

Building Green Schools Through Adiwiyata School in Indonesia

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Abstract: This study aims to explore Green Schools through Adiwiyata School program in Environmental education that contributes to sustainable environmental problems. This study uses an interpretive approach to data collection and analysis (Thanh and Thanh 2015), which aims to understand individuals related to experiences in building environments through Adiwiyata Program. Participants in this study are schools that have realized the Adiwiyata program, both public schools and private schools. The research findings show that building a Green School starts from activities of schools to foster self-awareness in overcoming environmental problems which are integrated into the Environmental Education curriculum. This research has implications for the participation and collaboration between schools and the community in realizing an environmentally friendly Adiwiyata School.

Keywords: Adiwiyata school, environmental education, green school.

Introduction

Adiwiyata is one of the programs of the State Ministry of the Environment in the context of implementing the joint agreement between the State Minister of the Environment and the Minister of National Education Number 03/MENLH/02/2012 and Number 01/II/KB/2010. In the Government Regulation, Adiwiyata is defined as a good and ideal place to gain all knowledge and various norms and ethics that can be the basis of human beings towards the creation of a prosperous life to achieve the ideals of sustainable development (Murdani et al. 2018). The main activity of the Adiwiyata program is to create school institutions that care and are environmentally cultured. The programs and activities developed are based on basic and living norms which include togetherness, openness, honesty, justice, and the preservation of the function of the environment and natural resources (Rakhmawati et al. 2016). Overall, the concept of Adiwiyata school is rooted in character

education. Character education believes in the existence of absolute morals that need to be taught to the younger generation so that they understand what is good and right (Mukminin 2014). There are various manifestations of planting environmental education in schools, such as environmentally cultured schools, green schools, and healthy schools. The term being promoted by the government is Adiwiyata. Adiwiyata schools aim to create good conditions for schools so that they can become places of learning and awareness of school residents (teachers, students, and school employees) so that in the future the school community can take responsibility for efforts to save the environment (Maryani 2016). The four main components of the Adiwiyata program are (1) eco-friendly school policies, (2) environment-based school curriculum, (3) participatory-based school activities, and (4) management of eco-friendly school supporting facilities and infrastructure (Warju et al., 2017). Environmental Education (PLH) is an effort to change the behavior and

attitudes of various parties or elements of society which aims to increase knowledge, skills, and public awareness about environmental values and environmental issues which in turn can drive environmental safety for the benefit of the current generation and future (Murdani et al. 2018). The 2013 curriculum not only requires students to achieve knowledge competence but also be able to achieve attitude and skill competencies. Learning activities, in addition to making students master the targeted competencies (materials), are also designed to make students recognize and realize and internalize values and turn them into behavior. Research on environmental management in building students' environmental awareness has been carried out such as the development of interdisciplinary approaches to improve students' ability to solve environmental problems (Hiwasaki and Arico 2007), literacy approaches of environmental issues to create individuals who are responsible for saving the environment (Pe'er et al. 2007), learning critical thinking with an epistemological, transformative, dialectical, and holistic approach with environmental insight to increase students' understanding of environmental conservation programs (Littledyke 2008), and introducing the concept of sustainable development to students through teaching and learning activities developed in the form of questions to shape student behavior in saving the environment (Entwistle and Peterson 2004).

Materials and Methods

Study Area

This research was conducted in the context of schools in Indonesia by taking schools that have carried out the Adiwiyata program, namely public schools and private schools in the city of Bandung and the city of Kendari including Public Elementary School 168 Cipadung and Public Elementary School 2 Baruga Kendari. We focus to encouraging public access, use and participation in management school adiwiyata. With long standing commitment to community engagement and outreach, including on achievements and engage the community in an even deeper and more

meaningful way; that is in shaping and planning the environmental education future vision. Integration across the program facilitated by a partnership among school Adiwiyata and governance. There are a number of operational teams who are responsible for running the School Adiwiyata in the program green school in community. An interpretivist phenomenology case study approach is used to help individuals view the program from their perspective in data collection and analysis (Thanh and Thanh 2015).

Procedures

Our involvement as researchers started back in April 2021 when we began a set of interviews in school Adiwiyata, with a wide range of its stakeholders. This qualitative study, framed with interpretative phenomenology that was designed in collaboration with environment agency so that the findings could directly inform the of Adiwiyata school management plan. This study has a number of meetings with team teacher Adiwiyata that exploring the use of tools and approaches participatory in management of the Adiwiyata school. Data were collected through semi-structured questions and analyzed by triangulation of data, sources and time to participants including school principals, teachers, students, parents and related communities and the Environmental & Forestry Service.

Data Analysis

We used a range of sources for our analysis: individual semi-structured interviews with the four steering group members in April until September 2021 (see guidelines in Tables 1, 2, 3 [supplemental data]); whatsapp and email correspondence from steering group members, and triangulation with Environmental & Forestry Service and community and follow-up discussions with two of these group members.







Findings and Discussion

School activities are carried out in the form of implementing the Adiwiyata program in the school environment such as the Garbage Pick-up Movement, processing used material waste

through Reduce, Reuse and Recycle as well as managing school facilities and infrastructure, namely developing Biodigester, Composer,

Hydroponics, infiltration wells, and bio pure infiltration holes. The research findings refer to the activities of the Adiwiyata schools in table 1.

Table 1. Activities of Adiwiyata School.

No	Environmentally Friendly Habitation (School Love Movement)	Interpretative	Figure
1	Organic Waste Processing	As an adiwiyata school, it certainly pays attention to the efforts of processing organic and inorganic waste. Organic waste is decomposed through Biopori Holes, Biodigester, and Composters	
2	Inorganic Waste Processing	Meanwhile, for inorganic waste, students sort it to be put into the recycler which will then be deposited in a waste bank or made eco brick. Garbage bank officers are those who are already in grade 5, their job is to collect inorganic waste from each class and sort it out	
3	The School Love Movement (GCS)	The School Love Movement (GCS) is an adiwiyata school derivative program that aims to familiarize students with caring about the cleanliness and comfort of the school environment.	
4	Jurassic (Neat and Clean Champion)	Jurassic is held before going home from school. All students and teachers are involved except for grade 1 students. Each student has their own area to clean. They are responsible for the teacher who is the supervisor at each location	
5	GPS (Garbage Pick Up Movement)	GPS is carried out every morning before entering class. There is a special bell for students to use GPS, so that students automatically carry out GPS without being instructed by the teacher.	
6	I Love Plants	Students are also obliged to water their own plants. Each student waters the plants every morning before GPS or in Environmental Education (PLH) learning	

In implementing the Adiwiyata program, it takes time for students to adapt to new conditions, namely by understanding what the Adiwiyata program is and being disciplined by not littering and then sorting waste according to its type, namely organic waste and non-organic waste, so that from understanding this concept, students

change their behavior without coercion and are willing to take care of the school environment with pleasure, students are trained to increase knowledge, skills, and awareness in preserving the environment. The research findings refer to the implementation of the Adiwiyata program in schools in table 2.

Tabel 2. The Implementation of the Adiwiyata School.

No	Adiwiyata School	Implementation
1	Adiwiyata School	a) The program distributes plants to each student; b) school cleaning activities; c) environmental education program; d) GPS (Garbage Pickup Movement)
2	School activities to support the environmentally friendly Adiwiyata program	a) hydroponic cultivation of plants; b) getting students used to watering the plants in the school environment and caring for the plants; c) students bring plants to be planted at school; d) the movement to pick up garbage, plant toga plants; e) dispose of waste according to its type
3	Form of school committee support	a) require children to take care of the plants in the school alternately with other students; b) providing support by following what the school has set in protecting the environment
4	Health protocol	a) wear a mask, keep a distance, wash hands; b) provide water, c) learning is carried out online and face-to-face is limited

The main contribution of the Adiwiyata school is to provide environmental education in the school environment (Trihantoyo and Rahma, 2017). This environmental care attitude already exists in the curriculum where every discussion is thematically based, this shows that the curriculum has led to the application of Environmental Education by making students understand, maintain and preserve the surrounding environment both at home and at school, carry out activities of planting Toga plants, flowers, as well as hydroponic plant cultivation,

this is done as an effort to prevent damage to the natural environment. Techniques applied in schools by integrating Environmental Education in competency standards, learning materials, learning activities, indicators of competency achievement, assessment, allocation of time and learning resources as well as the character of the nation. The implementation of environmental education can be described in learning plan in table 3.

Tabel 3. Application of the Environmental Education on Silabus.

Standard Competency/ Basic Competence	Learning Materials	Learning Activities	Indicators of Competency Achievement	Assessment			Allocation of time and Learning Resources	Character of Nation
				Technique	Instrument Shape	Example of instrument		
Competency standards: 1. Implement hygiene at home and school.	a. Subject matter - Hygiene and health at home - Hygiene and health at	Individual, group, or classical students understand hygiene and health	Mention examples of clean living at home	Oral and written test	Short answer Description	What are the benefits of bathing? ?	2 x 35 minutes Environmental Education	Independent Confident Cooperation Care for the

<p>Basic competencies: 1.1 Recognize clean and healthy living at home and at school</p>	<p>school</p> <p>b. Material Learning</p> <p>1. Clean life</p> <ul style="list-style-type: none"> - Self Hygiene - Environmental Hygiene <p>2. Healthy living</p> <ul style="list-style-type: none"> - Healthy living at home - Healthy living at school 	<p>by:</p> <ul style="list-style-type: none"> - Mention examples of clean living at home and at school. - Give examples of healthy living at home and at school. - Shows examples of cleaning tools - Ask and answer questions about hygiene and health at home and at school. - Students and teachers draw conclusions about cleanliness and health at home and at school. - Affirmation and reinforcement from the teacher 	<p>Give examples of clean living at school</p> <p>Give examples of healthy living at home</p> <p>Mention a healthy way of life at school</p>			<p>Mention 3 examples of clean living at home</p>	<p>Book Publisher Erlangga page 1 – 14 and the environment as a learning resource</p>	<p>environment Responsibilities</p>
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Discussion

This study emphasizes on the Adiwiyata school to develop a Green School that is comprehensively integrated with school activities in building students' environmental awareness. Studers et al.

(2008) noted the effectiveness of go green is supported by stakeholders and finance related to the implementation of *go green* schools. Efforts to build commitment to improving environmental quality are difficult to realize without well-planned or managed programs (Hens et al. 2010). One of the

environmental management models applying the principles of good environmental management is the Adiwiyata program which is implemented in schools. Adiwiyata is a program from the Ministry of Environment to encourage the creation of knowledge and awareness of school communities in environmental protection (Azrai et al. 2017; Maryono 2015; Rachman and Maryani, 2017). Adiwiyata programs are designed by prioritizing the concept of environmental management to encourage planned environmental management actions in building students' awareness to care about environmental quality (Murdani et al. 2018). Students with environmental awareness have sensitivity to environmental problems (Loganayaki and Ranjitha 2014). The better the environmental awareness, the greater the participation of students as seen in the Go Green School activities (Azrai et al. 2017).

The study show environmental issues are one of the topics studied in various scientific meetings at the local, national and international levels. Environmental education (EE) is one of the tools available to encourage people to understand the environment. The importance of environmental education, both formal and informal, brings about changes in knowledge, attitudes and practices (Birdsall, 2014; Guixin, 2010; Kilinc & Aydin, 2013; Petegem, Blicck, Imbrecht, & Van, 2005; Srbinovski, Erdogan, & Ismaili, 2010). This is because the emergence of various environmental damage has caused environmental quality degradation such as floods, landslides, air pollution, soil pollution, water pollution, and various other forms of damage that interfere with human comfort (La Fua et al. 2016), and can pose a threat to human health (La Fua et al. 2016) and sustainability of human life (La Fua. 2013). One of the commitments that need to be made in protecting the earth from environmental damage is through the implementation of environmental education which aims to prepare the community to have knowledge, skills, values, and attitudes to care for the environment so that they can actively participate in solving environmental problems (Jufri et al. 2019). Environmental education is the most appropriate vehicle to provide knowledge, skills, and caring attitudes towards the

environment (Sudjak et al. 2018). Prastiwi et al. (2019) stated that there are relationship between academic ability and environmental problem-solving skill. The environmental education learning process carried out is a process of organizing values and clarifying concepts to foster the skills and attitudes needed to raise awareness, knowledge, and concern for the environment (Arifiantari and Dwiastuti, 2019), and can educate individuals who are responsive to understand environmental issues, and have productive skills to protect and preserve nature.

Rusdi, Sipahutar, and Syarifudin, (2017) explained that it is necessary to apply learning to improve students' scientific literacy skills. This shows the importance of knowing the environment as a student learning material from an early age to adulthood. Students are introduced to be able to identify, classify learning resources based on the environment to support knowledge, skills, awareness in maintaining a balanced life, as explained by Fua, et al (2018). This environmental care attitude is related to students' knowledge of the environment, as researched by Suhartinah, et al (2019) that knowledge is positively correlated with attitudes and behavior towards the environment. Scientific literacy is very important for students so that students have the skills and mastery of science and can examine matters related to nature so that it can foster student interest in deepening science at the next level or enjoying nature by protecting the environment so that students can solve problems in everyday life. The principle of sustainability is also carried out where the program continues through environmental-based school activities which later become a culture within the school to jointly maintain cleanliness, beauty, and comfort in the school environment by continuing to maintain environmental sustainability, as evidenced by the competition activities that the school participates in the Adiwiyata program.

Conclusion

The purpose of this research is to build a green school through the Adiwiyata school which has been implemented in public schools and private

schools in its implementation through the Adiwiyata program and school activities. Adiwiyata School is expected to be sustainable to foster self-awareness of each individual to protect the environment. From the findings in the field that the school community has been involved in the Adiwiyata program through the responsibility of all parties starting from the principal, teachers, school guards, students, and parents, this reflects the participatory principle that has been running. The implication of this research is the attitude of self-awareness for students to be responsible for the school environment so that it is comfortable, beautiful, and clean to bring the school atmosphere to be cool and increase students' enthusiasm for learning.

Conflict of Interest: There are no conflicts of interest concerning the publication of this article.

References

- Azrai, E. P., Sigit, D. V., & Puji, M. 2017. The Correlation Between Environmental Awareness and Students Participation in Go Green School Activity at Adiwiyata's School. *Biosfer: Jurnal Pendidikan Biologi*, 10(2), 7-11.
- Arifiantari, R., & Dwiastuti, S. 2019. The Analysis of Environmental Attitudes of Public Junior High School Students in Ngawi. In *Journal of Physics: Conference Series* (Vol. 1241, No. 1, p. 012038). IOP Publishing.
- Birdsall, S. 2014. Measuring student teachers' understandings and self-awareness of sustainability. *Environmental Education Research*, 20(6), 814-835
- Entwistle, N. J., & Peterson, E. R. 2004. Conceptions of learning and knowledge in higher education: Relationships with study behaviour and influences of learning environments. *International journal of educational research*, 41(6), 407-428.
- Guixin, M. 2010. The practice and idea of environmental education at normal colleges and universities. *Chinese Education & Society*, 43(2), 53-62
- Hens, L., Wiedemann, T., Raath, S., Stone, R., Renders, P., & Craenhals, E. 2010. Performance of newly implemented Environmental Management Systems in primary schools in South Africa. *Journal of environmental management*, 91(4), 906-917.
- Hiwasaki, L., & Arico, S. (2007). Integrating the social sciences into ecohydrology: facilitating an interdisciplinary approach to solve issues surrounding water, environment and people. *Ecohydrology & Hydrobiology*, 7(1), 3-9.
- Jufri, J., La Fua, J., & Nurlila, R. U. 2019. Pendidikan Lingkungan di SDN 1 Baruga, Kendari City. *Al-TA'DIB*, 164-181.
- Kılinc, A. 2010. Can project-based learning close the gap? Turkish student teachers and proenvironmental behaviours. *International Journal of Environmental & Science Education*, 5(4), 495-509
- La Fua, J. 2013. Eco-pesantren; model pendidikan berbasis pelestarian lingkungan. *Al-Ta'dib*, 6(1), 113-125.
- La Fua, J., Nurlila, R. U., Gunawan, F., & Wekke, I. S. 2016. Islamic Education on Formation of Environmental Awareness in Pondok Pesantren Indonesia. In *IOP Conference Series: Earth and Environmental Science* (Vol. 156, No. 1, p. 012035). IOP Publishing.
- La Fua, J., Wekke, I.S., Sabara, Z., & Nurlina, R.U. 2018. Development of Environmental Care Attitude of Students Through Religion Education Approach in Indonesia. *Earth and Environmental Science*
- Littlely, M. (2008). Science education for environmental awareness: approaches to integrating cognitive and affective domains. *Environmental Education Research*, 14(1), 1-17.
- Loganayaki, B., & Ranjitha, B. (2014). Creating Environmental Awareness for Tribal School Children. *International Journal of Scientific Research*, 2(3), 174-176.
- Maryani, I. 2016. Evaluasi Pelaksanaan Program Sekolah Adiwiyata Ditinjau Dari Aspek Kegiatan Partisipatif di SDN Ungaran I Yogyakarta. *JP2SD (Jurnal Pemikiran dan Pengembangan Sekolah Dasar)*, 1(3), 170-180.
- Murdani, D., Hakim, A., & Yanuwadi, B. 2018. Strategies of Regency Adiwiyata (Green) School Management at Secondary Education Level in Sintang Regency. *Indonesian Journal of Environment and Sustainable Development*, 9(2).
- Mukminin, A. 2014. Strategi Pembentukan Karakter Peduli Lingkungan di Sekolah Adiwiyata Mandiri. *Ta'dib: Journal of Islamic Education (Jurnal Pendidikan Islam)*, 19(02), 227-252.
- Maryono. (2015). The implementation of the environmental education at "adiwiyata" schools in pacitan regency (an analysis of the implementation of grindle model policy). *Journal of Education and Practice*, 6(17), 31-42.
- Pe'er, S., Goldman, D., & Yavetz, B. (2007). Environmental literacy in teacher training: Attitudes, knowledge, and environmental behavior of beginning students. *The Journal of Environmental Education*, 39(1), 45-59.
- Petegem, P., Blicek, A., Imbrecht, I., & Van, H., T. (2005). Implementing environmental education in pre-service

- teacher training. *Environmental Education Research*, 11(2), 161–171.
- Prastiwi, L., Sigit, D.V., Ristanto, R.H. (2019). Relationship Between Academic Ability and Environmental Problem-Solving Skill: A Case Study at Adiwiyata Schools in Tangerang City, Indonesia. *Universitepark Bülten*, 8(1), 76-86.
- Rakhmawati, D., Prasetyo, A. P. B., & Ngabekti, S. 2016. Peran Program Adiwiyata Dalam Pengembangan Karakter Peduli Lingkungan Siswa: Studi Kasus Di SMK Negeri 2 Semarang. *Unnes Science Education Journal*, 5(1).
- Rachman, S. P. D., & Maryani, E. (2017, August). Teachers' and students' green behaviour of Adiwiyata targeted school. Paper presented at the 1st UPI International Geography Seminar.
- Rusdi, A., Sipahutar, H., & Syarifuddin. (2017). Hubungan Kemampuan Berpikir Kreatif dan Sikap terhadap Sains dengan Literasi Sains pada Siswa Kelas XI IPA MAN. *Jurnal Pendidikan Biologi*, 7(1), 72–80.
- Srbnovski, M., Erdogan, M., & Ismaili, M. (2010). Environmental literacy in the science education curriculum in Macedonia and Turkey. *Procedia - Social and Behavioral Sciences*, 2(2), 4528–4532
- Studer, S. et al., 2008. SMEs and voluntary environmental initiatives: a study of stakeholders' perspectives in Hong Kong. *Journal of environmental planning and management*, 51 (2), 285–301.
- Sudjak, S., Asiyah, U., & Prasetyo, R. A. 2018. The Role of Islamic Boarding School as Socialization Agent of Ecological Values (A Case Study in Salaf-Modern Islamic Boarding School). *WACANA, Jurnal Sosial dan Humaniora*, 20(4).
- Suhartinah, Siti., Yunin hidayati., Nur Qomaria., & Wiwin Puspita Hadi. 2019. Studi Korelasi Antara Sikap Peduli Lingkungan Dengan Kemampuan Literasi Sains Siswa pada Materi Ekosistem. *Natural Science Education Research*, Vol.2 No.1,77-84
- Trihantoyo, S., & Rahma, A. (2017). Green School Program Management in Fostering Students' Character. In *Social Sciences, Humanities and Economics Conference (SoSHEC 2017)*. Atlantis Press.
- Thanh, N. C., and T. T. Thanh. 2015. The Interconnection between Interpretivist Paradigm and Qualitative Methods in Education. *American Journal of Educational Science 1 (2): 24–27*
- Trihantoyo, S., & Rahma, A. (2017). Green School Program Management in Fostering Students' Character. In *Social Sciences, Humanities and Economics Conference (SoSHEC 2017)*. Atlantis Press.
- Warju, S. P. H., & Soenarto, M. D. H. (2017). Evaluating the Implementation of Green School (Adiwiyata) Program: Evidence from Indonesia. *International Journal of Environmental and Science Education*.
- Yin, R.K., 2014. *Case Study Research Design and Methods*, fifth ed. Sage, Thousand Oaks, CA.