

# Green Environmental Management Practices in Schools in The Implementation of the Deming Cycle: A Narrative Inquiry Approach

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## ABSTRAK

Tujuan dari penelitian ini adalah untuk menerapkan siklus Deming pada pengelolaan lingkungan hijau untuk meningkatkan praktik berkelanjutan di sekolah. Menggunakan pendekatan naratif inkuiri dengan mengumpulkan data melalui wawancara semi terstruktur kepada kepala sekolah, guru, dan siswa untuk mendalami praktik pengelolaan lingkungan hijau di sekolah Adiwiyata. Analisis dilakukan secara interpretatif dengan memperluas, mengeksplorasi, menceritakan kembali, dan memfiksikan data. Temuan yang disajikan dalam praktik pengelolaan lingkungan hijau menunjukkan empat tema utama dalam menerjemahkan strategi ke dalam praktik operasional, meliputi perencanaan, implementasi, pembelajaran, dan tindakan, untuk membantu dalam mengidentifikasi dan menganalisis praktik lingkungan secara reflektif. Penelitian ini berimplikasi pada perilaku pro lingkungan melalui pendekatan saintifik pengelolaan lingkungan hidup di sekolah.

**Katakunci:** Pengelolaan lingkungan hijau, Sekolah, Siklus Deming

## ABSTRACT

The aim of this research is to apply the Deming cycle to green environmental management to improve sustainable practices in schools. Using an inquiry-narrative approach by collecting data through semi-structured interviews with school principals, teachers, and students to explore green environmental management practices at Adiwiyata schools. Analysis is carried out interpretatively by expanding, exploring, retelling, and fictionalising the data. The findings presented in green environmental management practices show four main themes in translating strategies into operational practices, including planning, implementation, learning, and action, to assist in identifying and analysing environmental practices reflectively. This research has implications for pro-environmental behaviour through a scientific approach to environmental management in schools.

**Keywords:** Green environmental management, School, Deming Cycle

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## 1. Introduction

Walter A. Shewhart, the father of statistical quality control, introduced the PDCA approach. Furthermore, Edward Deming, a quality expert from the United States, is known for the Deming cycle. He modified "Plan-Do-Control-Action" to "Plan-Do-Study-Act" for better interpretation. The PDSA approach is implemented to make changes, such as continuous improvements, as part of problem-solving. The concept of the Plan-Do-Study-Action (PDSA) model underlies the environmental management system approach. The PDSA model provides an iterative process that organizations use to achieve continuous improvement. This can be applied to an

environmental management system and its elements. The environmental management system of the PDSA (Plan-Do-Study-Action) cycle focuses on active dialogue and follows an emancipatory approach. It aims to raise shared awareness in ecological management practice (Jabbour,2019) through teamwork to solve environmental problems, including ecological conflicts, and encourages environmental learning. Therefore, stakeholder involvement and commitment are critical dimensions in ecological management (Kim et al., 2019). However, in embedding green practices in environmental management itself, they still need to be implemented sustainably.

Several empirical studies by Guang and Liang (2020) have observed that the PDCA Cycle in environmental management heavily depends on current big data technology. Matsuo (2013) has shown that learning can be enhanced when stakeholders engage in PDSA practices reflectively with others. In addition, several studies have been conducted on environmental management to increase students' environmental awareness. For example, Monroe et al. (2021) report that direct experience in nature shapes attitudes toward the environment, leading to lifelong pro-environmental behavior. Environmental management is a basic human need actively pursued to maintain a healthy environment. Botta et al. (2013) argue that comprehensive environmental management includes planning, implementation, and observation. We focus on the PDSA cycle in the context of green environmental management practices within a framework to improve processes and facilitate continuous learning. PDCA is a cycle of activities allowing everyone to create sustainable improvements consistently. Environmental management emphasizes identifying, designing, and characterizing stakeholders (Colvin et al., 2016), setting the level of participation (Reed et al., 2018), and evaluating participatory processes. The PDSA cycle encourages organizations to explore ways to deepen their organizational value-enhancing transformation sustainably. In this study, we adopt the scientific method of the Shewart cycle, namely PDSA, to critically assess school environmental management by applying conceptual ideas, including power, knowledge, and discourse. We explore the strategies and policies of the Adiwiyata program in environmental management practices to explain how the PDSA cycle is implemented and the roles of each program person in charge. This research contributes to individual awareness and concern for preserving the natural environment.

**2. Methodology**

This study explores Clandinin and Connelly's (2007) framework for a narrative inquiry approach within the interpretive paradigm. Narrative inquiry explores individual experiences and how social, cultural, and environmental factors influence and shape individual experiences. Clandinin and Connelly (2000) introduced narrative as a research methodology that explores participants' experiences of the events being investigated to gain experiential knowledge.

A narrative inquiry study is designed to investigate the life experiences (Clandinin, 2013) of a group of teachers, principals, and students in the Adiwiyata program. This study was conducted at a public elementary school in Bandung, West Java, as a model school that has implemented the Adiwiyata program and received awards at the provincial level. In recruiting participants, we sent WhatsApp messages to the head of the Adiwiyata program to be followed up by the school principal, each teacher in charge of

the program, and the students involved in this research. Recruitment of participants used criteria that understood the implementation of the Adiwiyata program, consisting of one school principal, one person in charge (deputy school principal), and four teachers as team coordinators in the age range of 30–50 years. In addition, students were participants in grades 5 and 6. All participants recruited for this study had experience in the Adiwiyata program. All participants understand the Adiwiyata program to ensure they know how to manage a green school environment. We examined the policies of the Adiwiyata program in schools, starting with planning, implementing, supervising, and following up on relevant practices. We interviewed eight participants: the principal, deputy principal, teacher as team coordinator, and student representatives.

**Table 1** Participant Demographics

Participant	Sex/Age	Function	Team in Specific Field
1	Female	Headmaster / 1	Person responsible
2	Female	Vice Principal / 1	Responsible representative
3	Female	Coordinator Team / 1	School Policy Coordinator
4	Female	Coordinator Team / 1	Curriculum Coordinator
5	Female	Coordinator Team / 1	Participatory Coordinator
6	Male	Coordinator Team / 1	Supporting Coordinator
7 and 8	Female and Male	Students 2	

The collecting data through reflective interviews and retelling. Participants' stories provide a dynamic narrative of the past, present, and future continuum in temporality (Clandinin & Connelly, 2000). The semi-structured interviews with each participant lasted about 30–60 minutes and were conducted face-to-face with the participants. When it was necessary to confirm unclear answers, additional interviews lasting around 30 minutes were conducted via Zoom to clarify or confirm the data. After the interview, the researcher transcribed the interview to ensure that the information was preserved. When there is no new information about their experience, the data collection is complete.

The data were analyzed using narrative analysis to develop the perspective of the participant's experiences about certain phenomena. Therefore, narrative analysis was carried out to focus on the story as the focus of exploration in this study. Four interpretative narrative inquiry strategies are used to analyze the data: expanding, exploring, telling and retelling, and fictionalization (Connelly & Clandinin, 2000). Expansion contextualizes research into authentic situations that include the macro-meso-micro environment. Exploring is concerned with the participants' life experiences. Telling to rationalize the agent's thoughts and behavior The fictionalization incorporates the socialization process of the

participants into the story. This interpretive strategy makes it possible to create the transmission of environmental management in social networks.

### 3. Findings and Discussion

In the findings of this research, we examine the Environmental Care Movement and Culture in Schools (GPBLHS), which is realized through the Deming cycle (PDSA), which includes components of planning, implementation, studying, and action. The findings show the themes from the units of meaning through narrative inquiry analysis. The essential structure of environmental management in schools shows how the Deming cycle (PDSA) is translated according to their situational context. The four main themes listed are overarching themes resulting from the narrative and the application of the Deming cycle to school environmental management. The following is presented in Table 2.

**Table 2.** Themes of managing school environment

Themes	Subthemes
Planning	Identify problems
	Planning action
	Caring and Cultured School Environment Policy
Do/Implementation	Environment-Based Curriculum
	Participatory Activities
	Environmentally friendly infrastructure
	School Program
Studying	Awareness
	Changes in behaviour
Action	Corrective action
	Standarization

#### 3.1. The Planning Stage

In the planning stage, the first step in the process and its main objective are to identify any problems and find opportunities for improvement. During the planning phase, the school maps out a plan of action, identifies problems, and sets goals. Planning is done by identifying environmental problems as well as developing an action plan to solve environmental problems, as stated by the school principal (P1) as follows:

"Planning is anticipating future problems and enabling the entire school community to participate and develop. The school principal and teachers make a map to see problems and opportunities, plan activities, and achieve targets through the "Environment-Based Education Movement Plan in Schools "(P1). (See Table 3).

The planning stage includes aspects, problems, potential, action plans, achievement targets (behavior and physical changes), priority scale, the person in charge, involvement, and funding. In planning, as presented in the table above, highlighting the waste problem, it will also be explained how to handle it. In planning, the principal integrates an action plan to create synergy through coordination, delegating authority, and responsibility through divisions.

"As stated by the vice principal (P2), the school principal also manages the Adiwiyata team based on the assigned tasks and responsibilities, ensuring that planned activities are carried out

properly through a) division of labor, b) work grouping, and c) coordination. The formation of the Adiwiyata team involved all components of the school environment. For the adiwiyata program to be optimally implemented, the school adiwiyata team formed four working group divisions: the policy sector, the curriculum sector, the participatory sector, and the infrastructure sector. Students are involved in participatory working groups and infrastructure working groups".

The distribution of tasks to the Adiwiyata team shows that the school seeks to maximize and empower existing human resources so that planned activities can run smoothly. Work grouping is carried out by assigning responsibilities to each newly formed field division, including: 1) Team one is responsible for the availability of documents and policies related to the management of Adiwiyata activities; 2) Team two deals with environmentally friendly curriculum documents that are integrated into learning activities; 3) Team three is in charge of participatory activities involving students, teachers, and the surrounding community in implementing Adiwiyata activities; and 4) Team four is tasked with ensuring the availability of facilities and infrastructure to support Adiwiyata activities. Coordination related to the tasks of each team can be followed up in small meetings to identify obstacles and plan the following stages of activity. Coordination also includes monitoring the work progress of each team and interventions to maximize the achievement of predetermined goals.

#### 3.2. The Implementation Stage

The school implements several policies: 1) A caring and cultural school environment policy; 2) an environmentally based curriculum; 3) participatory activities; and 4) an environmental support infrastructure.

"As conveyed in interviews with participants (P2) as a divisional team, the formulation of policies determined by schools to support the Adiwiyata program is based on a vision and mission statement based on environmental knowledge, budget allocation for environmental activities of up to 20% to support the Adiwiyata program, and community empowerment through school committees. Community empowerment through school committees to support Adiwiyata activities, such as procuring trash bins, flower pots, and plants to beautify the school environment".

##### 3.2.1 School Environment Policy

To realize that schools that care and have an environmental culture need participation and sustainability.

"Based on the results of the interview, the participant (P3) conveyed that environmentally friendly school policy planning process activities were carried out through meetings between school principals, teachers, and committee representatives to collect ideas from various parties and then discuss the best and most appropriate to determine what programs are suitable to stay environmentally sound".

The interviews were strengthened by observations that showed the state of the school. Among them is a school vision and mission, school rules, and work program planning that contains aspects of environmental education (see Table 3). In

addition, the results of the documentation study also show various green school program planning documents, including the RKAS document, which contains 20% of the green school financing program budget, curriculum documents, syllabuses, and lesson plans developed using competency indicators and standards, including environmental management standards and inventory books on the availability of green school supporting facilities and infrastructure.

Environmental care policies have been implemented at SDN Cipadung Bandung. This can be seen from the following things: a) The school has a formulation of vision, mission, and objectives that care for and have an environmental culture. b) Environmental education learning has been integrated into the curriculum as local content. Environmental education learning is carried out from class I to class VI, with a learning time of one hour per week. Environmental education learning materials were prepared based on the Independent Curriculum from the State Ministry of the Environment in 2006. c) Increasing human resources in environmental education involves teachers in workshops and waste management training in environmental management held by the Bandung Regency Environmental Impact Control Office. This activity was carried out to create a school that cares and has an environmental culture. d) to save natural resources (water, electricity) through energy-saving recommendations in the school environment.

Debra et al. (2021) concluded that education about environmental sustainability must be integrated into schools at all levels to bridge the environmental knowledge gap between the younger generation and parents. e) Support in creating a clean, healthy, and beautiful school environment has also been provided at SDN Cipadung. This is manifested in the form of rules made by the school. Decrees regarding waste management in the school environment, for example, always clean toilets and an appeal against smoking in the school environment. This has been understood and obeyed by the school community. f) There is also a school policy for planning activities and allocating budgets for environmental education, learning, and development activities. Schools have allocated a particular environmental development budget, which is stated in the school income and expenditure budget plan.

### **3.2.2 Environmentally Based Curriculum**

Environmental material is taught through the learning curriculum to provide students with an understanding of everyday ecological problems.

"Participant (P4) also said that creating a school that cares and has an environmental culture involves developing cross-subject learning models, exploring issues of environmental problems in the community, elaborating environmental and culture-based learning methods, and increasing students' knowledge and awareness of the environment through extracurricular activities".

An environmentally based curriculum has been implemented at SDN Cipadung by allocating special

lesson hours as local content subjects in the Learning Implementation Plan and environmental education modules. Exploration of materials based on local problems around the school environment, residences, and open spaces. This is intended to equip students with an awareness of where to live and foster a sense of sensitivity and concern for the environment. Development of environmental education by applying direct observation methods to the natural environment through camping together, outbound, and field trips while playing, in addition to project-based learning methods. Through direct observation of the surrounding environment, students will gain more meaningful experiences. Children will learn through direct experience; this is very important in the child's overall development by trying, exploring, and discovering new things, such as visiting organic waste management sites and inorganic waste recycling.

### **3.2.3 Participatory Activities**

Participatory-based activities at Cipadung Elementary School are carried out with the involvement of the community around the school, such as tree planting and reforestation, waste management, and environmental campaigns.

"Participant (P5) said that the activities carried out on a participatory basis included dance and music extracurriculars and little doctors. While co-curricular activities (learning activities outside the subject matter such as field trips, picket cleaning, clean Friday, and cleaning competitions".

These activities are carried out regularly to foster a sense of cooperation, humanity, and unity. We are carrying out partnership activities through collaboration between schools and various parties outside the school (government agencies, non-governmental organizations, private industries, and organizations) in the form of environmental education development and coaching activities. This activity includes adopting schools by the private sector or industry in the framework of fostering environment-based schools, preparing environmental teaching materials, and making teaching aids for environmental education learning. Carry out environmental action activities carried out by external parties; namely, the school fulfills invitations from external parties to participate in ecological action activities such as carrying out healthy school activities, school cleanliness competitions, environmental-themed drawing competitions, environmental songwriting competitions, debate competitions, and environmental-themed speeches. This activity can be done in groups or individually.

### **3.2.4 Environmental support infrastructure.**

"Participant (P6) conveyed the management of school support facilities developed at SDN Cipadung, such as arranging natural lighting and adequate air ventilation and maintaining and planting trees."

School sanitation hygiene is a concern in maintaining health in the school environment, such as

providing sufficient clean water for school residents; school sanitation workers are assisted by students who carry out cleaning pickets and how to save water, electricity, and paper energy. Efforts to improve canteen services and healthy food in supporting the management of a healthy school environment include placement of canteen locations that meet hygiene requirements (not near toilets or garbage disposal sites), periodic inspection of the quality of canteen food (use of raw materials, colorings, and preservatives); use of environmentally friendly packaging; providing counseling to traders and canteen employees; and appointing one of the teachers to supervise canteen food. Provide separate bins (organic and inorganic) in the classroom, canteen, and office. This is by the principle of education for sustainable development.

### 3.3 The Study Stage

The study stage is to increase student awareness of changing student behavior towards the environment through organic waste processing, inorganic waste processing, environmentally friendly activities (School et al.), jurisprudential activities (Neat and Clean Champion), garbage collection movement, making bio pore holes, and making compost to increase student involvement and responsibility in environmental issues, create a healthier environment, and overcome and avoid adverse environmental impacts. At the study stage, it is realized through school programs, as shown in Table 4 below.

The learning cycle is significant for the identity development of students and teachers because it fosters awareness, responsibility, and participation in managing the environment in various ways. Teaching students how to care for the environment, dispose of waste properly, make bio pore holes, and compost will provide students with knowledge and skills and a way to instill a love for the environment. Individuals are involved and take responsibility for achieving common goals.

"As stated by one of the participants (P6), this environmentally friendly program was carried out through several efforts to support the Adiwiyata program's goal of becoming an environmental laboratory. School members will have concern for and awareness of the environment by caring for and preserving the surrounding environment".

Separation of organic and non-organic waste by applying the 3R concept, namely: 1) Reuse, namely using and reusing used materials such as bottles for plant containers; 2) Reduce, namely reducing existing waste; 3) Recycle is recycling organic waste such as compost for plant fertilizer.

"As conveyed by student participants (P7), I learned to sort easily decomposed waste, such as organic and non-organic waste that needed handling. The waste is collected in temporary shelters and disposed of by officers in landfills. Garbage Disposal Sites are made of holes equipped with covers to prevent rats, insects, and certain animals from entering to avoid the unpleasant odor from the garbage, which can be disturbing".

The increasing amount of waste being recycled and its function changing into more valuable items proves that an environmentally friendly school culture has overcome the waste problem.

"One student also said (P8): "The teacher taught me to understand the recycling process that can still be used, such as organic waste that can be recycled into compost for plants. We watched the teacher demonstrate how to make compost to reduce waste and benefit plants. I also bring plants to be planted at school, such as medicinal plants and vegetables that can be harvested. Each child cares for the plants in front of the class and around the school".

Waste management aims to maintain a clean and healthy environment (Marliani, 2014). Therefore, waste should not be a breeding ground for germs or an intermediary for disease spreading. Other requirements are not polluting water, air, or soil, being odorless, not starting a fire, and so on.

### 3.4 The action stage

The Adiwiyata program is evaluated for its success in making improvements, adding programs, and financing from the government and the community so that it can be implemented per participatory and sustainable principles.

"As stated by a participant (P5), This stage is the stage for taking the necessary actions based on the results achieved, including a) Corrective actions in the form of solutions to problems encountered in achieving targets; these corrective actions need to be taken if the results do not reach what has been targeted; and b) Standardisation an action is an action to standardize the way or best practice that has been carried out. This standardization action is carried out if the results reach the target".

Corrective actions are more focused on waste problems and have been handled as described in the learning stage on how to deal with waste problems. Waste management must receive attention from all school residents because waste is divided into two types: organic and inorganic. Waste management can be a medium in the learning process for students to process waste that decomposes quickly, for example, wet waste, which can be processed into plant fertilizer or compost. This compost will be helpful for fertilizing plants as a planting media mixture in pots. Children learn about natural knowledge directly, which can raise environmental awareness. Meanwhile, inorganic waste that does not decompose quickly, such as HVS-type paper waste, has the highest price; apart from that, there is cardboard, food wrapping, and other paper types. Two things can be done to manage paper waste.

"As stated by participant (P6), paper waste can be recycled by cutting it into small pieces and then soaking it in water. After that, the soaked paper is blended until it becomes mushy. So children can be creative in using this paper waste, such as paper masks or pig shapes. Besides that, paper waste processing can also be done with a sales sorting system. HVS-type paper is separated from other types, such as newspapers and cardboard. The sorted waste paper is sold to scavengers. Scavengers will come to school to pick up the paper waste. Another type of waste is plastic bottles. This waste, which is much sought after, such as used plastic drink bottles, can be recycled into plastic pellets, likewise with used metal drink cans.

While the standardization action is to follow what has been made in each standard, such as vision and mission standards, curriculum, and infrastructure, so that it does not come out of the guidelines that have been determined, the school principal carries out monitoring and evaluation of the implementation of environmental management activities. Evaluation is carried out when an activity has been completed or within a certain period, such as through a school self-evaluation by analyzing the objectives of the green school program at the end of the year. In this way, evaluation is not only to find out the quality of environmental management activities but also to determine ways to overcome the obstacles encountered to achieve even better achievements.

This effort is in line with Heleri & Ismanto (2021) and Windawati (2015), who evaluate green and adiwiyata school programs by comparing objectives and results, looking at gaps between program standards provided by the government and actual conditions, and determining quality based on specific considerations and criteria as a consideration in making new decisions. The school principal carries out the control process, with the person in charge assisted by the coordinating team. This control is carried out at the planning and implementation stages of the program to determine whether it is by the procedure. The principal directly controls the implementation of several programs. The principal also always reminds and justifies when some things are wrong. To oversee the development of the program, the school cooperates with supervisors from the health and gardening services, the health center, as well as supervisors from within, namely school supervisors and the education office. This is according to the Adiwiyata guidelines from the Ministry of Environment (2012), which state that the task and role of the green school team are to monitor and evaluate planned and implemented activities. From these reporting activities, various obstacles in program implementation can also be identified, as well as being a reference for carrying out follow-up plans. This cycle will return to the planning stage to carry out further process improvements so that a continuous process improvement cycle occurs.

## **Discussion**

We focus on the PDSA cycle in the context of green environmental management practices within a framework to improve processes and facilitate continuous learning. PDCA is a cycle of activities allowing everyone to create sustainable improvements consistently. Environmental management emphasizes identifying, designing, and characterizing stakeholders (Colvin et al., 2016),

setting the level of participation (Reed et al., 2018), and evaluating participatory processes. The PDSA cycle encourages organizations to explore ways to deepen their organizational value-enhancing transformation sustainably. Adopting the scientific method of the Shewart cycle, namely PDSA (plan-do-study-action), to critically assess environmental management in schools by applying conceptual ideas, including power, knowledge, and discourse, in this study. We explore the strategies and policies of the Adiwiyata program in environmental management practices to explain how the PDSA cycle is implemented and the roles of each program person in charge.

PDSA is a practical approach to managing a planned program. Jagtap and Teli (2015) state that PDSA can assist in a practical and helpful problem-solving process. It can be very effective in several ways. First, it can help create new solutions and improve frequently repeated cycles. In this situation, you will benefit from improvements built into processes many times after implementation. Second, any new solution found for a problem can be tried and refined in a controlled manner before selecting a solution for full implementation. The third advantage is avoiding the large-scale waste of resources from the full-scale implementation of mediocre or wrong answers. Environmental management adopts various policy actions to promote collective environmental action where this is not possible voluntarily. Collaborative relationships that create cooperation in ecological management affect pro-environmental policy support.

The PDSA cycle can improve environmental understanding in schools through practical experience. It starts with planning, do, study, and action from the Adiwiyata program. Through this analysis, we consider how schools are consolidated in terms of the complex interplay of constraints, choices, and activities in practice.

Participatory approaches to environmental management are becoming more popular. Through their constructive participation, children's consciousness, agency, and action are conceptualized at the same time (Trott, 2019). In other words, constructive engagement engages children's knowledge by upholding continuity in the present. Constructive engagement, most importantly, empowers children to become agents of transformative change, where being constructive means serving a useful purpose. The main activity of the Adiwiyata program is realizing that school institutions care and are environmentally cultured (Handayani et al., 2015).

**Table 3.** School environmental management planning

Aspect	Problems	Potential	Action Plan	Achievement Target		Priority Scale	Person in Charge	Involved Party	Activity Cost
				Attitude Change	Physical Change				
Waste Management	There are still many students who dispose of waste, not based on the type of waste.	Many trash bins	Management Standards Review and Integration of PRLH (waste managers) to document KTSP (vision, mission, and program). Integration Process Standards on the Practice of PRLH in the Lesson Plan Process Standards in Conducting Training for Teachers in PRLH (3 R Waste Managers)	Integration into the document school KTSP Integration into the document school	Vice principal for curriculum	Teacher and education staff	Vice Principal for Curriculum	school residents (school committee and teachers)	School Operational Funds (BOS)

*The sources from Caring and Cultured Environment Movement in Schools (GPBLHS)*

**Table 4.** School programme

No	Program	Activities
1	Biodigester Creation	a) organic decompose system; b) organic waste management; c) technology management with microorganism addition as starter to speed up decomposition without air; and d) biodigester capable of producing gas and organic fertilizer while also reducing midden.
2	Composer Creation	is a method of processing organic waste into compost for plants.
3	Hydroponic Creation	Hydroponics is the cultivation of plants without soil with the fulfilment of plant nutrients.
4	Infiltration Wells Creation	is a water conservation engineering technique in the form of a dug well that functions to collect rainwater and seep into the ground
5	Biopore Hole Creation	is a cylindrical hole dug vertically into the ground as a water absorption method aimed at overcoming puddles by increasing soil water absorption.
6	Environmental-friendly activities carried out by the school	a) nutritious eating activities and garbage collection activities; b) cleaning class routine; c) reducing the use of plastic by distributing free plates; d) garbage collection movement; e) waste disposal based on type; f) planting flowers, planting gowns, growing hydroponic plants; g) maintaining cleanliness in the school environment; h) PBLHS activities; I waste selection based on type; (organic, inorganic)
7	The activity of processing used material waste through 3 R	a. Reducing waste by bringing shopping bags to traditional and modern markets, using refilled goods/products, and choosing paper product packaging over plastic because paper is easily biodegradable and reduces paper waste. b. Reusing materials that can still be used, such as washable clothes that are given to people in need, using containers, bags, and bottles that can be reused several times, using rechargeable batteries instead of single-use batteries, and using washable handkerchiefs. c. Recycling goods or waste into other materials or forms, such as converting plastic bottles into plastic seeds and making crafts such as plastic pots, buckets, and converting organic waste into compost, and converting non-organic waste into useful goods with a monetary value, such as crafts.
8	Natural resources	Saving water, electricity, and stationery

*The sources from Caring and Cultured Environment Movement in Schools (GPBLHS)*

## Conclusion

PDSA is a framework or scientific management method with a plan-do-study-act cycle. At the planning stage, problems are identified to determine work programs and budget projection needs. After that, the policy is implemented according to the program that has been created. Furthermore, the program is translated at the learning stage and then evaluated at the inspection stage, and improvements are developed at the action stage. This process is carried out continuously to see progress and what needs to be done for the following process. This research has implications for school management that are oriented effectively towards the PDSA cycle in

schools' environmental management process. Through the PDSA practice, all school members can be empowered to share valuable new knowledge. School principals can also carry out direct supervision through reflective communication in the workplace, where each member has the opportunity to express views and criticism in environmental management. Through reflective PDSA practices, school members can increase awareness and concern for environmental management. The theoretical implication is that PDSA practice plays a vital role in green environmental management in schools in the concrete experience of observing, doing, and checking

reflectively according to planning and actively experimenting in action.

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