

# Increasing Environmental Literacy to Support Environmental Conservation: Case Study in Jebres, Indonesia

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**Abstract.** Efforts can be made to reduce disparities and protect the environment by increasing literacy, education, knowledge, and environmentally friendly behavior. The library of UNS was supporting/inhibiting factors and the benefits of increasing environmental literacy to support the Sustainable Development Goals (SDGs) in Jebres Village, Surakarta. Society is part of a social system consisting of interconnected and integrated structures to achieve balance. The research employed qualitative methods with a semi-structured interview, Focus Group Discussion, and documentation. The main informants were waste bank managers, librarians, lecturers, pawnshops, and informants supporting librarians and the community around campus. The results indicated that technical guidance on waste bank management, environmental book donations, reading promotion, writing about environmental preservation, and organic waste management were all efforts to increase environmental literacy. These supporting factors were the availability of human resources, stakeholder support, and collaboration with Soekarno-Hatta Smart Park. Inhibiting factors include low public awareness of environmental concerns and weak coordination with local governments. The benefits were that people were environmentally aware and actively participated in wise waste management. As a result, the environment can be well maintained, and people's income can be increased through proper waste management. This study highlights the role of academic libraries in promoting environmental literacy.

## 1 Introduction

The problems currently faced include natural environmental problems, biodiversity conservation or natural resource conservation, socio-economic problems such as health, poverty alleviation, and other aspects of prosperity and peace [1]. The application of technology must provide a balance between economic development and environmental preservation [2]. Indonesia is threatened by environmental pollution and destruction, so environmental sustainability efforts are needed. The balance of the environment needs to be restored because it gives life and prosperity which is beneficial to society with the aim of

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preserving nature and overcoming, taking action against perpetrators of pollution and environmental destruction as well as creating a good, healthy, beautiful and comfortable living environment for everyone [3].

Crucial global problems currently faced include environmental degradation, extinction of several flora and fauna, human rights, migration and refugees, and gender equality [4]. Environmental degradation is a major challenge for most developed, underdeveloped and developing countries. During the period of industrialization, most of the world's largest economies. The world shifted their focus to industrialization without thinking about preserving environmental resources [5].

Lack of education as well as depletion of natural resources and economic growth can pose serious threats to the environment [6]. Therefore, environmental literacy is needed to help understand the conditions of environmental problems, gain knowledge, develop environmental influences, and the ability to analyze environmental problems [7]. Environmental literacy can be used to maintain environmental awareness in the future with appropriate knowledge regarding environmental behavior and attitudes [8].

Environmental education should not be regarded as something that is instantaneous in promoting environmental literacy among students. Lack of developed tools to monitor progress towards the Sustainable Development Goals (SDGs). In promoting this sustainable development, the university serves as a model and living laboratory for the implementation of greener practices in cities [9,10], [3].

Education is an integral part of the Sustainable Development Goals (SDGs), to reduce inequality and protect the environment. The library provides relevant materials to support lectures, organizes information literacy training and involves users in periodic information literacy programs to create awareness of SDGS [12]. Education is undergoing a transformation in both formal and informal learning contexts through new digital technologies. Education is the key to the quality of human life in the future and world sustainability [13].

Libraries play a role in integrating SDG's to be able to advocate for positive change to achieve an inclusive, open, and tolerant society [14,15]. Publiclibrary teachers in the U.S. are engaged in environmental education and are looking for new strategies for teaching information literacy [16,17]. Libraries and librarians must be able to motivate and act as agents of change and be able to motivate them, be good examples and act as agents of change proactively in relation to the global sustainability agenda,, information plays an important role for development [18,19].

Sustainable Development Goals (SDGs) in environmental aspects at the national level and inadequate integration of environmental topics, literature on sustainable development from an environmental perspective has grown, the activities of Literacy Information Science (LIS) researchers related to environmental issues, are few in number. Sustainable development is now the new paradigm of librarianship. Among the sustainable development goals are environmental goals, which in libraries can be achieved through developing environmental services and education [11,20].

Research on sustainable development and environmental literacy in school libraries has been found, but research discussing environmental literacy in college libraries is still very limited. This research has contributed to increasing environmental literacy by university libraries and increasing public awareness in environmental care. This study aims to analyze the efforts made by the Library of Sebelas Maret University (UNS), supporting / inhibiting factors, and the benefits of increasing environmental literacy to support SDGs in Jebres Village Surakarta, considering that the community is part of a social system consisting of interconnected and integrated structures to achieve balance.

## 2 Methodology/approach

Qualitative research methods, data collection with semi-structured interviews, Focus Group Discussion, and documentation. The main informants are waste bank managers, librarians, lecturers, pawnshops as well as informants supporting librarians and the community around campus. To ensure the validity of the data will use source triangulation i.e. information obtained through different sources, as well as method triangulation through different methods, for example interviews with observations [21]. Data analysis with interactive analysis models namely data reduction, data presentation and conclusion drawing [22].

## 3 Results and Discussion

The results showed that the efforts made by the Sebelas Maret University Library to improve environmental literacy in Jebres Village were holding technical guidance activities with material on waste bank management, raising donations in the form of environmental books, getting used to reading and writing about environmental conservation, and organic waste management.

The waste in the community is first sorted and then collected for further making various kinds of crafts, so that it can produce products that have more value, in addition to reducing waste it can also increase people's income. The waste bank community can also increase environmental and community awareness by empowering existing resources, increasing community motivation, and creativity.

Waste that is usually only thrown in vain, with the existence of this waste bank the community will be given training on how to turn the waste into organic fertilizer. The rare and expensive phenomenon of fertilizers, the availability of organic fertilizers can provide a solution. In addition, plants that are fed with organic fertilizers will be safer for health than fertilizers from chemicals.

Universitas Sebelas Maret also provides a waste bank managed by UNS students. Currently the waste bank receives and processes inorganic waste, then the product will be processed itself into products that are of selling value. Library of UNS plays a role in caring for the environment, so that it carries out environmental literacy activities carried out in Jebres Village by carrying out technical activities with waste bank management speakers, organic and non-organic waste management and collaborating financial literacy to turn waste into gold. The management of the waste bank brought material from the community who had succeeded in managing the waste bank, namely Mrs. Kunia Prihatini, S.Pd as the Manager of the Gulon Asri RW 21 Jebres Waste Bank, Surakarta. The material presented included the motive for sorting waste, namely not making the economy the main motive and awareness of partiality to the environment. The phenomenon in society that should be abandoned is throwing garbage without being sorted, throwing garbage in rivers, throwing garbage in empty yards, throwing garbage on the street. The government's efforts in overcoming the waste problem are by conducting education and appeals to establish waste banks and the establishment of Waste Power Centers (PLTS). Creative activities that can be done by waste banks to gain money by selling damage and recycling waste. An example of a waste bank product is a tote bag craft from used plastic scraps. Recycling patchwork in the form of tablecloths, recycling straws in the form of flower vase mats, recycling bottles in the form of beautiful flower vases, paper waste can be recycled into pulp mixed with sand and cement pressed into bricks, used cooking oil can be made into candles.

A team of lecturers from the Rural Sociology research group, Agricultural Extension and Communication Study Program (PKP) of Sebelas Maret University (UNS) Surakarta Lecturer Eksa Rusdiyana, S.P., M.Sc. delivered material related to the Sebelas Maret University waste bank providing knowledge and skills for the community to process household waste both organic and inorganic. The community produces waste every day

such as paper, plastic, and processed food waste or leftover food, in addition to providing education on the use of waste. Utilizing used rice washing water to water plants, utilizing kitchen waste to make eco enzymes or biopesticides and utilizing plastic used for food as a planting medium and commercialized through waste banks. In addition to providing environmental insights, it also motivates participants to care about waste by sorting waste and then collecting it into the waste bank.



Recycling Plastic Wrap



Bottle Recycling

Candles Made from Used  
Cooking Oil

**Fig. 1.** Example of a product produced from the management of the Gulon Waste Bank, Jebres, Surakarta [23]

UNSLibrarian Sri Maryati Ratnaningsih, A.Md., provided material related to the management of organic waste from household vegetables, then continued with the practice of making compost and in liquid form. In addition, the manager also provides examples of ready-made liquid fertilizers.

The speaker from the pawnshop with resource person Mr. Suwarno with the theme Choosing Garbage Saving Gold. It was also conveyed that the purpose of the waste sorting program in order to save gold is to improve the health and welfare of the community, reduce the impact of environmental waste, and increase sources of livelihood, while the benefits of the gold saving waste sorting program are to create a clean and healthy environment, provide inclusion to the community, and provide knowledge about waste management with a series of programs including socialization of the impact of hazards garbage, waste sorting and processing; Literacy in Financial Management and Gold Investment; Building Waste Banks etc. The mechanism of converting waste into gold is by education on choosing waste, selecting household waste, weighing and recording waste values, depositing waste into waste banks, converting waste values and saving them to gold savings, waste collection and management. Choose to save gold because gold is resistant to inflation; the assets are real and durable; Easy to buy; Easy to manage; Easy to cash; Easily transferable.

Participants in this *bimtek* activity were attended by people around the campus, such as the people of Jebres sub-district, and several areas in Solo Raya such as Karanganyar, Wonogiri, Sragen, Boyolali, Sukoharjo and Klaten. Librarians from various universities, schools in the Greater Solo area, lecturers, UNS students, environmentalists in the Greater Solo area.

*Bimtek* for the development of financial literacy based on waste management is also an activity in an effort to increase environmental literacy of the community. This activity should ideally not only be carried out once but can be carried out regularly with the hope that the library and the community can be in line in terms of scheduling the environment, especially waste. One of the environmental literacy activities that has been carried out by Library of UNS is *Bimtek* for the Development of Financial Literacy Based on Waste Management at Taman Cerdas Ir. Soekarno Hatta Jebres, Surakarta on Tuesday, July 26, 2022. Financial literacy activities as well as environmental literacy are expected not only to stop when *Bimtek* but can be implemented in everyday life, so that it can be loved by the environment, clean, minimize plastic waste and can add to the family economy.

The strategic location of the Library of UNS makes it easy for the public to access the library. The library provides facilities and collections both print and electronic, besides that there are also collections with environmental themes, waste management. So that the UNS community and the public can take advantage of it, on certain days there is a schedule for taking waste savings by officers.

The availability of human resources consists of staff and librarians who in their daily lives have been directly involved in organic waste management. UNS also has environmental expert lecturers who continue to strive to increase environmental awareness through research and community service programs carried out not only in the Solo area. In addition, there is a waste bank manager at the Faculty of Agriculture. The availability of waste banks at the Faculty of Agriculture UNS makes it easy for the community if they want to consult and save their waste, so that it can be exchanged for gold. UNS collaborates with *Pegadaian*. This can be an opportunity for libraries to play an active role in increasing environmental awareness, especially waste management. This waste management and if I can borrow the term overcoming problems without problems can be overcome waste without waste so that it can really make a clean environment and can provide the greatest benefit to the community.

The availability of the number of library staff and environmental educators owned by UNS is a solution in increasing environmental awareness not only of the public but also of the younger generation who are environmentally conscious. Staff and other academicians can invite and set an example in daily waste management. And can be a pioneer in turning waste into gold savings. Stakeholders must work together with the community, waste bank managers, librarians, UNS lecturers in environmental care.

Low public awareness of environmental concerns and weak coordination with local governments. People still tend to mix organic and inorganic rubbish, there has not been any awareness to sort it out. Coordination between the Library of UNS and Faculty of Agriculture UNS in environmental literacy activities does not yet exist. Public ignorance of library collections and access, so knowledge in environmental awareness is still limited. There is no library budget allocation in environmental literacy so that the activities of the field are very limited. Staff and educators have not maximized in paying attention to environmental literacy.

The benefits are environmentally friendly communities and participate in managing waste wisely so that the environment can be well maintained, and people's income can be increased through good waste management.

The strategy carried out by the university library in increasing environmental awareness for the community, including organizing activities that discuss waste management and optimizing waste sorting so that it has more use value. The strategy used to provide environmental literacy to students is carried out by utilizing WeChat social media [24]. Turning waste into gold so that it can increase people's income from managed waste [25]. In addition, it can increase public awareness of environmental concerns. This research still needs a more focused discussion, for example the effect of environmental literacy on community income, community awareness strategies in waste sorting. Women's education will increase women's contribution as strategic actors in environmental management [26]. Recyclable waste generated on campus is donated to recycling cooperatives to increase income, social inclusion for scavengers [27].

## **4 Conclusion**

The role of university libraries in realizing the Sustainable Development Goals (SDGs) is by playing an active role in environmental literacy, including through sustainable programs related to waste management which can be optimized to increase the income of

communities around campus. Libraries can increase the number of books related to environmental literacy and books that can channel the hobbies of the local community. Activities held by libraries can increase public awareness of environmental literacy. Collaboration is needed between waste bank managers, faculties, libraries, and stakeholders to realize environmental awareness.

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