

Development of Environmental Awareness Education Model Guidebook in Sekolah Sungai Winongo

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Abstract. The “sekolah sungai” is an effort to make the community aware of preserving the environment. It is necessary to have a guide book for the implementation of the sekolah sungai Winongo so that it is easily understood by all members of the river school. This study aims to produce a guide book for environmentally conscious education models at the sekolah sungai Winongo. This research is a development research with the ADDIE model, which is carried out until the development stage or model development. Data were collected using interviews, observation and assessment of design and product feasibility. Analysis of the initial condition data was carried out descriptively, the feasibility of the product was carried out by the opinion of the river school material expert, the learning media expert was statistically quantitative using the percentage of success of the model. The results of the study were in the form of a guidebook for the model of environmentally conscious education at the Sekolah Sungai Winongo. This model can be use for communities around the river to utilize the location as a river school.

Key words: environmental education, sekolah sungai, guidebooks

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INTRODUCTION

In this decade, awareness of environmental sustainability has encouraged the birth of communities engaged in nature conservation. These communities are very diverse, ranging from the preservation of forests, beaches, rivers, and so on. They have their own vision and mission and are increasingly aware that education is a very strategic effort in activities and movements to save the environment (Shofwan, et. all, 2019). It is important to understand the impact of disaster intensity on these elements of economic and social development, particularly on education (Onigbinde, 2018). Community disaster education is an integral component of disaster management worldwide. Its main objective is to promote public safety and, to a lesser extent, reduce disaster damage (Dufty, 2018). The education system is key to reducing personal injury, loss of life and damage from natural disasters (Lin et al., 2018). Different levels of awareness among individuals and communities, affect disaster management measures and their efficiency (Cerulli et al., 2020). On the other hand, we need to respond to recent UNESCO directives on global citizenship education which continue to strengthen the instrumentalist view of the environment as part of its contribution to a 'more just, peaceful, tolerant, inclusive, secure and sustainable world'.(Gough & Gough, 2016).

One of the environmental problems that occur in Indonesia is the water crisis which can have an im-

act on food, energy and other crises. The next problem is natural disasters. Quoted from the People's Mind, the PRMN Team (Team, 2021) stated that BNPB recorded that on January 1-18, a total of 154 natural disasters occurred in Indonesia. Most of them are in the form of floods, hurricanes and landslides. Another problem that occurs in the river environment is the number of rivers that are dirty, smelly and cannot be used for bathing and washing and many rivers are missing or experiencing shallowness (Goenmiandari et al., 2010). The most crucial problem at this time is that people living around riverbanks still show attitudes and behaviors that do not preserve the river, such as throwing garbage in the river, there are still many standing latrines. The impact felt by activities above the river environment will be polluted (Elmy & Winarso, 2019), although directly the river looks flowing and fine. Traditional water quality prediction models cannot comprehensively consider the influence of physical, chemical, biological, meteorological, and hydraulic factors (Liu et al., 2019).

The river functions as a transportation infrastructure, supporting economic activities, and a place for socialization. In addition, the river also functions for daily activities such as bathing, washing and playing. Rivers are an undeniably valuable resource for human survival and have become part of the living landscape. Ironically, due to human activities, anthropogenic problems have caused the degradation of river values (Mohd Firdaus et al., 2021). There

are negative impacts of human activities on rivers. Pollution from household waste, commercial and industrial activities, garbage, chemicals, and so on can affect water quality. With the rapid economic development and accelerating urbanization, water pollution has become more and more serious (Tirkolaee et al., 2018). This will mainly affect the use of rivers as a source of drinking water or as a habitat for freshwater ecosystems (Angriani et al., 2018).

Education is a key role in restoring river degradation because in education there is a transfer of knowledge to all citizens (Ladrera et al., 2020). Education here is not only what happens in school, but must last a lifetime (Onoprienko et al., 2021). Environmental education can be done through various stages of formal and non-formal education (El-Deir, 2019). Environmental education is very important to achieve a more rational, efficient, and socially just water consumption (Sartori et al., 2022). Previous studies have attempted in depth to establish coexistence between humans and nature in urban contexts (Mohd Firdaus et al., 2021). With the advent of competency-based approaches, the educational environment has changed again and has begun to interact with electronic resources introduced into the educational process (Ilyashenko et al., 2019).

Yogyakarta has 8 (eight) rivers, namely: Code River, Krasak River, Opak River, Oyo River, Progo River, Mataram Ditch, Tinalah River, and Winongo River. The eight rivers have the potential to flood if the rainfall is high and the behavior of the community is not friendly to the river. The severity of water conflicts is also determined by the impact of water scarcity on the socio-economic-environmental system of stakeholders (Yuan et al., 2021).

The “sekolah sungai” is one of the effective and strategic efforts to prepare the community and the environment to face the water crisis. A symbiotic relationship of mutualism needs to be built between the community and the river as part of saving the environment (earth) (Purbadi, 2017). River school education is community-based education which means the process of involving community members or community groups to raise problems and needs, find solutions, use resources, and implement learning activity plans or both. This educational model involves the community and is rooted in the culture that exists in the community (Tilaar, 2000).

In this case, Yogyakarta has a River School, namely the Winongo River School, which is located in the Winongo River. Kali Winongo is one of the rivers that flows through the Special Region of Yogyakarta. The length of this river is 43.75 km and flows across Sleman Regency, Yogyakarta City and

Bantul Regency. This river originates from several small rivers on Mount Merapi, and ends at Kali Deggung.

There are two benefits of “sekolah sungai”, tangible and intangible (Purbadi, 2017). Tangible benefits, the residents of Winongo, Bener Village, Tegalrejo District, Yogyakarta City are the goals of other communities from all over Indonesia who want to know the typical river education and based on local potential.

Intangible benefits, residents of Winongo, Bener Village, Tegalrejo District, Yogyakarta City are known throughout Indonesia (even to foreign countries) for their success in advancing community-based participatory life. They give real examples in organizing and managing the area in mutual cooperation, especially managing river spaces so that they become potential residents.

Both of these benefits need to be optimized so that the “Sekolah Sungai Winongo” contributes widely and maximally. There needs to be a river school model that is documented and can be studied. This is because the “Sekolah Sungai Winongo” has the potential as a reference for a well-managed River School in the city of Yogyakarta. Seeing these conditions, an environmentally conscious education model is needed at the “Sekolah Sungai Winongo” that can be studied by river school managers and visitors who want to learn about learning at the Sungai River School.

The form of the development of river school education is a conceptual model of environmentally conscious river schools (Fakhrudin, et al., 2021). This book is a conceptual framework to facilitate river school managers in preparing, implementing, and evaluating the implementation of the development of environmentally conscious education learning materials in river schools. Material development focuses on environmental awareness education which includes biotilic activities, fun outbound, and disaster mitigation.

The environmental education model is an important model for developing education as well as awareness about sustainable development. The model can be seen in written form and with a clear schema. Therefore, the development of the river school model is very necessary.

METHOD

This research is development research using the ADDIE model, namely Analysis, Design, Development or Production, Implementation or Delivery. This research was carried out on Winongo residents in Bener Village, Tegalrejo District, Yogyakarta

City. Based on previous research, the residents of the Winongo community already have a river school program that is already running, but does not yet have an effective model. namely the steps or processes to develop or improve a product.

The development model at the Development stage is in the form of developing an environmentally conscious education model in the river school in the form of a book. Research and development of an environmentally conscious education model in river schools is carried out through several stages. The steps and forms of the stages in this research and development can be seen in Figure 1.

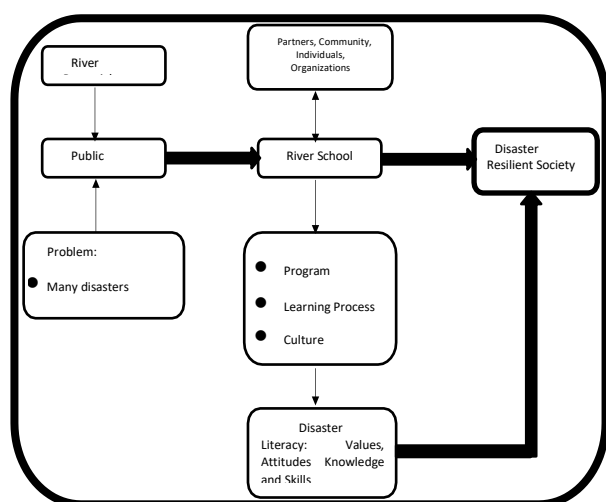


Figure 1. Model Development Chart

Based on Figure 1, it can be explained that the development of an environmentally conscious education model in river schools is carried out to solve and overcome problems that occur in the community. This development model involves several parties, both partners, communities, individuals and organizations with the hope that the river school program can run optimally.

Data were collected using FGD, observation and product feasibility assessment methods. The instrument used for data collection was through interview guidelines, observation guidelines and questionnaire sheets. Observations and interviews were used to research and assess initial needs in finding needs from the community. The feasibility of the product is measured using a questionnaire sheet which includes material aspects and media aspects.

The data that has been collected is then used for analysis and description. After the analysis has been carried out, the next step is drawing conclusions related to the product of the river school model

RESULTS AND DISCUSSION

Based on the results of the initial research, it was concluded that the Winongo community in Bener Village, Tegalrejo District, Yogyakarta City needed an environmentally conscious education model in the river school to improve existing programs in the community. Furthermore, it was agreed to create a model for environmentally conscious education in river schools in increasing literacy of river potential. The book will later be used to facilitate the management of river schools in preparing, implementing and evaluating the implementation of river school education lessons.

The purpose of implementing the environmentally conscious education model in river schools is to: (1) provide an overview of the components involved in environmentally conscious education around rivers, (2) provide directions for the development of environmentally conscious education programs in river schools, (3) make it easier for river managers to establish partnerships, (4) Become a planner in managing human resources (HR), (5) Make it easier for river school managers to implement each step of the learning model of environmentally conscious education in the river school, (6) Provide an overview of the appropriate learning environment arrangement in implementing the environmentally conscious education model in schools river.

Development Design

The activities carried out in this stage are to identify the local potential in the research location. Furthermore, the results of the identification are used to be included in the model of environmentally conscious education in river schools such as: learning materials, location drawings and materials and tools that are in accordance with the development of the model.

Conceptual model development design includes several parts, namely introduction, river flow, model design and model implementation and closing. The introduction contains the background, objectives, about the model book, the use of the model book.

The river flow section contains the substance of the river and the potential of the river. The design of the model contains the components of learning and the characteristics of the learning model. The implementation of the model contains objectives, materials, methods and evaluations in river school learning.

The conceptual model is structured as a description of the design of the river school which has components of preparation, implementation and evaluation. Activities carried out in river schools to in-

crease disaster literacy provide strengthening of knowledge, abilities and awareness of target communities related to conditions in the surrounding environment.

Production Guide

The product of the model book for environmentally conscious education in river schools outlines the introduction, river flow, model design, model implementation and closing as well as a bibliography.

The preparation of the guide product used in this study uses seven steps, namely: needs analysis, formulation of learning objectives, formulation of learning materials, script writing, evaluation and revision and product testing. It will be explained in more detail as follows:

Needs analysis

River education as a place to provide public awareness and knowledge in managing rivers and disaster mitigation have several problems that must be resolved immediately. The existing river school has at least 6 problems. First, the damage to the river is getting worse. This resulted in the greater threat of flooding that occurred in the area near the river. Second, the community around the river still does not have concern for the river so that there is a need for further more systematic and measurable awareness. Third, the competence of human resources owned by Sungai Winongo School is still not qualified to manage learning activities. Fourth, The supporting facilities and infrastructure for river schools have not been maximized, which means that the river school programs cannot run as they should. Fifth, community participation in river schools is still lacking. Sixth, partners in running river school programs are still limited to environmental agency, even though to run river schools more partners are needed to enrich the materials and educational models.

The data obtained were then discussed with community leaders using Focus Group Discussion. The results of the Focus Group Discussion and observations agreed that an environmentally conscious education model in river schools is needed that is able to provide strengthening knowledge and skills in river utilization awareness.

The awareness process in participatory development involving the community is an important phase (Megayanti et al., 2021). Communities who have an understanding of the importance of their participation in environmental development will help smooth the process of environmental development.

Formulate the objectives of model development

The purpose of developing an environmentally conscious education model in “sekolah sungai” as mentioned above is obtained from an in-depth analysis. Discussions with several parties such as residents around the river, academics and practitioners became the main basis, while to analyze how the goals could be achieved, the researchers studied and referred to several theories related to the river school model.

Formulating a conceptual model

The purpose of the model that has been determined is to produce strategies and content materials from the design of the model for environmentally conscious education in “sekolah sungai”. The analysis of the objectives resulted in several conceptual explanations, namely about river flow, model design and implementation in the field.

Writing a model script

At the stage of writing the manuscript, a description of the main material that has been previously planned is carried out. The manuscript is written carefully and uses reliable scientific sources such as the results of previous research and scientific journals.

Evaluation and revision

Evaluation of the model book for environmentally conscious education in river schools is needed to see the feasibility of the product. The evaluation was carried out using material expert validation and media expert validation. The existence of an evaluation process helps to improve the product to be more effective and efficient when used.

Expert validation results

The product trial phase is carried out to material experts and media experts. The data on the results of product trials that refer to the evaluation grid can be seen as follows:

Table 1. Validation results from material experts

Component	Score	Information
Content Eligibility	3.5	Very good
Serving Eligibility	3.7	Very good
Language	3.6	Very good

The average score of the guidance material aspect is 3.6, including the very good category.

Table 2. Validation results from media experts

Component	Score	Information
Graphics	3.5	Very good

Cover	3.6	Very good
Serving	3.3	Very good

The average score of the book display aspect of the Environmentally Aware Education model in the river school: 3.46 is in the very good category.

The data generated from the validation results to the environmental awareness model book material experts at the river school resulted in an average score of 3.6 which was classified as very good. Based on table 1, the material in the river school guide is very feasible and can be used by the target community. The validation given by media experts is also very good with an average score of 3.46. The data shows that in appearance, the media is suitable for use by the public.

Material experts not only provide responses to the questionnaires that have been given, but experts also provide comments or notes related to river school guidelines. Some notes from material experts are as follows: (1) If you want to use it as a book that can be used as point C, it is still incomplete, namely references, research results; (2) Because this is a model of a river school, it is important that this book is deepened according to the findings, not just concepts such as definitions; (3) The name is “sekolah sungai”, in my opinion there is material about rivers, their types, dangers, management and functions. Even to the point of making people use them as river tours that have economic value such as rivers which are built like ponds to be stocked with fish; (4) Worth using in the field with revisions.

Decent with certain additions such as more applicable, for example learning methods, educational tools, TOT models (outbound) maybe even those who splash in rivers, the name is a river school, you have to know the river which is part of the breath of people's lives. In tribes there are rivers that very vital for the breath of nature conservation, even by using tradition, people really don't want to pollute the river now that means people are aware of the river and its benefits

Revision

The data generated from material expert validators and media experts provide a complete picture related to the feasibility of river school guidelines in improving disaster literacy. The quantitative results of the questionnaires filled out by material experts and media experts showed that the “sekolah sungai” model book that had been made was feasible to use with an average score of 3.6 and 3.46, but several revisions had to be made according to input from material experts.

After getting an assessment and input from the

validator, a revision was made to the “sekolah sungai” guide book. In accordance with the input, several things that were revised are as follows: (1) Enriching the reference of research results in the model book for environmentally conscious education in river schools; (2) The book was developed and deepened according to the results of the initial research; (3) Addition of materials related to rivers, types, hazards, management, functions and river tourism that are economically valuable for the community; (4) The guide is made more applicable by adding detailed learning methods.

The design of the environmentally conscious education model in the river school is designed using a non-formal education approach which is expected to increase the existence of the “sekolah sungai” as an alternative learning vehicle and community empowerment. Therefore, the development of environmentally conscious education learning models in “sekolah sungai” is expected to support the needs of the community in dealing with challenges and threats of disasters and river flow dysfunction. In addition, environmentally conscious education in river schools that is carried out on a community basis can contribute to creating conditions for empowered communities. Broadly speaking, the design of the “sekolah sungai” model

Regarding the condition of empowered people, the characteristics of empowerment itself can be seen from several indicators, namely power over personal choices and life, power over the assertion of human rights, power over the definition of need, power over ideas, power of institutions, power over resources, power over economic activity, power over reproduction (Ife & Tesoriero., 2008). This empowerment effort cannot be separated from the level of awareness process by Paulo Freire, who stated that there are three levels of public awareness to be able to reach the word empowered, namely starting from the first level of magical awareness, secondly naive awareness, and the third is critical awareness level. Of course, the environmental awareness education efforts at the “sekolah sungai” are a process to change magical awareness into critical awareness,

Education can play an important role in reducing the direct and indirect negative impacts of extreme climate events (Cerulli et al., 2020). The way to make people aware of the importance of environmental sustainability is through education that not only leads to cognitive, but also behavior (Yarkandi, 2012). The behavior of students can thus be formed to gain useful knowledge about the environment (Gultom et al., 2019). It's hard to teach the values of conservation and preservation to people who don't value the nature around them or who are afraid or

hate to venture into it. Traditional classroom techniques or interpretive signage did little to change these attitudes (Chawla, 2015; Bacon & Ziepniewski, 2017).

The “sekolah sungai” as a vehicle for community learning about the environment, especially rivers, have practical benefits to provide awareness about rivers and their potential. The existence of this river education model manual is expected to be able to assist river school managers and the community in implementing the existing river school program. The “sekolah sungai” guidelines in improving disaster literacy can already be said to be feasible for use by the community. The results of the expert validation state that the river school model guidelines are very good to be used. This can be seen from the average value generated from the expert validator.

Education is a conscious and planned effort to provide stimulation to students to gain knowledge and the ultimate goal is to form awareness of the importance of protecting the environment (Tanyid, 2014). Education as one part in the national development effort has a strategic position for the development of human resources (Hermawan & Suryono, 2020). Environmental education is considered a continuous and permanent process which is an integral dimension of education for all citizens, oriented to the process of acquiring knowledge, developing habits, skills and attitudes and forming values, harmonizing relationships between humans, and between them and society and other nature, with them providing a reorientation of the economy, social and cultural processes by carrying out sustainable development. (Department of Science and Technology, 2007; Rodrigues, 2014). Educational programs with different environmental themes are developed and implemented to strengthen ecological awareness, especially among children and youth (Directorate of Partnership, Communication and Cooperation (DPCC); Gaaadaoui et al., 2021).

The existence of an environmentally conscious education model makes “sekolah sungai” closer to the ideal in conceptually looking at how river schools can be developed empirically based on potential. Soleh (2017) provides a definition of potential as power, strength, ability and ability that can be developed (Soleh, 2017). Through the Winongo river school, the community can be moved to preserve the river environment, because all citizens have the right and obligation to maintain, care for and preserve the environment in Indonesia (Prasetyo & Dasim, 2016).

The environmental awareness education model book was developed with a non-formal education approach, namely education as awareness.

Green in Kindervatter (Kindervatter, 1979) reveals that non-formal education must play a role in empowerment or community development by carrying out a process of awareness and liberation. The community can also relate conceptual and procedural knowledge to solving environmental problems, and how to apply it in everyday life by providing examples for students to care about the environment (Wardani, 2020); Pradini, Sujanto, Nurjannah, 2018). Values As an educational model that awakens awareness, this book can contribute to the social movement of the community so that they can better understand the natural and social realities around them. so that the community is able to innovate on the potential that exists in their environment. Bloom's taxonomy defines educational goals in three domains viz. cognitive, effective and psychomotor or conative. Environmental education contained in this model manual also consists of these three domains. Information on river properties and river character is related to the cognitive domain. This information will certainly produce a sense of belonging between humans and nature. They will be emotionally attached to various environmental protection movements as a result of the inner pressure of the community. This is the affective domain. In the psychomotor realm, humans seek physical involvement, namely activities that demand preservation with cleanliness, recycling, and tidiness of the river (Tomar, 2019).

In the context of ecological citizenship, the vision, mission and goals of environmentally-based schools are also very important because the high and low levels of environmental citizenship owned by school students are also influenced by the environmental climate and commitment of the school itself, including the vision, mission and goals of the school which contain the concept of care for the environment (Yusuf et al., 2020).

In the future, this model of environmentally conscious education in river schools can be tested to find out how far its effectiveness and efficiency is in responding to empirical conditions in river schools. In addition, it is important to develop models of environmentally conscious education in other places that are prone to disasters, considering that Indonesia has various geographical conditions that have the potential to be developed into a fashion. through the study of rivers or other natural conditions allows opportunities for discussions with stakeholders in various organizational settings (Lundmark & Jonsson, 2014). Local Economic Development offers local government government, private sector, non-profit sector, and local communities have the opportunity to work together to improve the local economy. It

aims to increase competitiveness and thereby promote sustainable and inclusive growth (Sasmita et al., 2022).

CONCLUSION

From the results of the study, it can be concluded that the development of an environmentally conscious education model at the “Sekolah Sungai Winongo” is feasible to be used at the “Sekolah Sungai Winongo”. The score from the material expert shows very good criteria as well as the score from the media expert shows very good criteria. This research is in the development stage, so further research is needed to determine the effectiveness of the model in increasing environmental awareness.

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