likert's type of four alternative answers: strongly agree, agree, less agree, and disagree. The CATWE indicators include four indicators. *Hard work indicators: W*orking hard to protect river ecosystems, working hard to preserve swamp ecosystems, fighting spirit to save nature, and working together to solve wetland environmental problems. *Concerning health and cleanliness indicators.* Disposing of garbage in its place, cleaning the classroom, maintaining, and controlling the household waste, closing water reservoirs, and maintaining drinking water wells. *Wise indicators.* Reducing air pollution and water pollution, saving water usage, turning off lights when it is not in use, and felling select trees. *Responsibilities indicators.* Protecting and caring for animals, protecting, and caring for plants, protecting natural resources, and maintaining ecosystem balance (Fitriana & Sholahuddin, 2019; Gericke et al., 2019).

The questionnaire was validated by five experts and judged as valid with a content validity ratio (CVR) 1 (Cohen & Swerdlik, 2013), inter-rater reliability index of 100% (Borich, 2003), and Cronbach's alpha of 0.72. Also, interviews were conducted voluntarily to six student samples to verify and elaborate students' opinions about their caring attitudes to the wetland environment within twenty minutes per student. The interviews were then transcribed and analyzed to be triangulated with the quantitative data.

Based on the distribution of questionnaire scores, the criteria for students' environmental caring attitudes were categorized as follows: score ≥ 112 is caring; 75 - 111 is caring enough, and 37-74 is careless. While each indicator's score categories were categorized as follows: score ≥355 is caring, 237-354 is caring enough, and 118-236 is careless. ANOVA test was also conducted to know the difference in students' environmental caring attitude to the wetland environment between junior high school students from different school areas using SPSS version 23.

RESULTS AND DISCUSSION

Table 1 shows the distribution of a caring attitude to the wetland environment by the school areas of Banjar District JHS's students.

Table 1. Environmental Caring Attitude of JHS's Students to the Wetland Environment by the School Areas

School Areas	Percentage by Category (%)		
	Care	Care Enough	Careless
Urban	75.4	24.6	0
The central	82.0	18.0	0
The rural	75.4	24.6	0
Average	77.6	22.4	0

The highest score of the CATWE was achieved by JHS students in central area schools, while JHS's students in an urban and rural area have the same caring attitude level. It can be said that most of the students in all schools observed care for the wetland environment, and none of them did not interest in the wetland environment.

Table 2. The Caring Attitude to Wetland Environmental of JHS' Students by Indicators

Indicators	School Area					
	Urban		Central		Rural	
	Score	Category	Score	Category	Score	Category
Hard work	373.3	Care	370.8	Care	375.5	Care
Respect for Health and Cleanliness	381.8	Care	395.5	Care	390.0	Care
Wise	383.6	Care	376.5	Care	369.5	Care
Responsible	401.8	Care	405.0	Care	401.8	Care
Average	385.1	Care	387.0	Care	384.2	Care

Table 2 shows the CATWE by indicators of JHS students in Banjar District. According to Table 2, the lowest score of the CATWE indicator is hard work, while the highest is the responsible indicator. However, students in all the school areas have CATWE in the care category on all indicators (hard work, respect for health and cleanliness, wise and responsible). All the data were tested their homogeneity by using *Lavene Test* and provided data as presented in Table 3.

Table 3. Test of Data Homogeneous

Levene Statistic	df1	df2	Sig.
1.782	2	351	.170

According to the Lavene test result above, all the data were homogeneous. Besides, data also were tested their normality of distribution by using *Kolmogorov-Smirnov* and *Shapiro-Wilk Test* as presented in Table 4.

Table 4. Test of Data Normality

	Groups	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
The score of Caring attitudes	Urban	.077	118	.085	.984	118	.169
	Central	.065	118	.200*	.980	118	.070
	Rural	.074	118	.162	.981	118	.085

Kolmogorov-Smirnov and the *Shapiro-Wilk* test above indicated that p-value (sig.) > 0.05. It means data were normally distributed. The homogeneous and normal data were then tested using *the One-Way ANOVA Test* using SPSS version 23 as presented in Table 5.

Table 5. ANOVA Test

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	81.870	2	40.935		
Within Groups	54774.992	351	156.054	.262	.769
Total	54856.862	353			

According to the ANOVA test above, it was obtained a significance value of 0.769 > 0.05. It means that there was no difference between the students' CATWE of different school areas.

Table 1 shows that most students, 77.6%, care about, and none of them in all the school areas did not have an interest in a wetland environment. Students in all the school areas have the same CATWE. This fact illustrates the success of environmental caring character education as the cumulative impact of curriculum implementation in elementary and junior high school levels. Because attitude develops through receiving, responding, valuing, organization, characterization, so it requires continuous habituation in an extended period. Students' knowledge through learning has supported their caring attitude towards the wetland environment because there is a positive interaction between knowledge and attitude. However, knowledge and attitudes do not always necessarily result in the expected behavior (Pauw & Petegem, 2013; Marcos-Merino et al., 2020). Habits, examples, and sustainable motivation in the school environment, family, and community collectively will lead to positive behavior towards the wetland environment. Indonesia's national curriculum has undergone reform such as strengthening and integrating environmental education in subjects (TATN, 2011). Based on the subject content scope, natural science and social science subjects discuss mostly the environment compared to the others. Even the learning approach in elementary schools uses an integrated webbed by utilizing the environment as a learning resource.

The finding also proved that formal education over a long period from elementary to the first year of the secondary school played an important role in changing the students' CATWE. Although students have achieved good attitudes as the impact of national curriculum implementation, they still need to strengthen students' CATWE to keep environmental sustainability, especially for 22.4 % of students late. There are educational factors that influence environmental education success, including institution policy, curriculum, learning method, academic culture (Susongko & Afrizal, 2018; Ikhsan et al., 2019), individual motivation factors even though knowledge has a fragile relationship on students' environmental behavior (Otto & Pensini, 2017).

This research found that the school area did not influence the students' CATWE (Table 4). This finding is in line with Sidauruk et al. (2013) that the students' environmental care behaviors of the different areas (urban, central, rural) in Medan city Indonesia showed an equally good category. There are no differences in CATWE of all school areas showed that (1) Environmental education, including wetland environmental knowledge, is relatively good in all the schools' area; (2) Understanding is the key to strengthening attitudes, including CATWE (Rabgay, 2018). Therefore, environmental education at the lower education level will provide a further provision and foundation for strengthening caring attitudes. Students' understanding might influence the good CATWE, and it relies on the accessibility of supporting information technology. Now, students can access information related to the environment at any time and place via the internet or social media; (3) It is hypothesized that other schools' environmental programs (e.g., green school and healthy school) have been carried out well and significantly influenced students' CATWE. Therefore, school area was not a determining variable for students to build their CATWE.

Based on the researcher's observations of the three participating schools with different areas, they have implemented a school-based environmental program, "Adiwiyata," but their difference is only at the program level. In urban region area, JHS 1 Martapura has been conducted at "Mandiri level" (autonomous level) since 2015; meanwhile, JHS 2 Martapura has been conducted at the national level since 2016. Central area schools JHS 1 Gambut and 1 Astambul have conducted national-level programs since 2017

and 2016, respectively. Rural area school JHS 1 Aranio has been conducted at the provincial level since 2018 while JHS 1 Sungai Tabuk has been conducted a district-level program since 2017. Even though the Adiwiyata level programs and schools' areas differ between them, they did not show a significant difference in students' CATWE. It means that the level of Adiwiyata and the school area were not the main factor affecting the level of students' CATWE.

The finding above is in line with previous studies' finding that external factors such as the school environment were not significantly affecting students' environmental care attitude (Meilinda et al., 2017; Riastini et al., 2019). Internal factors such as self-motivation are the main reason for students to care about the environment (Aliman et al., 2019). Nevertheless, a different finding was reported by another researcher that students from schools that have implemented the Adiwiyata program have a higher level of environmental knowledge, affective and skills (Iswari & Utomo, 2017).

Adiwiyata program level should indicate the schools' level of the environmental culture growing successively from the district, provincial, national, and autonomous levels (TATN, 2011). Different Adiwiyata program levels may also indicate environmental culture and the completeness level of supporting facilities for daily activities as environmentally friendly schools. The school facilities include providing trash bins based on the type of waste, greenhouse, hydroponics, composting, drainage, mushroom houses, medicinal plants, cleaning service activities every week, etc. Another most prominent school facility is the ownership of the school environmental education software-updated. By assuming that all the affecting factors were equally good between the participating schools, they also have equally good CATWE (Rabgay, 2018). In this case, the program level should be a differentiator for CATWE because of the different levels of Adiwiyata due to different schools' environmental cultures. This finding provides a contradictory fact with the aim of the Adiwiyata program.

Accordingly, it is necessary to conduct further research to investigate the extent to which the quality and intensity of the CATWE through the different levels of the Adiwiyata program. It also needs to be elaborated on other factors that might impact the CATWE as the synergy of environmental education with various school activities and activities outside the school. Students need sufficient environmental knowledge and sustainability and motivation from the closest people, such as family and school residents, to positively affect the environment (Ntanos et al., 2018; Vesely et al., 2020). Even social and cultural factors and values that students believe can influence their attitudes and behavior towards the environment (Chisholm et al., 2016; Rachmatullah et al., 2020) that someone with a lower socioeconomic level tends to lead the egocentric value of the environment. It is still a severe environmental problem in Indonesia.

Based on Table 2 from the four indicators (hard work, respect to cleanliness and health, responsibility, wise), the lowest achievement of students' wetland environment caring attitude is a hard work indicator while the highest is responsibility. However, overall, all students of JHS in the different areas have reached the CATWE in the caring category. The examples of students' caring attitude according to the interview was described below.

Hard work relates to maintain and preserve the environment to reach the lowest achievement of the students' CATWE. Even though, in general, this attitude has reached the caring category. The following were the attitudes of hard work according to students when they were interviewed.

Researcher: Do you feel worried if the waste from our houses is directly streamed into the river?
Students: Yes. Because it may pollute the river ecosystem.
All the six interviewed students answered "Yes."
Researcher: Do you think that the plywood factory's liquid waste can be streamed into the river directly?
Students: No. Because it contains hazardous chemicals from plywood processing so it will poison our body.
All the six interviewed students answered "No."
Researcher: Do you think that people who live in "lanting houses" (floating houses) can throw the trash directly into the river?
Students: No. Because it will pollute the river (a student argues that because inorganic waste is not easily decomposed).
All the six interviewed students answered "Yes".
Researcher: Do you care when you see people dump the sasirangan liquid waste into rivers?
Students: No. Because it does not cause odor or floating garbage in the river.
Other students: Yes, I do because It may cause a bit of pollution.

In this case, three students who were interviewed answered care, while the others responded uncaringly.

Almost all the students also realized that residual waste from industrial activities in South Kalimantan must not be disposed into rivers, whether waste from smalls or large scales in-

dustries because they were dangerous for living things. It certainly relates to the environmental knowledge they have learned through the subject matter. Adawiyah supported this finding (2018) that JHS students' attitude towards the river was categorized as good, manifested by always trying to protect the river ecosystem. Even though, the role of family and people around them were less in instilling the environmental caring attitude. Regarding the disposal of liquid waste from "sasirangan" (the traditional cloth of Banjarese) family industry, which was directly steamed into the river, the students were still doubtful whether this would pollute the river. It is suspected that students have not seen how the process happens in the Sasirangan home industry. A similar situation was reported by Mratihatani and Susilowati (2013) that most people considered waste disposal from making batik (traditional cloth of Javanese) in the Pekalongan Central Java river was considered harmless.

In this current study, responsibility is the indicator with the highest score from the other four indicators. Students from the central area schools have the highest score; meanwhile, the urban and rural area has the same score. Responsibility indicator consists of four aspects: protecting and caring for animals, protecting, and caring for plants, protecting natural resources, and maintaining the equilibrium of the ecosystem. Below is one part of the interviews.

Researcher: Do you think that the conservation of the Bekantans is essential?

Students: Yes. Because to preserve and prevent them from extinction as well as keep our ecosystem equilibrium.

Researcher: Do you think that mangrove plants affect our environment?

Students: Yes. It can avoid abrasion and become a habitat as well as food for animals.

All the six interviewed students stated that it is needed to preserve both proboscis and their habitats.

In animal caring, students gave a positive response to the preservation of the endemic animal of South Kalimantan, "Bekantan" (proboscis monkey). The proboscis is an endemic animal of South Kalimantan, whose population is currently threatened because its original habitat has been damaged. The students were well aware that "Bekantan" is almost extinct. However, many students claimed that they had never seen "Bekantan" directly. "Bekantan" indeed requires rehabilitation, especially for proboscis monkeys that were illegally maintained by people. According to Fuad et al. (2019), the facts caused by the students' understanding of resources and their impact on their lives increase their motivation to keep them.

Respects to cleanliness and health indicators consist of five aspects: disposing of the garbage in its place, maintaining clean classrooms, closing water reservoirs, maintaining drinking water wells, and handling household waste. Based on Table 2, it can be seen that students' CATWE on the indicators of respect for cleanliness and health was categorized as care.

Researcher: If you finish eating and drinking, do you always throw garbage into the trash can?

Students: Yes. Because it is to keep our environment clean and healthy.

Researcher: Do you process and separate vegetable waste left over from the household to be a fertilizer?

Students: No. I have no experience in the microbiological process of organic waste.

All the interviewed students answered that they have no microbiological process experience, but two of them often heap organic waste directly into the soil around the house so that the soil becomes fertile. The household's leftover vegetables or organic waste can be made into compost material. The composting can be accelerated by adding an effective microorganism EM4 activator.

The wise indicator consists of five aspects: reducing air pollution, reducing water pollution, saving water usage, turning off lights when not in use, and cutting down trees selectively. The highest score was obtained in the urban area, followed by central and rural areas (**Table 2**).

Researcher: Do you think that an excellent way to open the new land in peatlands area is by burning the Galam forest?

Students: No. Because burning the forest will cause smog and air pollution.

Researcher: If there is an action to refuse forest burning on a large scale to open new land, will you support the action?

Students: Yes, I will.

All the six students answered "Yes," but they are still in doubt to be involved if they take part in the demonstration.

One of the wise attitudes expressed by students relates to the traditional opening farming field by burning the grass and "galam" (*Melaleuca cajuputi Roxb*) forest. It is cheap and economical, but the habituation should be stopped because it may cause peat forest fire and air pollution. South Kalimantan has the lowest air quality index in Kalimantan by 91.41 (Sulaeman et al., 2020), even though it still in the good quality index. Students also agree to use "jukung" a traditional boat for reasonable distance transportation in the water

area, because this transportation does not use fuel as energy sources so that it will reduce air pollution. Riyandeni and Kusumantoro (2013) also found that 82.5% of respondents agree to design public transportation on the river. This finding is in line with Dimante et al. (2016) that 68.1% of students who have studied natural science are wiser in protecting the environment.

Based on the discussion above, in general, students' CATWE are in a good category and must be improved continuously in the future. Strengthening CATWE must also be done through activities outside the classroom by involving the communities because this activity provides a more significant role in strengthening students' knowledge, attitudes, and behavior towards the environment and even their ability to solve the problems (Barbaro & Pickett, 2016; Otto & Pensini, 2017; Aliman et al., 2019).

The learning experience outside the school becomes a memorable experience; therefore, it motivates students to involve deeply in learning activities because learning is usually conducted in limited classrooms (Ntanos et al., 2018; Olgun, 2018; Amahmid et al., 2019; Tekakpınar & Tezer 2019). Students can practice their knowledge directly, such as planting trees, cleaning up trash, and putting it into the trash bin according to hazardous, inorganic, and organic categories.

It needs to drive the collaboration of many resources in supporting environmental education, including the curriculum, environment, and society (Asri et al., 2020; Sulaeman et al. 2020). Alkaher and Gan (2020) suggested that schools have to engage their several stakeholders as school-state-community partnerships to cultivate the students' and community's environmental citizenship, school-business partnerships to improve the physical infrastructure, and assisted the promotion of education for sustainability in the school.

CONCLUSION

Environment education in Indonesia is conducted in integration especially with the subject matter of science and social studies. Schools are also encouraged by the government to conduct environmental-based school programs "Adiwiyata" in grade levels from the district, province, national to autonomous level. This environmental education aims to instill an environmentally caring attitude early. This study found that (1) the most of JHS students of Banjar District have a good caring attitude towards the wetland environment. There are no differences in students' CATWE between three different school areas (urban, central, and rural areas). These results indicate that the school area is not the primary determining variable of an environment caring attitude. It might be caused by good accessibility of the environmental knowledge in this digital era and supporting school environment programs; (2) Responsibility is the indicator with the highest score of the CATWE; meanwhile, the lowest is the hard work indicator. Although, overall indicators have reached average scores in the care category, including respect for health and cleanliness and wise. It needs to be evaluated why the level of the "Adiwiyata'' school environmental program was not able to distinguish the students' CATWE. Further research may investigate the effectiveness factors of the school environmental program "Adiwiyata'', outside classroom activity, and family role in environmental education. Finally, it is necessary to develop environmental education patterns that are integrated classroom activity and real experiences outside the classroom to strengthen the formation of caring attitudes and behaviors towards the wetland environment.

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