Analysis of Attitudes towards the Environment in Students of Adiwiyata and Non-Adiwiyata Schools

Larashati[1], Sukarmin[1], Annisa Nur Khasanah[1*]

[1] Bachelor of Natural Science Education Study Program, Sebelas Maret University, Surakarta, Indonesia.

Abstract: Environmental protection and preservation are in the hands of citizens and students are the future of the nation, so it is very important to assess or measure the attitude towards the environment owned by students. The aims of this research are to: (1) analyze the attitude towards the environment in students of Adiwiyata and Non-Adiwiyata schools on EBSS (Environmental Behavior Sub Scale), EOSS (Environmental Opinion Sub Scale), and EESS (Environmental Emotion Sub Scale); and (2) analyze the attitude towards the environment in students of Adiwiyata and Non-Adiwiyata schools. The research method used is a mixed method with a sequential explanatory design. Data analysis used descriptive statistics and inferential statistics with independent samples t-test. The results showed that there were significant differences in attitudes towards the environment between Adiwiyata and Non-Adiwiyata school students on EBSS, EOSS, and EESS with the significance probability of 0.007, 0.000, and 0.025 respectively. The research results generally showed that there were significant differences in attitudes towards the environment between Adiwiyata and Non-Adiwiyata school students with a significant probability of 0.000. The conclusion of this research is significant differences in attitudes towards the environment between Adiwiyata and Non-Adiwiyata school students both in EBSS, EOSS, EESS, and overall.

Keywords: Adiwiyata Schools; Attitude towards the Environment; Secondary School Students

Introduction

The school environment is a very crucial element and is required in a school because the learning process cannot take place properly and appropriately without a school environment (Sulfemi, 2018). The school environment should create a conducive atmosphere or conditions for students so that they feel comfortable and can express their potential (Wahid et al., 2020). A conducive school environment can support the optimal continuity of the learning process (Tohirin, 2014).

In fact, the results of observations on the condition of the school environment and the results of interviews conducted by Alpusari (2013) show that environmental awareness among Non-Adiwiyata school students is still generally low. This is evidenced by the still scattered garbage, waste in the use of water and paper, and the cleanliness of the bathroom which is still lacking,

resulting in pollution of the school environment (Alpusari, 2013). It is different from the condition of the school environment at the Adiwiyata school, where observations show that there is almost no scattered garbage, there are waste disposal activities according to the type, and the condition of the school environment is beautiful because there are many green plants in the school environment (Alpusari, 2013).

The condition of the school environment can affect the potential development and formation of students' attitudes (Wahid et al., 2020). The condition of the school environment that is below standard, inadequate cleanliness of the school environment, and the presence of pollution in the school environment can have a negative impact on school residents, especially students who in this case carry out teaching and learning activities at school every day (Jumirah et al., 2021). In addition, an unsupportive school environment

condition can hinder students from acquiring knowledge (Permana & Ulfatin, 2018).

Environmental knowledge must be instilled in communities and students of all lines, types, levels, and educational units from an early age (Ramdhani, 2016). Knowledge and awareness of current environmental issues have become the main goal of science education because students must know the various environmental problems that occur and they have a duty to develop an attitude towards the environment (Ponmozhi & Krishnakumari, 2017). Educating students to become individuals who have environmental knowledge and are sensitive to the environment makes them have a more favorable attitude towards the environment which plays an important role in solving environmental problems, and vice versa (Tafli & Ates, 2016). Attitude towards the environment is a set of beliefs, tendencies, and individual values towards nature, ecology, or environmental issues (Vandenbos, 2015). Attitude towards the environment is described as attitudes and actions that always try to avoid environmental damage and develop efforts to repair environmental damage (Gustria & Fauzi, 2019). One of the main causes of environmental damage and environmental pollution is the formation of an attitude towards the environment that does not work well (Abun & Racoma, 2017).

The government has made efforts to improve the attitude towards the environment through Environmental Education (EE) in schools which is carried out through the Adiwiyata program (Putri, 2019). EE held in schools is a better means than universities to increase attitudes towards the environment (Arslan, 2012; Ogunbode & Arnold, 2012). The attitude towards the environment research conducted also relates or contains items related to environmental awareness, where the competence of 21st-century attitudes and environmental awareness in students who live and socialize in the 21st century is important to study and improve (Amran et al., 2019).

Every individual needs to fulfill his responsibility to the environment (Tafli & Ates, 2016). Every individual also has the same rights and obligations in terms of environmental conservation (Amini, 2015). Environmental protection and preservation are in the hands of citizens and students are the future of the nation so it is very important to assess or measure the attitude towards the environment among students (Ponmozhi & Krishnakumari, 2017). It is important to measure attitude towards the environment (Uzun et al., 2019). Attitude towards the environment if studied can provide assistance to the solution of environmental problems and attitude towards the environment can influence individual behavior (Uğulu & Erkol, 2013). Therefore, individual behavior towards the environment can determine the condition of the surrounding environment. Behavior towards the

environment is determined by the attitude towards the environment, so it is important for us to know the attitude towards the environment.

Attitude towards the environment research can also serve to evaluate and determine the direction of environmental education in the future. The formation of an attitude towards the environment is important for various components, including Adiwiyata schools and Non-Adiwiyata schools. To clarify the differences in attitudes towards the environment, a comparative analysis was then conducted between schools that received awards as Adiwiyata schools and Non-Adiwiyata schools, where Adiwiyata school students were judged to have a higher attitude towards the environment compared to Non-Adiwiyata school students (Ozso et al., 2012; Tucker & Izadpanahi, 2017). Thus, all schools should try to become Adiwiyata schools and this research is to prove the difference in attitude towards the environment for students in Adiwiyata and Non-Adiwiyata schools. The attitude towards the environment research includes three sub-scales, namely the Environmental Behavior Sub Scale (EBSS), Environmental Opinion Sub Scale (EOSS), and Environmental Emotion Sub Scale (EESS). The aims of the research are to: (1) analyze the attitude towards the environment in students of Adiwiyata and Non-Adiwiyata schools on EBSS, EOSS, and EESS; and (2) analyze the attitude towards the environment in students of Adiwiyata and Non-Adiwiyata schools.

Method

The method used in this research is a combination research method (mixed methods) with sequential explanatory design research. The research sample is 222 class VIII students of Adiwiyata school and 217 class VIII students of Non-Adiwiyata school taken using purposive sampling technique with consideration of school type and grade level. The research was carried out in one of the public junior high schools that received an award as an Adiwiyata Mandiri school and as a comparison, one of the public junior high schools with the status of a Non-Adiwiyata school. Adiwiyata and Non-Adiwiyata schools are located in Bantul Regency, Yogyakarta Special Region (DIY).

Data was collected using the Environmental Attitude Scale (EAS), interviews, and documentation. EAS is the result of research and development (Uzun et al., 2019). The EAS consists of 40 items which include three sub-scales, namely 13 EBSS items, 11 EOSS items, and 16 EESS items. All EAS items are presented with a 5-point Likert scale so that the lowest score is 40 and the highest score is 200. The higher the respondent's score means the more favorable attitude towards the environment that is owned by the respondent. Before being used, EAS is translated first using a back-to-back

translation technique. EAS is distributed online via Google Forms. Data from survey results using EAS was confirmed through interviews with several samples and corroborated by documents related to environmental programs and the implementation of the Adiwiyata program.

Data analysis was performed using the IBM SPSS version 25 program. The data analysis technique used descriptive statistics and inferential statistics, namely independent sample t-test. The normality test uses skewness and kurtosis on the basis of decision making, namely if the value of Z count < Z table (1.96 at a significance level of 0.05), it can be assumed that the data is normally distributed (Ghozali, 2018). The homogeneity test uses Levene's test of homogeneity of variance on the basis of decision making, namely if the value of $Sig \geq 0.05$, it can be assumed that the data is homogeneous (Ghozali, 2018). Hypothesis testing with independent sample t-test was carried out on each sub-scale, namely EBSS, EOSS, and EESS, as well as overall (EAS) on the basis of decision making, namely if the value of $Sig.$ $(2\text{-}tailed) \leq 0.05$ then H_0 is rejected dan H_1 is accepted (Hidayati et al., 2019).

Result and Discussion

The results of descriptive statistics are contained in Table 1.

Table 1. Descriptive Statistics of Attitude towards the Environment

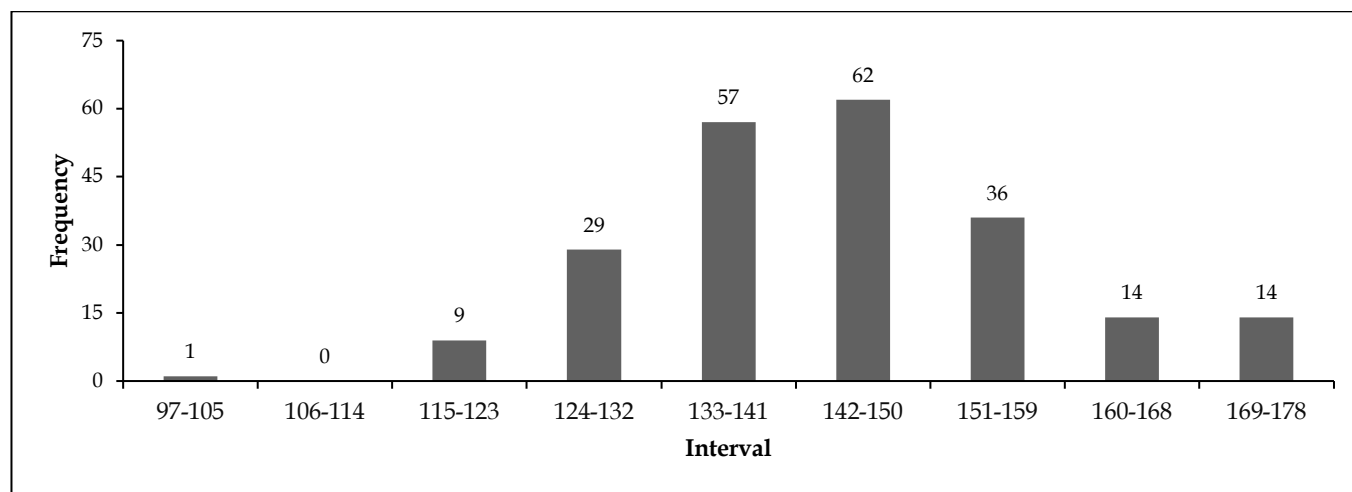| Descriptive Statistics	Adiwiyata School	Non-Adiwiyata School
N	222	217
Mean ($\bar{x}$)	144.56	139.90
Standard Error of Mean (SE)	0.891	0.890
Median (Me)	143	140
Mode (Mo)	139	146
Standard Deviation (SD)	13.275	13.118
Variance	176.220	172.079
Range	81	74
Maximum Value	178	178
Minimum Value	97	104
Sum	32.093	30.359

Figure 1. Frequency Distribution of Attitude towards the Environment Scores in Students of Adiwiyata School
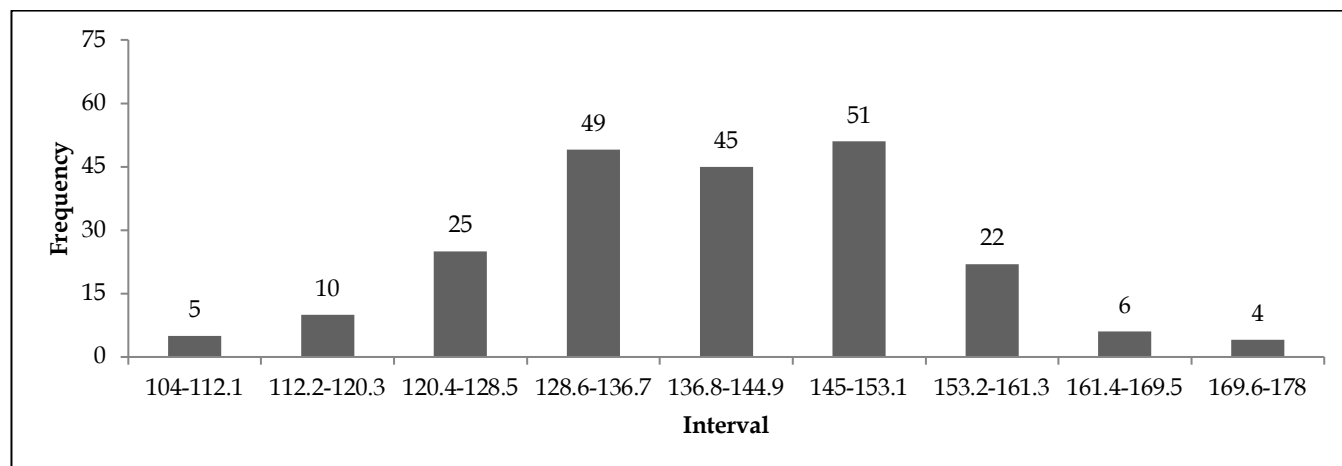

Figure 2. Frequency Distribution of Attitude towards the Environment Scores in Students of Non-Adiwiyata School

Based on this score, the standard score or T-score can then be determined. Based on the T-score formula, it can be determined the interpretation of the attitude towards the environment score then can be classified into 3 categories, namely unfavorable, neutral, and favorable (Azwar, 2016). The results of the interpretation of the attitude towards the environment score are contained in Table 2. and Table 3.

Table 2. Interpretation of Attitude towards the Environment Scores in Students of Adiwiyata School

Interval	F	Percentage (%)	Category
97-141	96	43.2	Unfavorable
142	11	5	Neutral
143-178	115	51.8	Favorable
Total	222	100	

(Source: Azwar, 2016)

Table 3. Interpretation of Attitude towards the Environment Scores in Students of Non-Adiwiyata School

Interval	F	Percentage (%)	Category
104-141	121	55.8	Unfavorable
142	4	1.8	Neutral
143-178	92	42.4	Favorable
Total	217	100	

(Source: Azwar, 2016)

Based on Table 2., it can be seen that Adiwiyata school students with a favorable attitude towards the environment are 51.8%, Adiwiyata school students with a neutral attitude towards the environment are 5%, and Adiwiyata school students with an unfavorable attitude towards the environment are 43.2%, while based on Table 3., it can be seen that Non-Adiwiyata school students with a favorable attitude towards the environment are 42.4%, Non-Adiwiyata school students

with a neutral attitude towards the environment are 1.8%, and Non-Adiwiyata school students with an unfavorable attitude towards the environment as much as 55.8%.

This is in accordance with the results of research by Nurwaqidah, Suciati, & Ramli (2020) which concluded that the implementation of the Adiwiyata program had a positive impact on junior high school students. Various kinds of environmental activities contained in the eco-school provide opportunities eco-school students to be actively involved in activities related to the environment. This active involvement provides students with direct experience related to the environment so that it has a positive impact on learning and can lead to an increase in attitude towards the environment in eco-school students (Ozsoy et al., 2012).

This is in line with the results of research by Gao (2018) which found that environmental education shows a very positive correlation with attitude towards the environment. Environmental education can increase individual knowledge related to environmental problems and environmental risks so that they can form and improve favorable attitudes towards the environment. The results of the case study Rakotomamonjy et al. (2015) in rural Madagascar also stated that children who received environmental education had higher environmental knowledge and a more favorable attitude towards the environment than children who did not receive environmental education. Various kinds of relevant the results of research that have been mentioned above are ultimately in accordance with the ultimate goal of environmental education, namely providing knowledge and forming an attitude towards the environment and favorable environmental behavior in students (Bergman, 2015; Isdaryanti et al., 2018; Yustina et al., 2020).

Table 4. Result of the Normality Test

School Type	N	Skewness	Kurtosis	ZSkewness	ZKurtosis
Adiwiyata School	222	0.233	0.394	1.42	1.20
Non-Adiwiyata School	217	0.001	0.070	0.01	0.21

Zskewness value and Zkurtosis value < 1.96 so it can be assumed that the data is normally distributed. The results of the homogeneity test show that the value of *Sig* = 0.914 so it can be assumed that the data is homogeneous.

Table 5. Result of Group Statistics on EBSS

School Type	N	Mean
Adiwiyata School	222	39.40
Non-Adiwiyata School	217	37.34

Table 6. Result of Independent Sample t-test on EBSS

	Levene's Test for Equality of Variances		t-test for Equality of Means	
	F	*Sig*	t	*Sig. (2-tailed)*
Equal variances assumed	0.703	0.402	2.707	0.007
Equal variances not assumed			2.708	0.007

The results of the independent sample t-test on the EBSS (Table 5. and Table 6.) show that the average attitude towards the environment in students of Adiwiyata school and Non-Adiwiyata schools on EBSS is significantly different as indicated by the value of t =

2.707 with a significance probability 0.007. The students of Adiwiyata school have a significantly higher attitude towards the environment compared to Non-Adiwiyata schools on EBSS.

This is supported by the results of follow-up interviews for filling out the EAS, where Adiwiyata school students said, "I often listen to environmental programs broadcast on TV and radio after I entered Adiwiyata school.", while Non-Adiwiyata school students said, "My teacher rarely gives assignments which require me to listen to environmental programs broadcast on TV and radio." Furthermore, Adiwiyata school students also said, "My teacher gave me assignments that required me to read environmental issues in daily newspapers and scientific articles on the environment.", while Non-Adiwiyata school students said, "My teacher doesn't give me assignments that required me to read environmental issues in daily newspapers and scientific articles on the environment."

This is in accordance with the results of research by Tucker & Izadpanahi (2017) which concludes that there is a significant difference (*Sig.* = 0.000) between the environmental behavior of students in schools designed for sustainability and students in conventional schools. A comparison of the mean scores shows that students in schools designed for sustainability have a level of environmental behavior that is more pro-environmental or significantly higher (*Sig.* = 0.000) compared to students in conventional schools, thus providing empirical evidence that schools designed for sustainability have an important role in shape student environmental behavior. In line with the results of research by Nurwidodo et al. (2020) who found that Adiwiyata school students had significantly higher pro-environmental behavior scores than Non-Adiwiyata school students (*Sig.* < 0.001). Research by Nurwaqidah et al. (2020) also stated that Adiwiyata school students had higher pro-environmental behavior scores than Non-Adiwiyata schools (*Sig.* = 0.000).

Table 7. Result of Group Statistics on EOSS

School Type	N	Mean
Adiwiyata School	222	37.75
Non-Adiwiyata School	217	36.47

Table 8. Result of Independent Sample t-test on EOSS

	Levene's Test for Equality of Variances		t-test for Equality of Means	
	F	Sig	t	Sig. (2-tailed)
Equal variances assumed	3.507	0.062	3.748	0.000
Equal variances not assumed			3.753	0.000

The results of the independent sample t-test on the EOSS (Table 7. and Table 8.) show that the average attitude towards the environment in students of Adiwiyata school and Non-Adiwiyata schools on EOSS is significantly different as indicated by the value of t = 3.748 with a significance probability 0.000. The students of Adiwiyata school have a significantly higher attitude towards the environment compared to Non-Adiwiyata schools on EOSS.

This is supported by the results of follow-up interviews for filling out the EAS, where Adiwiyata school students said, "My school carries out activities that aim to generate income for the school and the income will be used to fund environmental activities in schools, such as waste bank management.", while school students Non-Adiwiyata said, "My school has never carried out any activities aimed at generating income for the school and the income will be used to fund environmental activities at the school.". In addition, Adiwiyata school students also said, "At my school, there are regulations or written warnings to turn off the lights when leaving the room.", while Adiwiyata school students said, "At my school, there are no written rules or warnings to turn off the lights when leaving the room."

This is in accordance with the results of research by Nurwidodo et al. (2020) which concluded that the level of ecological knowledge in students of Adiwiyata schools was significantly higher (*Sig.* < 0.001) than students of Non-Adiwiyata schools. In line with the results of research by Hidayati et al. (2019) which found that the environmental knowledge of Adiwiyata Junior High School students was higher than that of Non-Adiwiyata Junior High School students (*Sig.* = 0.000). Individuals with higher environmental knowledge have a more favorable attitude towards the environment, and vice versa (Zheng et al., 2018).

Table 9. Result of Group Statistics on EESS

School Type	N	Mean
Adiwiyata School	222	67.41
Non-Adiwiyata School	217	66.09

Table 10. Result of Independent Sample t-test on EESS

	Levene's Test for Equality of Variances		t-test for Equality of Means	
	F	Sig	t	Sig. (2-tailed)
Equal variances assumed	0.013	0.911	2.244	0.025
Equal variances not assumed			2.244	0.025

The results of the independent sample t-test on the EESS (Table 9. and Table 10.) show that the average

attitude towards the environment in students of Adiwiyata school and Non-Adiwiyata schools on EESS is significantly different as indicated by the value of t = 2.244 with a significance probability 0.025. The students of Adiwiyata school have a significantly higher attitude towards the environment compared to Non-Adiwiyata schools on EESS.

This is supported by the results of follow-up interviews for filling out the EAS, where Adiwiyata school students said, "I have participated in environmental actions.", while Non-Adiwiyata school students said, "I have never participated in environmental actions." Furthermore, Adiwiyata school students also said, "My school often holds activities in nature or activities related to the surrounding environment, for example, planting mangrove trees.", while Non-Adiwiyata school students said, "My school does not hold activities in nature or activities related to the surrounding environment. "

This is in accordance with the results of research by Robina-Ramírez et al. (2020) which concludes that the sustainability education received by students can positively affect environmental emotions to protect nature (*Sig.* = 0.000). This is in line with the results of research by Yerbury & Boyd (2018) which found that contact and closeness with nature are important because they can create positive emotions. Clayton et al. (2017) also explain that interactions with nature in the form of own experiences or with other people can affect individual emotions.

Table 11. Result of Group Statistics of Attitude towards the Environment

School Type	N	Mean
Adiwiyata School	222	144.56
Non-Adiwiyata School	217	139.90

Table 12. Result of Independent Sample t-test of Attitude towards the Environment

	Levene's Test for Equality of Variances		t-test for Equality of Means	
	F	Sig	t	Sig. (2-tailed)
Equal variances assumed	0.012	0.914	3.699	0.000
Equal variances not assumed			3.699	0.000

The results of the independent sample t-test of attitude towards the environment (Table 11. and Table 12.) show that the average attitude towards the environment in students of Adiwiyata school and Non-Adiwiyata schools is significantly different as indicated

by the value of t = 3.699 with a significance probability 0.000. Thus, hypothesis 1 (H_1) in this study is accepted or not rejected. The students of Adiwiyata school have a significantly higher attitude towards the environment compared to Non-Adiwiyata schools.

This is in accordance with the results of research by Ozsoy et al. (2012) who concluded that the attitude towards the environment owned by eco-school students was higher than that of traditional school students (*Sig.* = 0.000). Furthermore, the results of research by Tucker & Izadpanahi (2017) state that students in schools designed for sustainability have a significantly higher attitude towards the environment (*Sig.* = 0.000) compared to students of conventional schools. The results of this study are supported by the results of research by Gao (2018) which found that environmental education shows a positive correlation, especially with attitude towards the environment because environmental education can increase favorable attitudes towards the environment (*Sig.* < 0.01). Individuals with a favorable attitude towards the environment can find the right solution in solving environmental problems (Prastiwi et al., 2019).

The results of research by Liefländer & Bogner (2018) also found that environmental education has an impact on one's attitude towards the environment. Students who received environmental education experienced a significant increase in their attitude towards the environment scale scores (Bacakoğlu & Taş, 2020).

Adiwiyata schools have several advantages related to Environmental Protection and Management (EPM) compared to Non-Adiwiyata schools so the attitude towards the environment in students of Adiwiyata schools is significantly higher than that in students of Non-Adiwiyata schools. Some of these advantages cover four aspects.

First, environmentally friendly policies include the school's vision and mission, curriculum, and School Activity Plan and Budget. Adiwiyata school's vision and mission contain three EPM efforts, while Non-Adiwiyata schools only contain one EPM effort. The structure of the Adiwiyata school curriculum is related to EPM policies. Adiwiyata schools have a budget for EPM efforts of 39% (more than 20%) of the total school budget and are allocated proportionally for 6-7 activities, while Non-Adiwiyata schools are allocated for 2 activities.

Second, the implementation of an environment-based curriculum includes the competence of educators and student learning activities. Adiwiyata school educators have competence in developing environmental learning activities, while in Non-Adiwiyata schools the number is limited because only science teaching staff. Adiwiyata school students carry out learning activities, produce real work related to

EPM, and communicate the results of their innovations in several media.

Third, participatory-based environmental activities include the implementation of EPM and partnership activities. Adiwiyata school residents carry out EPM activities in a planned manner, such as building and school environment maintenance, for example: clean Friday, garden maintenance activities by each class, class cleaning competitions, and class cleaning pickets, while Non-Adiwiyata schools only work for community service and cleaning pickets class. Adiwiyata school residents also carry out EPM activities in a planned manner, including the use of land and school facilities according to EPM rules, the use of extracurricular activities for learning related to EPM, there are more than 5 classifications of creativity and innovation activities related to EPM, as well as participating in environmental actions organized by outsiders. There are more than 3 partners who are used as resource persons and support in the form of materials for activities related to EPM at Adiwiyata schools. Adiwiyata School has more than 3 times been a resource person providing support in EPM efforts.

Fourth, the management of environmentally friendly supporting facilities includes the availability of environmentally friendly supporting infrastructure and improving the quality of management and utilization of environmentally friendly facilities and infrastructure. Adiwiyata schools have more than 6 infrastructure facilities to overcome environmental problems in schools in accordance with the Facilities and Infrastructure Standards, while Non-Adiwiyata schools have less than 6 infrastructure facilities. Adiwiyata schools have more than 6 supporting infrastructures for environmental learning, while Non-Adiwiyata schools have less than 6 infrastructures. There is an improvement in the quality of management and utilization of environmentally friendly facilities and infrastructure at Adiwiyata schools, including the availability of 4 elements of the management and maintenance mechanism for facilities, efficient use of energy sources, both water and electricity, and stationery, and the canteen has made more than 3 efforts in order to improve the quality of healthy and environmentally friendly canteen services.

Non-Adiwiyata Schools have environmental programs consisting of various environmental activities, but most of them are carried out by Non-Permanent Employees, not by students. Non-Adiwiyata schools should try to be more optimal in increasing the attitude towards the environment in students even though they have not yet received an award as an Adiwiyata school, namely by adapting the Adiwiyata program found in Adiwiyata schools. Adaptation of the Adiwiyata program can be done in various ways on several aspects, including relating to educators and education staff, students, facilities and infrastructure, as well as external parties.

Regarding education and teaching staff, namely by increasing the competence of educators and education personnel in the EPM field, especially in developing environmental learning activities. Regarding students, namely by increasing the quantity and quality of environmental programs by increasing environmental activities involving school residents, especially students. Another effort that can be made regarding students is to develop participatory-based environmental activities which include extracurricular/curricular activities related to the environment, participation in environmental actions, and Clean and Healthy Living Behavior.

Regarding facilities and infrastructure, namely by: (1) following up on the availability of infrastructure to overcome environmental problems such as separate trash bins, for example by conducting waste management; (2) managing and utilizing the supporting infrastructure for environmental learning, such as forest/parks/school gardens, for example by holding competitions or garden maintenance activities by each class; (3) implementing efficient use of energy sources; and (4) creating a healthy and environmentally friendly canteen. Regarding external parties, namely by increasing collaboration with outside parties in order to fulfill environmentally friendly infrastructure and training or workshops to support EPM activities. Another equally important effort is to build continuous communication with all school members so that they have a high level of commitment to implementing EE and participating as target schools.

Conclusion

According to the results of the research and discussion, the following conclusions can be drawn: (1) There are significant differences in the attitude towards the environment in students of Adiwiyata and Non-Adiwiyata schools on EBSS, EOSS, and EESS, with significance probabilities of 0.007, 0.000, and 0.025, where Adiwiyata school students have significantly higher attitudes towards the environment than Non-Adiwiyata school. (2) There is a significant difference in the attitude towards the environment in students of Adiwiyata and Non-Adiwiyata schools with a significant probability of 0.000, where Adiwiyata school students have significantly higher attitudes towards the environment than Non-Adiwiyata school.

Acknowledgements

research, and thank you to the supervisors who have guided me in completing this article.

References

Abun, D. & Racoma, A. (2017). Environmental Attitude and Environmental Behavior of Catholic Colleges' Employees in Ilocos Sur, Philippines. *Texila International Journal of Academic Research*, 4(1), 23–52. https://doi.org/10.13140/RG.2.2.28802.32966

Alpusari, M. (2013). Analisis Kurikulum Pendidikan Lingkungan Hidup pada Sekolah Dasar Pekanbaru. *Jurnal Primary Program Studi Pendidikan Guru Sekolah Dasar Fakultas Keguruan dan Ilmu Pendidikan Universitas Riau*, 2(2), 10–17. https://doi.org/10.33578/jpfkip.v2i2.1957

Amini, R. (2015). Outdoor Based Environmental Education Learning and Its Effect in Caring Attitude toward Environment. *Jurnal Pendidikan IPA Indonesia*, 4(1), 43–47. https://doi.org/10.15294/jpii.v4i1.3500

Amran, A., Perkasa, M., Satriawan, M., Jasin, I., & Irwansyah, M. (2019). Assessing Students 21st Century Attitude and Environmental Awareness: Promoting Education for Sustainable Development Through Science Education. *IOP Conference Series: Journal of Physics: Conference Series*, 1157(022025), 1–5. https://doi.org/10.1088/1742-6596/1157/2/022025

Arslan, S. (2012). The Influence of Environment Education on Critical Thinking and Environmental Attitude. *Procedia-Social and Behavioral Sciences*, 55, 902–909. https://doi.org/10.1016/j.sbspro.2012.09.579

Azwar, S. (2016). *Sikap Manusia: Teori dan Pengukurannya* (Second Edition). Yogyakarta: Pustaka Pelajar.

Bacakoğlu, T.Y. & Taş, İ.D. (2020). The Impact of Immediate Vicinity Training on Academic Success and Environmental Attitudes of the Fourth Graders in the Primary School. *Education and Science*, 45(203), 27–44. https://doi.org/10.15390/EB.2020.8521

Bergman, B.G. (2015). Assessing Impacts of Locally Designed Environmental Education Projects on Students' Environmental Attitudes, Awareness, and Intention to Act. *Environmental Education Research*, 22(4), 480–503. https://doi.org/10.1080/13504622.2014.999225

Clayton, S., Colléony, A., Conversy, P., Maclouf, E., Martin, L., Tores, A.C., Truong, M.X., & Prévot, A.-C. (2017). Transformation of Experience: Toward a New Relationship with Nature. *Conservation Letters*, 10(5), 645–651. https://doi.org/10.1111/conl.12337

Gao, Y. (2018). To Study the Relationship between Environmental Education and Environmental Behavior Based on Environmental Attitude. *Ekoloji*, 27(106), 627–634. Retrieved from http://www.ekolojidergisi.com/article/to-study-the-relationship-between-environmental-education-and-environmental-behavior-based-on-5397

Ghozali, I. (2018). *Aplikasi Analisis Multivariate dengan Program IBM SPSS 25* (A. Tejokusumo (ed.); Ninth Edition). Semarang: Badan Penerbit Universitas Diponegoro.

Gustria, A. & Fauzi, A. (2019). Analysis of High School Students' Environmental Attitude. *IOP Conference Series: Journal of Physics: Conference Series*, 1185(012079), 1–5. https://doi.org/10.1088/1742-6596/1185/1/012079

Hidayati, K., Marpaung, R.R.T., & Yolida, B. (2019). Pengaruh Program Adiwiyata terhadap Literasi Lingkungan dan Sikap Peduli Lingkungan. *Jurnal Bioterdidik*, 7(2), 46–55. Retrieved from http://jurnal.fkip.unila.ac.id/index.php/JBT/article/view/17117

Isdaryanti, B., Rachman, M., Sukestiyarno, Y.L., Florentinus, T.S., & Widodo. (2018). Teachers' Performance in Science Learning Management Integrated with Character Education. *Jurnal Pendidikan IPA Indonesia*, 7(1), 9–15. https://doi.org/10.15294/jpii.v7i1.12887

Jumirah, Sari, P.A., Kusnadi, E., & Oktaviani, A.D. (2021). Analisis Kesadaran Lingkungan Siswa Sekolah pada Kegiatan Green-Chemistry dalam Kondisi New Normal Pandemi Covid-19. *DIKSAINS : Jurnal Ilmiah Pendidikan Sains*, 2(2), 40–48. https://doi.org/10.33369/diksains.v2i2.19838

Lieflӓnder, A.K. & Bogner, F.X. (2018). Educational Impact on the Relationship of Environmental Knowledge and Attitudes. *Environmental Education Research*, 24(4), 611–624. https://doi.org/10.1080/13504622.2016.1188265

Nurwaqidah, S., Suciati, & Ramli, M. (2020). Environmental Literacy-Based on Adiwiyata Predicate at Junior High School in Ponorogo. *Jurnal Pendidikan Biologi Indonesia*, 6(3), 405–412. https://doi.org/10.22219/jpbi.v6i3.12468

Nurwidodo, N., Amin, M., Ibrohim, I., & Sueb, S. (2020). The Role of Eco-School Program (Adiwiyata) towards Environmental Literacy of High School Students. *European Journal of Educational Research*, 9(3), 1089–1103. https://doi.org/10.12973/EU-JER.9.3.1089

Ogunbode, C.A. & Arnold, K. (2012). A Study of Environmental Awareness and Attitudes in Ibadan, Nigeria. *Human and Ecological Risk Assessment: An International Journal*, 18(3), 669–684. https://doi.org/10.1080/10807039.2012.672901

Ozsoy, S., Ertepinar, H., & Saglam, N. (2012). Can Eco-

Schools Improve Elementary School Students' Environmental Literacy Levels? *Asia-Pacific Forum on Science Learning and Teaching*, *13*(2), 1–25. Retrieved from https://www.eduhk.hk/apfslt/

Permana, B.I. & Ulfatin, N. (2018). Budaya Sekolah Berwawasan Lingkungan pada Sekolah Adiwiyata Mandiri. *Ilmu Pendidikan: Kajian Teori dan Praktik Kependidikan*, *3*(1), 11–21. https://doi.org/10.17977/um027v3i12018p011

Ponmozhi, D. & Krishnakumari, S. (2017). Environmental Attitude of School Students. *IOSR Journal Of Humanities And Social Science*, *22*(7), 1–4. https://doi.org/10.9790/0837-2207030104

Prastiwi, L., Sigit, D.V., & Ristanto, R.H. (2019). Ecological Literacy, Environmental Awareness, Academic Ability, and Environmental Problem-Solving Skill at Adiwiyata School. *Indonesian Journal of Science and Education*, *3*(2), 82–92. https://doi.org/10.31002/ijose.v3i2.1114

Putri, A. (2019). Implementasi Program Adiwiyata dalam Rangka Menciptakan Sekolah Peduli dan Berbudaya Lingkungan. *Jurnal Tunas Bangsa*, *6*(1), 37–47. Retrieved from https://ejournal.bbg.ac.id/tunasbangsa/article/download/918/851

Rakotomamonjy, S.N., Jones, J.P.G., Razafimanahaka, J.H., Ramamonjisoa, B., & Williams, S.J. (2015). The Effects of Environmental Education on Children's and Parents' Knowledge and Attitudes towards Lemurs in Rural Madagascar. *Animal Conservation*, *18*(2), 157–166. https://doi.org/10.1111/acv.12153

Ramdhani, R.B. (2016). Implementasi Program Adiwiyata dalam Pengelolaan Lingkungan Sekolah di SMPN 3 Sukabumi. *International Journal Pedagogy of Social Studies*, *1*(2). https://doi.org/10.17509/ijposs.v1i2.4711

Robina-Ramírez, R., Merodio, J.A.M., & McCallum, S. (2020). What Role Do Emotions Play in Transforming Students' Environmental Behaviour at School? *Journal of Cleaner Production*, *258*. https://doi.org/10.1016/j.jclepro.2020.120638

Sulfemi, W.B. (2018). Pengaruh Disiplin Ibadah Sholat, Lingkungan Sekolah, dan Intelegensi terhadap Hasil Belajar Peserta Didik Mata Pelajaran Pendidikan Agama Islam. *EDUKASI: Jurnal Penelitian Pendidikan Agama dan Keagamaan*, *16*(2), 166–178. https://doi.org/10.32729/edukasi.v16i2.474

Tafli, T. & Ates, A. (2016). Development of Environmental Attitude Scale towards Pre-Service Biology Teachers. *Journal of Education and Practice*, *7*(32), 33–40. Retrieved from https://www.researchgate.net/publication/320417436_Development_of_Environmental_Attitude_Scale_Towards_Pre-Service_Biology_Teachers

Tohirin. (2014). *Psikologi Pembelajaran Pendidikan Agama Islam*. Jakarta: Raja Grafindo.

Tucker, R. & Izadpanahi, P. (2017). Live Green, Think Green: Sustainable School Architecture and Children's Environmental Attitudes and Behaviors. *Journal of Environmental Psychology*, *51*, 209–216. https://doi.org/10.1016/j.jenvp.2017.04.003

Uğulu, İ. & Erkol, S. (2013). Environmental Attitudes of Biology Teacher Candidates and the Assessments in Terms of Some Variables. *e-Journal of New World Sciences Academy-Education Sciences*, *8*(1), 79–89. Retrieved from https://dergipark.org.tr/tr/pub/nwsaedu/issue/19813/211917

Uzun, N., Gilbertson, K.L., Keles, O., & Ratinen, I. (2019). Environmental Attitude Scale for Secondary School, High School, and Undergraduate Students: Validity and Reliability Study. *Journal of Education in Science, Environment and Health*, *5*(1), 79–90. https://doi.org/10.21891/jeseh.491259

Vandenbos, G.R. (2015). *APA Dictionary of Psychology* (G. R. Vandenbos (ed.); Second Edition). Amerika: American Psychological Association. https://www.apa.org/pubs/books/4311022

Wahid, F.S., Setiyoko, D.T., Riono, S.B., & Saputra, A.A. (2020). Pengaruh Lingkungan Keluarga dan Lingkungan Sekolah terhadap Prestasi Belajar Siswa. *Syntax Literate: Jurnal Ilmiah Indonesia*, *5*(8), 555–564. https://doi.org/10.36418/syntax-literate.v5i8.1526

Yerbury, R.M. & Boyd, W.E. (2018). Human-Dolphin Interactions: Relationships, Connections, and the Reinforcement of an Ongoing Nature Relationship. *Anthrozoos*, *31*(4), 443–458. https://doi.org/10.1080/08927936.2018.1482116

Yustina, Halim, L., & Mahadi, I. (2020). The Effect of "Fish Diversity" Book in Kampar District on the Learning Motivation and Obstacles of Kampar High School Students through Online Learning during the COVID-19 Period. *Journal of Innovation in Educational and Cultural Research*, *1*(1), 7–14. https://doi.org/10.46843/jiecr.v1i1.2

Zheng, Q.J., Xu, A.X., Kong, D.Y., Deng, H.P., & Lin, Q.Q. (2018). Correlation between the Environmental Knowledge, Environmental Attitude, and Behavioral Intention of Tourists for Ecotourism in China. *Applied Ecology and Environmental Research*, *16*(1), 51–62. https://doi.org/10.15666/aeer/1601_051062