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Article

Implementation of a Socio-Scientific-Based Healthy Canteen as an Effort to Reduce Plastic Waste and Build Environmental Awareness at SMP Negeri 1 Kauman

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ABSTRACT

Plastic waste continues to be a serious environmental problem, including in educational settings. The use of single-use plastics in schools can pollute the environment and hinder the development of environmentally conscious character among students. This condition is also found at SMP Negeri 1 Kauman, Ponorogo Regency, which, although it has been an Adiwiyata School since 2013, still faces high usage of plastic waste in the canteen area. This study aims to describe the implementation of a healthy canteen based on a socioscientific approach as an effort to reduce plastic waste and foster environmental awareness at SMP Negeri 1 Kauman. Environmental education plays a role in shaping environmentally caring behavior through habituation and active participation of school members, including in environmentally friendly canteen management. The socioscientific approach was chosen because it encourages students to think critically and take responsibility for environmental issues they directly encounter. This research uses a descriptive qualitative approach with data collection techniques including observation, interviews, and documentation. The results of the study show that the policy of banning single-use plastics in the canteen has been consistently implemented by replacing packaging with banana leaves and food wrapping paper. Canteen vendors have adapted to the policy, while students have shown positive behavioral changes, such as bringing their own food and drink containers and participating in recycling activities. The implementation of the healthy canteen based on the socioscientific approach has been effective in fostering ecological awareness, social responsibility, and supporting the sustainability of the Adiwiyata program at the school.

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INTRODUCTION

Education is one of the fundamental aspects in shaping students' character, morals, and social awareness. Through education, individuals not only acquire knowledge and skills but also values that encourage positive behavioral change. One of the important issues in today's

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educational landscape is strengthening environmental education in schools. Environmental education does not solely focus on cognitive aspects but also on cultivating ecological attitudes and habits. (Supratman et al., 2025) In the school context, environmental learning is expected to foster students' awareness of the importance of maintaining cleanliness, managing waste, and reducing the use of environmentally harmful materials such as single-use plastics.

Based on initial observations and interviews conducted at SMP Negeri 1 Kauman, Ponorogo Regency, it was found that the school has been an Adiwiyata School since 2013 and has consistently implemented various environmental programs, such as greening activities, waste sorting, and the management of both organic and inorganic waste. However, observations in September 2025 indicated that the use of single-use plastics in the canteen area remained relatively high, especially for food and beverage packaging. This condition shows that more practical and comprehensive supporting strategies are still needed to ensure that Adiwiyata values are optimally realized in daily school activities.

To address this issue, the school needs to develop learning models and environmental management strategies that are more applicable and involve all school members. One relevant approach is the Socio-Scientific Issues (SSI) Approach. This approach focuses on engaging students with social issues related to science, such as plastic waste and environmental health, thus helping them develop critical thinking skills and ecological awareness. (Putri et al., 2024) The socio-scientific approach has been proven effective in improving students' environmental literacy and social responsibility in various educational contexts. (Permatasari et al., 2024)

The implementation of a healthy canteen based on the socio-scientific approach at SMP Negeri 1 Kauman is a strategic solution because it integrates two essential aspects: health and environmental sustainability. Through contextual learning activities, students are invited to analyze the impact of plastic use, conduct direct observations of the canteen system, and develop ideas for reducing waste through environmentally friendly packaging innovations. This program aligns with the view that education that connects scientific knowledge with real social issues can enhance students' ecological awareness and responsibility. (Majid et al., 2025)

The novelty of this research lies in the integration of the healthy canteen concept with the socio-scientific approach as a direct strategy to reduce plastic waste within everyday school activities. Unlike previous studies that typically focus only on classroom-based environmental learning or waste reduction campaigns, this research integrates the learning process with real practices in canteen management. Thus, students not only understand environmental issues theoretically but also actively engage in designing real and sustainable solutions within their environment. This contributes significantly to strengthening the Adiwiyata program while fostering a school culture oriented toward sustainability.

Therefore, through the application of the socio-scientific approach in healthy canteen management, it is expected that environmentally conscious behaviors and culture will emerge among school members. This program not only contributes to reducing plastic waste in the school but also strengthens the role of education in shaping environmentally conscious and responsible students. Consequently, this research aims to describe how the implementation of a socio-scientific-based healthy canteen at SMP Negeri 1 Kauman can serve as an effective strategy for fostering environmental awareness and supporting the school's Adiwiyata program. Hence, the title formulated is: "Implementation of a Socio-Scientific-Based Healthy Canteen as an Effort to Reduce Plastic Waste and Build Environmental Awareness at SMP Negeri 1 Kauman."

METHOD

This study employs a qualitative approach with a descriptive qualitative research design. This approach was chosen because the research focuses on obtaining an in-depth understanding of the social phenomena occurring within the school environment, particularly in the

implementation of the healthy canteen program based on the socio-scientific approach. Qualitative research aims to understand the meaning that emerges from social interactions, individual experiences, and the natural context in which the phenomenon occurs. (Fadli, 2021) The researcher serves as the primary instrument who directly interacts with data sources through observation, interviews, and documentation. The focus of this study is to reveal how the healthy canteen program is implemented, how the socio-scientific approach is applied, and its impact on reducing plastic waste and fostering environmental awareness among students at SMP Negeri 1 Kauman, Ponorogo Regency, which has been an Adiwiyata School since 2013.

The data sources in this study consist of two types: primary and secondary data. Primary data were obtained through direct observation and in-depth interviews with key informants, including students, teachers, and school canteen managers. The interviews were conducted on Wednesday, October 22, 2025, from 08:30 to 10:45 AM at the school. Meanwhile, secondary data were obtained from supporting documents such as photographs of healthy canteen activities. The research population includes all school members; however, the sample was selected purposively based on their direct involvement in healthy canteen activities and environmental management. The purposive sampling technique was chosen because it allows the researcher to obtain relevant data from informants considered most knowledgeable about the research context. (Wijaya et al., 2025)

The data collection techniques consisted of three main methods: (1) participatory observation, used to observe school members' behaviors in the practice of healthy canteen management; (2) semi-structured interviews, used to explore informants' perceptions, experiences, and responses regarding the healthy canteen program; and (3) documentation, used to gather physical evidence such as archives, photos, and school activity reports. Data analysis was conducted interactively through three stages: data reduction, data display, and conclusion drawing or verification. The researcher transcribed interview results, categorized key themes, and interpreted the data narratively. Through this approach, the findings are expected to provide a comprehensive description of the implementation of the socio-scientific-based healthy canteen program at SMP Negeri 1 Kauman.

RESULT AND DISCUSSION

The findings of this study describe the implementation of a socio-scientific-based healthy canteen in the school. The main focus of the research lies in three aspects: (1) the implementation of plastic reduction policies in the healthy canteen by the school, (2) the response and application of these policies by canteen vendors, and (3) the level of environmental awareness and behavioral change among students. Data were collected through interviews with three key informants: the healthy canteen coordinator (teacher), the canteen vendor, and two students.

Based on the interview with the healthy canteen coordinator, Mr. Nur Yaqin, S.Pd., he explained that since 2013 the school has implemented the Adiwiyata program, which emphasizes environmental management and school health. One of the key policies is the prohibition of single-use plastics in the canteen area. The school encourages all vendors to replace plastic packaging with environmentally friendly materials such as rice paper or banana leaves, and to educate students to bring their own food containers and drinking bottles. Educational activities are conducted through school ceremonies, parent meetings, and direct socialization with students. According to teacher observations, this policy has successfully reduced plastic waste and increased students' awareness of the importance of maintaining environmental cleanliness. However, challenges still arise from some external vendors and new students who are not yet consistent in practicing these habits.

Meanwhile, the canteen vendor, Mr. Agung, stated that since the implementation of the healthy canteen policy, he has replaced food previously wrapped in single-use plastics with

items not packaged in plastic. For the containers, the canteen now provides rice paper and banana leaves. At the beginning, some students found it inconvenient to bring their own food containers, but over time they became accustomed to it. According to him, this policy has effectively reduced plastic waste, although difficulties still occur when banana leaves are hard to obtain. The school also routinely provides guidance regarding the healthy canteen program, although no subsidies are provided when vendors must spend extra money to purchase alternative packaging.

The students interviewed, Yumna and Kayyis, demonstrated a good understanding of the importance of caring for the environment. They realized that excessive plastic use can pollute the environment and harm human health. They consider the policy of bringing personal containers and cups to be a positive habit, even though it was initially seen as inconvenient. They also believe that using leaves and paper as packaging is safer and more biodegradable. However, a small number of their peers were still found not to be disciplined in disposing of waste properly.

Plastic waste has now become an international, national, regional, and community issue, including within educational environments. The impact has spread across the world on land, in water, and in the air. Therefore, awareness and involvement from society at all levels are urgently needed. Education is a conscious and planned effort to create a learning environment and learning process that guide students to actively develop their potential spiritual strength, self-control, personality, intelligence, noble character, and skills they have possessed since birth. (Wibowo, 2023) In response to this situation, SMPN 1 Kauman established the healthy canteen program, aiming to reduce both plastic and organic waste, while also teaching students creativity in reusing plastic waste as school decorations and instilling the importance of environmental stewardship.

Therefore, the school urges all students of SMPN 1 Kauman to bring their own food and drink containers, which are to be used when purchasing meals and beverages in the healthy canteen. Food containers should not be made from plastic or styrofoam.

Source: Personal Document

Figure 1. Healthy Canteen of SMPN 1 Kauman Ponorogo

A. Implementation of the Healthy Canteen as a Means of Reducing Plastic Waste

SMPN 1 Kauman established the healthy canteen program intended for all school members, including students and teachers. Prior to the implementation of the program, most school canteens still used single-use plastic packaging such as plastic cups, plastic bags, and other disposable plastic waste. This condition increased the volume of plastic waste within the school environment, which is difficult to decompose and polluted various areas, including the school garden.

The establishment of the healthy canteen was driven by the awareness of teachers and students regarding environmental cleanliness, as the excessive plastic waste was disrupting the learning process. The healthy canteen began to be realized in 2013 when SMPN 1

Kauman was designated as an Adiwiyata-based school. The purpose of this healthy canteen is to reduce the amount of plastic waste in the school environment. Of the millions of plastic waste generated, only 13% can be recycled into industry most of which originates from food and beverage packaging and plastic bottles. (Lisdiana et al., 2023) Therefore, the school encourages students to bring their own food and drink containers to be used when buying food and beverages at the healthy canteen. Food packaging should not be made from plastic or styrofoam. (Kadaryati et al., 2023) Currently, the canteen no longer provides snacks in single-use plastic containers; instead, it offers packaging made from banana leaves and rice paper.

B. Socio-Scientific Approach in the Healthy Canteen Program

The socio-scientific approach emphasizes learning based on social issues connected to scientific concepts to foster students' critical thinking, decision-making, and social responsibility. In Mathers' research, the issue of plastic waste reduction is presented as a real-life problem close to students' experiences. (Mathers et al., 2024) Similarly, at SMP Negeri 1 Kauman, teachers link these issues with scientific concepts such as recycling, environmental pollution, and the impact of plastic on ecosystems.

Through reflective activities, students not only understand these concepts but are also encouraged to find concrete solutions that can be applied in the school environment, such as bringing their own containers, using reusable water bottles, and reducing the consumption of plastic-packaged foods.

This aligns with Mathers' findings that the use of socio-scientific issues in science learning enhances student agency the ability of students to take initiative and responsibility for their social actions. In the healthy canteen program, students demonstrate this agency through active participation in socialization on plastic reduction, monitoring the use of packaging, and participating in creative activities such as making ecobricks from single-use plastic waste and producing compost fertilizer from organic waste.

C. Developing Environmental Awareness and Behavioral Change

Developing students' environmental awareness is one of the main goals in implementing the socio-scientific-based healthy canteen. Environmental awareness is not only related to conceptual understanding of the importance of maintaining cleanliness and reducing plastic waste, but also encompasses attitudes and real behaviors in daily life. Based on interview results, the implementation of the healthy canteen policy has encouraged students to actively engage in environmentally friendly practices, such as bringing their own food and drink containers, sorting waste, and reducing the use of single-use plastics in the school environment.

The interviews revealed that most students understand the rationale behind the plastic-free policy and are willing to change their behavior to maintain school cleanliness. This awareness emerges through habituation and reinforcement of values by teachers and the school community. Habituation plays an important role in developing ecological character because environmentally friendly behavior is not only built through cognition but also through consistent repeated actions. (Komatsu et al., 2023) This can be seen in students who have become accustomed to bringing reusable bottles and lunch boxes, as well as participating in recycling activities such as making ecobricks organized by the school. Organic waste is processed into fertilizer, packaged, and planned to be sold as a product created by the students of SMPN 1 Kauman Ponorogo.

The development of environmental awareness through the implementation of the socio-scientific-based healthy canteen is effective and well-directed. This approach integrates knowledge, attitudes, and actions in contextual learning. Students not only understand the concept of plastic reduction but also show concrete behaviors in maintaining the cleanliness of the school environment. This success demonstrates that socio-scientific–

based education is a relevant strategy for fostering a young generation that is environmentally aware and responsible for environmental sustainability.

CONCLUSION

Based on the research findings, it can be concluded that the implementation of the healthy canteen program based on the socio-scientific approach at SMP Negeri 1 Kauman has been effective as an effort to reduce plastic waste and foster environmental awareness. The policy prohibiting single-use plastics, along with the use of environmentally friendly materials such as banana leaves and rice paper, has successfully reduced the volume of plastic waste in the school. The socio-scientific approach enables students to understand environmental issues scientifically while connecting them to social life, thus encouraging the formation of sustainable ecological behavior.

Furthermore, the involvement of the entire school community teachers, canteen vendors, and students plays a crucial role in the success of the program. Students not only demonstrate an understanding of the dangers of plastic but also show real actions such as bringing their own food and drink containers, sorting waste, and participating in recycling activities. Thus, the healthy canteen program based on the socio-scientific approach not only contributes to reducing plastic waste but also serves as a character education platform that instills values of responsibility, discipline, and environmental care.

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