

# Recycling Library as Fulfillment of the Right to Education and a Healthy Sustainable Environment

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**Abstract.** The fulfillment of the right to education and a sustainable healthy environment still faces serious obstacles in rural areas of Indonesia, one of which is due to limited literacy facilities and waste management. Wonorejo Public Elementary School No. 04 is a concrete example of an elementary school that does not have a library, while the level of household waste production is quite high and has the potential to cause environmental pollution. This study aims to examine the implementation of the Recycling Library as an innovative model to fulfill the right to education while strengthening ecological awareness based on school empowerment. The method used is community-based participatory research (CBPR) with a socialization-monitoring system approach through socialization, assistance, and hybrid monitoring. The results of the study show the formation of a functional library with a collection of 491 donated books, supporting tools from recycled waste, and the revitalization of previously unused school space. This program improves student literacy, fosters a culture of self-help, and reduces the potential for environmental pollution through school-based waste management. The conclusion of this study confirms that the Recycling Library is an instrument for simultaneously fulfilling the right to education and the right to a healthy environment.

## 1 Introduction

Education is a fundamental right guaranteed in Article 31 of the 1945 Constitution of the Republic of Indonesia [1] and Article 26 of the Universal Declaration of Human Rights (UDHR) [2], which affirms that everyone has the right to education without discrimination. However, in rural areas of Indonesia, this right is still hampered by limited supporting facilities, particularly the absence of libraries as centers of literacy and learning. Based on observations, there are elementary schools that do not yet have library facilities, such as Wonorejo Public Elementary School No. 04 in Karanganyar Regency, Central Java, but they do have unused rooms. This condition hinders the development of 21st-century skills such as critical thinking, creativity, and information literacy as emphasized by UNESCO [3]. UNICEF also emphasizes that limited access to educational facilities widens the gap in learning quality between social groups [4].

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In addition to educational limitations, environmental problems worsen the quality of life and health of the community around the school. According to observations, Wonorejo Public Elementary School No. 04 is located in an area with a high volume of household waste, but waste management is still minimal, as evidenced by the fact that the final disposal site located in the village exceeds capacity, causing potential pollution and disease. According to the results of bibliometric research, waste management in schools is an important component of sustainable development because education serves as a trigger for awareness and the formation of environmental habits for future communities [5]. A cross-country study in Kenya also shows that school involvement in waste management through a participatory approach influences student participation in educational activities and demonstrates the potential of waste collection as a valuable resource [6]. The collective approach of schools to waste management reflects the principles of the circular economy and sustainable education, while reinforcing the urgency of integrating environmental management into the academic context. Therefore, the school-based approach at Wonorejo Public Elementary School No. 04 can be an effective model in responding to environmental challenges while strengthening the right to education.

The Recycling Library program is an innovative solution to address educational limitations and environmental problems at the local level. This model utilizes recycled inorganic waste to create library support tools, revives used books that are still in good condition, and revitalizes unused school spaces. From a legal perspective in Indonesia, this idea is in line with Article 28H paragraph (1) of the 1945 Constitution of the Republic of Indonesia regarding the right to a good and healthy environment, as well as Article 31 of the 1945 Constitution of the Republic of Indonesia regarding the right to education. Law No. 32 of 2009 concerning Environmental Protection and Management also emphasizes the importance of community participation in environmental management. Through the involvement of teachers, students, and educational staff, this program reflects the principles of self-help and community empowerment. Thus, the Recycling Library not only provides physical facilities but also builds collective capacity based on independence and sustainability.

The synthesis of the urgency of education and the environment shows that the Recycling Library is an instrument for fulfilling the right to education and a healthy, sustainable environment through the empowerment of schools as subjects of development. Schools are no longer positioned as objects of policy but as active actors capable of creating local solutions to structural limitations. The novelty of this program lies in its ability to connect the issues of literacy, the circular economy, and a rights-based approach in a single community-based empowerment model. As theoretical evidence, Zhang and Perkins in their study assert that a community-based empowerment education model enables ecological environmental transformation through active participation and local social capital [7]. By integrating literacy, sustainability, and community participation, the Recycling Library demonstrates a significant academic contribution to the international literature on rights-based education, environmental law, and sustainable development. In this way, schools are empowered to improve their quality, build independence, and strengthen a culture of self-help in responding to global challenges.

## **2 Research Method**

### **2.1 Design and Methodological Framework**

This study uses a community-based participatory research (CBPR) approach that focuses on empowering school subjects as the main actors [8]. This approach is relevant because it

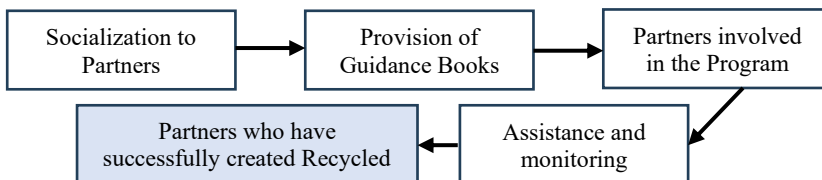
places schools, teachers, and students not merely as objects of intervention, but as subjects who actively build solutions to educational limitations and environmental problems. The program was implemented through a socialization-monitoring system model developed by the team, utilizing digital technology (*Google Meet*, *WhatsApp*, and *digital manuals*) to facilitate interaction, knowledge transfer, and ongoing mentoring. The socialization process uses the guideline book (Figure 1) as an official reference that sets out the rules, procedures, standards, and implementation methods to ensure that the activities are carried out uniformly, systematically, and in accordance with their objectives. This framework is in line with the rights-based approach principle, which emphasizes the fulfillment of the right to education and a healthy environment in a participatory and inclusive manner.



**Fig. 1.** Recycling Library Manual

## 2.2 Implementation Stages

The program is implemented through several main stages (Figure 2). The first stage involves socialization accompanied by tutorials on making recycled tools so that partners understand the principles of sustainability and independence. At this stage, the team also presents material on the concept, benefits, and procedures for establishing a Recycling Library, and distributes digital guidebooks as practical references. Next, school partners implement the program based on the socialization materials and guidelines provided. To ensure the sustainability of the implementation, the team provides hybrid assistance and monitoring through *Google Meet*, *WhatsApp*, and direct visits to the location to ensure that schools are able to run the program independently. This monitoring also serves as a forum for evaluating progress, discussing obstacles, and strengthening the capacity of partners. Through this stage, partner schools have successfully established Recycling Libraries that serve as literacy facilities and media for sustainable environmental education.



**Fig. 2.** Implementation Stages

## 2.3 Location, Subject, and Object of the Program

The program was implemented from August 23 to September 24, 2020, at Wonorejo Public Elementary School No. 04, Wonorejo Village, Gondangrejo District, Karanganyar Regency, Central Java, Indonesia (Figure 3). The subjects of the program were the school community,

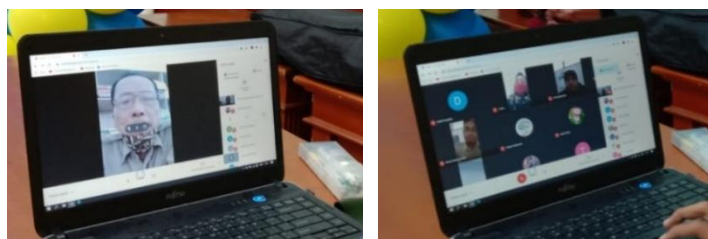
consisting of teachers, students, and educational staff, while the objects of the program included waste management, the use of used books, and the revitalization of unused school spaces. The intervention focused on the construction of a dual-purpose Recycling Library, which serves as a means of fulfilling the right to education and as an instrument for sustainable environmental management.



**Fig. 3.** Wonorejo Public Elementary School No. 04

## 2.4 Data Collection and Analysis Techniques

Data was collected through activity documentation, hybrid interviews, and reflective reports from partners during the implementation process. Documentation included photos, videos, and notes on the process of creating the Recycling Library by the school community. Online interviews were conducted using *Google Meet* and *WhatsApp* (Figure 4) to obtain qualitative data related to the experiences, perceptions, and obstacles faced by partners. Data analysis was conducted using a qualitative descriptive approach through data reduction, presentation, and verification to identify the program's effectiveness. Data validity was strengthened by member checking with partners to ensure that the interpretation was in line with their experiences.



**Fig. 4.** Communication with partners using digital media

## 3 Discussion

### 3.1 Implementation of the Recycling Library as Access to the Right to Education

The implementation of the Recycling Library at Wonorejo Public Elementary School No. 04 began through a mechanism of socialization and assistance based on school community participation. This activity was carried out in a hybrid format, utilizing digital media and face-to-face meetings with a guidebook as a technical guideline for the development of recycling-based literacy facilities. The active involvement of teachers, students, and educational staff in discussions and operational practices reflects an empowerment model consistent with the principles of community education, in which the community is the main

actor in local transformation [7]. This participatory approach fosters a sense of community ownership of educational initiatives, thereby creating program sustainability beyond external intervention. The implementation of supporting facilities made from inorganic waste, such as plastic bottles, cardboard, and newspapers, demonstrates effective local innovation in overcoming a lack of resources. Thus, the Recycling Library not only provides learning facilities but also becomes a medium for internalizing the values of independence and sustainability in community-based education.

The transformation of previously unused school space into a functional library represents the fulfillment of the right to concrete and relevant education (Figure 5). This process involves cleaning, simple renovations, and the use of recycled tools, which are collaboratively produced by the school community. The presence of the library actualizes the principles of Article 31 of the 1945 Constitution of the Republic of Indonesia and Article 26 of the Universal Declaration of Human Rights, which affirm education as a fundamental right of every individual. As a theoretical addition, Barrett et al.'s (2019) study in the World Bank report entitled *The Impact of School Infrastructure on Learning: A Synthesis of the Evidence* concludes that the quality of school infrastructure, including representative libraries, has a significant influence on student learning outcomes in various contexts in developing countries [9]. With libraries, students gain equal access to teaching materials, thereby reducing literacy gaps between regions. This condition confirms that the utilization of local resources-such as space and used goods-can bridge structural limitations in the effective provision of educational facilities.



**Fig. 5.** Room at Wonorejo Public Elementary School 04 before and after becoming a Recycling Library

The collection of books gathered through donations further strengthens the Recycling Library's function as an inclusive and sustainable literacy center (Figure 6). A total of 491 books from various categories, ranging from thematic books to educational magazines, form the initial collection that enriches students' learning resources. This strategy is in line with Law No. 20 of 2003 concerning the National Education System, which emphasizes equal access through the provision of literacy facilities. Findings from Rawlings et al. show that an increase in the number of books and stationery is directly related to an increase in literacy competence in various contexts in developing countries [10]. By integrating book donations into recycling-based libraries, schools have succeeded in bringing about educational innovations that are not only cost-effective, but also inclusive and environmentally friendly.



**Fig. 6.** Book Donation Poster and Collection of Donated Books

### 3.2 Recycling Libraries in the Perspective of the Right to a Healthy and Sustainable Environment

The right to a good and healthy environment is a fundamental right guaranteed by Article 28H paragraph (1) of the 1945 Constitution of the Republic of Indonesia and reinforced by Law No. 32 of 2009 concerning Environmental Protection and Management. This legal instrument affirms that every citizen has the right to enjoy a decent environment, including in the context of education, where learning spaces must be clean, safe, and supportive of student growth and development. This concept is in line with the Stockholm Declaration (1972) and the Rio Declaration (1992), which emphasize the importance of integrating human rights with environmental sustainability [11]. The implementation of the Recycling Library at Wonorejo Public Elementary School No. 04 is proof that school-based waste management can be a means of fulfilling these rights. Plastic, bottle, and paper waste that is recycled into library equipment not only reduces pollution but also creates an environmentally friendly learning ecosystem. Thus, this program demonstrates the direct connection between waste management, constitutional rights, and educational sustainability.

The implementation of the Recycling Library shows a real contribution to preventing environmental pollution and strengthening the ecological awareness of the school community. Before this program was implemented, household waste was not managed optimally, posing risks of accidents, disease, and ecosystem degradation. Through mentoring, teachers and students are taught simple recycling techniques to turn waste into bookshelves and other functional tools (Figure 7). According to recent research by Kowasch (2022), integrating circular economy concepts into education, such as cradle-to-cradle and zero waste issues, strengthens students' understanding of ecological sustainability and builds transformative educational capabilities [12]. Field data shows that cardboard, plastic bottles, and old newspapers have been successfully converted into effective literacy support tools. The integration of this practice makes schools not only beneficiaries but also agents of change in reducing waste volume and building sustainability awareness.



**Fig. 7.** The results of recycling waste

The Recycling Library contributes significantly to the achievement of the Sustainable Development Goals (SDGs), particularly SDG 4 on quality education and SDG 12 on sustainable consumption and production. By providing a recycling-based library, schools have succeeded in expanding access to literacy without adding to the environmental cost. The book donation, which collected 491 collections, demonstrates the dimension of social participation that strengthens the culture of literacy in schools. According to a study by Zaremohzzabieh et al. (2024), community involvement in waste management through a participatory approach has proven effective in improving the sustainability of waste management practices in developing countries [13]. Within the framework of community-based participatory research (CBPR), the involvement of teachers, students, and educational staff demonstrates the school's capacity as an active subject in maintaining sustainability. Through the integration of literacy, waste management, and community empowerment, the

Recycling Library presents a concrete model for fulfilling the right to a healthy environment as well as sustainable educational transformation.

### 3.3 Empowering Schools as Subjects of Transformation through the Concept of Self-Help

The active role of teachers, students, and educational staff in the implementation of the Recycling Library shows how schools can become agents of transformation through the concept of self-help (Figure 8). Field results show that school members not only accept the program but are also directly involved in utilizing waste and managing empty spaces to create functional libraries. This approach is in line with the principle of community-based participatory research (CBPR), which emphasizes community involvement in all stages of educational intervention. From an international perspective, a study by Harthun et al. (2019) shows that the involvement of teachers and students in the design and implementation of educational programs increases the relevance and effectiveness of these programs [14]. Through direct involvement, schools build internal capacity to adapt to educational resource constraints. This process confirms a paradigm shift from structural dependence to community-based independence.



**Fig. 8.** Partners participated in establishing a Recycling Library.

The implementation of the Recycling Library also shows multiple dimensions of empowerment, from waste management to learning tools to strengthening the culture of literacy in schools. Teachers act as facilitators, students as creative implementers, and educational staff as technical supporters, creating a participatory educational ecosystem. According to UNESCO (2025), education for sustainable development must be a core component of school curricula worldwide, with a focus on collaboration and sustainability [15]. Thus, the Recycling Library not only adds to the facilities but also instills the value of sustainability in the entire school community. This empowerment strengthens the function of education as an instrument for shaping environmentally conscious character. This self-help-based approach shows that transformation can be achieved without complete dependence on external intervention. This can be seen in the comparison of the partners' conditions before and after the Recycling Library program (Table 1):

**Table 1.** Comparison of Partner Conditions Before and After the Recycling Library Program

Aspects Observed	Before the Program	After the Program
Knowledge about waste management	Partners are not yet aware of how to optimize the productive use of waste and used items	Partners understand the concept of utilizing inorganic waste to support the Recycling Library
Environmental awareness	Partners still consider waste to be useless garbage	Partners have ecological awareness that waste can be managed as an alternative resource

Literacy facilities	The school does not have an adequate library as a center for student literacy	The school has a Recycling Library with a collection of 491 donated books and recycled shelves
School community participation	Teachers, students, and educational staff have not been actively involved in managing learning facilities	The school community is directly involved in the creation, maintenance, and development of the Recycling Library
Utilization of school space	There were empty rooms that were unused and had no functional value	The empty space was successfully revitalized into a functional recycling-based library
Program independence	Schools depend on external intervention in the procurement of educational facilities	Schools are able to develop and maintain program sustainability independently based on the principle of self-help
Student literacy access	Students have difficulty accessing reading materials at school	Students gain equal access to teaching materials, thereby encouraging an increase in reading interest and literacy

Furthermore, the empowerment of schools through the Recycling Library demonstrates the close relationship between the right to education and the right to a healthy environment. The use of waste that was previously worthless as a means of supporting the library demonstrates local innovation that is in line with SDG 4 on quality education and SDG 12 on sustainable consumption and production. Within the framework of a rights-based approach, schools are no longer positioned as objects of policy, but rather as subjects capable of producing solutions based on local resources. This shows an important shift from mere access to community control over the fulfillment of fundamental rights. School members not only gain literacy tools, but also build sustainable ecological awareness. Thus, the Recycling Library affirms its novelty in international education literature by connecting education, human rights, and sustainable development through a school empowerment model.

## 4 Conclusion

The Recycling Library Program at Wonorejo Public Elementary School No. 04 proves that limited educational resources and environmental issues can be overcome through innovation based on school community empowerment. The implementation of the program, which involves teachers, students, and educational staff, demonstrates a paradigm shift from dependence on external intervention to self-help-based independence. The utilization of unused space, donated books, and recycled inorganic waste demonstrates the integration between the fulfillment of the right to education and the right to a healthy environment. The community-based participatory research and rights-based approach make schools active subjects in producing solutions to structural problems. The results of this program are in line with sustainable development goals, particularly SDG 4 on quality education and SDG 12 on sustainable consumption and production. Academically, the Recycling Library affirms its novelty in the literature on education, human rights law, and environmental sustainability. Thus, this program demonstrates the real relevance of literacy, empowerment, and sustainability in the context of basic education.

The authors are grateful to the lembaga Pengelola Dana Pendidikan (LPDP) of the Ministry of Finance of the Republic of Indonesia, which has provided finance support to this publication.

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