The Improvement of Students' Digital Literacy Based on Environment and Local Wisdom at Public Elementary School of Oelnitep, Kefamenanu City District North Central Timor Regency: Integrating with Technology to Care for the Earth

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ABSTRACT

This community service was carried out to increase students' digital literacy based on environment and local wisdom at public elementary school of Oelnitep. The activities were divided into 5 stages with the aim to produce output that is useful for partners and also for the community service team. The first stage was the initial survey in order to discuss with the school principal regarding the condition and circumstances of the school and the problems faced. The service team and the school also exchanged ideas regarding solutions to the problems of the partner. The second stage was the preparation of community service activities such as the learning media as well as the tools and materials needed. The third stage was the core activities where the students were introduced the video of "Cyber Eco Adventure: Exploring the Environment with Technology", the Use of Google Earth, the Demo of automatic watering tools, and the practice of planting the tree saplings and making drip irrigation. Based on the results of this community service activity, it can be concluded that the use of environmental-based technology can be a way to improve digital literacy while providing basic understanding regarding the environment at public elementary school of Oelnitep.

INTRODUCTION

The development of digital technology in the era of society 5.0 has brought significant changes and influences to education in the world, including in Indonesia. The era of society 5.0 is marked by close collaboration between humans and AI (Artificial Intelligence) in achieving certain goals, where AI is utilized collaboratively with human intelligence to achieve more effective and efficient results with better quality (Yahya & Muhammad, 2023). Thus, the education system also needs to be encouraged to be more innovative in utilizing technology when organizing learning in schools, especially the use of digital technology (Rahmawati, 2020).

The OECD has defined digital literacy as a person's ability in utilizing information and communication technology and being able to sort and filter correct and valid information according to needs (OECD, 2019). Therefore, elementary school levels (SD) as one of the basic educational institutions have the responsibility to prepare students to be able to cultivate the ability to adapt and utilize technology wisely. One of these educational functions needs to be owned by schools as an effort to continue to adapt to the demands of the times (Diputra et al, 2020).

In addition to digital literacy skills, students' awareness of environmental sustainability also needs to be fostered from an early age considering that global environmental changes and their impacts are undeniable and increasingly felt. Global environmental changes can have negative impacts such as global climate change, clean water crisis, excessive use of natural resources and environmental pollution. Environmental awareness in elementary school students is one of the important things in providing a foundation for understanding, appreciating and being responsible for the environment from an early age (Nugroho, 2022).

Technology collaboration in increasing understanding of environmental awareness in education is one of the important efforts in increasing environmental-based digital literacy. The use of environmental-based technology can be a way to increase digital literacy while providing basic understanding of the environment (Ariansyah, et al., 2024; Ambarwati, et al., 2021). The research conducted by Suharman, et al. (2021) has found that the integration of digital literacy and environmental awareness in elementary schools has a positive impact not only on students' technological skills but also in increasing awareness of the importance of environmental conservation. The community service carried out by Pambudi, et al. (2022) has also found the importance of strengthening environmental awareness values in elementary school students by instilling pro-environmental attitudes in elementary school children (Mandia & Nasution, 2024).

If examined further, it can be seen that a good environment greatly determines the quality of human life, so that humans have a great responsibility to maintain and care for the environment in which they live. A healthy environment is everything around vicinity that can affect the development of human life, both directly and indirectly. A healthy environment will have a good impact on human life. Likewise, a bad environment will also have a bad impact on human life which can result in humans not being able to live a comfortable life (Naziyah, et al., 2021).

North Central Timor Regency is one of the regencies in East Nusa Tenggara Province (NTT) which directly borders the Democratic Republic of Timor Leste (RDTL) with 40.95% of the contribution of TTU Regency's GRDP coming from the agricultural sector. TTU Regency also has rich biodiversity. Public elementary school of Oelnitep is one of the public elementary schools located in Tubuhue Village, Kota Kefamenanu District, North Central Timor Regency and is situated 9 km from Timor University. The location of Oelnitep Elementary School is included as one of the priority areas for Research and Community Service at Timor University.

Based on the observation result at public elementary school of Oelnitep, it is known that there are obstacles experienced by both teachers and students in the learning process where teachers only use books as learning media and limitations in the use of technology as an interactive learning. The availability of technological facilities and infrastructure is also one aspect that results in a lack of digital knowledge in

this school. Based on the geographical conditions and problems faced by public elementary school of Oelnitep, it is necessary to increase environmental-based digital literacy to provide awareness of the importance of preserving the environment among elementary school students.

RESEARCH METHOD

Procedure and Stages

The procedures and stages of implementing community service activities were based on Figure 1 consisting five (5) stages of activities. These five activities are carried out in order to produce output that is useful for partners and also for the community service team.

The Initial survey and agreement/cooperation with the school principal as well as discussions related to partner issues

The Preparation of community service activities such as the learning media as well as the tools and materials needed

Core Activities:
1. Video introduction: "Cyber Eco Adventure: Exploring the Environment with Technology"
2. The Use of Google Earth to monitor the condition of the earth's surface, especially in TTU Regency
3. The Demo of automatic watering tools for plants created by university students as the community service members
4. The practice of planting the tree saplings and making drip irrigation using simple material

Evaluation of Activity Results and Partner Feedback Evaluation of Activity Results and Partner Feedback

Reporting the Results and Publication

FIGURE 1. Stages of Community Service Activities

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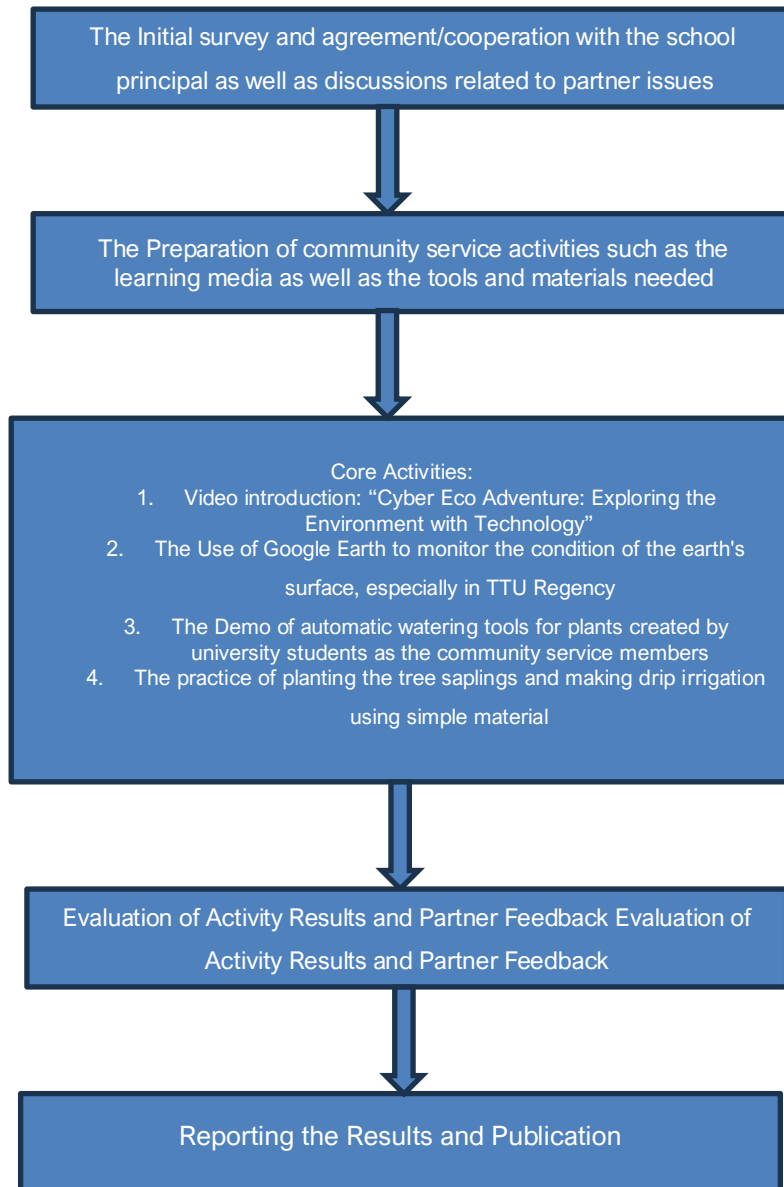
a. Initial survey and agreement/cooperation with the school principal and discussion related to partner problems

The initial survey was conducted at public elementary school of Oelnitep as one of the public schools located in the development locus by Timor University. In the initial survey, the service team discussed with the school principal regarding the condition and circumstances of the school and the problems faced. The service team and the school also exchanged ideas regarding solutions to the problems of the partner. Figure 2 below shows the documentation of the survey activities carried out.

FIGURE 2. Initial Survey

b. The preparation of community service activities such as the learning media as well as the tools and materials needed

Based on the analysis of the problem and the solution to the problem, the community service team then prepared environmental-based digital literacy improvement activities in the form of socialization and training. The preparations needed include preparation of tools and materials, as well as preparation of materials in the form of teaching materials, learning videos and making minimalist automatic watering tools.

c. The core activities were taken places within 4 fundamental steps as follows:
   - Video introduction: "Cyber Eco Adventure: Exploring the Environment with Technology"
   - The Use of Google Earth to monitor the condition of the earth's surface, especially in TTU Regency.

FIGURE 3. The Opening Ceremony at School

   - The Demo of automatic watering tools for plants created by university students as the community service members.

FIGURE 4. The Demo of Automatic Watering Tools

- The practice of planting the tree saplings and making drip irrigation using simple materials.

FIGURE 5. The practice of planting the tree saplings

FIGURE 6. The Closing Activity

d. Activity Results and Feedback from Community Service Partners

Evaluation of activity results was carried out to determine changes in the level of participants' understanding of digital and environmental literacy. Evaluation was carried out using questionnaires and analysis.

e. Reporting of Community Service Results and Publication

The end of all stages of activities was the output produced in the form of publication of activities through online media such as YouTube and newspapers, scientific publications and HAKI as well as final activity reporting.

Partner Participation

Partner participation in this community service activity was divided into several activities, namely:

- Determining problem priorities
  Determining problem priorities was done by discussing with the school principal to receive suggestions in identifying the main problems that need to be solved so that they can be resolved together both from the school and the community service team.
- Determining the method of implementing training activities
  The determination of the implementation method includes the time of implementation, facilities to be used and training participants.
- Target Audience
  The target of community service activities is the students in public elementary school of Oelnitep who are in grades V and VI with a total of 25 participants by introducing Eco Cyber Video, Google Earth, Automatic watering tool demos and joint planting.

Timeline

The timeline of this community service can be seen in table 1 as follows.

TABLE 1. Timeline of Community Service

No.	Name of Activities	January-March	April-May	July	August	September	October
1	Preparation (Initial Survey and Location)	■					
2	The Preparation of Tools and Materials		■				
3	The Preparation of Training Contents			■			
4	The Implementation				■		
5	Journal Publication					■	
6	Final Report						■

RESULT AND DISCUSSION

Based on the implementation of community service that has been carried out, the results achieved from this community service are as follows:

a. The Implementation of the first phase of the survey

The first phase of the survey was conducted at the service location, at public elementary school of Oelnitep with the aim of discussing the problems experienced in the school. In addition, alternative solutions offered to overcome these problems were also discussed. This process was highly supported by the school principal and the teachers at public elementary school of Oelnitep. From the results of the first survey, the problem was that students in this school still had limited knowledge and understanding of technology (digital literacy) and the use of technology for environmental sustainability. Therefore, the solution was in the form of an introduction to technology in the form of computers/laptops and Google Earth, as well as the emphasis on the importance of protecting the environment for the sustainability of the earth through the introduction of automatic watering tools and joint planting activities.

b. The Implementation of training activities

The implementation of community service activities integrated was carried out in the area of public elementary school of Oelnitep. This activity was not only attended by students in grades V and VI but also by the teachers. The implementation of the activity went very well, the enthusiasm of the students in this training activity was seen vividly as well. The implementation of the activity was carried out using a direct training method delivered by community service team and some students from University of Timor. The activity ran interactively between the community service team and participants. The community service team also identified that the participants of the training acquired good understanding related to the digital technology taught during the activities. The implementation of the training was also held by solving environmental problems directly through the joint activities of planting and making drip irrigation on the plants planted.

c. Publication in Online Media

This community service activity has been published in online media in the form of Facebook and Digital Newspaper (POS KUPANG).

CONCLUSION

Based on the results of this community service activity, it can be concluded that the use of environmental-based technology can be a way to improve digital literacy while providing basic understanding regarding the environment at public elementary school of Oelnitep.

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