

## **Futures for pro-environment and social responsibility activities in Indonesian schools: An *Adiwiyata* case study**

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This study explores in-depth information about the formation of pro-environmental behaviour and students' social responsibility through the *Adiwiyata* program in Indonesia. This study employed a qualitative method using observation, interviews, and documentation as the data collection techniques. The study was conducted at a senior high school in Pontianak; participants were the school principal, the *Adiwiyata* builder, the *Adiwiyata* trainer, two teachers, and four students. In contrast to the majority of green schools in Indonesia, the findings of this research show that the implementation of the *Adiwiyata* program at SMA (Senior High School) 8 Pontianak, emphasises solving environmental problems responsibly, shaping student behaviour to be pro-environmental, and becoming environmental cadres. This study is expected to contribute to the formation of students' character to carry out environmental conservation efforts responsible for maintaining green ecology for present and future generations.

### **Introduction**

An environmental degradation is an event of a decrease in environmental quality or a decrease in the carrying capacity of the environment caused by humans or caused by nature (Aditya Dewantara et al., 2021). Environmental degradation is caused by the intervention of humans that use nature excessively. These interventions are in the form of human activities that damage the environment, such as clearing forests, throwing garbage into rivers, burning forests, polluting water, air, and sea, which results in lack of oxygen in rivers, overheating, flooding, landslides, drought, lack of clean water, disease, and endangering living things, others and themselves. This happens due to the lack of environmental knowledge, care and awareness, which are the main obstacles to solving environmental problems (Parker et al., 2018).

Environmental problems cannot be solved by purely technical steps. More importantly, these problems can be solved by changing the mentality and awareness of environmental management. Concerning human behaviour in responding to natural resources and the environment that tends to be indifferent, changing behaviour is a top priority in overcoming environmental problems. Embedding environmental care behaviour can be done through education (Rif'ah, 2020). Education can be a catalyst to raise citizens' awareness of their responsibility in protecting the environment (Saragih, 2020). Through environmental education, students can learn to understand the pace of technological development, understand problems in the biosphere, and acquire productive skills to protect and preserve nature (Ipin, 2017). In other words, environmental education helps

to present a sufficient number of types of learning challenges for students (Rickinson & Lundholm, 2015).

Environmental education in schools is one application of character education. *Pusat Kurikulum Depdiknas* (Indonesian Ministry of National Education Curriculum Centre) mentioned that character education that must be instilled in students includes eighteen values, namely: religion, honesty, tolerance, discipline, hard work, creativity, independence, democratic, curiosity, national spirit, love for the homeland, respect for achievement, friendship and communication, love peace, love to read, care about the environment, care about social, and responsibility (Pusat Kurikulum Depdiknas, 2011). Character education is not just teaching what is right and wrong; more than that, character education also instills habits about caring for the environment (Rotari, 2017). One of these character values is in the form of attitudes and actions that always try to prevent and develop efforts to repair the natural damage (Purwanti, 2017).

The study presents an implementation of the Green School Program called the *Adiwiyata* Program by Indonesian Ministry of Environment, launched in 2016. The program aims to particularly promote environmental awareness through learning practices in schools. The *Adiwiyata* program (Green School Program) aims to advocate government efforts towards environmental conservation and sustainable development for the benefit of present and future generations. It provides opportunities for schools, especially students, to be involved in pro-environment activities (Tanu & Parker, 2018). The *Adiwiyata* Program helps towards character schools where development of the education system is carried out by focusing on developing aspects of intelligence (cognitive), skills aspects (psychomotor), attitudes, and values aspects (affective) (Putri, 2019). The implementation of these three aspects of character education must be carried out systematically and continuously (Sulistiyarini et al., 2020).

The *Adiwiyata* program facilitates the schools to shape students' character and other components, and develop habits of being aware and caring about the environment. The sustainable impact of this program is the formation of people who have an understanding and a concern for maintaining a balanced environment. The main focus of this research is the environmental care behaviour of students through the *Adiwiyata* Program. In particular, this study was guided by some research questions as below:

1. What are the students' understanding and perceptions towards the *Adiwiyata* program?
2. How does the *Adiwiyata* program improve students' pro-environmental behaviour and social responsibility in protecting their environment?

## Literature review

### The *Adiwiyata* school program

*Adiwiyata* is an innovative school program that advocates caring about a clean, beautiful, and healthy environment (Parker, 2018). The program is expected to become a laboratory for environmental care activities to reduce waste such as plastic, energy conservation, and

water-saving by promoting healthy lifestyles and developing active partnerships with the community (Desfandi, 2015). The usefulness of the *Adiwiyata* Program is carried out by optimising human resources (school residents), curriculum, facilities and infrastructure, and seriousness in maintaining quality control (Prasetyo et al., 2020). Therefore, good participation and cooperation of the entire school community is needed to support the success of the *Adiwiyata* Program (Umroh et al., 2018). From 2006 to 2021, as many as 4,726 schools won awards as *Adiwiyata* schools (*Antara News*, 2021). These schools are good examples for other schools to take part in increasing the environmental quality index in their area. Numerous studies have investigated the implementation of the *Adiwiyata* program, especially in the development of environmental awareness based on school culture (Nurwidodo et al., 2020; Rukiah et al., 2020; Sholahuddin et al., 2021). However, this study is directed at the scarcity of literature, in particular, to clarify the contribution of the *Adiwiyata* program in shaping students' pro-environmental behaviour and social responsibility.

### **Environmental care character**

Caring for the environment means maintaining, managing, and protecting the environment. A clean and healthy living environment is everyone's dream. Environmental education is part of the UN's *Sustainable Development Goals* (SDGs). The fourth goal of the SDGs is to ensure inclusive and equitable quality education through the promotion of lifelong learning opportunities (United Nations, 2015). The SDGs with the *Pendidikan Lingkungan Hidup* (PLH) or content of Environmental Education (EE) has become a joint commitment and responsibility of the world community to save the earth from damage and destruction due to development that does not pay attention to environmental sustainability (Indahri, 2020). UNESCO has called on all member countries to implement PLH which is integrated into the general environmental education curriculum, and has submitted several examples of the forms of regulations, policies, and standards of the PLH curriculum applied by the implementing state or state (Indahri, 2020).

The *Adiwiyata* program is one of the tangible forms of implementing environmental education in formal educational institutions. Earlier studies found that the *Adiwiyata* program had a positive impact on the formation of environmental care characters which was strengthened by ecopedagogics through contextual learning (Casmara et al., 2022). Gusmadi and Samsuri (2019) said that efforts to build a caring character for the environment are carried out through the ecological citizenship movement. Ecological citizenship involves empowering people to have the knowledge, skills, and attitudes to identify their values and goals with respect to the environment and act according to the best knowledge of choices and consequences (Berkowitz et al., 2005). The implementation of this program is a form of operationalisation of citizens' concern for environmental protection and sustainable development from the perspective of ecological citizenship (Prasetyo et al., 2019). The concept of ecological citizenship is a thought that is closely related to the ethical and moral procedures of citizens towards the environment (Dobson, 2007). It is driven by a radical change rooted in a radical transformation in worldview, followed by mental and behavioural changes reflected in the lifestyle of both individuals and cultural groups (Efriani et al., 2020).

## Method

This study employed a qualitative approach to a case study method, the reason being that the target of implementing the *Adiwiyata* program is formal education. Case studies had the advantage of providing space for naturalistic research that can be used to improve the subjectivity of participants (Lincoln & Guba, 1985). In addition, the case study method was an intensive and thorough method for disclosing the background, status, environmental interactions of specific individuals, groups, institutions, and communities (Miles, Huberman & Saldana, 2014). The case study method was in-depth and detailed to produce a longitudinal picture, namely the collection and analysis results within a period of time (Cresswell, 2014).

The study was conducted at *SMA Negeri 8 Pontianak* (<https://www.sman8ptk.sch.id>) located on Ampera Pal Lima Street, Pontianak Kota District, Pontianak, West Kalimantan, Indonesia. The school 6,500 m<sup>2</sup> land area owned by the Pontianak government. SMA (Senior High School) Negeri 8 Pontianak was established on 1 November 1999, with an "A" accreditation. This school is located in a strategic area near the main street, making it easy to access. However, although it is located close to the main street, the school building is designed to reduce noise pollution from vehicles. Parker et al., (2018b) reported that most *Adiwiyata* schools in Indonesia had not emphasised the aspects of social responsibility and pro-environmental behaviour sustainably in each of their subject themes. Moreover, the *Adiwiyata* is just an extracurricular and is separated from the school program and the curriculum (Parker et al., 2018; Tanu & Parker, 2018). Unlike other *Adiwiyata* schools, the *Adiwiyata* program at SMA Negeri 8 Pontianak does not only emphasise extra-curricular and school programs, but is also embedded in all curricula and subjects emphasising sustainable environmental values. In addition, SMA Negeri 8 Pontianak is the only school located in a city environment with a relatively large forest and land used for social facilities and public purposes. These are the reasons why the researchers chose SMA Negeri 8 Pontianak as the research location.

## Participants

Research participants consisted of three groups: principals, teachers and students, who participated in semi-structured interviews. Researchers used the purposive sampling technique to determine data sources. The reason was that extracting information related to the implementation of the *Adiwiyata* program required in-depth analysis, especially from school principals and members of *Adiwiyata*. The participant involvement was based on two reasons, including (a) willingness to participate; and (b) participating in the *Adiwiyata* program. There were 9 participants involved, including the school principal, *Adiwiyata* builder, *Adiwiyata* trainer, two teachers, and four students. Program *Adiwiyata* in this school has been running for about eight years since 2014. The allocation of time for the *Adiwiyata* program is carried out during school hours and outside school hours, divided into curricular and extracurricular activities according to school policy. The curricular activities are in the form of the teaching and learning process in the classroom embedded in the subject. Students get environmental materials integrated into school subjects such as chemistry, physics, biology, citizenship, geography, and other subjects such as

entrepreneurship education. Extracurricular activities are determined in the curriculum that the implementation is after the school hours with a time allocation of 3-4 hours per week. Its implementation is more of a practice that includes participatory-based environmental activities, which include making compost, utilising used goods that can be made into handicrafts, giving botanical names to trees, making planting media, and planting trees, flowers, and medicinal plants.

### Data collection

Data collection was carried out in April-May 2020. Data were collected through observation and structured interviews, in the form of in-depth interviews in Indonesian with school principals, *Adimiyata* coaches and trainers, teachers, with a duration ranging from 40 to 60 minutes. The research instrument was developed based on research questions. The researchers conducted a literature review of previous research and preliminary studies, including initial observations of the research location. The focus of interview questions for students related to ecological literacy, attitudes, and participation in implementing the *Adimiyata* program. The researchers administered the data collection focusing on the potential ethical issues that might arise (Creswell, 2015). The researchers also collected supporting documentation in the form of photos and archives from the implementation of the *Adimiyata* program as additional data.

Table 1: List of interviewees

No	Participant	Age years	Sex	Year of joining <i>Adimiyata</i>
1	School principal	55	M	2014
2	<i>Adimiyata</i> builder	41	F	2014
3	<i>Adimiyata</i> trainer	51	F	2014
4	Teacher A	51	M	2014
5	Teacher B	46	F	2014
6	Student A	17	F	2019
7	Student B	17	F	2019
8	Student C	17	F	2019
9	Student D	17	M	2019

### Data analysis

The technique of data analysis was carried out using an interactive model suggested by Miles & Saldana (2014) which includes data reduction, data presentation, conclusion drawing, and verification. Data reduction is made by grouping the data according to the aspects of the research problem. They are, furthermore, presenting the data in the form of a narrative presentation and interpretation of the research data obtained. After the data is displayed, the final step is to conclude continuously from the first time they go to the field until during the data collection process. With the increase in data, verification must be carried out by rethinking during the writing and reviewing existing data from field notes. Data verification is also carried out by asking for consideration from other parties related to the research and comparing the data collected obtained from specific sources with other sources, and making extensive efforts to place copies of other data findings until

conclusions are drawn. Suppose the conclusions put forward at the initial stage are supported by valid and consistent evidence when the researcher returns to the field to collect data. In that case, the conclusions put forward are credible. After that, the validity of the data was tested, which is an essential part of the research. The data validity is the standard of truth of a research data that emphasises more on the data than on the attitude and number of people (Miles, Huberman & Saldana, 2014; Suter et al., 2011). The validity test was carried out by testing the credibility of the data through triangulation.

## Findings and discussion

### Students' understanding and perceptions of *Adiwiyata*

The implementation of program *Adiwiyata* is carried out through several stages: planning, conducting socialisation to residents' schools, designing work programs, and conducting evaluations. By involving all stakeholders, including school committees, principals, the person in charge of the *Adiwiyata* program, teachers, students, and students' parents. The *Adiwiyata* program has a strategic role in increasing environmental awareness, creating a healthy environment, and avoiding negative environmental impacts. Students' understanding of the *Adiwiyata* program can be seen through the way students protect the environment, starting from how to dispose of waste properly, how to process waste into a product, how to take care of plants, how to save energy sources, until how to keep the classroom and the environment clean. Students who have a good understanding of environmental education will be able to be fostered to make environmental care attitudes a culture (Pratiwi et al., 2020).

Students' understanding of the *Adiwiyata* program is formed through classroom learning activities in accordance with an environmentally friendly curriculum. Teachers carry out learning through various methods, techniques, and learning strategies. Students are directed to always be active in the learning process using various ways such as discussions, presentations, and field practice. It is used to provide an overview of environmental problems and issues globally. The teacher invites students to think critically to solve current environmental problems such as global warming, floods, and the efficient use of plastic waste. Lessons related to environmental education should be taught through an interdisciplinary, thematic, and project-based approach (Velempini et al., 2018). Not only that, but all subjects in this school also focus on environmental and ecosystem sustainability aspects. For example, in entrepreneurship education, students are asked to make handicraft assignments from waste paper, plastic, and used bottles into a product that has a use-value. In civic education, every discussion is always associated with pro-environmental values and characters. For example, the emphasis of nationalism for Indonesian citizens is not only on us defending the country by fighting wars but also on protecting the land, water, and the surrounding environment, including loving the country. According to one teacher:

Students' understanding is limited to understanding anthropocentrism in understanding nationalism and the environment. This causes many students to think that nature and the environment are only limited to meeting human needs and interests. In fact, the primary support for the state to continue to exist is the maintained nature and ecology. Therefore, the *Adiwiyata* program at this school always emphasises that every subject is integrated into socially responsible pro-environmental values (Teacher A)

The *Adiwiyata* as a comprehensive program has positively impacted the school culture and school members, especially students. In addition to impacting the residents, the implementation of the *Adiwiyata* program itself has an impact on the school environment. The perceived impact is that the school environment becomes cleaner, more beautiful, healthy, and comfortable. These environmental conditions bring happiness and comfort to the school stakeholders when they are at school because a clean and healthy school environment describes a condition where all components of the school environment are balanced. It also indicates a significant balance between the carrying capacity and capacity and the availability of facilities as well as infrastructure in the school environment. As stated by the school principal:

The benefits felt by the *Adiwiyata* program are that the environment is greener, more beautiful, and cleaner. We fostered the students to be disciplined by introducing increased savings in sources of funds by reducing resources and energy, such as turning off lights when not in use and a slogan in every restroom that says turn off the faucet if it is running. We always teach students to be frugal in using energy sources. This program also changes the behaviour of school residents, especially students, to carry out a culture of environmental preservation. We even emphasise the importance of environmental issues and social responsibility as part of our efforts to internalise our pro-environmental character (school principal of SMA 8 Pontianak)

The *Adiwiyata* program also has an impact on student behaviour. Where the level of awareness of students in maintaining environmental cleanliness has increased, and student participation in participating in environmental management activities in schools has been good. As expressed by a student:

We are pleased with the current condition of the school environment; it looks greener and beautiful to see. This program increases our knowledge and trains us to manage the environment, such as composting, recycling used goods into useful and selling items, etc. Moreover, waste reduction and plastic recycling are innovations to reduce environmental pollution. We are always invited to protect forests, nature and the environment from chemicals because without nature and humans, each other is continuous (Student A)

Students' environmental awareness is influenced by several factors, including (1) knowledge; (2) humanitarian; (3) poverty; (4) lifestyle. Of the four factors that are very dominant in influencing environmental awareness is knowledge. In creating environmental awareness, it needs to rely on knowledge about the environment that can be independently obtained or through learning (Munawar et al., 2019). Being knowledgeable to be conscious is not instant. There has to be a balance with actual actions practised directly through positive habits to protect the environment. Different from other *Adiwiyata* schools, the school uses the motto *LISAMBUNG* which stands for "*Lihat*

*sampah langsung buang*’ or throw the trash into the trash can when you see it. This motto is always applied when meeting students who litter, and is reminded at every flag ceremony. Through the motto *LISAMBUNG*, students are expected to have a sense of ownership of the environment. Because those who have high environmental awareness can be seen from the knowledge they have, the way they react, and their behaviour towards the environment (Prasetyo et al., 2019a). This is done to remind students at all times to become a habit and social responsibility. Sanctions are also given to students who litter. Each class should send student representatives to become the *Adiwiyata* candidates who promote the program to their classmates. This is where the roles of teachers and students work together to build a pro-environmental culture. According to the teacher, social responsibility for the environment does not apply only to the government and industry; the community and students must also be able to solve these environmental problems. Therefore, students must be equipped with knowledge and information about global environmental issues. A similar statement was also made by the students who said:

We are always encouraged to maintain the cleanliness of the environment around the school. This appeal was conveyed during the flag ceremony, and every teacher also always reminded us to check the cleanliness of the desk drawers and surrounding areas. Even when the learning hours had not started, we had to do the daily cleanliness duty. Collecting used goods for recycling, we are given a school assignment to identify environmental problems around our homes and then make innovations to get solutions. In addition, we are required to plant plants in each of our homes and even make mini biopori in front of the house (Student D)

Socialisation is always carried out to students about the environmental culture movement and involves students in workshop activities related to the *Adiwiyata* program. Every year, the school elects an Environmental Ambassador to be the school's environmental icon. Environmental ambassador assessment includes insight, skills, and good interaction skills. Environmental ambassadors have a role in transferring environmental knowledge, participating in the planning, implementing, and promoting Environmental Education (EE) (Cheung et al., 2018). The existence of Environmental Ambassadors in schools is expected to prepare the next generation to be capable and participative in managing the environment.

### **Contribution of *Adiwiyata* in shaping students' pro-environmental behaviour and social responsibility**

The *Adiwiyata*, as an environmental education program, teaches always to protect the environment. The students are taught not to take, cut or uproot plants found along the way, throw garbage in its place, plant trees, reduce plastic use, manage waste according to its type, reduce carbon emissions, and save as much energy as possible. The positive habits taught by the program are a manifestation of social responsibility that shows individual awareness of both intentional and unintentional actions that impact social life. The formation of student social responsibility in schools is carried out through four *Adiwiyata* sub-programs.



The first sub-program is the maintenance and care of the school building environment, including classroom cleanliness pickets, garden maintenance by each class, collection of organic and inorganic waste, maintenance of teacher and student toilets, maintenance of flower pots, maintenance of school glass and walls, maintenance of school gutters, maintenance of a healthy canteen (Table 2). The second one is the use of land and school facilities, including the management of organic waste into compost, used goods into handicrafts, ponds for fish rearing, greenhouses, and ponds use of the school environment for learning facilities. The third is the development of environmental extracurricular activities, including making compost, filling compost fertiliser into pots, loosening the soil to be planted with flowers, and giving botanical names to trees and plants. As depicted in Figure 1, students put ready-made compost into a barrel which will later be used as a planting medium for vegetables and other plants. The advantage of using compost is that it is cheaper and is more environmentally friendly than chemical fertilisers sold on the market. Besides, compost contains nutrients that can improve soil physical properties and soil microbiology (Sulaeman et al., 2017). In addition, there are various benefits of compost, such as producing good and fertile plants, reducing the effects of greenhouse gases and climate change, and maintaining water and soil quality (Wihardjaka, 2021).



Figure 1: The process of putting compost fertiliser into the barrel

The fourth is environmental care activities inside and outside the school to commemorate the environmental day. In this case, students participate in the *Movement for Environmental Care and Culture in Schools*, a conscious, voluntary, networked, and sustainable joint action carried out by schools to implement environmentally friendly behaviour (Chan et al., 2019). From Figure 2, it can be seen that students' enthusiasm for participating in environmental care actions indicates that they already have a sense of responsibility and

consider themselves part of nature to maintain the balance of the ecosystem for its survival. This occasion at the same time rejects the view that humans are not part of nature, so they are free to carry out significant exploitation without thinking about the long-term effects that result in environmental damage (Wulandari, 2016). Student participation in environmental care actions outside of school increases self-actualisation through activities that lead to direct action in the field (seeing, studying, and taking concrete actions in realising the subject of nature conservation or conservation) (Parker et al., 2018). Thus, participatory-based environmental activities allow students to learn about the values of ecological awareness so that they can become agents of change that are more oriented towards environmental sustainability (Prasetyo et al, 2020).



Figure 2. Tree Planting along the *Jawi* River

The school enforces rules for students to bring their own tumblers and places to eat. This action is aimed at reducing the volume of plastic waste. Students also use inorganic waste in valuable innovative products, such as using used bottles as planting media, hanging pots, and making costumes from plastic and used newspapers. Students also take used cloth, sparrows, soap and sticks to make crafts such as vases, tissue boxes, flowers, baskets, etc. The implementation of the *Adiwiyata* program is not limited only to green environmental engineering but is also energy efficient by urging all school members to save energy by turning off lights and equipment when not in use, turning off water taps when not in use, and turning off unnecessary electricity. This shows that environmental education through the *Adiwiyata* program is more than a theoretical description given to students; it is concrete by doing, acting, and taking part directly in the actual situation. As

a result, the *Adiwiyata* program is proven to develop students' skills to maintain the environment. The program has successfully created individuals who build a good and healthy living environment accompanied by awareness, knowledge, and attitudes in decision making, positive actions that lead to solving problems. These positive habits must be carried out continuously and in synergy to form a strong character.

Table 2: The results of the 4 sub-programs of *Adiwiyata*

<i>Adiwiyata</i> sub-programs	Activity	Attainment	Result
School building maintenance and care	Class cleaning duty Garden maintenance by each class Collecting organic and inorganic waste Maintain the cleanliness of teacher and student toilets Flowerpot maintenance School mirrors and walls maintenance School gutter maintenance Maintaining the cleanliness of the canteen	Students carried out 8 maintenance tasks in the school building and environment	The result of these activities is that the school environment becomes clean, beautiful, and green because it has various types of plants (trees, flowers) shady, fertile, and neat.
Use of land and school facilities	Using organic waste for compost Making handicraft items from used goods Use of ponds for fish maintenance Using green houses Using the school environment for learning facilities	Students carry out 5 land-use activities and school facilities in accordance with the principles of environmental protection and management	This activity results make students know of good and correct environmental management and create a learning atmosphere that blends with nature.
Environmental extracurricular activities development	Environmental extracurricular	Students participate in environmental extracurricular held every Friday at 13.30-16.30 attended by students of 10th, 11th and 12th grades. Each class is required to send representatives to take part in environmental extracurriculars.	Environmental extracurricular activities in environmental management such as making compost, filling compost fertiliser into pots, loosening the soil to be planted with flowers, giving botanical names to trees and plants.
Environmental care action activities at school and outside the school environment	<i>Hilo green community park with a waste free theme</i> Planting trees along <i>Jawi</i> river (a river near the school) to reforest Pontianak city	Students actively participate in environmental activities carried out in the school environment and outside the school environment.	Actualising responsible school community behaviour in efforts to preserve environmental functions.

Table 2 shows the final result of this *Adimiyata* program as a change in behaviour, especially in students (Indahri, 2020). Changes in behaviour shown by students at Senior High School Pontianak can be seen through students' actions and participation in pro-environmental activities at school, as shown in Table 2. This shows that students have built a relationship with nature by treating nature not as it is but as it should be. Spending some time with nature will have a positive impact on student development (Staples et al., 2019). The developed programs and activities are based on fundamental living norms, including togetherness, openness, honesty, justice, and the preservation of the function of the environment and natural resources. Adhering to these basic norms becomes a source of strength to build environmentally cultured school institutions. As stated by the *Adimiyata* trainer:

Implementing the *Adimiyata* program aims to create conditions in the school environment to become a comfortable learning place for school residents, especially students. It involves learning about the values of good and correct environmental maintenance and management for school residents and the surrounding community (*Adimiyata* trainer)

The *Adimiyata* program as a vehicle for education for sustainable development is under the coordination and responsibility of the Ministry of Environment (KLH) and is a national scale program managed to actualise the development of environmental education (Prasetyo & Hariyanto, 2017). Environmental education is an important factor in changing lifestyles to simultaneously improve the environment. The learning process in schools has been formulated based on *Adimiyata* aspects, including environmentally friendly policies, implementation of environmentally-based curriculum, participatory-based environmental activities, management of environmentally friendly supporting facilities and infrastructure, and *educotourism* with educative, participatory, and sustainable principles (Siswanto et al., 2019). Through educational principles, students are trained to be sensitive to the surrounding situation and prioritise educational values and character development to love the environment in the school environment, at home, and in the broader community. As stated by the builder of *Adimiyata*:

Environmental education such as *Adimiyata* will be more meaningful if it develops students' sense of concern for nature in a fun way and is embedded in students' memories. Therefore, the teacher's role in educating and helping students is very important. The task of a teacher is not only teaching compulsory subjects at school. However, teachers can also competently create a learning atmosphere that blends with nature. With the school's mission to empower teachers, all school components are trained and fostered in a planned and sustainable manner to develop skills related to teaching skills in discipline, management, and leadership (*Adimiyata* builder)

The participatory principle in the *Adimiyata* program is that the school community is involved in school management which includes the entire planning, implementation, and evaluation process according to the responsibilities of their respective roles. In this case, all school members, including students, teachers, administrative, and security personnel, must actively participate in realising an environmentally cultured school. The principle of

sustainability is an essential concern for schools. School policies in the *Adiwiyata* program are long-term programs until they become a school's hallmark.

The *Adiwiyata* program development is supported by a budget allocation for environmental education development activities. Schools set policies regarding the use of budgets, with as much as 20% of the total of 86 school budgets being for environmental activities. These activities can be in the form of tree planting, cleaning actions in the school environment, as well as capacity building related to environmental conservation and management for school staff, both teaching, and school administrative staff. In supporting the *Adiwiyata* program, the school also provides environmentally-friendly facilities to overcome environmental problems and support learning.

The school's supporting facilities and infrastructure include classrooms, teachers' room, principal's room, counselling guidance room, administration room, living room, student council room, extracurricular room, craft art room, mosque, student health-care unit, library, laboratory, hall, parking area, field, toilets, trash cans, places to take ablution water, and sinks. Meanwhile, the supporting facilities and infrastructure for environmental learning include nursery houses, fish ponds, infiltration wells, *biopore*, gardens, healthy canteen. A healthy canteen in schools is to meet the food and drink needs of students and be used as the media to educate students about health, cleanliness, honesty, mutual respect, discipline, and other values (Usmi & Murdiono, 2021). From here lies the importance of school canteen management as one of the substances of school management. The healthy canteen at Senior High School in Pontianak has received attention from school management through the implementation of special canteen services following the decision of the Ministry of Health regarding guidelines for implementing healthy schools and consistently continuing to implement programs that support the creation of a healthy and clean school environment to create intelligent students in teaching and learning activities.

In sum, the *Adiwiyata* program emphasises the formation of a caring character for the environment and also the formation of social character. The social character formed in students will equip them to live side by side with love, mutual respect, cooperation, peace, and concern for each other and the surrounding environment. Through collective awareness and concrete actions that are formed from an early age in maintaining and overcoming environmental problems, negative environmental impacts can be avoided in the future.

## Conclusion

The formation of pro-environmental behaviour and student social responsibility in the school environment requires encouragement and commitment from all school members. This study shows that the *Adiwiyata* program has succeeded in developing environmental insight and students' skills in protecting and preserving the environment. Therefore, environmental insight and student skills need to be formed through positive habits in participatory-based environmental activities and supported by school learning. Each

subject has been integrated into socially responsible pro-environmental values. The results of this study are expected to support students in realising and practising an attitude of caring for the environment, because students as educated people must be able to set good examples for the surrounding environment, namely in schools, families and community.

### Limitations and future research

The study has limitations related to the sample size because it is limited to only one school, so it cannot be generalised to a broader population. Future research is expected to use a more prominent and broader sample to obtain better and more generalisable research results. The research was conducted qualitatively and used primary data obtained through in-depth interviews. The limitations of this study include the researcher's subjectivity, where there is a tendency to bias. Therefore, triangulation of sources was carried out by cross-checking data from facts from different informants using various data collection methods, namely interviews and observations.

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## **Appendix 1: Semi-structured interviews [English translations]**

### **Student interviews guidelines**

1. How do you feel about the Adiwiyata program implemented in your school?
2. Are there any activities of environmental management in SMA Negeri 8 Pontianak?
3. Do you always participate in environmental activities inside and outside of the school?
4. What facilities and infrastructure are provided to support the implementation of the Adiwiyata program?
5. Are there particular subjects regarding the environmental matter?
6. What do you know about the facilities and infrastructure provided by the school in supporting the implementation of the Adiwiyata program?
7. What kind of innovative products are produced by the students during the Adiwiyata program?
8. What benefits do you feel after joining the Adiwiyata program?

### **Principal, Adiwiyata trainer and teacher interviews guidelines**

1. How is the Adiwiyata program implemented in SMA Negeri 8 Pontianak?
2. Where are the sources of funding for the Adiwiyata program? Is the funding mechanism working well?
3. Are the school subjects integrated with the environmental matter?
4. Who have been involved in the Adiwiyata program?
5. Do teachers, students, committees, and parents get any socialization towards the Adiwiyata program?
6. What are the targets that have been achieved in implementing the Adiwiyata program?
7. Does the school participate in environmental actions carried out by outsiders?
8. Does the school already have adequate facilities and infrastructure to carry out the Adiwiyata program?
9. Are there any obstacles in the implementation of the Adiwiyata program?
10. Is there a significant difference before and after the Adiwiyata program in students' awareness of protecting the environment?

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**Please cite as:** Sulistyarini, Komalasari, A., Dewantara, J. A., Prasetyo, W. H., Rahmanic, E. F. & Martono (2022). Futures for pro-environment and social responsibility activities in Indonesian schools: An *Adiviyata* case study. *Issues in Educational Research*, 32(2), 746-764. <http://www.iier.org.au/iier32/sulistyarini.pdf>