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Community Service at SDK Nita 1 on Integrated Environmental and Local Wisdom Education

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Abstract
Learning at SDK Nita 1 still relies on textbooks without the development of contextual teaching materials, so that local wisdom is not optimally utilized in the learning process. In addition, waste management at the school has not been carried out properly because all waste is burned every morning, causing pollution and health risks for the school community. This community service activity aims to improve teachers' ability to develop teaching materials based on the local wisdom of Sikka Regency and to increase the awareness and skills of the school community in environmentally friendly waste management. The implementation methods include socialization, training, technology application, mentoring, evaluation, and program sustainability in two focus areas: teaching material development and waste management education. The results of the activity show a significant increase in competence and behavior. A total of 100% of teachers successfully developed teaching materials based on local wisdom using design technology (Canva), and all of them were able to manage the related learning administration. In terms of the environment, 75% of school members were able to sort organic, inorganic, paper, and hazardous waste; 75% were able to process organic waste into compost; 75% were able to make bricks from plastic waste; 85% were able to store inorganic waste suitable for sale at waste banks; and 80% were able to use compost for educational plants. Waste management facilities such as segregated trash bins, compost bins, and waste banks have also been successfully established as supporting infrastructure. Waste management facilities such as separate trash bins, compost bins, and waste banks were also successfully set up to support sustainability. These findings show that integrating local wisdom and environmental education into PkM can create more contextual learning and build a clean, healthy, and sustainable school culture.

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1. INTRODUCTION

SDK Nita 1 is a private elementary school operating under the auspices of the Catholic Schools Foundation of the Diocese of Maumere, Sikka Regency, East Nusa Tenggara Province. The school was established on June 17, 1912. As a private institution, the number of teachers with Civil Servant (ASN) status is very minimal, consisting of only 1 out of 8 teachers, while the remaining 7 are honorary teachers. The school employs 2 non-teaching staff members, comprising 1 operator and 1 administrative officer. SDK Nita 1 consists of 6 study groups with a total of 159 students (91 boys and 68 girls). Located on Jalan Donsilipi, Nita Village, the school enjoys a strategic location along the national road, making it easily accessible by transportation. Although

the learning facilities are decent, they remain very limited. Furthermore, the honorary status of the majority of the staff impacts teacher welfare, which is currently considered inadequate

This condition also impacts the development of the instructional process conducted by teachers. Teachers rely solely on teaching materials found in standard textbooks. Meanwhile, contextual materials or examples are not provided to students, as instruction is guided by a single source without further development or innovation. The utilization of local wisdom is rarely, if ever, practiced by the teachers. Such an approach causes students to experience difficulties in learning, as they are compelled to study cultures from other regions rather than their own context. Beyond the instructional process, the environment of SDK Nita 1 (the school grounds and surroundings) is classified as quite clean. The school has one permanent waste disposal site located in the rear right corner of the school premises, built directly adjacent to the school wall. Due to this limitation, all waste is collected at this single site and burned every morning. Consequently, the smoke from this waste incineration is inhaled by the school community and even by residents living in the school's vicinity.

Currently, the waste disposal site is in a damaged state due to breaks on both the front and back sider, causing waste discarded by the school community to easily scatter, even reaching residents' gardens. These conditions serve as the rationale for the team to conduct community service activities at this school, focusing on training in the development of teaching materials based on the local wisdom of Sikka Regency and on waste management (El Puang et al., 2023; Hasibuan, 2023). This community service activity represents the implementation of research results from 2022, which emphasized the integration of local wisdom into learning, alongside other studies highlighting local wisdom as a learning resource. It is also a continuation of the 2024 Community Service (PkM) activities that focused on creating a safe and comfortable environment in elementary schools (Hildegardis et al., 2024; Jando et al., 2022; Maris et al., 2024). Therefore, through the implementation of this activity, it is expected that teachers will enhance their innovative and creative capabilities in designing and developing teaching materials aligned with local culture. Additionally, it is hoped that teachers, together with students, will be able to manage waste effectively, thereby achieving a healthy school environment (Hildegardis et al., 2024; Tiring et al., 2022).

2. IMPLEMENTATION METHOD

The stages or steps employed to resolve the problems or outline the proposed solutions for addressing the partner community's issues include:

1. **Training and mentoring for teachers in designing and developing local wisdom-based teaching materials**
   - **a. Socialization**
     Aims to introduce the concept of local wisdom in education and the importance of developing teaching materials. In this stage, the team holds an initial meeting with the principal and teachers to explain the objectives of the training program. The team also presents introductory materials regarding the significance of utilizing local wisdom in elementary school learning. Subsequently, the team communicates the schedule and the planned program activities.
   - **b. Training**
     Aims to equip teachers with the knowledge and skills to design and develop local wisdom-based teaching materials. In this stage, training on designing teaching materials based on the local wisdom of Sikka Regency is conducted using a training module. Participants also identify potential local wisdom that can be integrated into learning. This is followed by a simulation of designing local wisdom-based teaching materials.
   - **c. Technology Application**
     Aims to integrate technology into the creation of engaging and innovative teaching materials. In this stage, teachers design teaching materials using the Canva application.
   - **d. Mentoring and Evaluation**

Aims to ensure implementation proceeds according to plan and to conduct an initial evaluation of participant understanding. During the mentoring stage, the team provides guidance to teachers throughout the design process until the finalization of the teaching materials. This stage is conducted over one day with a duration of 3 lesson hours (150 minutes). Meanwhile, in the evaluation stage, the team distributes questionnaires to be filled out by teachers and students to assess the effectiveness of the teaching material development.

e. Program Sustainability

Aims to ensure the continued use of local wisdom-based teaching materials. The team conducts consultations or follow-up mentoring for teachers and facilitates the sharing of best practices. The team also carries out periodic monitoring and evaluation.

2. Education on waste management installation

a. Socialization

Aims to establish an initial understanding regarding the importance of waste management. In this stage, the team holds a preliminary meeting with the principal and teachers to explain the objectives of the training program. The team also presents introductory materials on the significance of waste management by displaying educational posters. Subsequently, the team communicates the schedule and the planned program activities.

b. Training

Aims to enhance the knowledge and technical skills of teachers and students in waste management. In this stage, the team conducts training using a training module covering the introduction to waste types, training on making compost from organic waste, training on making bricks (batako) from inorganic waste (plastic waste), and storing dry waste in the waste bank.

c. Technology Application

Aims to directly apply waste management technology. In this stage, the team and partners (teachers and students) carry out the installation of waste management facilities. The team provides compost bins, a waste bank, and 4-color labeled trash bins. Subsequently, teachers and students sort the waste based on its type, produce compost from organic waste, manufacture bricks from inorganic waste (plastic waste), and store dry waste in the waste bank.

d. Mentoring and Evaluation

Aims to ensure implementation proceeds according to plan and to conduct an initial evaluation of participant understanding. During the mentoring stage, the team provides guidance or assistance to teachers and students during the waste management installation activities. This stage is conducted over one day with a duration of 3 lesson hours (150 minutes). Meanwhile, the evaluation aims to assess the success of the waste management program. In this stage, the team distributes questionnaires to be completed by teachers and students to measure conditions before and after the implementation of the waste management installation, as well as to compile the final activity report.

e. Program Sustainability

Aims to ensure the program continues to run and develop after the activity concludes. In this stage, scheduling for waste management duty rosters (piket) is established, along with integration into extracurricular activities.

3. RESULTS AND DISCUSSION

1.1 Research Results

a. Training and mentoring for teachers in designing and developing local wisdom based teaching materials

1) Socialization

Results of this stage, the team conducted a direct visit to the school to hold an initial meeting with the principal and teacher representatives. The school administration welcomed the program initiative and expressed full support for the upcoming training and mentoring activities. Subsequently, the team presented introductory materials regarding definitions and examples of local wisdom relevant to the school's surrounding environment. The teachers demonstrated interest and provided positive responses to the materials delivered. Next, the team presented the detailed training program plan, which included the training and mentoring schedule, materials to be discussed in each session, and the implementation methods (face-to-face, group discussions, and hands-on practice). The completion of this socialization stage involved Identification of school needs and readiness, agreement on the form of collaboration between the executing team and the school, establishment of a school contact person for further coordination, complete delivery and discussion of introductory materials with participants, compilation of activity documentation (photos and minutes), distribution of initial printed materials to teachers, agreement on the final training program schedule with the school, formulation of roles and responsibilities between the executing team and the mentoring teachers.

2) Training

Results of this stage, the team organized training on designing local wisdom-based teaching materials. The training was conducted interactively using lecture methods, group discussions, and Q&A sessions. Participants were guided to identify potential local wisdom existing in their respective environments, specifically those relevant to the context of Sikka Regency. Some of the potentials successfully identified included gong waning, roit alan, lodong me, tung piong, and others. Subsequently, participants presented their teaching material drafts utilizing the identified local wisdom, guided by the Team. Each participant drafted materials according to the subject matter and grade level they selected. The presentation results received feedback from the Team (resource persons) and other participants. The training activity on designing local wisdom-based teaching materials was successfully executed. All aspects of the activity, ranging from material delivery via modules and the identification of local wisdom potentials to the simulation of designing teaching materials, were completed with a high level of participant engagement.

3) Technology application

The team opened the session with an introduction regarding the importance of utilizing technology in designing engaging and contextual teaching materials. The Canva application was introduced as a visual tool that is intuitive and easy to use for teachers, both beginners and those already accustomed to technology. Teachers began designing local wisdom-based teaching materials that they had planned in the previous stage (based on the presentation and feedback results). Each teacher selected an appropriate teaching material format. The designs were tailored to the grade level, subject matter, and local values intended to be conveyed (e.g., weaving culture, folklore, traditional cuisine, etc.). Teachers presented their respective teaching material designs in front of other participants, and the executing Team provided feedback. Teachers also offered input to one another during the open discussion session. The implementation of technology through the use of Canva proceeded smoothly and received positive responses from participants. Teachers demonstrated high adaptability in utilizing technology to design teaching materials that were interesting, informative, and based on local wisdom.

4) Mentoring and evaluation

In this stage, the Team provided direct mentoring to teachers during the process of designing local wisdom-based teaching materials. Mentoring was conducted individually or in small groups, utilizing a dialogic and corrective approach. Teachers

were afforded the opportunity to revise and refine their teaching material drafts based on the feedback provided previously. Subsequently, the Team distributed evaluation questionnaires to the teachers. The mentoring process for designing teaching materials successfully ensured that every teacher was capable of producing materials that were not only academically relevant but also culturally contextual. The evaluation stage indicated that the integration of local wisdom into teaching materials had a positive impact on student engagement and enriched the learning process.

5) Program sustainability

The team conducted consultations or follow-up mentoring for teachers and facilitated the sharing of best practices. The Team also performed periodic monitoring and evaluation.

Figure 1. Training and mentoring on designing local wisdom-based teaching materials

b. Education on waste management installation

1) Socialization

The team conducted an initial visit to the school to hold a meeting with the principal and teachers. Subsequently, the team presented introductory materials regarding the importance of waste management, the negative impact of waste on the school environment, and the school's role in fostering eco-friendly habits. Visual educational posters were also presented during the socialization and provided in printed form to be displayed in classrooms/the school. Next, the Team conveyed the detailed plan for the training program implementation. The schedule was adjusted to align with the academic calendar and the teachers' available time. Based on the process conducted, the socialization of the waste management training program at the school proceeded smoothly. All aspects of the activity, ranging from the initial meeting and the delivery of introductory materials along with educational media to the scheduling of activities, were completed according to plan. The response from the school was very positive and fully supportive of the program's execution into the next stages.

2) Training

The Team opened the training with an introduction to various types of waste. The material was delivered interactively through discussions, questions & answers sessions, and visualization using posters as well as physical examples of waste types. Teachers and students were assigned tasks to identify the types of waste commonly found in the school environment. Subsequently, the Team demonstrated simple composting using organic materials available in the school environment, such as dry leaves, food scraps, and grass. The method used was a closed drum composter. Participants then directly practiced the process of collecting organic materials. Following this, the Team guided the teachers and students in preparing the waste bank. The results indicate that the waste management training at the school was effective and participatory, with all activities

successfully executed according to plan. The training materials were delivered through structured modules combined with hands-on practice.

3) **Technology application**
The executing team, together with partners (teachers and students), carried out the installation of waste management facilities in the area designated by the school. Teachers and students began routine waste sorting within the school environment. Collected organic waste was processed into compost using the installed compost bins, while sorted plastic waste was utilized for manufacturing eco-friendly bricks (*batako*). Furthermore, sorted dry waste was stored in the waste bank. This process demonstrates that the application of waste management technology at the school was successfully implemented by actively involving teachers and students. Facility installation, sorting practices, processing, and waste storage were carried out in an integrated and sustainable manner. This program not only increased environmental awareness but also built practical skills and collective responsibility within the school environment.
4) **Mentoring and evaluation**
The team provided direct on-site mentoring to teachers and students during the application process of the previously installed waste management facilities. Subsequently, the Team conducted an evaluation to measure the program's impact, specifically changes in the knowledge, attitudes, and practices of teachers and students before and after the installation. The evaluation was conducted through the distribution of questionnaires. The mentoring and evaluation stages were carried out well, assisting the transition from installation to operation. Teachers and students successfully executed waste management practices independently with measurable guidance. The evaluation showed an increase in the awareness and skills of the school community, as well as support for the creation of a positive environmental culture.
5) **rogram sustainability**
In this stage, scheduling for waste management duty rosters (*piket*) was established, along with integration into extracurricular activities.

Figure 2. Socialization on waste management

Figure 3. Training on making compost

Figure 4. Training on waste management

1.2 Discussion

The community service activity conducted at SDK Nita 1 aimed to enhance teachers' capabilities in designing local wisdom-based teaching materials and to optimize school waste management in an educational and sustainable manner. Overall, this activity demonstrated success in both pedagogical and environmental aspects. Regarding the training and mentoring for teachers in designing and developing local wisdom-based teaching materials, results indicated that 100% of the teachers are now capable of designing such materials. These local wisdom-based teaching materials are expected to facilitate students in understanding the subject matter more easily and in recognizing the surrounding regional culture, particularly that of Sikka Regency. Soeprijanto et al. (2025) explain that through local wisdom, students learn about the surrounding environment they frequently encounter. Furthermore, research findings by El Puang et al. (2023) indicate that thematic teaching materials based on Sikka folklore (*Jong Dobo*) enhance the motivation and understanding of elementary school students. Regarding waste management education, the community service results showed a significant improvement in the school community's ability to perform waste sorting (75–85%), composting, and waste storage in the waste bank. Through this activity, the school environment is becoming waste-free. Waste burning in the morning is no longer observed, rendering the environment of SDK Nita 1 free from air pollution. Waste issues have a significant impact, including causing air pollution (Purnami, 2020). According to Hasibuan (2023), the processing of organic and inorganic waste has a positive impact on environmental health and ecological awareness. This aligns with the finding that the SDK Nita 1 community has become more aware of the effects of waste incineration.

4. CONCLUSIONS

The community service activities implemented have demonstrated positive and significant results in enhancing partner empowerment across both social and managerial aspects. In general,

the program successfully enhanced teacher capabilities in designing teaching materials based on the local wisdom of Sikka Regency, achieving a 100% capability rate among teachers. Additionally, the initiative drove behavioral change within the school community regarding waste management through sorting and processing practices, with an achievement range of 75–85%. Beyond human resource development, the activities established adequate supporting facilities, such as waste sorting and processing infrastructure, including segregated bins, compost bins, and a waste bank. Ultimately, these efforts have fostered the formation of a learning culture and school management system that is more contextual and environmentally friendly.

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