CSJSC
Community Service for Sustainable Community Journal
CSJSC 3(1): 1–16
ISSN 3047-8448

Institute for Advanced Science, Social and Sustainable Future
MORALITY BEFORE KNOWLEDGE

Implementation of holistic PLP through vertical garden development and library digitalization as an effort to realize a green and digitally literate school

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Received Date: November 5, 2025 Revised Date: February 2, 2026 Accepted Date: February 28, 2026

ABSTRACT

Background: The Holistic School Field Introduction Program (Program Pengenalan Lapangan Persekolahan/PLP Holistik) is a collaborative initiative between higher education institutions and partner schools aimed at integrating educational theory, field practice, and school environment empowerment. This holistic approach aligns with previous studies emphasizing contextual learning, digital literacy, and environmental-based education in primary schools. This study aims to describe the implementation and impact of the Holistic PLP through environmental development and school digital transformation projects. **Methods**: This study employed a qualitative descriptive approach based on field practice, with data collected through observation, documentation, and participatory evaluation involving the school community. The program was implemented at SDN Rawu through stages of initial observation, project planning, implementation, maintenance, and evaluation, grounded in contextual learning and sustainable education theories. **Findings:** The results indicate that the recycled-material-based vertical garden was successfully developed and utilized as a contextual learning medium, while the digital library system based on SLiMS Bulian 9.0 improved book collection management efficiency by up to 60% and enhanced teachers' and students' digital literacy. These findings demonstrate that integrating contextual learning theory with technology-based practices positively impacts the learning environment without significant adverse effects. **Conclusion:** The Holistic PLP program effectively enhances school environmental quality, student teacher competencies, and the sustainable use of educational technology. **Novelty/Originality of this article:** The novelty of this study lies in the integration of environmentally friendly projects and digital library development within a single Holistic PLP framework at the primary school level, an approach that has been rarely explored in previous PLP implementations.

KEYWORDS: digital literacy; elementary school; food security; holistic PLP; SLiMS; vertical garden.

1. Introduction

The Holistic School Field Familiarization Program (PLP) is a concrete manifestation of the implementation of the integration of learning, research, and community service in an integrated and contextual manner. This program is not only designed to provide practical

Cite This Article:
Yudianto, A., Habibi, T., Hakim, M. R. A., Munawaroh, L., Cahyo, E. D. (2026). Implementation of holistic PLP through vertical garden development and library digitalization as an effort to realize a green and digitally literate school. *Community Service for Sustainable Community Journal, 3*(1), 1-16. https://doi.org/10.61511/csjsc.v3i1.2026.3293

teaching experience for prospective teacher students but also aims to shape them into agents of social change sensitive to the dynamics of the school and community environment. Through the Holistic PLP, students are challenged to identify local potential, analyze real-world problems in schools, and design innovative, project-based solutions that are sustainable and have a direct impact. Thus, this activity serves as an integrative vehicle for developing the professional character of prospective educators who are reflective, creative, collaborative, and adaptive to the challenges of 21st-century education (Giningroem et al., 2023; Susanti et al., 2025).

In the context of higher education, the successful implementation of the Holistic PLP depends heavily on collaboration between supervising lecturers, students, and partner schools. These three elements form a complementary learning ecosystem: lecturers act as facilitators and academic mentors, students as field innovators, and partner schools as social laboratories where innovations are implemented. This approach aligns with the student-centered learning paradigm, which positions students not merely as implementers of instructions but as designers and drivers of activities that have a real impact on the learning community (Panggabean et al., 2021). Through these experiences, students not only develop pedagogical competencies but also strengthen managerial, interpersonal communication, and social leadership skills, which are crucial in modern education.

The implementation of Holistic PLP requires attention to the internalization of community service principles such as inclusivity, transparency, and responsiveness to ensure that every innovation brought by students truly addresses local needs in a just manner. This is reinforced by the view that community-based education must be able to optimize the active participation of local communities so that the programs implemented have strong relevance and long-term sustainability (Arifannisa, 2025). Schools as partners are transforming into community centers that integrate educational resources with the empowerment of the surrounding environment to support the sustainable development goals (SDGs). This transformation emphasizes the position of educational institutions not only as places to transfer knowledge, but also as catalysts for social change that are able to synergize academic potential with real needs on the ground for the common good.

One of the strategic partners in implementing this program is SDN Rawu, which has significant potential to be developed into an environmentally and digitally oriented school. Geographically and physically, the school has an open area with land that can be utilized for vertical gardening. Initial observations revealed an empty wall on the north side of the schoolyard that could be used as a vertical garden. This vertical garden development serves not only as a greening facility but also as a contextual learning medium that instills values of environmental stewardship, ecological responsibility, and local food security in students from an early age. This aligns with the views of Saraswati & Mahyuni (2025) & Syafe'i et al. (2025), who emphasized that implementing a vertical farming system in elementary schools can be an effective strategy for fostering environmentally conscious character and introducing the concept of sustainable living to school-age children.

In addition to its environmental potential, Rawu Elementary School also possesses important literacy assets, including a library and several computer devices. However, observations indicate that these facilities have not been optimally utilized. The book collection management process is still carried out manually, from recording and borrowing to reporting, resulting in low service efficiency and limited access to reading resources. This situation has implications for a weak digital literacy culture among teachers and students. In the context of educational transformation towards the Society 5.0 era, library digitization is a strategic step to improve the efficiency of learning resource management and expand access to information. One applicable solution is the use of the Senayan Library Management System (SLiMS), an open-source library automation software widely implemented in various educational institutions due to its lightweight, flexible, and user-friendly nature (Sari et al., 2023).

The synergy between two focused activities—the development of environmentally friendly vertical gardens and the digitalization of libraries based on SLiMS—is a key driving force in the implementation of the Holistic PLP program at Rawu Elementary School. The

implementation of these two programs is expected to create a green, healthy, and information technology-based learning environment. The vertical garden serves as a contextual educational tool that fosters students' critical, collaborative, and innovative thinking skills, while the digitalization of the library encourages the strengthening of digital literacy and a reading culture in schools. Thus, this activity supports the direction of national education policy, which emphasizes the integration of literacy, numeracy, and character, as outlined in the dimensions of learning outcomes (Kemdikdasmen, 2025).

More broadly, the implementation of the Holistic PLP at Rawu Elementary School demonstrates the practical application of the link and match principle between universities and partner schools. Through the active involvement of five students, along with their supervisors and school officials, this program not only provides solutions to the school's real needs but also enriches the students' professional experience as prospective teachers. This activity also serves as a model for project-based community service that is applicable, innovative, and sustainable. It is hoped that the results of this program can be replicated in other schools as part of the effort to create green and digitally literate schools, which contribute to the achievement of the Sustainable Development Goals (SDGs) in the fields of education and the environment.

2. Methods

2.1 Research methodology

The Holistic School Field Introduction Program (PLP) was implemented using a participatory action research (PAR) approach, which actively involved the entire school community—teachers, students, and educational staff—throughout all stages of the program. This approach was deliberately selected because it emphasizes collaboration, shared decision-making, and active participation, thereby fostering a strong sense of ownership among participants. Such involvement is essential in ensuring that the program does not merely function as a short-term intervention but can be sustained and further developed by the school community after its completion (Kindon et al., 2007). The program was carried out over a period of three months at Rawu Elementary School, during which field supervisors and students from the Holistic PLP team worked closely with school stakeholders. Throughout the implementation process, continuous interaction and coordination were maintained to align the program activities with the actual needs and conditions of the school. This collaborative engagement not only facilitated smoother execution of the planned activities but also created a participatory learning environment in which all parties contributed to and benefited from the program.

2.2 Research procedure

The implementation of the program followed a structured sequence consisting of observation and potential analysis, project planning, activity implementation, maintenance and monitoring, as well as evaluation and reflection. The process began with field observations, interviews with teachers and the principal, and a review of school administrative documents to identify both potential and challenges at Rawu Elementary School. These included the availability of land suitable for vertical farming, the use of recycled materials as planting media, and the readiness of information technology facilities for library digitization. Conducting observation and needs assessment at this stage is essential to ensure that the proposed solutions are aligned with actual field conditions (Levy-Feldman, 2025).

Based on these initial findings, the project planning stage was carried out collaboratively by the team, involving both teachers and students. The planning process included designing the vertical garden, selecting plant species such as bok choy and chili peppers that are appropriate for the local environment, and determining the use of recycled

materials such as plastic bottles and PVC pipes. In parallel, the team also developed a plan for library digitization, including book data input, collection classification, and database development using the Senayan Library Management System (SLiMS) application, Bulian version 9.0. This collaborative planning ensured that the program design was contextual and feasible for implementation in the school setting.

The next stage involved the implementation of the planned activities. This included constructing the vertical garden using recycled materials, conducting planting activities, and installing the digital library system using SLiMS. Students actively participated throughout the process, including in system application and training sessions for school librarians. A learning-by-doing approach was emphasized to ensure that the activities functioned not only as program execution but also as an educational process for both students and teachers (Bot et al., 2005).

Following implementation, maintenance and monitoring were conducted to ensure the sustainability of the program. Maintenance activities covered routine practices such as watering, fertilizing, and basic pest control for the vertical garden. At the same time, periodic monitoring was carried out to evaluate plant growth and to ensure that the SLiMS-based library system functioned properly. This stage was guided by the principle of continuous improvement, allowing adjustments to be made based on ongoing field observations (Singh & Singh, 2015). The final stage consisted of evaluation and reflection. Evaluation was conducted using several indicators, including the level of participation of the school community, the sustainability of the vertical garden, and the effectiveness of the digital library system. In addition, reflective discussions were held collaboratively between lecturers, students, and school representatives to identify key lessons learned during the program. This participatory reflection is consistent with the principles of Holistic PLP, which emphasize reciprocal learning and collaborative capacity building (Panduan Pengenalan Lapangan Persekolahan Holistik, 2025).

2.3 Expected outcomes

By implementing these stages, the Holistic PLP activities at SDN Rawu are expected to generate both tangible and intangible outcomes that support the school's long-term development. In terms of tangible outputs, the program is designed to produce a functional vertical garden utilizing recycled materials and an operational digital library system based on the Senayan Library Management System (SLiMS), which can improve access to learning resources. These outputs are not merely symbolic but are intended to be continuously used and maintained by the school community beyond the program duration.

In addition, the program is expected to foster ecological awareness among students and teachers through direct involvement in environmentally friendly practices, such as urban farming and waste utilization. At the same time, the implementation of the digital library system is anticipated to enhance digital literacy skills, particularly in managing, accessing, and organizing information resources within the school environment. These competencies are essential to support more adaptive and technology-oriented learning practices.

Furthermore, the participatory nature of the PAR approach is expected to strengthen collaboration across different roles within the school, including students, teachers, and administrative staff. Through continuous interaction, joint decision-making, and shared responsibility in each stage of the program, the school community is expected to develop a stronger sense of ownership toward the implemented innovations. Ultimately, this sense of ownership is crucial to ensure the sustainability and scalability of the program initiatives in the future.

3. Results and Discussion

The Holistic School Field Introduction Program (PLP) implemented at Rawu Elementary School (SDN Rawu) produced several concrete outcomes in both food security

and library digitization. The project involved collaboration between a supervising lecturer, five students, the principal, and a mentor teacher as active partners. The results demonstrated that the project-based approach and the school's potential positively impacted the learning environment, technological literacy, and ecological awareness of the school community.

3.1 Environmentally friendly vertical garden development

The development of the vertical garden at SDN Rawu began with an observation process and the identification of the school's open-space potential. Based on the mapping of the school area, it was found that the northern side of the schoolyard had an empty wall with optimal sunlight exposure and relatively stable humidity, making it highly suitable for the implementation of a recycling-based vertical garden. The selection of this location also took into account safety aspects, access to water, and its proximity to classrooms, so that it could be effectively utilized as a direct learning medium for students.

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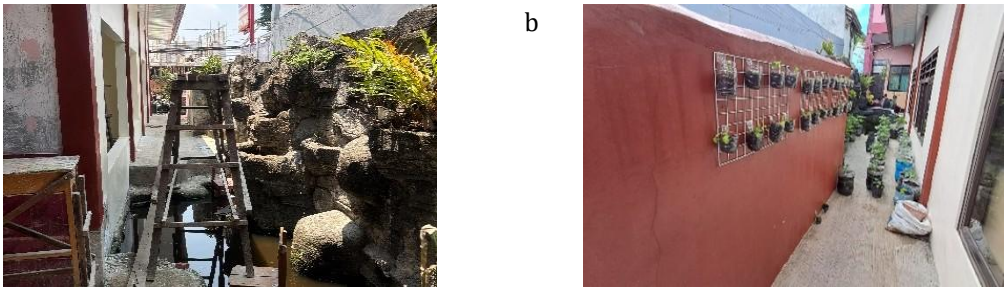

Fig. 1. (a) Location of vertical garden before; (b) Vertical garden location after

The implementation phase begins with the collection of recycled materials such as used plastic water bottles, wood, and wire from the school and surrounding community. This approach not only reduces production costs but also educates the school community about the concept of reduce, reuse, and recycle (3R) in plastic waste management. The vertical garden installation measures 2 x 3 meters and is arranged vertically. The selected plants include bok choy and chili peppers. These three types were chosen because: 1) they have a relatively short harvest period (20–40 days), 2) they tolerate high light intensity, 3) they are highly nutritious, and 4) they align with the concept of sustainable agriculture in limited space (urban farming).

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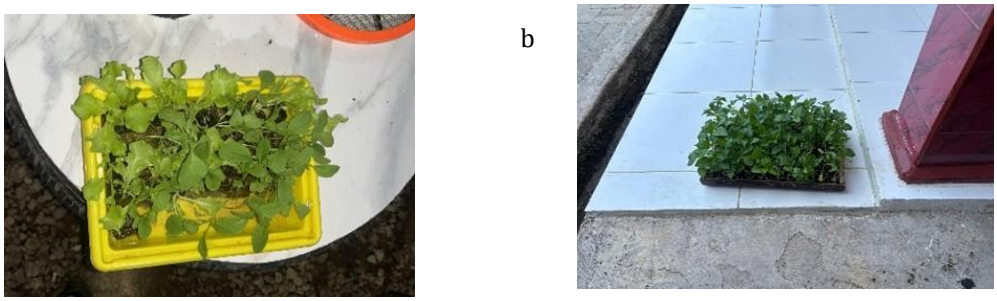

Fig. 2. (a) Bok coy seeds; (b) Chili seeds

The stages of making a vertical garden include: (1) cleaning and cutting used bottles to make planting pots, (2) assembling a vertical frame from wood and wire, (3) making a planting medium consisting of a mixture of soil, organic compost, and rice husk charcoal in a ratio of 2:1:1, and (4) planting seeds and initial watering. Each stage was carried out systematically to ensure that the structure was stable and the growing media supported optimal plant growth. In addition, the use of recycled materials and simple techniques was

intended to make the process easily replicable by students and the broader school community.

a b

Fig. 3. Vertical garden making process: (a) students preparing planting media and seedlings; (b) assembling and installing vertical planting containers

After two weeks, monitoring results indicated that the plant survival rate reached 85%, with particularly optimal growth observed in bok choy and chili peppers. This survival rate can be considered relatively high, especially given that the vertical planting system was being implemented for the first time in an elementary school context. These findings suggest that the plants were able to adapt well to the school's environmental conditions and microclimate. Furthermore, the results also indicate that the selected planting methods and growing media were sufficiently effective in supporting early-stage plant development within a vertical system.

Fig. 4. Final results of vertical garden management

Vertical gardens are not only a means of reforestation but also serve as a medium for contextual, project-based learning (PjBL). Students are actively involved in every stage, from planting and watering to recording plant growth. This activity fosters environmental stewardship, a sense of responsibility, and basic scientific skills such as observation, measurement, and recording growth data. In practice, vertical gardens are used to support science and civics (PPKn) learning themes, particularly those related to food security, ecosystems, and sustainability. Teachers use the vertical garden area as a mini-laboratory, enabling hands-on, experiential learning. Produce from the vertical garden is used not only for shared consumption but also for small-scale student entrepreneurial activities in the school's healthy cafeteria, thereby fostering an entrepreneurial spirit and independence in students from an early age. This approach aligns with the eco-school model, which integrates learning activities with environmental sustainability practices in schools (Chatzifotiou & Tait, 2017).

Qualitatively, this program has three main impacts on the school community: 1) Ecological Aspects – Improved air quality and aesthetics of the school environment, as well as reduced plastic waste due to its use in garden installations. 2) Educational Aspects – Students are more active, enthusiastic, and understand environmental concepts in a real way. They also learn about plant cycles and the values of cooperation. 3) Social Aspects and School Image – This activity strengthens the branding of SDN Rawu as a green school committed to environmentally friendly practices and independent food security. Research by Aragón & Manzano (2025) shows that implementing a vertical garden system in elementary schools can increase students' ecological awareness and strengthen local food security programs. Meanwhile, research by Setiawan et al. (2025) confirms that the vertical farming model is an effective educational tool for fostering ecological responsibility and critical thinking skills in elementary school students.

3.2 Community engagement and educational impact of vertical garden program

The vertical garden development activities at Rawu Elementary School (SDN Rawu) were not only focused on the physical aspects of greening, but also aimed to raise collective awareness among the school community regarding the importance of food security and sustainable environmental management. As part of the implementation phase of the Holistic PLP Program, outreach, discussions, and short training sessions were conducted for teachers, students, and educational staff on the basic concepts of school food security, the importance of productively utilizing plastic waste, and sustainable agricultural practices in limited space. Through these activities, teachers and students understood that food security is not simply about farming, but also a form of independence and social responsibility to ensure the availability of healthy food within the school environment. The outreach was delivered through interactive lectures, demonstrations of processing plastic waste into planters, and simulations of vertical garden management.

The enthusiasm of the school community was evident in the high level of participation in the collection of used bottles, planting, and the daily watering schedule, which was established in rotation. Based on field observations, approximately 80% of fourth-sixth grade students were actively involved in vertical garden maintenance activities. Supervisory teachers and students formed a working group called "Green Garden Friends," tasked with monitoring plant growth, recording weekly plant height data, and managing simple harvests for practical learning activities and a healthy canteen. This activity created a collaborative learning environment that integrated students' cognitive, affective, and psychomotor aspects. Through hands-on experience, students learned how the plant cycle works, how waste can be reused, and how routine maintenance contributes to environmental sustainability. This approach reinforced the concept of Project-Based Learning (PjBL), which emphasizes meaningful learning through real-life projects based on contextual problems (Fitri et al., 2024).

In the context of elementary education, the application of PjBL in environmental activities provides opportunities for students to internalize environmental awareness values and develop soft skills such as cooperation, communication, and responsibility. This aligns with research by Rahmi (2024), which states that learning is more effective when students directly experience, reflect on, and apply learning outcomes in real-life situations. Beyond the learning aspect, these activities also have social and cultural impacts on the school environment. Several parents have begun participating by donating planting media and vegetable seeds to expand the vertical garden area. This demonstrates the development of a sense of belonging and collective ecological awareness that involves the entire school ecosystem. According to Annas et al. (2025), action-based environmental education can shape long-term ecological behavior and improve elementary school students' scientific literacy, especially when supported by participatory and sustainable activities.

Furthermore, this activity also supports the Adiwiyata School program, which emphasizes the importance of school community involvement in environmental conservation. With the vertical garden, Rawu Elementary School now has an educational

green space used for thematic learning activities and simple scientific observations. Students become not only recipients of information but also agents of change by implementing environmentally friendly habits such as sorting waste, conserving water, and caring for plants. Interviews with supervising teachers revealed that this activity has fostered a renewed enthusiasm among students. They feel more proud of their school, now that it has a productive garden created through collaboration between teachers, students, and the school community. Thus, the food security awareness raising activities at SDN Rawu not only impact the cognitive aspects of students, but also foster a collaborative ethos, ecological empathy, and a spirit of independence within the school community.

3.3 Digitization of school library systems

The Holistic PLP activities at Rawu Elementary School not only focus on environmental initiatives but also actively promote digital transformation, particularly in the school's library management system. This dual approach reflects an integrated effort to address both ecological awareness and technological advancement within the educational environment. In this context, the program is aligned with the principles of Merdeka Belajar (Freedom to Learn) and the broader agenda of Digital Transformation in Education, both of which emphasize the strategic use of information technology to enhance administrative efficiency and expand access to learning resources. Furthermore, the integration of a digital library system is expected to support the development of students' digital literacy by familiarizing them with information management, digital cataloging, and technology-based learning tools. By embedding these practices into daily school activities, the program not only improves institutional management but also prepares students to engage more effectively in an increasingly digital learning landscape.

3.3.1 Implementation stages

The digitalization process began with the planning and infrastructure preparation phase. Students and supervising teachers conducted an initial audit of the library's collections, computer equipment, and the school's internet network. Based on the findings, 1,200 books needed to be reclassified because they previously lacked a standardized cataloging system. The first step involved sorting and classifying the collection based on the 23rd edition of the Dewey Decimal Classification (DDC) system, which divides collections by subject area. This step is crucial to ensure metadata conforms to international bibliographic standards. Next, the SLiMS (Senayan Library Management System) application, Bulian version 9.0, was installed and configured, an open-source library management system widely used by schools and universities in Indonesia.

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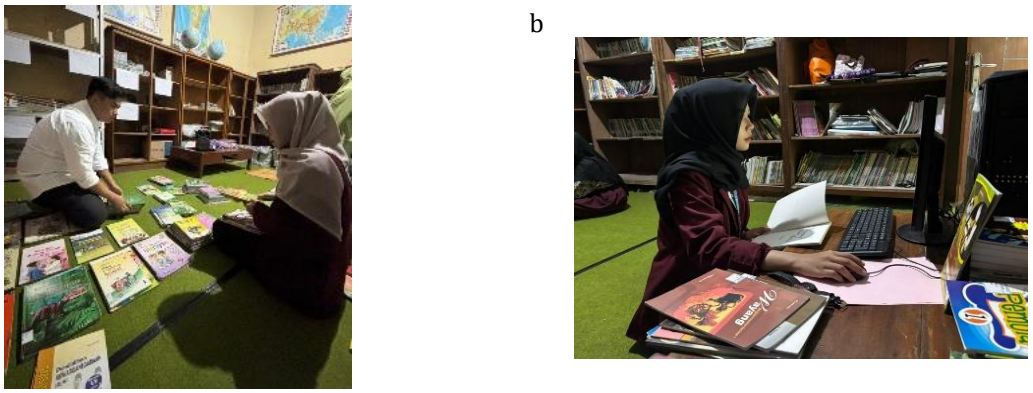

Fig. 5. Library digitization process: (a) classification of book collections; (b) inputting book data

During the data entry phase, students assisted supervising teachers in entering complete metadata for each book—including title, author, publication year, ISBN, and call number—into the digital system. Labeling and barcode printing were performed using a label printer integrated with the SLiMS database. To strengthen service management, digital library membership cards were also created for students and teachers. A pilot test of the system was conducted with the school community, involving 10 teachers and 30 students as initial users. The trial results showed that the average digital book loan transaction took only 2–3 minutes, significantly faster than the previous manual system, which required 8–10 minutes per transaction. This demonstrated an increase in service efficiency of approximately 65%.

Fig. 6. Digital service trial

3.3.2 Training and mentoring

As a follow-up, intensive training was conducted for two supervising teachers appointed as prospective school librarians. This training covered the use of key SLiMS features, such as catalog management, member management, loan-return circulation, and collection statistics reporting. Students also developed a module-based operational manual (SOP) to ensure the system could be maintained sustainably even after the PLP activities ended. This mentoring is a concrete example of the collaboration between universities and elementary schools to strengthen digital capacity. In addition to improving the competency of mentor teachers, this activity also provides students with hands-on experience in applying educational technology contextually.

3.3.3 Impact and benefit analysis

Digital transformation through SLiMS has had a significant impact on the quality of library management. First, in terms of administrative efficiency, this system eliminates manual recording processes and minimizes the risk of data loss. Second, in terms of service transparency, all transactions are automatically recorded, enabling principals to monitor borrowing levels and collection needs in real time. Third, in terms of digital learning, students are introduced to a data-driven information system, which strengthens digital literacy and information literacy skills from an early age. Khulzannah & Harefa (2025) confirmed that implementing SLiMS in elementary schools can increase library management efficiency by up to 60% because the system not only automates circulation processes but also provides an easily accessible collection database. Research by Sa'adiah et al. (2025) showed similar results, where mentoring on SLiMS use in secondary schools significantly improved librarian competency and the digital literacy of teachers and

students. These findings align with the results of the Holistic PLP program at Rawu Elementary School, where the implementation of SLiMS has been proven to accelerate services while improving the digital skills of the school community.

Beyond the technical benefits, this activity also has pedagogical value. The digital library serves as a learning medium across subjects, particularly under the theme "Technology and Information." Students are encouraged to understand how book data is stored, processed, and accessed through digital systems, thus learning basic information technology concepts in a simple yet applicable way.

3.4 Impact on students and school partners

The Holistic PLP program at Rawu Elementary School provided students with authentic experiences integrating educational theory and practice in a real-world setting. Throughout the program, students played active roles as planners, facilitators, innovators, and implementers. They not only carried out instructions but also analyzed school needs, designed solutions based on local potential, and collaborated with teachers and the principal at every stage of the program. This participatory approach emphasizes the role of students in community service, where intensive collaboration with schools is key to building teacher professionalism while empowering the local education ecosystem (Fitriyani et al., 2025). Through the SLiMS-based vertical garden development and library digitization project, students experienced a learning process that emphasized interdisciplinary collaboration, problem-solving, and socio-educational service. Physical programs such as vertical gardens are designed to support the sustainability of the school environment through greening of narrow land (Nurdiansyah et al., 2024), while library digitalization ensures the sustainability of knowledge management which is essential for improving student literacy (Lathifah, 2024). This experience provided a platform for students to develop 21st-century competencies, such as creativity, communication, collaboration, and critical thinking (the 4Cs).

This activity also strengthened the pedagogical, social, and professional competencies of prospective teachers, as Farida et al. (2024) noted that student involvement in locally-based projects significantly impacted their professional readiness and pedagogical reflection in the context of elementary education. Field projects like these train students to plan, implement, and evaluate educational activities that are contextual and relevant to the needs of the school community. Furthermore, the experiential learning approach implemented in the PLP provides students with opportunities to learn through direct experience, reflection, and the application of theoretical concepts in the field. This model aligns with the view of Sholekah & Makhsun (2019) that the learning process will be more meaningful if students are directly involved in real-life experiences, reflect on them, and then test them in new situations. Thus, the field experience during PLP serves as a concrete form of experiential learning that enriches the professional preparedness of prospective teachers.

From the perspective of school partners, this activity has had a positive impact on increasing institutional capacity and learning innovation. The school directly benefits from: 1) Improved contextual learning facilities through vertical gardens used as learning media for science and the environment. 2) Optimized administration and digital literacy services through the implementation of the SLiMS Bulian 9.0-based library system, which simplifies the process of searching, borrowing, and archiving books. 3) Improved technological literacy of mentor teachers, who are now able to operate the digital collection management system and integrate it into thematic learning activities. Observations indicate increased enthusiasm among the school community for the implemented innovations. Supervisory teachers found the efficient digital system helpful, while students showed greater interest in literacy and environment-based learning activities. This activity also strengthened the partnership between universities and elementary schools, which is not merely administrative but oriented towards mutual growth and program sustainability.

According to Moeliodihardjo et al. (2013), educational partnerships between universities and elementary schools are crucial for creating sustainable innovation because they facilitate a two-way exchange of knowledge—students gain practical experience, while schools receive academic and technological support. Therefore, the Holistic PLP activity at SDN Rawu can be categorized as a collaborative service model that provides mutual benefits for both parties. Furthermore, this activity also has an impact on strengthening the innovative and sustainable learning ecosystem. Through the integration of student academic activities with school needs, a reflective space is created that allows lecturers, teachers, and students to jointly evaluate the learning process and outcomes. The results of this reflection are expected to form the basis for the development of project-based contextual learning modules relevant to the Indonesian elementary school context.

3.5 Evaluation and sustainability

The evaluation of the Holistic PLP activities at Rawu Elementary School was conducted comprehensively using a participatory evaluation approach, involving supervising lecturers, students, the principal, and supervising teachers. This evaluation was conducted through field observations, interviews, joint reflections, and analysis of activity documentation results. A participatory approach was chosen so that each party has an active role in assessing the effectiveness of the activities and designing sustainability strategies collaboratively (Nuryana et al., 2025). Based on the evaluation results, all main program targets were achieved well, including the formation of a productive vertical garden, increased awareness of the school community regarding the environment and food security, and the functioning of the SLiMS-based digital library system. The evaluation results showed that the vertical garden developed with a size of 2 x 3 meters and 120 pots of plants successfully grew well, with a plant success rate reaching 85% after two weeks of care. Teachers and students stated that the presence of this vertical garden provided a more contextual and interactive learning experience, especially in thematic and science learning. In addition, this activity fostered ecological awareness and social responsibility within the school community. Based on a simple survey of 35 fourth-sixth grade students, approximately 78% of them reported growing plants at home and actively participating in maintaining a clean school environment. This fact demonstrates that project-based activities can drive tangible changes in ecological behavior at the elementary school level.

Library digitization through the implementation of the SLiMS Bulian 9.0 application has also been shown to improve the efficiency of collection management and information access. A total of 1,200 books have been successfully inputted into the digital system with complete metadata. Trained mentor teachers are able to operate the system independently, and trial results indicate that borrowing digital books takes only two to three minutes, significantly more efficient than the previous manual system. Beyond efficiency, this activity also introduces digital literacy to students from an early age, consistent with findings by Khulzannah & Harefa (2025) that SLiMS implementation can increase the efficiency of school library management by up to 60%. The success of this activity is evident not only in technical achievements but also in the transformation of the learning culture within the school. Collaboration between students, teachers, and lecturers creates an innovative and sustainable learning ecosystem. According to Arifannisa (2025), the success of collaborative educational programs is largely determined by the extent to which activities foster participatory awareness and autonomous sustainability at the local level. In the context of Rawu Elementary School, this is reflected in the formation of a "Green Garden Friends" group responsible for maintaining the vertical garden and managing the harvest.

As a sustainability effort, the school has developed several short- and long-term strategies. The short-term strategies include routine maintenance of the vertical garden by a group of students and mentor teachers, as well as advanced training for the school librarian on the use of the SLiMS system. The long-term strategies include the development of an environment-based learning module to be integrated into the Pancasila Student Profile project, as well as plans to integrate SLiMS with a web-based school literacy portal. The

partner university will also conduct periodic mentoring twice per semester to monitor the program's sustainability, in accordance with the recommendations for a sustainable partnership model between universities and elementary schools proposed by (*Dikti Saintek Berdampak*, 2025).

The overall reflection indicates that the success of this activity is supported by three main factors: cross-role collaboration between students, lecturers, and mentor teachers; a school asset-based approach, not simply problem-solving; and the application of simple yet impactful technology. Thus, the Holistic PLP activity at SDN Rawu has succeeded in creating a service learning model that harmoniously integrates academic, social, and ecological aspects. This program aligns with the idea of Nasution et al. (2025) who stated that community-based learning can foster critical awareness, social empathy, and professional responsibility in students through direct involvement in community service activities. In the future, this program is expected to become a replication model for other elementary schools in developing a green, literate, and digitally empowered learning environment. Through the synergy between universities and elementary schools, the Holistic PLP activity has proven to strengthen the bridge between theory and practice, and emphasizes the role of higher education in empowering school communities sustainably (*Dikti Saintek Berdampak*, 2025).

4. Conclusions

The Holistic School Field Introduction Program (PLP) at Rawu Elementary School demonstrates that an integrative and project-based approach effectively connects higher education with the real needs of schools. The integration of vertical garden development and SLiMS-based library digitization successfully created a contextual learning environment that promotes ecological awareness, digital literacy, and character education. The vertical garden functioned as both an environmental intervention and a learning medium, fostering students' responsibility, collaboration, and understanding of sustainability, while the digital library significantly improved administrative efficiency and access to learning resources.

In addition, the program provided meaningful experiential learning for prospective teachers, strengthening their pedagogical, social, and professional competencies, while simultaneously enhancing the institutional capacity of the partner school. Supported by strong collaboration, an asset-based approach, and appropriate technology use, the Holistic PLP at SDN Rawu serves as a replicable model of sustainable service-learning that contributes to the development of green, literate, and digitally empowered elementary schools.

Acknowledgement

The authors would like to express their sincere gratitude to the Faculty of Teacher Training and Education (FKIP) for supporting the implementation of the Holistic School Field Introduction Program (PLP). Special appreciation is extended to the principal, teachers, and students of Rawu Elementary School (SDN Rawu) for their cooperation, participation, and openness throughout the program. The authors also thank the supervising lecturers and PLP students for their dedication and collaborative efforts in planning and implementing the activities. This work would not have been possible without the support and active involvement of all parties who contributed to the success and sustainability of the program.

Author Contribution

Conceptualization, A.Y.; Methodology, L.M. and A.Y.; Software; Validation, A.Y. and L.M.; Formal Analysis, A.Y.; Investigation, M.R.A.H.; Resources, T.H.; Data Curation, M.R.A.H.; Writing–Original Draft Preparation, A.Y.; Writing–Review & Editing, A.Y. and L.M.; Visualization; Supervision, A.Y. and L.M.; Project Administration, A.Y.; Funding Acquisition, T.H. supported the field implementation as a mentor teacher and facilitated coordination

with schools. E.D.C. contributed to the final proofreading. All authors have read and approved the final manuscript.

Funding
This research received no external funding.

Ethical Review Board Statement
Not available.

Informed Consent Statement
Not available.

Data Availability Statement
The data supporting the findings of this study are available from the corresponding author upon reasonable request. The data are not publicly available due to ethical considerations and to protect the privacy of the participating school community.

Conflicts of Interest
The authors declare no conflict of interest.

Declaration of Generative AI Use
During the preparation of this work, the author(s) used ChatGPT (OpenAI) to assist in improving language clarity, academic tone, and coherence of the manuscript. After using this tool, the author(s) reviewed and edited the content as needed and took full responsibility for the content of the publication.

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