**Jurnal Ilmu Sosial dan Pendidikan (JISIP)**
Vol. 9 No. 3 Juli 2025
*e-ISSN : 2656-6753, p-ISSN: 2598-9944*
DOI: *10.36312/jisip.v9i3.9050/http://ejournal.mandalanursa.org/index.php/JISIP/index*

# Innovation Strategy of SMA Batik 1 Surakarta in Developing Adiwiyata on Limited Green Land

**Nur Aliya Widya Putri[1], Putri Dian Puspita[2], Talitha Nabila Salma[3]**
Sociology Anthropology Education Study Program, Sebelas Maret University

**Article Info**
***Article history:***
Received: 23 June 2025
Publish: 1 July 2025

***Keywords:***
*Adiwiyata;*
*Eco Mapping;*
*Schoo; Innovation;*
*Limited Land;*
*Environmental Education.*

**Abstract**
*SMA Batik 1 Surakarta developed an adiwiyata program despite having limited green space. In a dense urban context with minimal open space, this school is able to prove that physical limitations do not hinder commitment to environmental education. Through a descriptive qualitative approach, data were obtained from in-depth interviews, observations, and documentation of teachers and students. The results showed that the school implemented various innovative, creative strategies, such as vertical gardens from recycled plastic bottles, utilization of used ablution water for the eco mapping program every Friday. These activities actively involve students in structuring the school environment and greening efforts, in line with the participatory and sustainable principles in Adiwiyata as well as strengthening the character values of Pancasila students. Environmental values are also integrated in subjects such as Biology and Sociology, and extended to the community through the distribution of plant seeds. School members as agents are able to produce and develop environmental education structures creatively and reflectively. The success of the Adiwiyata program is not determined by land area, but by the synergy between agents and structures that encourage the creation of an ecological and sustainable school culture. This research is an important reference for urban schools facing similar challenges.*



***Corresponding Author:***
Syifana Nur Alifah,
Universitas Negeri Semarang
Email: syifana@students.unnes.ac.id

## 1. INTRODUCTION

Environmental damage today is not only caused by natural events, but is more often caused by human activities themselves. Real examples of environmental damage that are increasingly occurring include water, soil, and air pollution due to uncontrolled industrial waste disposal, excessive use of pesticides, diverting forest functions to settlements, flooding, reduced green open spaces, disrupted ecosystem balance, environmental quality degradation, reduced groundwater discharge, illegal logging, air pollution, and increased waste volume. Humans and the environment have a relationship that influences each other and cannot be separated. The environment includes everything that is around living things, both humans and other creatures, has complex relationships and interactions between its components [1].

In Indonesia, one of the government programs to support environmental-based education is the Adiwiyata School program. This program aims to encourage the creation of schools that care about and have an environmental culture. One form of implementation of Environmental Education (PLH) in schools can be done through the Adiwiyata program. This program is a form of appreciation from the government to schools that have consistently implemented environmentally aware education. The main objective is to create

school residents who are responsible for protecting and managing the environment, through good school governance as part of supporting sustainable development. Adiwiyata carries the principle of participatory and sustainable [1], and is implemented through four main components, namely environmentally aware policies, implementation of environmentally based curriculum, participatory environmental activities, and environmentally friendly supporting facilities.

However, the implementation of the above program does not always run smoothly, especially for schools that have limited facilities, such as minimal green land. SMA Batik 1 Surakarta is one of the schools that faces this challenge. With limited land, schools are required to carry out various innovations in order to continue to develop the Adiwiyata program optimally.

Research by Muh Nur Islam Nurdin et al. (2023) shows that one of the main problems faced by schools is the lack of special funds for the Adiwiyata program, making it difficult for schools to develop the program further [2]. Meanwhile, a study by Irlansari & Hardati (2019) highlighted that the implementation of an environmental-based curriculum can achieve high criteria because environmental learning is integrated into all subjects [3]. On the other hand, the same study also revealed that the results of participatory environmental activities were still moderate. This is because the use of land and school facilities as learning media has not been maximized and student participation in several activities is still lacking. However, there has not been much research that specifically examines innovation strategies in schools with limited land, especially at SMA Batik 1 Surakarta.

In many educational institutions with limited land, the implementation of environmental-based components such as tree planting or garden management is often hampered. In fact, Adiwiyata schools generally utilize green open spaces (RTH) for planting activities, waste management, and ecosystem learning [4]. SMA Batik 1 Surakarta proves that limited land is not an obstacle to implementing the Adiwiyata program optimally. Through an approach based on daily habits, such as the Clean Friday program, eco-mapping, and management of ablution water that flows into the pool, this school has succeeded in increasing student participation in environmental activities in a sustainable manner.

Based on the above problems, this study aims to examine innovative strategies of schools in developing Adiwiyata amidst limited green land. By analyzing the creative curriculum approach, utilization of technology, and collaboration between stakeholders, this study is expected to be a reference for urban schools to continue to contribute to sustainable development. These findings will also enrich academic discussions on the flexibility of environmental programs in responding to dynamic spatial and social challenges.

## 2. RESEARCH METHODS

This study uses a qualitative research method with a descriptive narrative approach. The aim is to understand the social phenomena that occur as a whole by describing and analyzing the behavior, events, and views of a person both individually and in groups [5]. Data collection was carried out through semi-structured interview techniques with teachers who are responsible as the head of Adiwiyata, extracurricular eco mapping teachers, and students at SMA Batik 1 Surakarta.

Interviews were conducted directly as a means to explore the thoughts, experiences, and perceptions of informants directly, especially those related to the topic being researched (Suriani, & Jailani, 2023) (Jailani, 2023). In addition to interviews to obtain information related to the Adiwiyata program, eco mapping, and student involvement in protecting the environment, researchers also conducted observations. Observations help researchers

obtain additional information such as behavior and interactions that may not have been revealed during interviews [7].

Researchers also collect documents such as notes, photos, and other archives related to the research topic. This study uses data analysis using the Miles Huberman model, namely data reduction, data presentation, and drawing conclusions [8]. The interview results are transcribed as part of the data reduction to make them easier to understand. Data related to eco mapping and Adiwiyata are presented in narrative form to facilitate understanding. After collection, researchers review and present important information about the Adiwiyata program and eco mapping. Through this method, in the final stage researchers can draw conclusions that describe the innovation of SMA Batik 1 Surakarta in developing Adiwiyata in limited green areas.

## 3. RESULTS AND DISCUSSION

Researchers also collect documents such as notes, photos, and other archives related to the research topic. This study uses data analysis using the Miles Huberman model, namely data reduction, data presentation, and drawing conclusions (Thalib, 2022). The interview results are transcribed as part of the data reduction to make them easier to understand. Data related to eco mapping and Adiwiyata are presented in narrative form to facilitate understanding. After collection, researchers review and present important information about the Adiwiyata program and eco mapping. Through this method, in the final stage researchers can draw conclusions that describe the innovation of SMA Batik 1 Surakarta in developing Adiwiyata in limited green areas.

SMA Batik 1 Surakarta faces a real challenge in implementing the Adiwiyata program, namely the limited green open space. This school is located in a dense urban environment with a dominance of physical buildings as well as narrow space for movement and very limited green space. However, this challenge actually triggers the emergence of various innovations and strategies carried out by school residents to be able to create a green, healthy, and sustainable learning environment. This condition is very appropriate if analyzed using the Structuration Theory by Anthony Giddens (1984), which states that agents, both individuals and groups, are not solely limited by structure, but also have the ability to change and reproduce structures through their own social practices Anthony Giddens (1984) (Herry-Priyono, 2016).

In the context of SMA Batik 1 Surakarta, educational actors such as the principal, teachers, and students act as active agents who utilize a school policy structure and also the national curriculum (especially the Adiwiyata program and the Merdeka curriculum) to be able to create an innovative solution. Giddens states that the structure consists of rules and resources, and in social practice, agents can act reflectively to be able to use the innovative structure carried out by SMA Batik 1 Surakarta [9]

One of the most prominent innovations is the development of vertical gardens on empty school walls so that the air in the school area remains cool and feels beautiful. The planting media used are recycled plastic bottles, small pots, and wooden shelves arranged in tiers. This innovation is in line with 3R-based waste management (Reduce, Reuse, Recycle) which is implemented through awareness, critical thinking, and real action [10]. In addition to reducing plastic waste, it also provides added educational value for students. In addition, schools also manage paper waste by collecting and recycling it as part of integrated waste management efforts in the Adiwiyata program. This innovation not only addresses the limitations of horizontal land but also functions as an ecological learning medium for students [11].

This approach is very similar to what was done at SMA Negeri 13 Padang, according to Herawatidkk, (2019), before the intervention, only 16% of participants understood the

vertical garden technique, but after the demonstration and training, 80% were able to implement it in their respective classes Herawati dkk. (2019). This finding is in line with the results of research by Azmi & Elfyetti (2012) which shows that active involvement of students in the Adiwiyata program can form a strong attitude of caring for the environment, where 77.90% of students showed an attitude of caring in the good category Azmi & Elfyetti (2012).

The above research shows how individuals in schools such as teachers, students, principals, and so on are able to reconstruct structural limitations into educational opportunities. An innovative approach like this also strengthens the findings of Aini (2014) that good mastery of environmental concepts must be accompanied by relevant contextual practices in the school environment so that caring attitudes can be significantly improved Aini (2014). In addition, the school also utilizes narrow spaces to create fish ponds from used ablution water. Water that was previously only thrown away is now part of a mini ecosystem that has aesthetic and functional value at the same time. This is a form of structural engineering that describes a reflective practice as stated in the structuration theory [15].

Another innovation is the eco mapping program which is routinely carried out every Friday. Eco mapping is expected to be a creative method to be able to manage the environment and a learning model that involves all elements of the school, especially teachers and students [16]. In this activity, students map areas prone to waste, potential land for greening, and recycling opportunities in the school environment. Eco mapping is not just a physical activity, but also an active learning process based on real contexts. Students are invited to identify environmental problems and also design solutions that can be implemented directly. This activity is in line with the principles of the Pancasila student profile strengthening project (P5), which integrates character values into students such as mutual cooperation, independence, and sustainability in the education process [NO_PRINTED_FORM] [17].

Through Giddens' theory, eco mapping activities can be read as a result of the dialectic between structure and agency. Students as agents, not only become an object of the Adiwiyata policy, but also become an active subject who consciously takes a role in maintaining an environment. They will not only plant or water plants, but can also develop an environmental mindset that is manifested in daily habits, such as turning off the water tap, sorting waste, or using used bottles as planting media. This is a form of internalization of ecological values in everyday social practices (Herry-Priyono, 2016). Adiwiyata activities are also holistically integrated with school subjects. Biology teachers, for example, link ecosystem materials and recycling with the practice of making compost from organic waste. This is in accordance with the opinion of Pahru, Akbar, and Hitipeuw (2020) that the success of environmental education lies in the synergy between policies, the role of teachers as agents, and concrete habits through Adiwiyata activities in schools Pahru, Akbar, dan Hitipeuw (2020).

In addition, the innovation of the Adiwiyata program at SMA Batik 1 Surakarta also extends to the surrounding community. The school distributes plant seeds to parents of students to be planted at home. This not only expands the green space physically, but also expands the space of influence socially through active community participation. Thus, the educational structure is expanded and reproduced beyond the core boundaries in the school program showing that agents outside the school structure can also be formally relational. This can strengthen Giddens' thesis that structures are always created and also observed through repeated social practices. (Field Notes, 2025).

Despite the various limitations still faced by SMA Batik 1 Surakarta, such as limited time to carry out environmental activities and challenges in regenerating environmental

cadres, the enthusiasm and determination of students and teachers remain the main strength. Efforts made by the school in collaborating with external parties, such as the planned collaboration with Le Mineral for a recycling program. This collaboration not only shows an effective partnership strategy, but also reflects the school's commitment to building a holistic and sustainable sustainability program, which is in line with the principles of environmental education that require synergy between stakeholders to achieve optimal results [19].

Finally, the lesson that can be learned from the innovation strategy of SMA Batik 1 Surakarta is that the success of the Adiwiyata program does not depend on the size of open land, but on how structures and agents can work synergistically. By utilizing school policies, curriculum integration, and active participation of all school residents, SMA Batik 1 Surakarta is able to form an ecological, adaptive and sustainable school culture.

Picture 1. Eco Mapping

Through the implementation of eco mapping in schools, it is hoped that there will be an integration and collaboration of creative methods to be able to manage the environment and also a learning model that involves all elements of the school, especially teachers and students, to become an appropriate, fun and relevant learning strategy for students' lives [20].

## 4. CONCLUSION

From the research conducted at SMA Batik 1 Surakarta, it shows that the limited green space in a dense urban environment does not prevent schools from developing the Adiwiyata program. SMA Batik 1 Surakarta has succeeded in optimizing this program through various creative innovations such as vertical gardens from recycled plastic bottles, utilizing used ablution water to be channeled into fish ponds, and implementing an eco mapping program that actively involves students. These innovations not only answer the challenge of limited space, but also strengthen the character values of Pancasila students through contextual learning. Environmental values are integrated into subjects, such as Biology and Sociology, and extended to the community through the distribution of plant seeds. Despite facing challenges such as limited time and regeneration of environmental cadres, the enthusiasm and commitment of the school community remains high. The success of the Adiwiyata program at SMA Batik 1 Surakarta is not determined by the area of land, but by the enthusiasm, involvement of all school residents in protecting the environment and the innovations carried out. Through a creative approach and collaboration between teachers, students, and work plans with external institutions, this

school has succeeded in creating an ecological, participatory, and sustainable school culture.

## 5. ACKNOWLEDGEMENT

Alhamdulillah, with the permission of Allah I can complete the research with the following article output. Thank you to the entire team who have worked well. Thank you to all parties who have contributed to the course of this research. May goodness and blessings always accompany us.

## 6. BIBLIOGRAPHY

[1] Kadorodasih, "IMPLEMENTASI PENDIDIKAN LINGKUNGAN HIDUP MELALUI PROGRAM ADIWIYATA DI SD N GIWANGAN YOGYAKARTA THE IMPLEMENTATION OF ENVIRONMENTAL EDUCATION THROUGH ADIWIYATA PROGRAM IN ELEMENTARY SCHOOL OF GIWANGAN YOGYAKARTA," 2017.

[2] M. N. I. Nurdin, E. Munastiwi, and J. Sari, "Problematika Progam Adiwiyata Sekolah: Studi Kasus Pada MAN Pangkep Kabupaten Pangkep," 2023. [Online]. Available: https://jurnaldidaktika.org527

[3] A. Irlansari and P. Hardati, "Indonesian Journal of Conservation," 2019. [Online]. Available: http://journal.unnes.ac.id/nju/index.php/ijc

[4] D. T. Yenti, Z. Saam, and Y. I. Siregar, "STRATEGI PENGELOLAAN LINGKUNGAN DALAM MENDUKUNG SEKOLAH ADIWIYATA NASIONAL DI SEKOLAH MENENGAH KEJURUAN (SMK) KEHUTANAN NEGERI PEKANBARU," 2020.

[5] M. Waruwu, "Pendekatan Penelitian Kualitatif: Konsep, Prosedur, Kelebihan dan Peran di Bidang Pendidikan," 2024. [Online]. Available: https://afeksi.id/jurnal/index.php/afeksi/

[6] N. Suriani, Risnita, and M. , S. Jailani, "Konsep Populasi dan Sampling Serta Pemilihan Partisipan Ditinjau Dari Penelitian Ilmiah Pendidikan," 2023. [Online]. Available: http://ejournal.yayasanpendidikandzurriyatulquran.id/index.php/ihsan

[7] N. Dahlia, "Studi tentang Proses Pengembangan Koleksi pada Perpustakaan STITMA Yogyakarta," vol. 9, pp. 14–16, 2021, [Online]. Available: http://ejournal.unp.ac.id/index.php/iipk/index

[8] M. A. Thalib, "Pelatihan Analisis Data Model Miles dan Huberman untuk Riset Akuntansi Budaya," *Jurnal Pengabdian Ilmiah*, vol. 5, no. 1, pp. 23–33, 2022.

[9] B. Herry-Priyono, "Anthony Giddens: Suatu Pengantar," 2016.

[10] W. Purnami, "Pengelolaan Sampah di Lingkungan Sekolah untuk Meningkatkan Kesadaran Ekologi Siswa," *INKUIRI: Jurnal Pendidikan IPA*, vol. 9, no. 2, p. 119, Apr. 2021, doi: 10.20961/inkuiri.v9i2.50083.

[11] I. Darmawan, A. Rahmatulloh, R. Gunawan, R. Rizal, and V. T. Manik, "SOSIALISASI DAN PELATIHAN APLIKASI ECO-MAPPING UNTUK MENDUKUNG PELESTARIAN LINGKUNGAN DI SEKOLAH," *Jurnal Pengabdian masyarakat teknoyasa*, vol. 4, no. 2, p. 229, 2023, [Online]. Available: http://journals2.ums.ac.id/index.php/abditeknoyasa/

[12] N. Herawati, S. P. Hasibuan, E. Resigia, Z. Syarif, and T. B. Prasetyo, "Warta Pengabdian Andalas Diseminasi Agroteknologi melalui Vertical Garden dalam Mewujudkan Program Adiwiyata di SMA Negeri 13 Padang," vol. 26, pp. 239–245, 2019, doi: 10.25077/jwa.26.4.a.239-245.2019.

[13] F. Azmi and Elfyetti, "ANALISIS SIKAP PEDULI LINGKUNGAN SISWA MELALUI PROGRAM ADIWIYATA DI SMA NEGERI 1 MEDAN," 2017.

[14] M. H. Aini, F. Rachmadiarti, and M. S. Prastiwi, "PENGUASAAN KONSEP LINGKUNGAN DAN SIKAP PEDULI LINGKUNGAN SISWA SMA ADIWIYATA MANDIRI DI KABUPATEN MOJOKERTO STUDENTS' ENVIRONMENTAL CONCEPT MASTERY AND CARING ATTITUDES AT ADIWIYATA MANDIRI SENIOR HIGH SCHOOL IN MOJOKERTO," 2014, [Online]. Available: http://ejournal.unesa.ac.id/index.php/bioedu

[15] Kementerian Lingkungan Hidup dan Kehutanan, "Panduan Umum Program Adiwiyata," 2020.

[16] C. W. Purwanti, H. Suwono, and Ibrohim, "Jurnal Penelitian Pendidikan Matematika dan Sains," 2018. [Online]. Available: http://journal.unesa.ac.id/index.php/jppms/

[17] K. Jayani *et al.*, "OPTIMALISASI LAHAN SEKOLAH MELALUI HIDROPONIK DI SDN 01 BUARAN SEBAGAI BAGIAN DARI PENGEMBANGAN PROGRAM ADIWIYATA," 2024, [Online]. Available: http://jurnal.umj.ac.id/index.php/semnaskat

[18] S. Pahru, S. Akbar, and I. Hitipeuw, "Pelaksanaan Program Adiwiyata dalam Mendukung Pembentukan Karakter Peduli Lingkungan," 2021. [Online]. Available: http://journal.um.ac.id/index.php/jptpp/

[19] H. Apriliani, G. Pawitan, and P. Suratman, "Systematic Literature Review: Analisis Collaborative Governance Dalam Program Adiwiyata Sekolah," *Jurnal Ilmiah Pendidikan Lingkungan dan Pembangunan*, vol. 24, no. 02, pp. 36–54, Jan. 2024, doi: 10.21009/plpb.v24i02.32857.

[20] W. Prihanta, E. Purwanti, M. Muizzudin, and E. Cahyono, "Menanamkan Literasi Lingkungan pada Peserta Didik Sekolah Dasar melalui Spesific Program : Eco-Mapping," *Nuras : Jurnal Pengabdian Kepada Masyarakat*, vol. 1, no. 1, pp. 39–46, Oct. 2021, doi: 10.36312/njpm.v1i1.60.