

STUDENTS' LEVEL OF KNOWLEDGE OF SDN TATAH ALAYUNG ON THE ENVIRONMENTALLY CONSCIOUS AND DISASTER MITIGATION SCHOOL PROGRAM IN A WETLAND ENVIRONMENT

Muhammad Efendi¹, Ghinia Anastasia Muhtar², Akhmad Sugianto³, Dwi Ramadani^{4*}, Rahmawati⁵

^{1,2,4}Geography Study Program, Lambung Mangkurat University, Banjarmasin, Indonesia

³Guidance and Counseling Program, Lambung Mangkurat University, Banjarmasin, Indonesia

⁵SDN Tatah Alayung, Baritokuala, Indonesia

*Correspondent Email: 2110416110005@mhs.ulm.ac.id

Received 2023-10-18 | Revision 2023-12-20 | Accepted 2023-12-30
Geography Study Program, Lambung Mangkurat University

Abstract: Schools with Environmental Insight and Disaster Mitigation (SWALIBA) are part of educational institutions that are committed to and systematically integrating environmental values, and disaster preparedness attitudes into all aspects of school activities. The SWALIBA process involves three stages, namely development, progress, and service, which reflect the condition and readiness of the school to run this program. SDN Tatah Alayung is currently in the preparation stage to become a SWALIBA school, which requires physical and non-physical preparation. An assessment of the physical aspects of the school has been carried out to evaluate the readiness to implement SWALIBA at SDN Tatah Alayung, and the results will be presented in scientific articles and activity reports. The approach methods in the Community Partnership Program include counseling, discussion, training, simulation, mentoring, monitoring, and evaluation of activities. Program evaluation shows that the level of student understanding at SDN Tatah Alayung is 96.79%, categorized as good. However, in terms of mitigation, training, simulation, and outreach regarding disasters in swamp areas, improvement still needs to be done because students' understanding is still below 50%. The analysis results were obtained from 53 respondents from class IV, V, and VI students. The technology that was successfully implemented involved changing attitudes and habits through outreach activities, discussions, training and simulations, as well as creating an attractive SWALIBA pocketbook for elementary school students.

Keywords: SWALIBA Program; SDN Tatah Alayung; wetland environment

INTRODUCTION

Geographically, SDN Tatah Alayung is located in Mandastana sub-district and borders directly with Sungai Tabuk sub-district (Banjar Regency). The location is on the edge of a river and a peat swamp area with plains that make it vulnerable to natural disasters, especially tornadoes, floods, and land fires. This area has a high potential for disasters, with a topography that is very vulnerable to the risk of tornadoes, floods,

and land fires. SDN Tatah Alayung, as a school in this area, is directly exposed to the risk of these disasters.

Disasters are defined as conditions that threaten the lives of living creatures, caused by human, natural, and non-natural factors, which can damage the environment, cause material losses, psychological impacts, and result in loss of life. Law No. 24 of 2007 concerning Disaster Management explains that a disaster refers to a situation or event

that poses a threat and disruption to people's lives, whether caused by natural, non-natural factors or human actions (Hidup, 2009; Muktadir, 2014).

Overall, flooding is an event where areas that are usually dry become submerged by water due to high rainfall and the topography of the area tends to be low. Flooding can cause direct impacts, such as damage to settlements and infrastructure, as well as indirect impacts, such as loss of life. In Indonesia, one of the factors that causes flooding is the accumulation of rubbish in rivers, which causes rivers to be unable to accommodate water discharge during heavy rain (Atmojo, 2020).

South Kalimantan Province, which is located in the southern part of the Borneo island, has an area of 38,744 km². Kalimantan Island generally has high rainfall because of its geographical location on the Equator. Flooding in this province is caused by high rainfall, increasing river water discharge, and lack of maintenance of river watersheds (DAS). Other factors that exacerbated this disaster included illegal coal mining (Setyowati, 2019; Shofwan et al., 2021).

Considering the situation above, it is necessary to design a concept to form an educational forum that can apply and develop knowledge about disasters and environmental conservation. Then, this formation concept was realized in the design of the School with Environmental Insight and Disaster Mitigation (SWALIBA) which was implemented as the first step in realizing Adiwiyata school status.

The main aim is for schools not only to act as conventional educational institutions but also to become strategic entities to expand society's understanding of disasters

and environmental sustainability. Schools with Environmental Insight and Disaster Mitigation (SWALIBA) can be described as educational institutions that pledge and regularly integrate environmental principles and disaster preparedness into all aspects of teaching and learning activities. This program has significance in dealing with potential damage due to natural disasters and promoting a sense of love for the environment among students. The goal is to create a comfortable, safe, and supportive learning environment (Astawa et al., 2022; Pamuji & Widowati, 2021).

The SWALIBA concept is an effort to introduce disaster prevention and environmental sustainability efforts in the educational environment. The establishment of this school is considered crucial because from here the young generation will emerge, who will have skills in reducing disaster risks and preserving the environment. Including students in the SWALIBA program aims to enable them to experience a comfortable and beautiful school environment, thereby encouraging enthusiasm for learning and responsibility for preserving the school environment (Anisah & Sumarni, 2019).

Law No. 20 of 2003 concerning the national education system article 5 paragraph 1 emphasizes that this initiative is in line with the mandate, which states that every citizen has the same right to receive a quality education. This step supports the spirit of the law by paying special attention to aspects of disaster prevention and environmental conservation in an education context. Similarly, Law No. 24 of 2007 can also be a relevant legal basis, which can provide support for the implementation of this SWALIBA initiative.

Disaster management also emphasizes everyone's right to receive education, training, and skills in disaster management. Environmentally Conscious and Disaster Mitigation Schools implement educational programs and activities aimed at increasing awareness and developing policies related to the environment and disaster mitigation (Wardana et al., 2019). This involves preparing school policies that pay attention to environmental aspects and disaster mitigation, designing a curriculum that focuses on these two things, as well as implementing participatory activities and managing supporting facilities in schools. Education about the environment and disasters are considered two interrelated things, to produce a generation that cares about the environment and is prepared to face disasters (Akbar & Hartono, 2017).

In implementing community service activities with a focus on empowering community partnerships, it is hoped that they will be able to achieve the national research roadmap and contribute to Key Performance Indicator (IKU) number 3, namely lecturers carrying out activities outside the campus. The synergy of the proposing team with various expertise in the fields of geography education, physical and environmental geography, as well as guidance and counseling is expected to produce the expected solutions and innovations (Efendi et al., 2022).

The involvement of college students in this activity is also the initial implementation of the Ministry of Education, Culture, Research, and Technology's program, namely Merdeka Belajar Kampus Merdeka (MBKM). Through research and service activities, students will be involved from the beginning to the end in activities for one

year, gaining knowledge from community partnership empowerment activities (Yuniarto, 2013).

LITERATURE REVIEW

Wetlands

The environment refers to natural conditions and the elements within them that influence each other, while wetlands are a process where water interacts with the soil. According to Hidayat (2010), wetlands cover various areas such as mangrove areas, peatlands, swamps, rivers, lakes, deltas, floodplain areas, and rice fields. According to Supriatna (2008) in his work entitled "Preserving Indonesian Nature", he stated that wetlands can be found in every country and climate zone, from polar regions to tropical regions, and from highlands to dry areas.

Ecologically, wetlands are ecosystems with high levels of humidity, often characterized by the presence of surface water throughout the year (Juwono & Subagiyo, 2017). Types of wetlands can involve swamps, mangroves, lakes, rivers, and others. Humans, as higher creatures, have an important role in maintaining biodiversity and managing water flow patterns (Yuniarto, 2013).

Wetlands, according to Shofwan et al. (2021), is an ecosystem characterized by the presence of water above or below the ground surface throughout or part of the year. Types of wetlands include swamps, marshes, lakes, rivers, and mangroves. Wetland ecosystems have a crucial role in disaster mitigation, especially related to flooding, soil erosion, and protection against storms (Ramadani et al., 2022).

Environmental Insight and Disaster Mitigation School (SWALIBA)



The concept of Environmentally Conscious and Disaster Mitigation Schools is an approach that includes environmental education in the school curriculum. The program aims to increase students' understanding of their natural and cultural environments and encourage sustainable action (Djali, 2013). Through the Environmentally Awareness and Disaster Mitigation School Program SWALIBA, it is hoped that students will be aware of the impact of human activities on the environment and learn how to maintain and protect natural resources. Implementation of environmentally friendly schools can involve practical learning in natural environments, integration of environmental issues in subjects, and promotion of student participation in sustainable projects (Utami, 2021).

The SWALIBA program is an important step to prepare future generations to face environmental challenges and disasters. With careful planning, community support, and strong commitment, this program can be an important vehicle for protecting the environment and human life (Indahri, 2020). To ensure that the implementation of the SWALIBA program has a positive impact, field activities are needed with assistance from individuals or groups who have knowledge and experience in the field of environment and disaster mitigation. Disaster mitigation in wetlands, as areas vulnerable to disasters such as floods, landslides, and climate change (forest and land fires), requires appropriate mitigation strategies.

This strategy can involve building flood control systems, rehabilitating wetland ecosystems, and wise spatial planning to avoid development in areas that are highly

vulnerable to disasters. Thus, disaster mitigation efforts in wetlands not only involve understanding and managing the environment but also sustainable spatial planning (Juwono & Subagiyo, 2017).

RESEARCH METHODS

Before carrying out Community Partnership Empowerment (PKM) activities with partner groups, the first step taken was to make preparations through meetings and discussions between the Service Team and partners, namely SDN Tatah Alayung in Mandastana District, Barito Kuala Regency. The purpose of this meeting is to coordinate activities and find common ground in implementing the SWALIBA concept (Environmental Insight and Disaster Mitigation Schools), as well as empowering the learning community at SDN Tatah Alayung. In this Community Partnership Program (PKM) activity, the service team uses a comprehensive method. First of all, counseling and discussions are the initial methods for conveying information related to the SWALIBA concept, environmental sustainability, and disaster mitigation to participants.

Through interactive dialogue, the Service Team tries to understand the needs and expectations of partner communities. Furthermore, the method involves training and simulation, where participants are given practical skills related to implementing the SWALIBA concept and implementing disaster mitigation. Simulations of disaster situations or environmental scenarios are also implemented to increase participants' preparedness and understanding. Direct support through mentoring and monitoring activities is also carried out, where the Service Team assists in implementing the

SWALIBA concept at SDN Tatah Alayung and carries out regular monitoring of the development of partner community activities. Finally, a systematic evaluation was carried out to assess goal achievement, identify obstacles, and evaluate the positive impacts that have been achieved in implementing the SWALIBA concept. This method is expected to ensure effectiveness, sustainability, and maximum benefits from PKM activities.

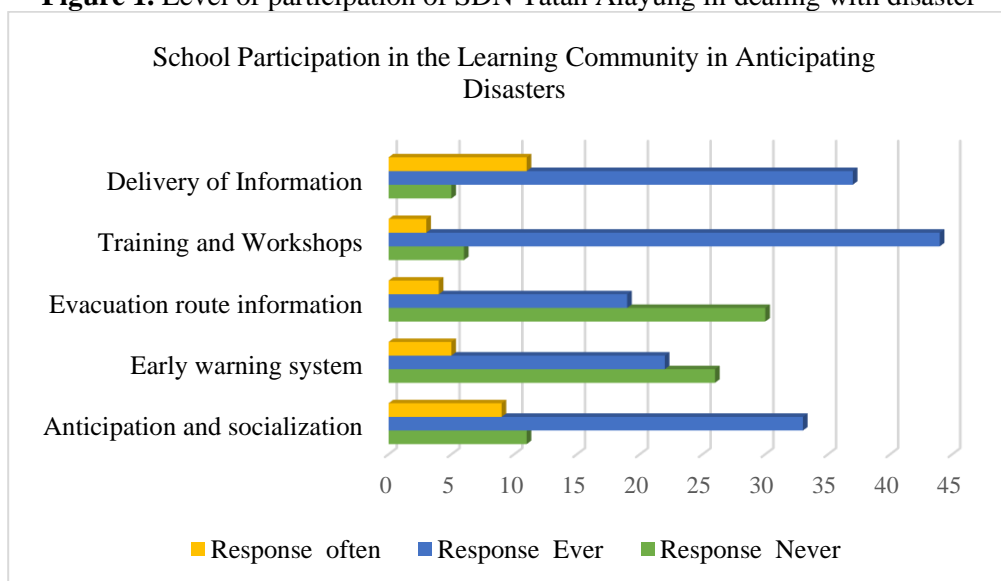
RESULTS AND DISCUSSION

School participation in building resilience to disasters is reflected through three main activity pillars, namely school physical facilities, school management, and

dissemination of knowledge about disasters. Through an initial survey of the learning community, the research team identified three indicators that had been successfully facilitated by schools, namely the delivery of information related to disasters, training, and workshops, as well as anticipation and outreach.

Even though the survey results state that the school has not fully met two important indicators, namely the availability of evacuation routes and an early warning system, data analysis from Table 1 and Figure 2 shows that SDN Tatah Alayung has quite an impressive level of resilience in facing potential disasters around the school environment.

Figure 1. Level of participation of SDN Tatah Alayung in dealing with disaster



Source: Primary data processing results, 2023

It should be noted that, although there are shortcomings in the implementation of the availability of evacuation routes and early warning systems, the efforts made by SDN Tatah Alayung demonstrate their commitment to disaster preparedness. However, extra attention needs to be paid to

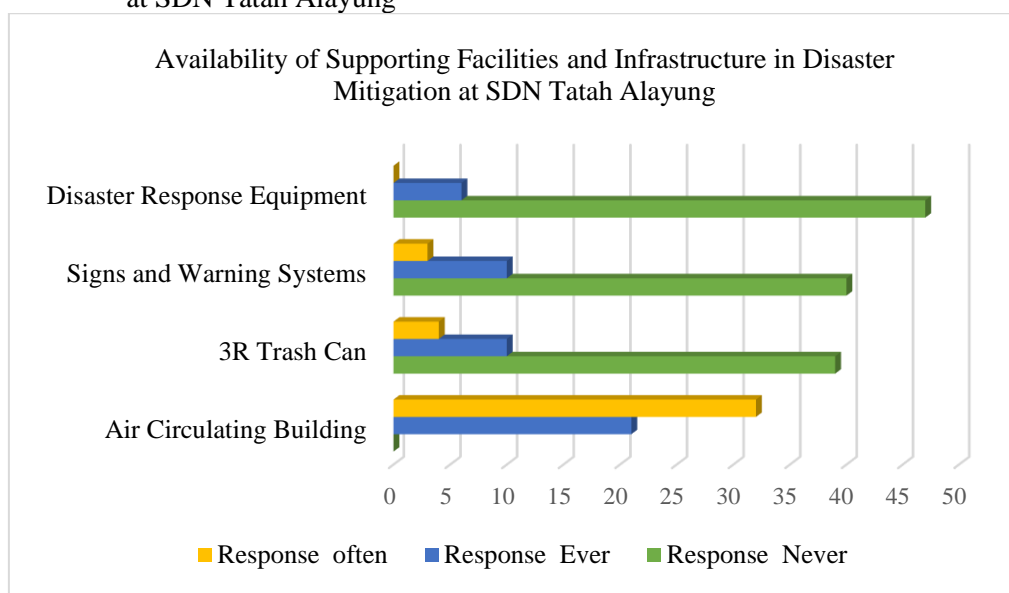
these aspects to ensure that all elements supporting school resilience are fully met. The results of data analysis from Table 1 and Figure 2 show that SDN Tatah Alayung has succeeded in achieving an adequate level of resilience. However, improvements are still needed in fulfilling the availability of

evacuation routes and early warning systems so that SDN Tatah Alayung can be more optimal in managing and dealing with potential disaster risks in their school environment. With this understanding, it is hoped that schools can continue to improve

disaster resilience efforts by identifying and improving existing weaknesses.

Collaboration between schools, communities, and related parties needs to be improved to achieve optimal levels of preparedness in facing potential disasters.

Figure 2. Availability of Supporting Facilities and Infrastructure in Disaster Mitigation at SDN Tatah Alayung



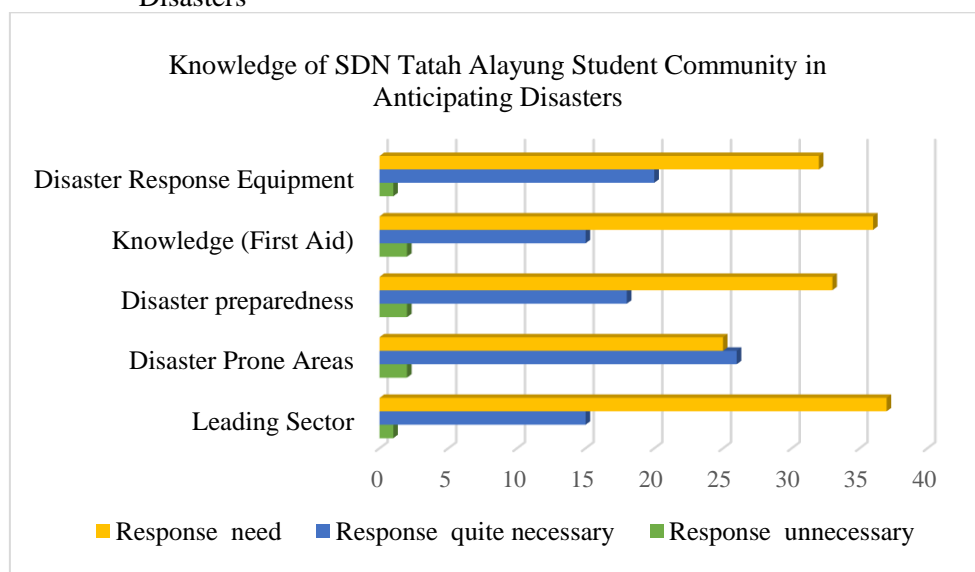
Source: Primary data processing results, 2023

Educational facilities and infrastructure play a central role in forming healthy and environmentally friendly schools. The complexity and quality of educational facilities not only influence student and staff comfort but also create a foundation for the development of environmental and sustainability understanding among school communities with a focus on disaster mitigation. In this context, there are five indicators of facilities that are essential for schools to have. Based on initial studies at SDN Tatah Alayung, there is one indicator that has been realized by the school, namely the school building has excellent air circulation. However, several other indicators still need further attention.

3R waste bins are still not evenly available in the school environment, while evacuation routes have not been formed, even though the field has been identified as a gathering point during emergency conditions. Signs and warning systems also do not exist in the school environment, and disaster response equipment has not been provided either in classrooms or throughout the school environment.

From the results of the data analysis, it can be concluded that in the aspect of educational facilities and infrastructure, SDN Tatah Alayung has not yet reached an adequate level of preparedness to face potential disasters in the school environment.

Figure 3. Knowledge of SDN Tatah Alayung Student Community in Anticipating Disasters



Source: Primary data processing results, 2023

Based on initial studies at SDN Tatah Alayung regarding the knowledge of the learning community regarding disasters, such as forest and land fires, floods, and tornadoes, the results show that the level of knowledge is quite good. However, support for related facilities and institutions in the local area still needs to be improved, as can be seen from the evaluation of the 5 indicators asked of the learning community regarding the environmentally awareness and disaster mitigation school program as an effort to improve the quality of education and the environment. From the data distribution, it can be concluded that in terms of disaster-related knowledge, SDN Tatah

Alayung has reached an adequate level of resilience. The effectiveness of simulation activities and the introduction of the concept of environmentally friendly schools and disaster mitigation SWALIBA at SDN Tatah Alayung, Mandastana District, can be measured through students' attitudes in understanding the delivery of the material. Evaluation is carried out using an attitude scale for each main indicator discussed during the activity. In this context, assessment not only involves cognitive understanding of concepts but also measures students' emotional responses and level of engagement with the material presented.

Table 1. Student Responses to Activities

No	Confirmation Questions	Percentage (%)		Level of Understanding
		Yes	No	
1	Are you familiar with the SWALIBA program? (+)	96.79	3.21	Very good
2	Do you know what forest and land fires are (+)	96.23	3.77	Very good
3	Do you know what a flood disaster is (+)	100	0	Very good
4	Do you know what a tornado disaster is (+)	96.23	3.77	Very good
5	Do you know what impacts are caused by forest and land fires (+)	88.46	11.54	Very good

No	Confirmation Questions	Percentage (%)		Level of Understanding
		Yes	No	
6	Do you know what impacts are caused by floods (+)	96.15	3.85	Very good
7	Do you know what impacts are caused by Puting Beliang (+)	86.54	13.46	Very good
8	Have you ever experienced illness due to forest and land fires, floods and tornadoes (-)	19.23	80.77	Good
9	Is your school located in an area prone to forest and land fires, floods and tornadoes (+)	59.62	40.38	Enough
10	Has your school ever been closed due to forest and land fires, floods and tornadoes (+)	40.38	59.62	Not enough
11	Does your school have disaster mitigation tools for forest and land fires, floods and tornadoes (+)	5.77	94.23	Not enough
12	Has your school ever conducted training in mitigating forest and land fires, floods and tornadoes (+)	37.82	62.18	Not enough
13	Has your school ever carried out disaster mitigation simulations for forest and land fires, floods and tornadoes (+)	21.15	78.85	Not enough
14	Have you previously participated in the SWALIBA socialization program? (+)	36.54	63.46	Not enough

Source: Secondary data processing results, 2023.

Through Table 1, it can be seen the results that describe students' responses to simulation activities and the introduction of SWALIBA. The attitude scale is used to reflect the extent to which students understand and respond positively to the concept of environmentally friendly schools and disaster mitigation. This evaluation includes various key indicators that have been presented during the activity, providing a holistic picture of the effectiveness of program implementation.

From the results of this evaluation, areas that have succeeded in achieving good student understanding can be identified, as well as highlighting aspects that require further attention to improve student understanding. Furthermore, the conclusions drawn from this analysis can become the basis for developing a more effective SWALIBA program in the future. This evaluation process is important to assess the impact and success of activities in achieving

learning objectives and students' understanding of environmental concepts and disaster mitigation.

Based on the distribution of data in Table 1 regarding student responses to the introduction of environmentally friendly schools and disaster mitigation (SWALIBA) in learning communities in wetlands, several significant conclusions can be drawn. The evaluation results show that the students' level of understanding can be categorized as good, with an average percentage result reaching 96.79%. These assessment parameters refer to the Sudjana (2010) criteria, which classifies evaluation scores between 80% and 100% as very good.

However, special attention needs to be given to aspects of mitigation, training, simulation, and outreach related to disasters in swamp areas, especially forest and land fires, floods, and tornadoes. The evaluation shows that students' understanding of this aspect is still inadequate, with results

reflecting less than 50%. This indicates the need to increase students' understanding of disaster mitigation in wetland environments.

The visualization of the evaluation results in Table 1 provides a percentage analysis based on fourteen confirmation questions, of which thirteen are positive and one is negative. The number of respondents was 53 people, consisting of students in grades IV, V, and VI of SDN Tatah Alayung. The results of this analysis provide a comprehensive picture of student responses to the SWALIBA program, providing a basis for developing programs that are more effective and responsive to the needs of students and the surrounding environment.

CONCLUSION

Based on the study and data analysis described above, it can be concluded that the level of student understanding can be classified as good. This is based on an average percentage result of 96.79%, to the parameters used by Sudjana (2010), if the evaluation value ranges from 80% to 100%, it is classified as very good. However, from the aspects of mitigation, training, simulation, and outreach related to disasters in swamp areas, especially forest and land fires, floods, and tornadoes, it is clear that improvement is still needed. This is because the results obtained by students are still less than 50%, indicating that students' understanding of this aspect is still low or inadequate.

The results of the analysis depicted in Table 1 are visualized in the form of a percentage analysis, which consists of fourteen confirmation questions with thirteen questions being positive and one question being negative. The total number of respondents used in this research was 53

people, consisting of students in grades IV, V, and VI at SDN Tatah Alayung. This evaluation provides a comprehensive picture of students' understanding of the concepts of SWALIBA and disaster mitigation, providing a basis for developing more effective programs in the future.

As academics who provide services to the community, the service team provides suggestions and opinions regarding the implementation of the SWALIBA (Environmental Insight and Disaster Mitigation School) Program, especially in the case of land fires, floods, and tornadoes, socialization should be carried out frequently, not only from academics but from other supporting elements involved, such as the education office, ministry of religion, disaster management agency, so that the learning community can become agents of change, especially in the field of managing land fire disasters that occur around them.

Schools, especially SDN Tatah Alayung, as partners, should include more material about the benefits and disasters related to the environment in the curriculum, both through core learning activities and in extracurricular activities held outside learning hours, for example, school waste bank communities, community disaster response learners, etc., this means that schools can meet Adiwiyata school standards while implementing the SWALIBA (Environmental Insight and Disaster Mitigation School) program.

THANK-YOU NOTE

The author would like to express his deepest gratitude to all parties who have supported this activity, especially to the DRTM Ministry of Education, Culture,



Research and Technology for the funding provided for the Community Partnership Program (PKM) in 2023. The author also expresses his thanks to the Head Tata Alayung Elementary School and teachers for their cooperation and participation in this service activity. Assistance with the SWALIBA (Environmental Insight and Disaster Mitigation) Program in Wetland Environments has succeeded in having an impact on students and the school community.

Thank you for the extraordinary dedication and cooperation of all parties involved in making this program a success. Hopefully the results of this service can be a stepping stone to further increase students' understanding of the environment and disaster mitigation around them.

REFERENCE

- Akbar, FI, & Hartono, R. (2017). Development of student activity sheets with a 4-D development model in material on disaster mitigation and disaster adaptation for class x high school. *Journal of Geography Education: Studies, Theory and Practice in the Field of Geography Education and Science*, 22(2), 134–145.
- Anisah, N., & Sumarni, S. (2019). Disaster-safe school model to realize character education at MIN 1 Bantul. *LITERACY (Journal of Educational Sciences)*, 10(1), 9–20.
- Astawa, IBM, Budiarta, IG, Treman, IW, & Sarmita, IM (2022). Developing Insight from Undiksha Laboratory School Residents About Environmentally Friendly Schools and Disaster Mitigation (SWALIBA). *WIDYA LAKSANA*, 11(1), 41–48.
- Atmojo, M.E. (2020). Early education in disaster mitigation. *Equatorial Journal of Informatics*, 3(2), 118–126.
- Djali, N. (2013). Disaster Education in Schools in Indonesia Based on Several Scientific Discipline Viewpoints. *ISSN Momentum Journal: 1693-752X*, 12(1).
- Efendi, M., Nasruddin, N., & Karani, S. (2022). School Participation in Disaster Resilient Learning Communities in Wetland Environments. *JPIG (Journal of Geography Education and Science)*, 7(2), 97–109.
- Efendi, Muhammad, Nasruddin Nasruddin, Muniatul Mukaramah, Asse Padly, and Muhammad Sulaiman Jazuli. "Actualization of Environmental Education According to the Qur'an Through the SWALIBA Program at Madrasah Aliyah Darul Ilmi." (2022).
- Efendi, M., Nugroho, A. R., Nayan, N., Rusdiansyah, R., & Normelani, E. (2022). Development of Adiwiyata-Based Integrated IPS Teaching Materials (Study of Environmental Wetlands and Sustainable Development at SMPN 11 Kota Banjarbaru). *J-PIPS (Jurnal Pendidikan Ilmu Pengetahuan Sosial)*, 9(1), 53-62.
- Efendi, M., Zakaria, A. A. S. M., Arifin, A. W. S., & Dupriansyah, M. (2023). Pengembangan Bahan Ajar IPS Terpadu Berbasis Adiwiyata Dengan Pendekatan Inquiry Training Pada Lks Siswa di SMPN 11 Kota Banjarbaru. In *Prosiding Seminar Nasional Lingkungan Lahan Basah (Vol. 8, No. 2, pp. 82-86)*.
- Life, MNL (2009). Regulation of the Minister of the Environment Number 17 of 2009 concerning Guidelines for Determining the Carrying Capacity of

- the Environment in Regional Spatial Planning. Jakarta (Id): CIL.
- Indahri, Y. (2020). Development of environmental education through the Adiwiyata (Study in Surabaya City) program. *Aspiration: Journal of Social Issues*, 11(2), 121–134.
- Juwono, PT, & Subagiyo, A. (2017). *Water Space and Spatial Planning: Water Engineering and Sustainable Development Approaches in Managing Urban Floods*. Brawijaya University Press.
- Muktadir, A. (2014). Development of a Local Content Subject Model Based on Local Wisdom to Improve Character in Elementary Schools in Bengkulu Province. *Journal of Character Education*, 5(3).
- Pamuji, MH, & Widowati, E. (2021). Implementation of the Mount Merapi Slope Disaster Mitigation Program. *Indonesian Journal of Public Health and Nutrition*, 1(2), 255–264.
- Ramadani, D., Yuni Kartika, N., Rahman Nugroho, A., & Anastasia Muhtar, G. (2022). Community Economic Potential Through Siamese Orange Cultivation in Banjar, Karang Bunga Village, Mandastana District, Barito Kuala Regency. In *Environmental Geography of Wetlands* (Vol. 3, Issue 2).
<https://ppjp.ulm.ac.id/journals/index.php/jgp/index>
- Setyowati, DL (2019). *Disaster Education, Urgency of Disaster Mitigation Education*. Semarang State University.
- Shofwan, M., Nugroho, AR, Prasakti, Y., Fitria, NN, & Azmi, L. (2021). Disaster Mitigation in the Traditional Community of Kampung Air, Mantuil Village, Banjarmasin City. *Journal of Geography (Wetland Environmental Geography)*, 2(2), 79–90.
- Utami, R.N. (2021). Implementation of the Disaster Preparedness School Program at the Sinaresmi Village Elementary School, Cisolok District, Sukabumi Regency. *Journal of Health Society*, 10(1).
- Wardana, S., Herdiansyah, H., & Wicaksono, A. (2019). Disaster risk management strategy in the environment and disaster mitigation-based school (SWALIBA). *Journal of Physics: Conference Series*, 1339(1), 012090.
- Yuniarto, B. (2013). *Building citizen awareness in environmental conservation*. Deepublish.