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Developing Prospective Physical Education Teachers' Leadership through Community-Based Service-Learning Projects

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Abstract

This study addresses the limited understanding of how community-based service learning develops leadership as an enacted and contextually shaped practice among pre-service physical education teachers. It explored the leadership-development processes experienced by students enrolled in the Teacher Professional Education Program (PPG) while implementing community-based service-learning projects in Islamic boarding schools. A qualitative multiple-case study design was employed, involving four PPG students who conducted 10-week leadership projects in four Islamic boarding schools in Jambi, Indonesia. Data were collected through semi-structured interviews lasting 45–60 minutes, participatory observations during project implementation, project documents, and participants' reflective notes. The data were analyzed using team-based thematic analysis supported by NVivo 12 through iterative coding, categorization, comparison, and theme development. The findings showed that participants enacted leadership through stakeholder coordination, role distribution, collaborative communication, negotiation, and adaptive decision-making. These practices were particularly evident when participants responded to limited facilities, structured religious routines, scheduling conflicts, and institutional expectations. Initial difficulties in team management and stakeholder communication became important learning opportunities when participants reflected on their experiences and adjusted their subsequent actions. The Islamic boarding school context therefore functioned not only as the project setting but also as a source of leadership demands that encouraged culturally responsive, adaptive, and collaborative practices. This study provides a process-oriented account of leadership development by demonstrating how contextual demands, situated action, and reflection jointly shape leadership practice. The findings support the integration of structured community engagement, explicit leadership outcomes, and guided reflection into pre-service teacher education programs.

Keywords: Teacher Leadership; Service Learning; Pre-Service Teacher Education; Physical Education; Islamic Boarding Schools

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INTRODUCTION

Physical education, sports, and health have a strategic role in preparing prospective teachers who possess not only pedagogical and disciplinary knowledge but also strong interpersonal and leadership capabilities. Physical education learning requires continuous social interaction, teamwork, decision-making, and the

management of diverse student dynamics. These characteristics make it a relevant setting for developing leadership through authentic and collaborative experiences. Project-based learning and service learning, for example, can connect academic preparation with community engagement and provide opportunities for pre-service teachers to practise responsibility, communication, coordination, and decision-making in real situations (Angga & Sari, 2025; Hermansah et al., 2025). Nevertheless, teacher education graduates, including students enrolled in the Teacher Professional Education (PPG) programme, may still experience difficulty translating leadership knowledge and social competencies into professional practice within schools and communities. Teacher education therefore requires experiential pedagogical strategies that enable prospective physical education teachers to develop leadership through direct engagement with authentic social and professional challenges.

Service learning has been recognised in higher education as a pedagogical approach that integrates academic learning, structured community service, and critical reflection. Rather than positioning students as passive recipients of knowledge, service learning engages them as active participants in activities that respond to community needs while remaining connected to disciplinary learning objectives (Dahlan et al., 2025). Within physical activity, sport, and teacher education, this approach has been used to strengthen students' social, personal, and professional competencies. A systematic review by Salam et al. (2019) showed that the adoption of service learning in higher education has continued to expand. However, further empirical investigation is required to explain how specific competencies—including communication, collaboration, reflective leadership, and social responsibility—develop through participation. Consequently, although the educational benefits of service learning are increasingly documented, the processes through which students construct and enact leadership remain insufficiently understood.

The implementation of service learning also involves challenges that may shape the quality of students' learning experiences. Pre-service teachers must often collaborate with multiple community stakeholders, operate within unfamiliar institutional arrangements, and respond to field conditions that demand considerable interpersonal, organisational, and leadership capabilities. Mutambara (2023) identified stakeholder collaboration, instructional preparedness, and students' readiness for complex field experiences as recurring challenges in teacher education service-learning programmes. These conditions demonstrate that service learning is not simply an extension of community service. Instead, it is a structured learning process that requires systematic planning, appropriate supervision, reciprocal partnerships, and purposeful reflection (Afandi & Hayati, 2025). Previous studies have frequently described the general benefits and implementation challenges of service learning, but comparatively less attention has been given to how those challenges generate particular leadership practices among pre-service teachers, especially in Indonesian physical education and PPG contexts.

Evidence also suggests that the contribution of service learning extends beyond cognitive achievement. Participation has been associated with stronger socio-educational commitment, teaching self-efficacy, empathy, intrinsic motivation, and confidence in undertaking professional responsibilities. For example, Asenjo et al. (2021) demonstrated that service-learning participation can strengthen student teachers' socio-educational commitment and confidence in their roles as educators. Such findings support the relevance of service learning to twenty-first-century teacher

education, which requires graduates who are adaptive, reflective, socially competent, and capable of responding constructively to complex professional situations. However, these studies have generally emphasised developmental outcomes rather than the situated actions and interactions through which leadership is learned and practised.

This issue is particularly important in Indonesia, where teacher preparation must connect formal professional training with the social realities of schools and communities. Evaluative research on teacher competency-development programmes, including research conducted in East Nusa Tenggara, indicates that improvements in pedagogical and professional competencies need to be accompanied by stronger social experience and leadership development (Rachman, 2021). This concern reflects a broader gap between competencies developed through formal instruction and those required to coordinate people, manage uncertainty, negotiate institutional expectations, and respond to community needs. Direct and community-based learning experiences should therefore be integrated more explicitly into teacher education so that graduates are prepared not only to teach effectively in classrooms but also to assume constructive roles in wider school and community environments.

Unlike studies that primarily assess outcomes such as self-efficacy, social commitment, empathy, or general professional competence, the present study conceptualises leadership as an enacted and contextually shaped practice. From this perspective, leadership becomes visible through concrete actions, including stakeholder coordination, role distribution, communication, negotiation, and adaptive decision-making within authentic community settings. Recent research in physical education and teacher education confirms the contribution of service learning to prosocial behaviour and professional development, but tends to prioritise outcomes over the processes through which leadership emerges. Ruiz-Montero et al. (2025), for example, reported increased empathy and collaborative leadership among students but provided limited explanation of how leadership was enacted during programme implementation. Pérez-Ordás et al. (2021) similarly noted that service-learning studies in physical education have focused mainly on participant outcomes, with less attention to programme quality and leadership processes. Lobo-de-Diego et al. (2024) highlighted social commitment and interpersonal development without examining the situated enactment of leadership, while Egan et al. (2022) primarily framed leadership as a developmental outcome. Rivas-Valenzuela et al. (2026) further showed that service learning can support inclusion and professional transformation, although its implementation remains shaped by structural and institutional constraints. Collectively, these studies indicate the need for closer examination of the micro-level practices through which pre-service teachers construct leadership while interacting with community members and responding to contextual demands.

The present study addresses this gap within Islamic boarding schools, or *pesantren*, where structured religious routines, hierarchical relationships, institutional expectations, and limited resources may directly influence project implementation. These contextual features make *pesantren* more than locations in which service-learning activities occur; they constitute social and institutional environments that require pre-service teachers to negotiate schedules, communicate with authority figures, adapt activities, and respond sensitively to local norms. This setting therefore offers an opportunity to examine how leadership develops through the interaction between contextual demands, situated action, and reflection. The study is also

relevant to Indonesian teacher education policies that emphasise character development, leadership, social competence, and community engagement. Because physical education involves intensive interaction, group coordination, and shared activity, the development of reflective, collaborative, and empathetic leadership is particularly important for prospective physical education teachers (Afriyuandi et al., 2025).

The study is informed primarily by experiential learning and social constructivism. Experiential learning proposes that professional learning develops through active involvement in concrete experiences followed by reflection, conceptualisation, and subsequent action (Suleman, 2024; Virskya et al., 2025). In community-based projects, this process can enable students to reconsider decisions, evaluate interactions, and modify their leadership approaches in response to field experience. Social constructivism further explains that knowledge and professional meaning are produced through interaction, dialogue, and collaboration rather than through individual cognition alone (Lenkauskaitė et al., 2020). Together, these perspectives support an understanding of leadership development as a process arising from participation in social practice, reflection on challenges, and negotiation with others.

Leadership development in physical education also has distinctive characteristics because it occurs through physical activity, movement coordination, rapid decision-making, teamwork, and intensive social interaction. Learning experiences grounded in authentic social situations can strengthen prospective teachers' capacity to coordinate activities, respond to unexpected conditions, and facilitate collaborative participation (Marani et al., 2024). Transformational leadership theory suggests that community-based leadership experiences may help students influence and motivate others through exemplary behaviour, shared purpose, and empathy (Judson et al., 2024; Pantow et al., 2025). Situational leadership theory likewise emphasises the need to adapt leadership behaviour to participants' characteristics, environmental conditions, and the demands of particular tasks (Juniawati et al., 2025; Khattak & Karim, 2023). In the present study, these leadership perspectives complement the experiential and social learning foundations by helping to interpret how participants adjusted their actions across different situations. Nevertheless, empirical research that closely examines the formation and enactment of leadership among pre-service physical education teachers through community-based service learning remains limited.

Against this background, this study explores how community-based service-learning projects contribute to leadership development among pre-service physical education, sports, and health teachers enrolled in the PPG programme at Universitas Jambi. Rather than treating leadership solely as an outcome of participation, the study examines the practices through which participants coordinated stakeholders, distributed roles, negotiated decisions, responded to constraints, and constructed meaning from their experiences. Theoretically, the study seeks to extend service-learning and teacher-leadership scholarship by providing a process-oriented and context-sensitive account of leadership as an enacted practice. Practically, the findings are expected to inform the design of pre-service teacher education programmes that integrate explicit leadership outcomes, structured community engagement, reciprocal institutional partnerships, and guided reflection. Specifically, the study addresses the following research questions: (1) What leadership practices emerge during

community-based service-learning projects? (2) How do service-learning experiences facilitate leadership development among pre-service physical education teachers? and (3) What contextual factors within Islamic boarding schools shape the enactment of leadership?

METHOD

Study Design

This study employed a qualitative multiple-case study design to explore how community-based service learning contributed to leadership development among pre-service Physical Education, Sports, and Health (PJOK) teachers enrolled in the Teacher Professional Education (PPG) programme at Universitas Jambi. The multiple-case design was selected because the study involved four service-learning projects implemented in four Islamic boarding schools (*pesantren*) in Jambi, Indonesia. Each case comprised one PPG student, one community-based service-learning project, and one partner *pesantren* during a 10-week implementation period. This bounded structure enabled the researchers to examine recurring and context-specific leadership practices across different institutional settings. Case study research is appropriate for investigating bounded systems through detailed, contextual, and in-depth data collection (Creswell & Creswell, 2017). Accordingly, the design supported an examination of leadership as a socially constructed and contextually situated practice emerging from participants' real-world service-learning experiences rather than as a predefined variable to be tested.

Participants and Sampling

The participants were four pre-service PJOK teachers aged 21–24 years, comprising two men and two women, who were enrolled in the PPG programme at Universitas Jambi. All participants had completed microteaching and foundational pedagogical training but had limited prior experience in leading community-based projects. This background made them information-rich participants for examining how leadership developed through engagement with authentic community settings.

Participants were selected through purposive sampling according to three criteria: (1) active involvement in a community-based service-learning project, (2) direct responsibility for coordinating or leading activities during field implementation, and (3) willingness and ability to reflect on their leadership experiences. Purposive sampling was appropriate because it enabled the researchers to select participants whose experiences were directly relevant to the phenomenon under investigation (Palinkas et al., 2015). To protect confidentiality, each participant and project site was assigned a pseudonym or identification code during data analysis and reporting.

Service-Learning Project and Implementation Procedure

The service-learning projects were implemented over 10 weeks across four *pesantren*. The projects integrated academic learning, community engagement, and structured reflection while providing participants with opportunities to practise leadership in authentic educational settings. Each participant engaged in weekly activities that included teaching physical education, organising traditional games, facilitating structured physical activities, and coordinating community sports events.

Project implementation consisted of five stages. First, participants attended an orientation and briefing on the objectives, expected learning outcomes, and

responsibilities associated with the leadership projects. Second, they identified local needs and coordinated project plans with teachers, school administrators, and relevant community stakeholders. Third, participants implemented the agreed service-learning activities at their respective sites. Fourth, the researchers conducted ongoing observations and collected relevant project documentation during field implementation. Fifth, participants joined reflective sessions and completed post-project interviews to examine their decisions, interactions, challenges, and perceived leadership development. Data collection occurred concurrently with project implementation to capture leadership practices as they emerged in real situations.

Data Sources and Data Collection

The researcher served as the primary instrument for data generation and interpretation, consistent with the principles of qualitative naturalistic inquiry. Four complementary data sources were used: semi-structured interviews, participatory observations, reflective notes, and project documents. The use of multiple sources enabled the researchers to examine participants' reported experiences alongside observed practices and documentary evidence.

Each participant completed a semi-structured post-project interview lasting approximately 45–60 minutes. The interview guide explored how participants coordinated with stakeholders, responded to field-based challenges, distributed responsibilities, made decisions, and interpreted changes in their understanding of leadership. Sample questions included: "How did you coordinate with teachers and community members during the project?", "What challenges did you face when making decisions in the field?", and "How did this experience shape your understanding of leadership?"

Participatory observations focused on observable leadership practices, including communication patterns, stakeholder coordination, role distribution, collaborative decision-making, conflict negotiation, responsiveness to contextual constraints, and team dynamics. The documentary dataset included field notes, participants' reflective notes, activity reports, project schedules, photographs, planning documents, and other project artefacts. These materials were used to contextualise and triangulate evidence obtained through interviews and observations.

Data Analysis

The data were analysed using an inductive, team-based thematic analysis supported by NVivo 12. NVivo was used to organise, retrieve, compare, and manage coded material across the interview, observation, reflective, and documentary datasets. The analysis proceeded iteratively rather than as a strictly linear sequence.

First, the researchers familiarised themselves with the dataset by repeatedly reviewing interview data, observation records, reflective notes, and project documents. Second, meaningful data segments were assigned initial codes representing participants' actions, experiences, challenges, interactions, and interpretations. Third, related codes were compared and organised into broader categories, including stakeholder coordination, role distribution, communication, adaptive decision-making, reflection, and contextual constraints. Fourth, the categories were examined and refined into overarching themes representing leadership practices, leadership-development processes, and contextual influences. Fifth, the themes were reviewed across the four cases to identify recurring patterns as well as variations associated with the conditions of each *pesantren*. Finally, the

researchers defined and interpreted the themes in relation to the research questions and the study's conceptualisation of leadership as an enacted practice. This iterative process was consistent with thematic analysis approaches that emphasise the identification, refinement, and interpretation of meaningful patterns within qualitative data (Braun & Clarke, 2006).

Coding was conducted collaboratively by two researchers. They reviewed the application and interpretation of codes, compared emerging categories, and discussed differences until consensus was reached. Collaborative coding was used to deepen interpretation and improve analytical consistency rather than to establish statistical agreement between coders.

Trustworthiness and Researcher Reflexivity

Several strategies were employed to strengthen the credibility, dependability, confirmability, and transferability of the findings. First, data-source triangulation was conducted by comparing evidence from interviews, participatory observations, reflective notes, and project documents. Themes were retained when they were supported by sufficiently detailed and consistent evidence across the dataset.

Second, member checking was conducted by returning summarised interpretations to participants for confirmation, clarification, or correction. Third, peer debriefing was undertaken with research colleagues who reviewed the coding process, category development, and thematic interpretations. Fourth, an audit trail was maintained to document data-collection procedures, coding decisions, theme development, interpretive changes, and analytical reflections. These procedures are consistent with established criteria for enhancing trustworthiness in thematic analysis (Nowell et al., 2017).

Researcher reflexivity was supported through the documentation of analytical reflections throughout data collection and analysis. The researchers considered how their academic roles, prior assumptions about service learning, and interactions with participants might influence the generation and interpretation of the data. Interpretations were therefore discussed within the research team and checked against evidence from multiple sources before the themes were finalised.

Ethical Considerations

Ethical approval was obtained from the institutional research ethics committee of Universitas Jambi (Decree Number: 3387/UN21/KP/2025). Before data collection, all participants received information about the study's objectives, procedures, voluntary nature, confidentiality protections, and their right to withdraw without penalty. Written informed consent was obtained from each participant. Pseudonyms or participant codes were used in transcripts, analytical files, and research reports to protect participants' identities and the confidentiality of the partner *pesantren*.

RESULTS AND DISCUSSION

Overview of the Findings

The analysis of semi-structured interviews, participatory observations, reflective notes, and project documents identified recurring patterns in how pre-service physical education teachers enacted and developed leadership during community-based service-learning projects. NVivo 12 was used to organise, retrieve, code, and compare material across the four cases. For reporting purposes, the participants and their

corresponding project sites are identified as Student 1-Site A, Student 2-Site B, Student 3-Site C, and Student 4-Site D.

The analysis produced four interrelated themes: (1) stakeholder coordination and distributed role management, (2) adaptive decision-making under contextual constraints, (3) innovation through locally responsive physical activities, and (4) leadership learning through challenges and reflection. These themes demonstrate that leadership was not experienced merely as an individual attribute or a formal project position. Instead, it emerged through participants' actions, interactions with stakeholders, responses to institutional conditions, and reflection on the consequences of their decisions.

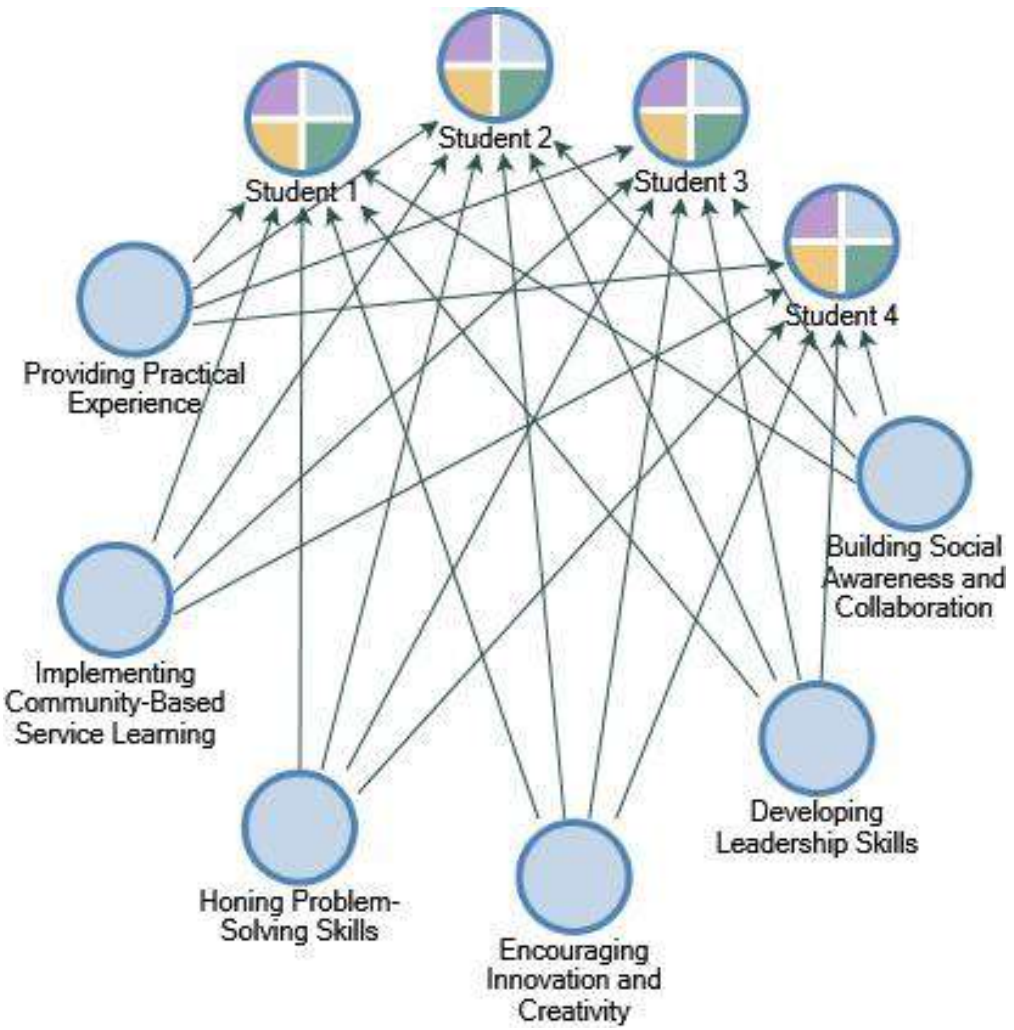


Figure 1. NVivo Project Map Linking the Four Cases to the Principal Analytical Categories

Figure 1 provides a descriptive overview of the coded associations between the four participants and the principal analytical categories identified in the dataset: community-based service-learning implementation, social awareness and collaboration, practical experience, innovation and creativity, problem-solving, and leadership development. The project map is presented as an organisational representation of the qualitative dataset rather than as a statistical measure of correlation or relationship strength.

The map indicates that all four participants were associated with categories involving practical engagement, social interaction, decision-making, innovation, and leadership practice. Participants did not act only as implementers of physical

education activities. They also assessed community needs, coordinated with school and community stakeholders, distributed responsibilities, modified activities, resolved implementation problems, and evaluated their decisions. These recurring actions provided the empirical foundation for the four themes presented below.

Stakeholder Coordination and Distributed Role Management

Leadership was first enacted through participants' coordination with teachers, *pesantren* administrators, project-team members, parents, and community representatives. Before implementing their projects, participants conducted initial field observations and discussed the needs of school students and local communities. They used this information to clarify project objectives, negotiate activity schedules, identify available facilities, and allocate responsibilities among team members.

Teachers and *pesantren* administrators participated in planning meetings, scheduling discussions, and project-opening activities. Their involvement showed that project implementation depended on reciprocal institutional engagement rather than on participants acting independently. Participants also maintained communication throughout the 10-week implementation period to confirm schedules, clarify responsibilities, respond to institutional changes, and ensure that planned activities remained compatible with *pesantren* routines.

Accessible communication platforms, particularly WhatsApp, were used to exchange information, coordinate team members, and reduce misunderstandings. Face-to-face discussions were held when decisions required approval from teachers or administrators or when differences emerged within the project teams. Student 1 described the importance of maintaining continuous communication with school stakeholders:

> *"We had to constantly coordinate with teachers to adjust activities to the school schedule, especially prayer times" (Student 1-Site A, post-project interview).*

Community involvement extended beyond formal school personnel. Parents and local residents attended or participated in activities and, in some cases, provided food, equipment, logistical assistance, or access to community facilities. These contributions required participants to recognise community members as partners in project implementation rather than merely as recipients of service. Student 2 explained that listening to community expectations influenced the design and organisation of activities:

> *"We learned to listen to community needs and adjust our plans so everyone could be involved" (Student 2-Site B, post-project interview).*

Leadership was also evident in the internal organisation of the project teams. Participants facilitated planning discussions, negotiated project priorities, divided members into working groups, and assigned responsibilities according to available skills and resources. Administrative leadership included preparing proposals, obtaining permits, drafting coordination letters, organising equipment, documenting activities, and monitoring task completion.

Differences of opinion sometimes emerged regarding activity selection, task allocation, and scheduling. Participants responded through open discussion and consensus-building rather than unilateral decision-making. Some also acted as intermediaries between team members to prevent disagreement from disrupting implementation. These practices indicate that leadership was distributed across

communication, administration, role allocation, negotiation, and collective responsibility rather than concentrated solely in a formal project leader.

Adaptive Decision-Making under Contextual Constraints

Participants encountered several contextual challenges that required them to reconsider their original project plans. These challenges included limited sports facilities and equipment, scheduling conflicts, structured prayer and religious-study routines, institutional regulations, differences in community expectations, and variations in the physical conditions of the four project sites.

Before finalising their activities, participants collected information from teachers, administrators, and community members regarding school routines, student needs, available spaces, and institutional expectations. They translated this information into decisions about project schedules, activity formats, role allocation, and resource use. This process required participants to balance the academic objectives of the service-learning projects with the practical and cultural conditions of each *pesantren*.

Scheduling was a particularly important challenge because physical education activities had to be aligned with prayer times, religious study, classroom instruction, and other school programmes. Participants responded by rescheduling activities, shortening sessions, modifying implementation sequences, and consulting teachers before introducing changes. These adjustments demonstrate that decisions could not be made independently of the hierarchical and religious structures of the *pesantren*.

Limited equipment also required participants to redesign activities so that all school students could participate. Student 3 described how resource constraints influenced activity planning:

> *"When equipment was limited, we had to rethink the activities so everyone could still participate" (Student 3-Site C, post-project interview).*

Participants used several strategies to address field-based problems. They gathered information systematically, consulted teachers and community members, sought advice from individuals familiar with traditional games, and used WhatsApp groups to prevent miscommunication. Open discussions were used to generate alternatives and reach agreement within the project teams.

When initial coordination was unsuccessful, participants clarified responsibilities and changed their communication approaches before subsequent activities. For example, misunderstandings about schedules encouraged participants to confirm plans earlier with teachers and administrators. Unclear task allocation led them to provide more specific responsibilities to individual team members. These changes show that adaptive decision-making involved not only responding to immediate problems but also revising organisational practices to prevent similar difficulties.

Joint evaluations were conducted to identify weaknesses related to scheduling, communication, role distribution, and activity suitability. Participants used these evaluations to improve subsequent sessions. In several cases, they also proposed that selected physical activities continue after the formal projects had ended. However, because the study did not include follow-up data, it could not determine whether these proposed activities were sustained over time.

The findings indicate that problem-solving was embedded within the leadership process. Participants had to balance project objectives with available resources,

religious routines, institutional expectations, safety considerations, and community needs. Their decisions were therefore negotiated, adaptive, and context dependent rather than determined by fixed project plans.

Innovation through Locally Responsive Physical Activities

Innovation emerged primarily as a response to local needs and limited resources. Participants introduced and revitalised traditional games, modified physical activities to suit available spaces, and created low-cost equipment from locally available materials. These decisions allowed activities to proceed despite limited access to standard sports facilities and helped make the projects more relevant to the cultural and institutional contexts of the partner schools.

Traditional games became an important medium for integrating physical activity, teamwork, cultural knowledge, and community participation. Participants selected games that could be conducted safely without disrupting *pesantren* routines. They also modified rules according to the number, age, and abilities of participating school students. In some cases, teachers or community members with knowledge of traditional games were consulted before activities were selected.

Student 4 explained that simple materials could support meaningful and enjoyable physical activities:

> *"We used simple materials to create games, but the students enjoyed them more than modern tools" (Student 4-Site D, post-project interview).*

Participants created simple game equipment from accessible materials, including wood and other locally available resources. Project documents and reflective notes indicated that some participants considered whether this equipment could remain available to the partner schools after the projects ended. Although the study did not evaluate its long-term use, these plans showed an awareness of continuity beyond the immediate project period.

Innovation was therefore not limited to producing new activities. It involved identifying community needs, assessing practical risks, allocating resources efficiently, adapting activity rules, and developing feasible alternatives when initial plans could not be implemented. Creativity was closely connected to leadership responsibilities such as decision-making, resource management, task distribution, and responsiveness to local conditions.

The use of traditional games also enabled participants to connect physical education with local cultural knowledge. Community members did not function solely as recipients of the projects; they contributed knowledge, resources, and practical guidance that influenced activity design. This reciprocal process strengthened the contextual relevance of the projects and encouraged participants to reconsider the assumption that effective physical education depends on modern or expensive equipment.

Leadership Learning through Challenges and Reflection

Leadership development did not occur automatically through participation in service-learning activities. It became more visible when participants reflected on unsuccessful interactions, reconsidered their decisions, and adjusted their subsequent actions. Several participants initially experienced difficulty coordinating team members, communicating with school stakeholders, and making decisions under unfamiliar field conditions.

Participants reported that leading activities in community settings differed substantially from discussing leadership in the classroom. Field-based decisions sometimes had to be made quickly, but participants also had to respect institutional procedures, religious routines, and community expectations. Student 1 explained the difference between classroom learning and leadership practice in the field:

> *"Leading in the field was different from class; we had to adapt quickly and make decisions on the spot" (Student 1-Site A, post-project interview).*

Reflective sessions and group evaluations enabled participants to identify weaknesses in communication, role allocation, and activity planning. They discussed what had not worked, clarified responsibilities, and used the resulting evaluations to modify subsequent activities. Reflection was therefore connected to observable changes in leadership practice rather than functioning only as a retrospective description of experience.

For example, initial misunderstandings about schedules encouraged participants to communicate earlier and more frequently with teachers and administrators. Differences in team members' opinions led them to adopt more open discussions and consensus-based decision-making. Equipment limitations encouraged them to redesign activities and distribute available materials more effectively. These examples demonstrate how contextual challenges became leadership-learning opportunities when they were followed by reflection and adjustment.

Participants also described changes in how they understood leadership. Rather than associating leadership primarily with giving instructions, they increasingly emphasised collaboration, trust, mutual support, and responsibility for collective goals. Student 2 described this change as follows:

> *"We learned that leadership is not about giving orders, but about working together and supporting each other" (Student 2-Site B, post-project interview).*

Observable practices supporting this interpretation included facilitating group discussions, mediating differences of opinion, maintaining communication among team members, monitoring field implementation, and placing collective project objectives above individual preferences. Participants also recognised that building trust with teachers, administrators, and community members required respectful communication and sensitivity to local norms.

The findings suggest that leadership learning involved an iterative sequence of experience, difficulty, reflection, and adjustment. Participants first encountered an authentic problem, responded through a particular leadership action, evaluated the consequences, and modified their subsequent practice. Leadership development therefore emerged from engagement with challenges rather than from successful participation alone.

Cross-Case Patterns of Leadership Enactment

Across the four cases, leadership enactment followed a recurring process. Contextual demands—such as religious schedules, institutional hierarchies, limited resources, differences within project teams, and community expectations—generated situations that required coordination and decision-making. Participants responded through stakeholder communication, role distribution, negotiation, activity

modification, and collaborative problem-solving. Reflection on these actions subsequently informed adjustments to later activities.

Although the specific challenges differed among the four project sites, leadership was consistently enacted through interaction with other people and engagement with local conditions. The *pesantren* context therefore functioned not only as the location of service-learning implementation but also as an active source of leadership demands.

Student 1-Site A illustrated leadership through schedule negotiation, rapid field-based decisions, and repeated coordination with teachers. Student 2-Site B highlighted responsiveness to community needs, collaborative participation, and an understanding of leadership based on mutual support. Student 3-Site C demonstrated adaptive decision-making in response to limited equipment and the need to ensure inclusive participation. Student 4-Site D illustrated innovation through traditional games and equipment created from accessible local materials. These distinctions provide illustrative case-level examples rather than indicating that each practice occurred exclusively within one case.

Table 2 synthesises the relationships between contextual situations, leadership practices, illustrative cases, and the empirical evidence identified in the dataset.

Table 2. Cross-Case Evidence of Leadership Practices during Community-Based Service Learning

Analytical area	Contextual demand or project situation	Leadership practices identified	Case(s)	Empirical evidence
Stakeholder coordination	Differences between project plans, school schedules, and *pesantren* routines	Consulting teachers and administrators, conducting planning meetings, negotiating schedules, and maintaining communication	Student 1-Site A; Student 2-Site B	Activities were adjusted to prayer times, religious-study periods, and other institutional programmes.
Role distribution and team management	Multiple implementation tasks and limited human and material resources	Dividing teams into working groups, assigning responsibilities, managing administrative documents, and monitoring task completion	Across the four cases	Responsibilities included proposals, permits, equipment preparation, activity facilitation, documentation, and stakeholder communication.
Community collaboration	Need for local participation, logistical assistance, and access to facilities	Engaging parents and residents, coordinating facility use, inviting participation, and	Student 2-Site B and other cases	Community members participated in activities and contributed food, equipment, logistical assistance, or

Analytical area	Contextual demand or project situation	Leadership practices identified	Case(s)	Empirical evidence
		acknowledging local contributions		access to community spaces.
Adaptive decision-making	Limited facilities, scheduling conflicts, and differences between initial plans and field conditions	Modifying activities, rescheduling sessions, consulting stakeholders, and reaching decisions through discussion	Student 1-Site A; Student 3-Site C	Activities were redesigned when equipment was insufficient or when schedules conflicted with worship routines.
Innovation and contextual responsiveness	Limited standard equipment and need for culturally relevant physical activities	Reviving traditional games, constructing low-cost equipment, adapting rules, and using locally available materials	Student 4-Site D and other cases	Simple game equipment and traditional activities were adapted to school spaces, resources, and student characteristics.
Communication and conflict management	Initial misunderstandings, differences of opinion, and unclear responsibilities	Using WhatsApp groups, holding open discussions, mediating differences, and clarifying responsibilities	Across the four cases	Participants revised communication practices after initial coordination problems and used consensus to resolve team issues.
Reflective leadership learning	Unsuccessful interactions and unexpected implementation challenges	Conducting group evaluations, reviewing decisions, identifying weaknesses, and adjusting subsequent actions	Student 1-Site A; Student 2-Site B; across cases	Reflection informed changes in scheduling, role allocation, activity design, and stakeholder communication.
Culturally responsive leadership	Hierarchical relationships, religious norms, and institutional expectations within *pesantren*	Seeking approval, communicating respectfully with authority figures, adapting to local	Student 1-Site A and across cases	Participants negotiated activities with teachers and administrators rather than

Analytical area	Contextual demand or project situation	Leadership practices identified	Case(s)	Empirical evidence
		norms, and balancing institutional expectations		imposing their original plans.

As shown in Table 2, leadership practices were closely connected to situations encountered during project implementation. Scheduling conflicts generated negotiation and adaptive planning, while limited resources encouraged activity modification and innovation. Differences within project teams required communication, mediation, and consensus-building. Religious routines and hierarchical relationships within the *pesantren* further required participants to communicate respectfully and obtain institutional approval.

The table also demonstrates that the themes were interrelated. For example, modifying an activity because of limited equipment involved problem-solving, innovation, communication, and resource management. Similarly, adjusting a schedule around prayer times involved stakeholder coordination, cultural responsiveness, and adaptive decision-making. Leadership practices should therefore be understood as interconnected responses to authentic project demands rather than as isolated competencies.

Across these situations, reflection enabled participants to evaluate their initial responses and adjust their subsequent actions. The cross-case synthesis indicates that leadership development occurred through the interaction of contextual demands, situated action, and reflective adjustment. Participants developed leadership not simply because they completed community-service projects, but because they were required to coordinate people, respond to constraints, evaluate decisions, and modify practices within authentic educational and community environments.



Figure 2. Word Cloud Frequency

Figure 2 presents a supplementary descriptive overview of frequently occurring words in the interview, observation, reflective-note, and project-document datasets. Prominent terms included "communication," "traditional games," "activities," "school," "community," "leadership," "collaboration," "students," and "teachers."

The prominence of "communication" corresponds with participants' repeated accounts of coordinating schedules, clarifying responsibilities, resolving misunderstandings, and negotiating activities with school and community stakeholders. The frequency of "traditional games" and "activities" reflects their central role in the physical education projects, while the terms "community" and "collaboration" indicate the involvement of actors beyond the student project teams.

The word cloud is presented only as a supplementary visualisation of frequently occurring vocabulary. Word frequency does not independently establish thematic importance, causal relationships, or the analytical strength of connections among concepts. The thematic findings and cross-case interpretations were therefore developed from the complete dataset rather than from word frequency alone.

Discussion

Leadership as an Enacted and Distributed Practice

The findings demonstrate that leadership emerging from community-based service-learning projects was not merely an outcome reported by participants but a practice enacted through concrete actions in the field. Participants coordinated with teachers and community members, distributed responsibilities within project teams, managed administrative tasks, negotiated differences, and adjusted decisions in response to changing conditions. These practices answer the first research question by showing that leadership emerged as a collaborative, relational, and contextually situated process rather than as a predetermined formal role.

This interpretation supports the view that teacher leadership develops through social interaction and engagement with authentic professional situations (Szeto & Cheng, 2018). It is also consistent with distributed and practice-based leadership perspectives, which conceptualise leadership as an activity produced through interactions among individuals, tasks, and institutional contexts (Clifton et al., 2020; MacGillivray, 2018; Nadeem, 2024; Youngs, 2017). From this perspective, leadership did not reside exclusively in individual participants. Instead, it was distributed across planning discussions, role allocation, communication, stakeholder negotiation, and collective problem-solving.

The participants' emphasis on mutual support, trust, shared responsibility, and consensus further indicates that leadership was enacted through relationships rather than through unilateral authority. Service-learning environments can create opportunities for such relational leadership because they require students to engage authentically with community members, negotiate different interests, and reflect on the consequences of their actions (Huda et al., 2018; Kiersch & Peters, 2017; Molderez & Fonseca, 2018). Sustained community engagement can also strengthen civic responsibility, interpersonal competence, and social accountability by positioning participants as partners rather than as external providers of predetermined activities (Ali, 2025; Salam et al., 2019).

The findings therefore extend previous research that has treated leadership primarily as a developmental outcome. In the present study, leadership became observable through micro-level practices such as maintaining communication,

facilitating discussion, allocating tasks, mediating disagreement, and adapting activities to local expectations. These situated actions support recent arguments that community-based experiences can promote collaborative and adaptive forms of leadership when participants must respond to complex social relationships and shared responsibilities (Cheruiyot & Venter, 2024; David et al., 2026).

Service Learning as a Process of Leadership Development

The findings addressing the second research question indicate that service learning facilitated leadership development through an iterative process of direct experience, challenge, reflection, and adjustment. Participants did not simply apply previously learned leadership concepts. They encountered situations that required them to reconsider assumptions, evaluate unsuccessful interactions, and modify subsequent decisions. Leadership learning therefore occurred through the transformation of field experience into reflective and practical knowledge.

This process aligns with experiential learning perspectives that emphasise concrete experience and critical reflection as foundations for professional development (Geithner & Menzel, 2016; Haritha & Rao, 2024; Voon et al., 2019). Direct involvement in planning, implementation, and evaluation enabled participants to connect theoretical knowledge with practical responsibilities such as stakeholder communication, time management, resource allocation, and decision-making. Similar forms of experiential engagement have been shown to strengthen professional competence, decision-making, and self-reflection among prospective teachers and other university students (Alvi & Gillies, 2021; Culhane et al., 2018; Helate et al., 2022; Thomsen et al., 2021).

Reflection was particularly important because participation alone did not automatically produce leadership learning. Initial misunderstandings, unclear responsibilities, and unsuccessful scheduling decisions became educationally meaningful when participants examined why problems had occurred and changed their subsequent actions. This finding is consistent with research showing that critical reflection enables learners to question their assumptions, interpret experience, and develop more deliberate professional responses (Indrašienė et al., 2023). Experiential activities become more educationally valuable when learners connect action with structured reflection rather than treating field experience as an end in itself (Colomer et al., 2020; Firmansyah et al., 2025).

The findings also reinforce the defining integration of service, academic learning, and reflection within service-learning pedagogy. Effective service learning requires reciprocal community engagement, purposeful learning objectives, and opportunities to interpret experience critically (Bringle & Clayton, 2020; Furco & Norvell, 2019). The participants' leadership development was therefore shaped not simply by providing physical education activities but by negotiating those activities with community partners, evaluating implementation problems, and considering how their decisions affected others. This process supports the view that service learning can foster transformative professional learning when community engagement challenges students to reconsider their roles and responsibilities (Bringle & Hatcher, 2023; Dal Magro et al., 2020).

Adaptive Decision-Making, Innovation, and Problem-Solving

The projects also demonstrated that adaptive decision-making, innovation, and problem-solving were closely connected components of leadership practice.

Participants encountered limited equipment, restricted activity spaces, scheduling conflicts, and differences between their original plans and local needs. These conditions required them to collect information, consult stakeholders, modify activities, and develop feasible alternatives.

Problem-solving was therefore not a separate technical skill but an essential part of leadership enactment. Participants had to determine which problems required immediate action, which decisions required institutional approval, and which solutions would remain acceptable to project teams and community partners. Student-centred and problem-oriented learning environments can strengthen critical thinking and decision-making by involving learners in authentic, uncertain, and context-dependent situations (Bhardwaj et al., 2025; Zamiri & Esmaeili, 2024). Community-based education similarly creates opportunities for learners to develop practical judgement because they must balance educational goals with institutional capacities and community expectations (Chowdhury & Alzarrad, 2025).

Innovation emerged primarily as a response to these constraints. Participants revived traditional games, modified activity rules, created low-cost equipment, and used locally available resources when standard sports facilities were unavailable. Creativity was therefore situated within a process of identifying problems and developing contextually workable responses. This finding is consistent with research indicating that creativity develops through opportunities to explore problems, interact with others, and produce meaningful solutions (Fredagsvik, 2023).

The participants' decisions also reflected aspects of transformational leadership, particularly when they encouraged collective involvement, introduced alternative activities, and motivated others through direct participation rather than instruction alone. Transformational leadership emphasises the capacity to encourage innovation, build shared purpose, and influence others through exemplary action (Ariyani & Zuhaery, 2021). However, the present findings suggest that these practices were not generated solely by individual leadership qualities. They emerged through the interaction between participants, team members, community partners, and the material limitations of each setting.

Experiential and community-based pedagogies can strengthen adaptive leadership by exposing learners to dynamic situations in which fixed procedures are insufficient (Williamson, 2017). In this study, participants learned to treat initial plans as provisional and to modify them when they conflicted with local realities. Innovation and problem-solving thus formed part of a broader adaptive process through which participants aligned physical education activities with available resources, cultural knowledge, and community priorities.

Social Interaction and Collaborative Learning

The development of leadership also depended on sustained interaction with teachers, administrators, parents, residents, and project-team members. Participants used face-to-face discussions and accessible digital platforms such as WhatsApp to coordinate activities, exchange information, clarify responsibilities, and resolve misunderstandings. These interactions enabled them to encounter different perspectives and negotiate shared decisions.

Social constructivist perspectives explain that knowledge and professional meaning develop through interaction, communication, and collective participation (Vygotsky & Cole, 2018). In the present study, participants' understanding of

leadership changed as they engaged with other actors and reflected on the outcomes of joint activities. They increasingly understood leadership as supporting others, listening to community needs, respecting differences, and maintaining shared responsibility.

These findings are consistent with research showing that collaborative learning can strengthen cultural awareness, interpersonal accountability, and recognition of different contributions (Finkelstein & Soffer-Vital, 2025; Zhou & Colomer, 2024). The involvement of community members in logistics, activity preparation, and traditional games also demonstrates that the community did not function only as a recipient of service. Local actors contributed resources, knowledge, and practical guidance that influenced implementation. This reciprocity is important because community-based service learning is most meaningful when academic and community partners jointly shape the learning process (Furco & Norvell, 2019).

The Pesantren Context as a Source of Leadership Demands

The findings addressing the third research question show that the Islamic boarding school context played a decisive role in shaping leadership enactment. Structured religious routines, hierarchical communication, institutional regulations, and limited facilities influenced when activities could occur, who needed to approve them, and how participants communicated their proposals. The *pesantren* therefore functioned not merely as the location of service learning but as an active institutional environment that generated specific leadership demands.

Prayer times, religious-study periods, and other scheduled activities required participants to demonstrate flexibility and negotiate implementation with teachers and administrators. Hierarchical relationships required respectful communication and recognition of institutional authority, while limited facilities encouraged participants to adapt activity formats and use local resources. Leadership thus developed through the tension between project objectives and contextual expectations.

This pattern is consistent with adaptive leadership theory, which explains that leadership becomes visible when individuals respond constructively to complex, changing, and uncertain environments (Nelson & Squires, 2017; Sott & Bender, 2025). Institutional norms, organisational culture, and resource conditions can significantly influence which leadership practices are considered appropriate and effective in educational settings (Bellibaş et al., 2025; Ogunbayo & Yassim, 2025). The participants' use of negotiation, consensus, and culturally respectful communication therefore reflected adaptation to the social and institutional characteristics of the *pesantren*.

Importantly, adaptation did not occur immediately or uniformly. Some participants experienced initial difficulties in coordinating schedules, communicating with authority figures, or aligning team plans with school routines. These challenges demonstrate that leadership development was neither automatic nor consistently smooth. Research on experiential and service learning similarly indicates that disruption, uncertainty, and practical difficulty can become important sources of professional growth when accompanied by reflection and appropriate support (Kohn, 2024; Ranczakowska & Kuznetsova-Bogdanovitsh, 2025).

Theoretical Contribution

This study contributes to service-learning and teacher-leadership scholarship by offering a process-oriented account of leadership development. First, it shifts attention

from leadership as a general programme outcome to leadership as an enacted practice. Leadership became visible through coordination, role distribution, communication, negotiation, activity modification, and reflection.

Second, the study identifies a recurring developmental process: contextual demands generated situated leadership actions, and reflection on those actions informed subsequent adjustment. This process connects experiential learning with distributed and practice-based perspectives on leadership. Leadership was constructed through experience and reflection, but it was also distributed across interactions, material conditions, and institutional expectations (Jerdborg, 2022; Youngs, 2017).

Third, the study demonstrates that contextual constraints do not function only as barriers to programme implementation. When accompanied by reflection and stakeholder support, they can create situations that require adaptive judgement, collaboration, and innovation. The findings therefore show how service learning, social interaction, and institutional context jointly shape leadership practice rather than operating as separate influences.

Practical Implications for Teacher Education

The findings have several implications for the design of pre-service teacher education. Community-based service learning should include explicit leadership learning outcomes rather than assuming that leadership will develop automatically through participation. These outcomes may include stakeholder communication, collaborative decision-making, role distribution, culturally responsive practice, and adaptive problem-solving.

Structured reflection should also occur before, during, and after project implementation. Before field engagement, reflection can help participants identify assumptions and anticipate ethical or institutional challenges. During implementation, guided reflection can support timely adjustments. After implementation, it can help participants connect their decisions with broader professional learning. Reflective engagement is a key condition for transforming community experience into meaningful learning (Chika-James, 2020; Lorenzo Moledo et al., 2021).

Universities should also develop reciprocal and sustained partnerships with schools and community organisations. Joint needs assessment, role clarification, scheduling, and evaluation can reduce misunderstandings and ensure that projects address both academic objectives and community priorities. Supervising lecturers should function as facilitators who help students interpret challenges without removing their responsibility for decision-making.

Physical education teacher education may particularly benefit from community-based projects because physical activities require coordination, inclusion, safety management, rapid decision-making, and sensitivity to available resources. Traditional games and locally responsive activities can provide meaningful media for leadership learning while also strengthening cultural relevance and community participation.

Limitations and Future Research

The findings should be interpreted in relation to several limitations. First, the study involved only four participants, with one participant associated with each project site. The findings therefore provide analytical insight into leadership processes

but should not be generalised statistically to all pre-service physical education teachers.

Second, the study focused primarily on the perspectives and practices of PPG students. Teachers, *pesantren* administrators, school students, parents, and community members were involved in the projects but were not included as equivalent interview participants. Their perspectives might provide different interpretations of participants' leadership and the reciprocal benefits of the projects.

Third, interviews and reflective notes may have been influenced by self-report and social-desirability tendencies. The use of observations and project documents reduced but did not eliminate this limitation. In addition, the researcher functioned as the primary instrument in data collection and interpretation, introducing the possibility of interpretive bias. Reflexivity, triangulation, collaborative coding, member checking, and an audit trail were used to strengthen trustworthiness, although qualitative interpretation remains situated within the research process (Nowell et al., 2017).

Fourth, the study did not examine whether leadership practices or school activities were sustained after the 10-week projects. Future research should employ longitudinal designs to investigate whether participants continue to enact collaborative and adaptive leadership during subsequent teaching practice. Comparative research involving *pesantren* and non-boarding schools could also clarify which leadership processes are context specific and which are transferable across educational environments. Mixed-method studies may further combine process-oriented qualitative evidence with measures of leadership development, while multi-perspective designs should include students, teachers, administrators, and community partners.

CONCLUSIONS

This study examined how leadership practices emerged during community-based service-learning projects, how these experiences supported leadership development, and how the *pesantren* context shaped leadership enactment among pre-service physical education teachers. The findings show that leadership was enacted through observable practices, including stakeholder coordination, role distribution, collaborative communication, negotiation, and adaptive decision-making. Leadership development occurred through participants' engagement with authentic field-based challenges, reflection on their actions, and adjustment of subsequent decisions.

The *pesantren* context was central to this process. Structured religious routines, hierarchical relationships, institutional expectations, and limited facilities required participants to adapt project schedules, communicate respectfully with authority figures, modify physical activities, and use locally available resources. Leadership therefore developed through the interaction between contextual demands, situated action, and reflective adjustment rather than through participation alone.

This study contributes a process-oriented understanding of leadership development in service learning by conceptualising leadership as a relational and contextually shaped practice. It demonstrates that community-based projects can provide meaningful opportunities for pre-service teachers to develop collaborative, adaptive, and culturally responsive leadership when field experience is supported by purposeful reflection and reciprocal engagement with community partners.

The findings should nevertheless be interpreted in relation to the study's small sample of four participants, its context-specific setting, and the potential influence of researcher interpretation. The study also did not examine whether participants' leadership practices or project activities were sustained after the 10-week implementation period. Future research should therefore use longitudinal, comparative, and multi-perspective designs to examine the durability of leadership development and its variation across *pesantren*, non-boarding schools, and other community-based educational settings.

RECOMMENDATIONS

Several recommendations arise from the findings. First, the Teacher Professional Education (PPG) curriculum should integrate community-based service learning as a structured component with explicit leadership outcomes. These outcomes should include stakeholder communication, role distribution, culturally responsive practice, adaptive decision-making, and collaborative problem-solving. Leadership development should also be assessed through participants' actions and reflections rather than inferred solely from project completion.

Second, supervising lecturers should facilitate structured reflection before, during, and after community-based activities. Pre-project reflection can help participants identify assumptions and anticipate institutional or ethical challenges. Reflection during implementation can support timely adjustment, while post-project reflection can help participants connect field experiences with broader professional learning.

Third, universities should establish reciprocal and sustained partnerships with schools, *pesantren*, and community organisations. Collaboration protocols should clarify project objectives, responsibilities, communication procedures, scheduling arrangements, resource contributions, evaluation processes, and plans for the continued use of project activities or materials. Community partners should be involved in needs assessment, planning, implementation, and evaluation to ensure that projects provide mutual educational and social benefits.

Fourth, service-learning projects in physical education should encourage the use of locally responsive activities, including traditional games and low-cost equipment, particularly in settings with limited facilities. Such activities can support physical learning, cultural relevance, community participation, and adaptive leadership development.

Future studies should involve more diverse participants and include the perspectives of teachers, *pesantren* administrators, school students, parents, and community members. Longitudinal research is needed to determine whether leadership practices continue during subsequent teaching experiences. Comparative and mixed-method studies could also examine differences across educational contexts and integrate qualitative evidence of leadership processes with outcome-based measures of leadership development.

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Conflict of Interest Statement
The authors declare that they have no financial, professional, or personal conflicts of interest that could have influenced the conduct, interpretation, or reporting of this study.

Data Availability
The qualitative data generated and analysed during this study are not publicly available because they contain information that could potentially identify the participants and partner institutions. De-identified supporting data may be made available by the corresponding author upon reasonable request, subject to participant confidentiality, ethical approval requirements, and institutional data-sharing policies.

Author Contributions Statement

Name of Author	C	M	So	Va	Fo	I	R	D	O	E	Vi	Su	P	Fu
Reza Hadinata	✓	✓			✓	✓		✓	✓		✓		✓	
Ely Yuliawan		✓		✓						✓		✓		
Wawan Junresti Daya				✓		✓				✓				
Roli Mardian						✓		✓		✓			✓	
Fadli Zainuddin				✓						✓		✓		

C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

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