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Field Implementation of a Local Wisdom-Based Practicum Module for Character Education in Early Childhood Learning

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Abstract

Background: The integration of character education, particularly environmental stewardship, in early childhood education is often constrained by conventional teaching approaches that limit experiential learning opportunities.

Aims: This community service program aims to implement a local wisdom-based practicum module to enhance environmental character development in early childhood learning.

Methods: This community service program employed the Participatory Action Research (PAR) approach, involving collaborative processes between researchers and teachers through four stages: planning, action, observation, and reflection. The program began with a needs analysis and joint module design, followed by implementation through hands-on activities, while data were collected through observation and interviews and analyzed descriptively to evaluate program effectiveness.

Result: The community service results indicate a significant increase in children's engagement and enthusiasm in practice-based learning, along with the development of pro-social and environmental behaviors such as cooperation, cleanliness awareness, and scientific curiosity. In addition, teachers' capacity as partners improved in understanding and implementing the local wisdom-based practicum module. Approximately 90% of participants showed positive responses, and the resulting practicum module was considered practical, applicable, and has potential for sustainable use and replication.

Conclusion: The implementation of a local wisdom-based practicum module through a community service program effectively enhances children's environmental character and supports experiential learning in early childhood education. It also strengthens teachers' capacity in applying innovative and contextually relevant instructional approaches. Therefore, this program offers a practical, sustainable, and replicable model for integrating character education in early childhood settings.

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INTRODUCTION

Early Childhood Education (ECE) provides a foundational learning experience through play, exploration, and social interaction, enabling children to develop in an environment that is enjoyable, healthy, and meaningful (Prins et al., 2022; Shih, 2024). This stage is often referred to as the "golden age," a period when children are highly receptive to stimulation from their family and school environments (Yulianingsih et al., 2020). Consequently, learning in early childhood must not only emphasize cognitive aspects but also integrate character values, including environmental stewardship. Pressing environmental issues such as pollution, the use of hazardous chemicals, and the rise in household waste necessitate the cultivation of environmental awareness from a young age (Ganatsios et al., 2021). This character can be effectively instilled through concrete activities relevant to children's lives, one of which is simple practicum based on local wisdom.

A practicum module is an essential tool as it contains a systematic guide for simple experiments, including objectives, materials, procedures, and observation sheets, thereby making learning more directed and meaningful (Van Merriënboer et al., 2024). A practicum module grounded in local wisdom allows children to learn from tangible experiences using readily accessible materials from their surroundings, simultaneously fostering an appreciation for their culture and nature. Practicum activities have been proven effective in developing basic science process skills, curiosity, and critical thinking in young children (Sakti et al., 2024). An educational laboratory, which can be designed as a simple science corner utilizing local resources, serves as an innovative platform to support this hands-on, "learning by doing" approach (Hanapi et al., 2025).

Recent empirical evidence underscores the effectiveness of community-engaged and experiential learning approaches in early childhood education for fostering holistic development, particularly in socio-emotional and environmental domains (Ahmar & Azzajjad, 2025; Farner et al., 2023; Maxwell et al., 2025; Whitmore, 2023). Studies indicate that embedding learning within authentic, community-based contexts significantly enhances children's engagement, agency, and pro-environmental dispositions (Mintoff et al., 2024). Furthermore, participatory and inquiry-based activities implemented through community service frameworks have been shown to strengthen collaborative behaviors and environmental responsibility among young learners (Hernandez Gonzalez, 2023). These findings collectively affirm that integrating community-based experiential strategies is not merely pedagogically desirable but essential for bridging the persistent gap between theoretical constructs and classroom practices in early childhood education.

In parallel, the incorporation of local wisdom as a culturally responsive pedagogical foundation has gained increasing scholarly attention, particularly in the context of sustainability and character education. Contemporary research demonstrates that culturally grounded learning environments significantly enhance children's sense of identity, belonging, and environmental ethics

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(Ezekwem-Obi et al., 2025; Green, 2024; Kurian, 2024). Moreover, local knowledge integration has been linked to improved learning motivation and contextual understanding, as children engage with familiar materials and practices rooted in their daily lives (Ogegbo & Ramnarain, 2024; Suryana & Kurnia, 2025). Such evidence highlights that leveraging local wisdom within community service programs not only strengthens pedagogical relevance but also reinforces sustainable values and cultural continuity in early childhood education.

Moreover, practicum-based and hands-on learning approaches, particularly those structured through modular designs, have been consistently validated as effective in enhancing young children's cognitive and behavioral development. Research indicates that structured practicum modules promote inquiry skills, critical thinking, and collaborative engagement in early childhood settings (Gonsalves, 2024; Lithoxoidou & Georgiadou, 2023; Rapti et al., 2025; Rebelo et al., 2023). In addition, studies reveal that such interventions simultaneously improve teachers' pedagogical competence, particularly in designing interactive and student-centered learning environments (Dada et al., 2022; Kong & Wang, 2024; Sørensen et al., 2023). Importantly, the integration of simple scientific experiments using locally available materials has been shown to enhance both scientific literacy and environmental awareness among children (Herlanti et al., 2025; Kumar et al., 2023; Purwasih et al., 2025). Therefore, the development and implementation of a local wisdom-based practicum module represent a theoretically grounded and empirically supported strategy within community service initiatives aimed at fostering environmental character in early childhood education.

Despite the established benefits of experiential learning, a preliminary situational analysis at Anugerah Kamal Kindergarten revealed a significant pedagogical gap. Learning activities were predominantly reliant on conventional, teacher-centered methods that offered limited opportunities for direct exploration. This approach not only failed to leverage the rich, locally available natural resources as educational tools but also hindered the development of character values, such as environmental stewardship, in a meaningful and contextual manner. This gap between theoretical best practices and on-the-ground reality prompted the need for a community service intervention focused on introducing an innovative, culturally relevant learning medium.

Therefore, this community service program was designed to implement a local wisdom-based educational laboratory practicum module at Anugerah Kamal Kindergarten. The module features simple, safe, and relevant activities such as making pandan leaf extract soap, creating natural air fresheners, and preparing popcorn. In line with the program's title, the primary objective was the Implementation of a Local Wisdom-Based Educational Laboratory Practicum Module for Character Education in Early Childhood Learning. This was achieved by: (1)

describing the module's implementation process, (2) analyzing the responses of children and teachers, and (3) evaluating the module's effectiveness in fostering environmental character, curiosity, and cooperation.

METHODS

Community Service Research Design

This community service program adopted a Participatory Action Research (PAR) design, which emphasizes collaborative engagement between researchers and community partners in identifying problems and implementing context-based solutions. PAR is grounded in constructivist and experiential learning theories, where knowledge is co-constructed through active participation and reflection (Cornish et al., 2023). This approach is particularly relevant in early childhood education contexts, as it allows for the integration of practical experiences with local cultural values. In this program, teachers were not positioned merely as participants but as co-researchers who contributed to problem identification, solution design, and evaluation. The iterative nature of PAR ensures that each stage of the program is continuously refined based on feedback and reflection, thereby enhancing both the effectiveness and sustainability of the intervention.

Problem Identification and Needs Analysis

The initial phase involved a comprehensive problem identification process conducted through preliminary observations and in-depth discussions with teachers and the school principal at Anugerah Kamal Kindergarten. The findings indicated that learning activities were predominantly teacher-centered and lacked the use of innovative, contextual, and experiential learning media. Furthermore, local resources with strong educational potential were underutilized, limiting opportunities to instill environmental character values in children. A needs analysis was then carried out to explore teachers' expectations, challenges, and readiness to adopt new learning approaches. This stage was essential to ensure that the designed intervention was aligned with the actual conditions of the school and responsive to the developmental characteristics of early childhood learners.

Stages of PAR Implementation

The implementation of the program followed four cyclical stages of Participatory Action Research, namely planning, action, observation, and reflection. In the planning stage, researchers and teachers collaboratively designed a local wisdom-based practicum module, focusing on simple, safe, and meaningful activities relevant to children's daily lives. In the action stage, the module was implemented through hands-on activities such as producing pandan-based soap, natural air fresheners, and popcorn, enabling children to learn through direct experience. The observation stage involved systematic monitoring of children's engagement, interaction, and behavioral changes during the activities, supported by field notes

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and documentation. Finally, the reflection stage was conducted collaboratively to evaluate the effectiveness of the program, identify strengths and limitations, and formulate recommendations for further improvement. This cyclical process ensured continuous refinement and contextual relevance of the intervention.

Table 1. Stages of Participatory Action Research (PAR) in the Program

Stage	Activities Description
Planning	Needs analysis, problem identification, module design based on local wisdom
Action	Implementation of practicum activities (soap, air freshener, popcorn)
Observation	Monitoring children's engagement, behavior, and participation
Reflection	Evaluation with teachers, identifying strengths and improvements

Target Participants and Setting

This program was conducted at Anugerah Kamal Kindergarten, located in Kamal Village, Kamal District, Bangkalan Regency, an area characterized by strong local wisdom and community-based livelihoods such as trading and fishing. The participants consisted of 30 children aged 5–6 years (Group B) and their supervising teachers. The selection of participants was based on their active involvement in the learning process and the relevance of the program to their developmental stage. Teachers played a dual role as facilitators and collaborators, actively participating in the design and implementation of the practicum module. This setting provided a meaningful context for integrating local wisdom into early childhood learning while addressing real educational challenges faced by the community.

Data Collection Techniques

Data collection was carried out using multiple techniques to ensure the validity and comprehensiveness of the findings. Observation was used to monitor children's participation, engagement, and behavioral changes during the practicum activities. Interviews were conducted with teachers to gather in-depth insights into their experiences, perceptions, and evaluations of the module implementation. Documentation, including photographs and field notes, was used to support and validate the observed data. These techniques were applied systematically throughout the implementation process to capture both process-oriented and outcome-oriented data. The use of multiple data sources also enabled triangulation, thereby increasing the credibility of the findings.

Types of Data and Data Analysis Techniques

The data obtained in this program consisted of qualitative data, including observational records, interview transcripts, and documentation, as well as supporting descriptive data related to participant responses. Data analysis was

conducted using descriptive qualitative analysis, involving data reduction, data presentation, and conclusion drawing. The analysis focused on identifying patterns of behavioral change, levels of engagement, and the effectiveness of the practicum module in fostering environmental character among children. In addition, teachers' responses were analyzed to assess the practicality and relevance of the module as a learning tool. This analytical approach allowed for a comprehensive understanding of both the process and impact of the community service program.

Ethical Considerations

Ethical considerations were strictly observed throughout the implementation of the program to ensure the protection and well-being of all participants. Informed consent was obtained from parents or legal guardians prior to children's participation in the activities. Teachers were also involved voluntarily and provided consent for their involvement in the program. Special attention was given to the documentation process, particularly when involving early childhood participants. Any visual materials containing children's images were handled with care, and identifiable facial features were blurred to maintain privacy and comply with ethical standards. These measures were taken to uphold professional integrity and ensure that the program adhered to established ethical guidelines in community-based research and practice.

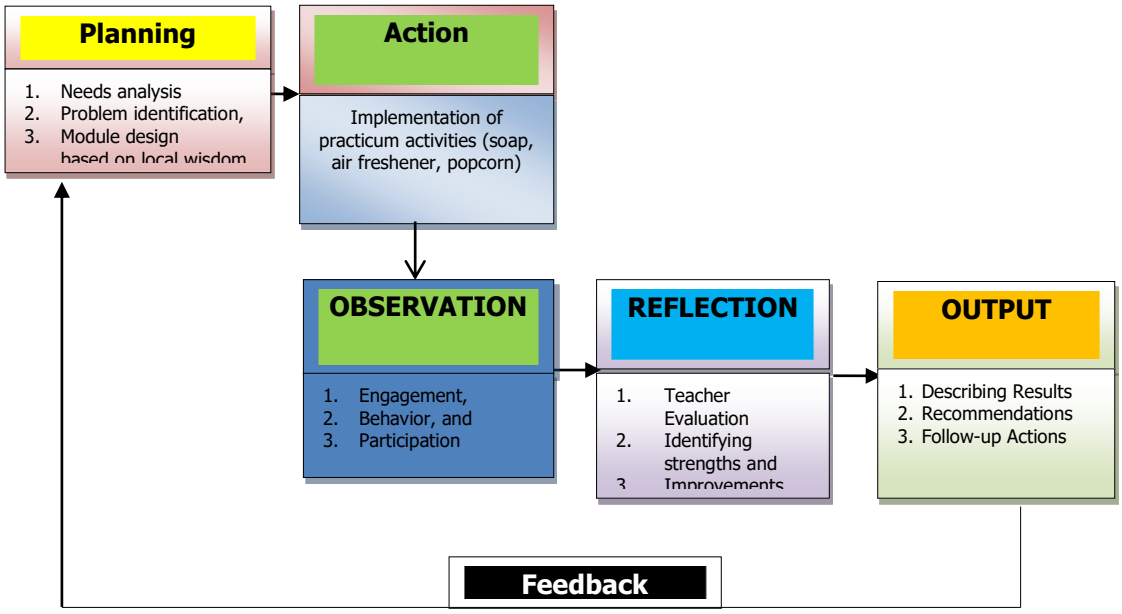

Figure 1. PAR Cycle

RESULTS AND DISCUSSION

Results

This section presents the outcomes of the community service program at Anugerah Kamal Kindergarten, structured according to the Participatory Action Research (PAR) stages: planning, action, observation, and reflection. The

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presentation illustrates how the program progressed from identifying the partner's needs to evaluating its direct impact on children and teachers.

Planning Stage

Addressing the Partner's Needs

The planning stage began with identifying the main challenges faced by the partner institution, Anugerah Kamal Kindergarten. Learning activities were predominantly conducted using conventional methods, such as lectures and worksheets, which limited children's opportunities to engage in hands-on and meaningful learning experiences. Teachers also indicated that the absence of a structured practicum module and supporting facilities hindered the implementation of more interactive and contextual learning. This condition revealed a gap between the expected development of children's character and the actual learning practices in the classroom. Therefore, this stage emphasized the need for an innovative, practical, and context-based solution that aligns with children's developmental characteristics.

Planning–Action Transition

Co-Designing the Practicum Module

Based on the identified needs, a collaborative design process was carried out involving teachers and the school principal. The result of this stage was the development of a local wisdom-based practicum module that utilized safe, simple, and locally available materials such as pandan leaves, corn, and betel leaves. The module was designed with clear and child-friendly procedures and included several hands-on activities, namely: (1) creating pandan leaf extract soap, (2) conducting the egg and vinegar experiment, (3) making natural air fresheners, (4) producing hand sanitizer from betel leaf and lime, and (5) making popcorn. Each activity was designed to provide direct learning experiences while simultaneously fostering environmental awareness, hygiene habits, and cooperative behavior among children.

Action Stage

Program Implementation and Direct Impact

The action stage involved the direct implementation of the practicum module with 30 children from Group B, facilitated collaboratively by teachers and the service team. During the pandan soap-making activity, children actively participated in mixing ingredients and observing changes, which helped them understand the use of natural materials. In the popcorn-making activity, children showed high enthusiasm as they observed the transformation process and engaged in social interactions such as sharing and cleaning up after the activity. These activities created a meaningful learning environment where children could explore, experiment, and learn through direct experience.

Figure 2. Children Participating in the Soap-Making Practicum

Figure 2 illustrates the active involvement of children in the pandan-based soap-making practicum. The children are seen directly participating in mixing ingredients, observing changes in texture and aroma, and following the teacher's guidance collaboratively. This activity not only enhanced children's understanding of the use of natural materials but also supported the development of fine motor skills, concentration, and the ability to follow instructions. Moreover, the interactions during the activity reflect positive cooperation and communication among peers.

Observation Stage

Behavioral Changes and Engagement

During the observation stage, systematic monitoring was conducted to assess children's engagement, participation, and behavioral development throughout the activities. The results showed that children demonstrated high levels of enthusiasm, active involvement, and curiosity. In addition, positive behavioral changes were observed, including cooperation among peers, awareness of cleanliness, and responsible use of materials. Teachers also provided positive feedback, stating that the module was practical, easy to implement, and effective in creating a joyful and engaging learning atmosphere.

Figure 3. Collaborative Learning during the Popcorn-Making Practicum

Figure 3 depicts a collaborative learning environment during the popcorn-making practicum. The children showed high enthusiasm while observing the transformation of corn into popcorn and actively engaged in social behaviors such as sharing tasks, taking turns, and cleaning up after the activity. This activity demonstrates the development of responsibility, cooperation, and independence among children. The learning atmosphere appears enjoyable and interactive, thereby supporting active engagement and meaningful learning experiences.

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Reflection Stage

Evaluation of Program Contribution

The reflection stage involved a comprehensive evaluation conducted collaboratively with teachers to assess the effectiveness and contribution of the program. The evaluation focused on children's responses, the usability of the module, its relevance to early childhood education themes, and its effectiveness in fostering environmental character. The results are presented in Table 1.

Table 1. Program Evaluation Summary

Aspect Assessed	Evaluation Results	Category
Children's response (enthusiasm/joy)	90% of children showed joy and curiosity	Excellent
Ease of use for teachers	Teachers confirmed the module was easy to implement	Good
Content relevance to ECE themes	Material was highly relevant to the local environment	Excellent
Contribution to learning methods	The module provided a valuable new teaching tool	Good
Effectiveness in instilling character	Children showed positive environmental behaviors	Good

The evaluation results indicate that the community service program successfully provided a practical and meaningful learning tool for Anugerah Kamal Kindergarten. The module enhanced children's learning experiences and supported the development of environmental character in a contextual and engaging manner. Teachers also suggested simplifying several procedures to improve future implementation, which provides important input for the sustainability and refinement of the program.

Discussion

The findings of this community service program demonstrate that the implementation of a local wisdom-based practicum module effectively enhances children's engagement and participation in learning activities. The observed increase in enthusiasm, curiosity, and active involvement indicates that experiential learning provides a meaningful learning environment for early childhood. This aligns with recent studies emphasizing that hands-on and inquiry-based approaches significantly improve children's motivation and engagement by allowing them to interact directly with learning materials and phenomena (Florencio da Silva et al., 2024; Gomez, 2025; Kumari & Mittal, 2026; Wen et al., 2023). The integration of real-life experiences within the learning process enables children to construct knowledge more effectively, supporting holistic development across cognitive, social, and

emotional domains.

Furthermore, the emergence of pro-social and pro-environmental behaviors, such as cooperation, cleanliness awareness, and responsible use of materials, highlights the effectiveness of experiential and context-based learning in fostering character development. The findings suggest that environmental character is more effectively developed when children are directly involved in meaningful activities rather than passive instruction. This is consistent with recent research indicating that early exposure to environmental practices through participatory learning can strengthen children's environmental awareness and responsibility (Kumari & Mittal, 2026; Tsevreni et al., 2023; Yang et al., 2022). Such approaches allow children to internalize values through experience, making learning more impactful and sustainable.

In addition, the use of local wisdom as the foundation of the practicum module contributed significantly to the relevance and effectiveness of the program. By utilizing locally available materials and culturally familiar practices, the learning activities became more contextual and meaningful for children. This finding is supported by recent studies which show that culturally responsive and local knowledge-based learning enhances children's sense of identity, belonging, and environmental ethics (Nganga & Kambutu, 2024; Sibanda et al., 2025). The integration of local wisdom not only strengthens the connection between children and their environment but also ensures that learning is sustainable and adaptable to different community contexts.

Moreover, this program also demonstrated a significant impact on teachers' pedagogical competence, particularly in adopting innovative and student-centered learning strategies. Teachers reported that the practicum module was practical, easy to implement, and effective in enriching their teaching practices. This aligns with recent literature highlighting that structured modules and experiential approaches can support teachers in designing more interactive and engaging learning environments (Kee et al., 2024; Mani et al., 2026; Salsabila & Asyifah, 2025; Sibanda et al., 2025). Therefore, the program not only benefits children as learners but also contributes to the professional development of teachers, reinforcing the sustainability and scalability of the intervention in early childhood education settings.

Community Service Contribution

This community service program provides significant contributions at both the community and academic levels. At the community level, the program enhances children's competencies, particularly in developing environmental awareness, pro-social behavior, and scientific curiosity through experiential learning activities. In addition, teachers' capacities are strengthened in designing and implementing innovative, context-based learning using local wisdom as a foundation. The introduction of a structured practicum module also contributes to institutional practices by providing a practical and sustainable learning tool that can be integrated

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into daily teaching activities. From an academic and practical perspective, this program offers an innovative approach by combining participatory methods with local wisdom-based practicum activities, which can be adapted and replicated in similar early childhood education settings. Furthermore, the findings provide practical implications for educators and practitioners in promoting character education through hands-on and culturally relevant learning, while also offering insights for policymakers in supporting contextual and sustainable early childhood education programs.

Limitations and Suggestions

Despite the positive outcomes, this program has several limitations that need to be acknowledged. The implementation was conducted within a limited time frame, which may not fully capture the long-term impact of the intervention on children's character development. Additionally, the program involved a relatively small number of participants within a single institution, which may limit the generalizability of the findings to broader contexts. There were also practical challenges related to time allocation during school activities and the need for continuous teacher assistance during practicum sessions. Based on these limitations, several suggestions are proposed for future programs. It is recommended that similar initiatives be implemented over a longer duration to observe sustained behavioral changes and deeper learning outcomes. Expanding the program to multiple institutions would also enhance its scalability and broader impact. Furthermore, future developments may focus on refining the practicum module to improve efficiency and adaptability, as well as integrating digital or visual supports to assist teachers in implementation. Opportunities for collaboration with stakeholders and further research are also encouraged to strengthen the effectiveness and sustainability of community service programs in early childhood education.

CONCLUSION

This community service program demonstrates that the implementation of a local wisdom-based practicum module is effective in addressing the identified need for more contextual and experiential learning in early childhood education. The program successfully enhances children's engagement, environmental awareness, and pro-social behavior through hands-on activities that are relevant to their daily lives. In addition, the program contributes to improving teachers' capacity in designing and applying innovative, practice-oriented learning strategies, thereby supporting more meaningful and interactive classroom practices. The findings indicate that integrating local wisdom into practicum-based learning not only strengthens character education but also provides a practical and adaptable model for early childhood institutions. This approach offers a sustainable solution that can

be implemented in similar educational settings to promote environmental character development from an early age. Based on these outcomes, it is recommended that future community service programs expand the scope of implementation to a broader range of institutions and extend the duration to observe long-term impacts. Further refinement of the practicum module and continuous collaboration with educators and stakeholders are also suggested to enhance the effectiveness, scalability, and sustainability of the program.

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AUTHOR CONTRIBUTION STATEMENT

PCO contributed to the conceptualization of the study, coordination of the community service program, and overall manuscript writing. FLTA and DBRAP were responsible for the design and development of the local wisdom-based practicum module during the planning stage. AERG and IA conducted the implementation (action stage) in the field, including facilitating practicum activities with children and assisting teachers. CD contributed to the observation and data collection processes, including documenting children's engagement and conducting interviews with teachers. ZA contributed to proofreading and ensuring the accuracy, clarity, and quality of the language used in the manuscript. All authors collaboratively contributed to the reflection stage, data analysis, interpretation of findings, and revision of the manuscript, and have approved the final version for publication.

AI DISCLOSURE STATEMENT

The authors used Chat GPT during the preparation of this manuscript for the purpose of improving clarity, grammar, and academic language quality. All content generated with the assistance of these tools has been carefully reviewed, revised, and validated by the authors. The authors take full responsibility for the accuracy, originality, and integrity of the final content of this publication.

CONFLICTS OF INTERES

The authors declare that there are no financial, institutional, or personal conflicts of interest that could have influenced the conduct of this study, the analysis of the data, the preparation of the manuscript, or its publication.

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