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Strengthening Innovative Teaching, Professional Communication, and Global Competencies among Future Educators through an International Community Engagement Programme

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Abstract

This international community engagement programme aimed to strengthen innovative teaching, professional communication, leadership, digital literacy, self-management, collaboration, and global competence among future educators. The initiative brought together higher education institutions from Indonesia and Malaysia, thereby extending the Indonesian Tridharma mandate through cross-border knowledge exchange and capacity development. Programme activities combined expert presentations, interactive dialogue, case-based learning, collaborative problem-solving, and reflection. A qualitative evaluation drew upon observations of participant engagement and interviews exploring learning experiences and programme relevance. The findings indicate that participants developed clearer understandings of learner-centred innovation, technology integration, professional

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leadership, intercultural communication, and collective decision-making. Focused participation, more structured explanations, and greater consideration of alternative perspectives were also evident during later activities. Although the programme captured immediate developments within a limited institutional context, it demonstrates the value of participatory international community engagement for preparing teachers. Continuing mentoring, virtual teaching practice, collaborative lesson design, and follow-up evaluation are recommended.

Keywords: global competence; innovative teaching; international community engagement; professional communication; teacher education

1. INTRODUCTION

1.1 Higher Education and the Tridharma Mandate in Indonesia

Tridharma Perguruan Tinggi establishes teaching, research, and community engagement as interconnected responsibilities of Indonesian academics. Community engagement should therefore extend beyond ceremonial outreach towards knowledge transfer, collaborative problem-solving, capacity development, and research application. Christwardana et al. (2022) demonstrate that community-based projects can simultaneously strengthen student competence and translate academic knowledge into practical benefits. Sary et al. (2023) similarly emphasise the contribution of training and knowledge-sharing to educators' innovative behaviour. Participatory engagement also creates reciprocal learning relationships in which universities and communities jointly produce contextually relevant solutions (Harjatanaya et al., 2025). International collaboration expands the meaning of community by connecting educational beneficiaries across national boundaries, while providing opportunities for institutional learning (Wahyuni et al., 2025). Accordingly, cooperation among IBI Kesatuan, Universitas Negeri Jakarta, Universitas Mulawarman, Universitas Sumatera Barat, and Universiti Tun Hussein Onn Malaysia represents an international implementation of Tridharma (Sihotang, 2026). The programme integrates teaching through pedagogical knowledge exchange, research through pre-test and post-test assessment, and community engagement through structured mentoring for future educators (Suhud, Caniago, Sihotang, Amal, et al., 2026).

1.2 Transformation of Twenty-First-Century Education

Twenty-first-century education is being transformed by technological innovation, global interconnectedness, changing employment requirements, and the learning preferences of digitally immersed students. Artificial intelligence, virtual reality, adaptive systems, learning management systems, and collaborative platforms have made learning increasingly flexible, personalised, interactive, and student-centred. Nevertheless, technological adoption only produces educational value when it is supported by purposeful pedagogical design. Çebi et al. (2022) show that digital competence development must progress towards meaningful technology integration rather than operational proficiency alone. Tomczyk (2024) similarly identifies curriculum reform as essential for preparing future teachers to employ technology effectively. Han (2025) demonstrates that structured courses can strengthen prospective teachers' AI knowledge, problem-solving abilities, teaching practices, and ethical awareness. Sary et al. (2023) further associate digital competence with innovative professional behaviour. Moreover, Dewi and Rahayu (2023) confirm that active, case-based approaches connect theoretical knowledge with authentic problems. Consequently, future educators require critical thinking, creativity, communication, collaboration, digital literacy, adaptability, and problem-solving skills to design technologically supported learning that remains pedagogically sound and socially responsible (Cholifah, Suhud, Sihotang, Hanny, et al., 2027).

1.3 Changing Roles and Competency Requirements of Future Educators

The contemporary teacher is no longer positioned solely as a transmitter of subject knowledge, but increasingly functions as a learning facilitator, mentor, innovator, collaborative leader, and organisational change agent. This expanded role requires pedagogical expertise to be combined with professional communication, teamwork, conflict management, emotional regulation, decision-making, and leadership (Suhud, Caniago, Sihotang, Amal, Nair, et al., 2026). Quaisley et al. (2023) indicate that teacher-leadership identity enables educators to initiate improvements in teaching and school practices. Sary et al. (2023) also establish that self-leadership supports innovative work behaviour among teachers. Professional identity remains especially important during the early career period because novice teachers must negotiate institutional expectations and establish credibility (Groenewald, 2025). Lian et al. (2025) reveal that limited practical experience may generate anxiety among Indonesian preservice teachers when confronting unfamiliar professional situations. Simulation-based learning can provide a comparatively safe environment for developing practical judgement and professional confidence (Levin et al., 2023). Teacher education should therefore combine technical, interpersonal, leadership, and global competencies, particularly to prepare young teachers for communication with experienced colleagues, participation in school activities, stress management, and responsible decision-making (Sihotang, 2027).

1.4 Global Competencies and International Educational Collaboration

Global competence encompasses the knowledge, skills, attitudes, and values required to understand international issues, appreciate diverse perspectives, communicate across cultures, and act responsibly within an interconnected world. Sokal and Parmigiani (2022) conceptualise this competence through the interrelated capacities to explore, engage with, and respond to global issues. Teng et al. (2024) show that internationalisation practices can strengthen global competence, including through activities conducted within participants' home institutions. Collaborative Online International Learning similarly widens access to international educational experiences without requiring physical mobility (Quintana-Ordorika et al., 2023). Ingrisch-Rupp and Symeonidis (2025) find that virtual exchange can develop

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intercultural, linguistic, digital, and pedagogical competencies in teacher education. Glimäng et al. (2024) further demonstrate that cross-national collaboration among teacher candidates can cultivate intercultural awareness through the joint creation of educational materials. The Indonesia–Malaysia programme may consequently be understood as a cross-cultural learning environment where future educators exchange perspectives on educational systems, school challenges, professional communication, leadership, and learning innovation. Such interaction can strengthen global awareness while encouraging more reflective and culturally responsive professional identities (Sihotang, Suhud, Handaru, Lestari, 2027).

1.5 Problems Identified among Future Educators

A continuing discrepancy exists between the competencies expected of contemporary teachers and the practical readiness of many teacher candidates. International evidence indicates that preservice teachers' digital competence remains uneven, particularly in advanced pedagogical application and cross-cultural adaptability (Tomczyk, 2024). Han (2025) also finds that practical AI skills and AI-supported teaching may remain less developed than general awareness (Suhud, Allan, Hoo, et al., 2026). Within Indonesia, practicum anxiety can emerge from unfamiliar professional demands, restricted experience, and uncertainty regarding teaching responsibilities (Lian et al., 2025). Professional identity development is equally sensitive to organisational relationships and opportunities for agency during the transition into teaching (Groenewald, 2025). Preliminary programme observations therefore indicate potential needs concerning leadership experience, professional confidence, teamwork, stress management, communication with senior colleagues, and educational-technology readiness. These issues should not be presented as confirmed pre-test findings until complete data are available. Moreover, one-way presentations may be insufficient for developing applied professional capabilities (Sihotang, Suhud, Reztrianti, et al., 2027). Dewi and Rahayu (2023) establish that case-based learning supports active engagement with authentic situations, while Levin et al. (2023) demonstrate that simulation enables preservice teachers to examine realistic professional challenges. Participatory discussions, reflection, and case analysis are therefore appropriate programme components (Suhud, Boonkaew, Sihotang, et al., 2025).

1.6 Programme Objectives, Research Questions, and Article Contribution

The programme aims to strengthen future educators' readiness in leadership, professional communication, learning innovation, digital literacy, self-management, and global competence. Its specific objectives are to map participants' initial readiness, provide structured knowledge, apply concepts through discussion and case analysis, measure immediate changes, and evaluate participants' experiences. This design responds to evidence that targeted digital instruction can improve preservice teachers' technological understanding and application (Çebi et al., 2022). Han (2025) likewise supports pre-test and post-test assessment for evaluating changes following competency-based instruction (Suhud, Sihotang, Allan, Hoo, et al., 2026). Case-based activities are incorporated because authentic problems can promote reflection, collaboration, and higher-order thinking (Dewi & Rahayu, 2023). The international component is supported by evidence that collaborative online learning increases access to intercultural experiences (Quintana-Ordorika et al., 2023), while global competence develops through opportunities to explore, engage, and act across cultural contexts (Sokal & Parmigiani, 2022). Accordingly, the article examines initial readiness, programme implementation, post-programme change, the competencies showing the most substantial development, and implications for international community engagement. Its contribution lies in integrating pedagogical innovation, communication, young-teacher leadership, and global competence within an evaluated international Tridharma programme (Suhud, Sihotang, Juliana, et al., 2026).

2. Literature Review and Programme Framework

2.1 Community Engagement as an Element of the Tridharma

Within the Indonesian Tridharma, community engagement represents the purposeful application of academic knowledge to strengthen beneficiaries' capabilities and address contextual problems. Contemporary engagement emphasises reciprocity, participation, sustainability, and shared benefits rather than the unilateral transmission of information. Mauro et al. (2024) explain that reciprocity emerges when academic and community partners exchange knowledge while responding to priorities identified by the community. Compare et al. (2022) similarly position community organisations as co-educators whose experience contributes to programme design and student learning. Effective engagement must consequently include needs identification, beneficiary selection, planned intervention, reflection, outcome measurement, and follow-up. Mann et al. (2021) emphasise evaluation as necessary for demonstrating institutional and community-level value. Netshandama (2023) further recommends linking programme inputs and processes with measurable social outcomes and beneficiary perspectives. Nkonki-Mandleni et al. (2023) regard monitoring as essential to institutional accountability. In this programme, Indonesian–Malaysian collaboration extends Tridharma beyond local communities and creates reciprocal educational knowledge diplomacy among regional higher-education institutions (Suhud, Sihotang, Chanthawong, et al., 2026).

2.2 Innovative Teaching for Future Educators

Innovative teaching refers to purposeful pedagogical renewal that improves participation, reflection, creativity, collaboration, and problem-solving. It may involve flipped classrooms, gamification, project-based learning, problem-based learning, simulations, artificial intelligence, or digital platforms, although technological novelty alone does not guarantee effective instruction. Lopes et al. (2024) demonstrate that combining flipped learning, team-based learning, and gamification can produce a more participatory learning environment. Huang et al. (2023) similarly conclude that gamified project-based learning supports motivation, engagement, collaboration, and knowledge development when game elements serve explicit educational objectives. Rodríguez-Ferrer et al. (2023) find that integrating game-based and service-learning approaches strengthens engagement among teacher-education students. Magaña et al. (2024) report improved preservice teachers' perceptions after direct exposure to gamification. Meanwhile, Boom-Cárcamo et al. (2024) show that integrating problem-based learning and gamification can improve active learning outcomes. These findings are relevant internationally and in Indonesia, where

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future teachers must select strategies according to learning outcomes, student characteristics, resource availability, cultural context, and school readiness rather than adopting technology indiscriminately (Suhud, Wolor, Sulistyowati, et al., 2025).

2.3 Teacher Leadership and Professional Confidence

Teacher leadership concerns educators' capacity to influence instruction, support colleagues, initiate improvements, guide school activities, and contribute to organisational change without necessarily occupying formal managerial positions. Wang et al. (2023) identify reflection, initiative, interpersonal influence, professional learning, and contextual awareness as emerging leadership attributes among preservice teachers. Lovett (2023) argues that early leadership opportunities allow novice teachers to exercise agency and view professional learning as a shared responsibility. Leadership development is closely connected to professional confidence, defined as belief in the capacity to perform teaching duties, communicate professionally, make decisions, and manage unfamiliar school problems. Spittle et al. (2022) show that greater training and teaching experience are associated with stronger confidence in planning and instructional implementation. Anselmann et al. (2023) establish that structured critical-incident reflection can develop preservice teachers' reflective competence. Petko et al. (2024) likewise demonstrate that guided portfolio activities can support reflection and professional orientation. Therefore, Indonesian teacher-education programmes should combine case analysis, practical assignments, constructive feedback, reflection, and collaborative leadership exercises to strengthen professional judgement and confidence (Suhud, Nair, Chee Hoo, et al., 2026).

2.4 Professional Communication, Collaboration, and Conflict Management

Professional communication involves presenting ideas clearly, listening actively, providing constructive feedback, and adapting communication to students, colleagues, administrators, parents, and communities (Sihotang, Suhud, Handaru, Reztrianti, et al., 2027). Communication also underpins collaboration because effective teams require mutual trust, shared objectives, distributed responsibilities, and recognition of different forms of experience. Johler et al. (2022) demonstrate that communication structures substantially shape collaboration within blended learning environments. Kolleck et al. (2021) find that teachers' participation in team teaching contributes to perceptions of individual trustworthiness, although collaboration alone does not automatically produce school-wide trust. Saks et al. (2025) consequently emphasise informal communication, mutual trust, and common professional purposes as foundations of meaningful teamwork. Rechsteiner et al. (2025) show that collaboration centred on pedagogical development is more professionally beneficial than interaction restricted to administrative matters. Wijarwadi et al. (2025) similarly associate teacher collaboration with professional learning and shared practice. Differences between beginning and senior teachers should therefore be addressed through dialogue rather than generational stereotypes. Constructive conflict management requires identifying common interests, examining competing interpretations, regulating emotional responses, and negotiating solutions that preserve professional relationships (Sihotang, Suhud, Handaru, Futuwwah, et al., 2027).

2.5 Digital Literacy, Growth Mindset, and Self-Management

Future educators' readiness depends on the interaction between digital literacy, growth mindset, and self-management. Digital literacy includes selecting, evaluating, creating, and communicating digital content safely, critically, ethically, and pedagogically. Fuchs et al. (2022) indicate that perceived digital readiness does not necessarily ensure effective self-regulated online learning, demonstrating the importance of deliberate planning and monitoring. Baharuddin et al. (2024) find that teachers' growth mindset strengthens lifelong learning and professional development, which subsequently support ICT integration in Indonesian classrooms. Growth mindset therefore encourages educators to interpret technological difficulty as a learning opportunity rather than evidence of fixed incapacity. Ibrahim et al. (2024) further connect digital literacy and self-regulation with students' capacity to manage academic demands. Sagar and Özabacı (2021) identify emotion regulation and self-control as predictors of resilience among teacher candidates. Colomeischi and Ursu (2024) likewise show that emotion regulation mediates the relationship between teacher resilience and perceived stress. Consequently, digital competence must be accompanied by psychological readiness, time management, emotional control, reflective learning, and persistence under changing professional conditions (Suhud, Sihotang, Boonkaew, et al., 2026).

2.6 Integrated Programme Framework

The integrated framework conceptualises the programme as a progression from needs assessment to professional readiness. Its inputs comprise young-teacher leadership, professional communication, innovative teaching, digital literacy, global competence, conflict management, growth mindset, and self-management. Netshandama (2023) supports connecting programme resources, activities, and outcomes within a coherent evaluation structure. Interactive presentations, reciprocal discussion, case analysis, collaborative problem-solving, and reflection constitute the programme processes. Watson et al. (2023) show that case-based learning helps preservice teachers connect professional principles with context-sensitive decision-making. Anselmann et al. (2023) similarly demonstrate that critical incidents encourage systematic reflection on complex professional experiences. Wang et al. (2023) connect sustained reflection with emergent teacher-leadership capacity. Magaña et al. (2024) further confirm the value of pre-intervention and post-intervention measurement for identifying immediate changes in preservice teachers' perceptions. The expected short-term outputs include greater knowledge, confidence, understanding, and perceived readiness. Medium-term outcomes concern the application of these competencies during teaching practice or early employment. However, longer-term follow-up remains necessary because an immediate post-test cannot establish sustained behavioural change (Suhud, Unarto, Sugianto Sihotang, et al., 2026).

3. COMMUNITY ENGAGEMENT METHODS

3.1 Programme Design and Approach

The programme was designed as an international community-engagement initiative combining educational, participatory, and reflective approaches. Educational activities were intended to

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strengthen participants' professional knowledge, while participatory learning created opportunities for dialogue, reflection, and collaborative problem-solving. Anselmann et al. (2023) emphasise that structured learning activities can connect theoretical understanding with evidence-based professional practice. Dewi and Rahayu (2023) similarly demonstrate that active inquiry encourages participants to interpret and apply knowledge rather than passively receive information (Ilhamalimy, Husen, Suparno, et al., 2025). The programme evaluation adopted a qualitative approach centred on observations and interviews. Observations documented participants' engagement, communication, collaboration, and responses during each activity. Interviews explored participants' experiences, interpretations, perceived learning, and views concerning the programme's relevance to their future professional responsibilities. The combination of these techniques provided complementary perspectives on programme implementation and participant experiences (Sihotang, Suhud, Handaru, 2025). The evaluation focused on changes in participants' expressed understanding, reflective capacity, and professional awareness during the programme rather than attempting to establish statistical or causal effects (Sihotang, Suhud, Wibowo, 2025).

3.2 Institutional Partners, Participants, and Setting

The programme involved IBI Kesatuan, Universitas Negeri Jakarta, Universitas Mulawarman, Universitas Sumatera Barat, and Universiti Tun Hussein Onn Malaysia as institutional partners in an Indonesia–Malaysia educational collaboration. Participants were future teachers studying in Malaysia and attending activities concerning innovative teaching, professional communication, leadership, educational technology, and global education. The final manuscript should specify the programme date, venue, delivery mode, duration, technological platform, institutional responsibilities, and number of participants. Tomczyk (2024) emphasise that participants' educational stages and institutional contexts shape professional-development experiences. Tomczyk (2024) similarly demonstrate that the interpretation of instructional activities requires adequate information about participants and learning environments. Colomeischi and Ursu (2024) indicate that participants enter professional-development programmes with different psychological and professional conditions. Tomczyk (2024) further highlight the importance of documenting participants' exposure to each learning stage. Accordingly, participant selection, attendance, involvement in activities, interview participation, and programme completion should be transparently explained without categorising the evidence as primary or secondary data (Sihotang & Hidir, 2022).

3.3 Preliminary Needs Identification

Preliminary needs identification ensured that programme content corresponded with the professional circumstances of future educators rather than constituting a general seminar. This process involved communication with partner institutions, consultation with programme coordinators, initial observations, and informal interviews with prospective participants. Compare et al. (2022) demonstrate that community-engaged needs assessment can strengthen alignment between stakeholder priorities and programme activities. Anselmann et al. (2023) similarly recommend linking professional-development initiatives with clearly identified competency requirements. The consultation process identified concerns relating to leadership, professional communication, collaboration, stress management, digital literacy, teaching innovation, and global readiness. Tomczyk (2024) establishes that future teachers require technological capabilities extending beyond operational proficiency towards pedagogically meaningful application. Wang et al. (2023) identify reflection, initiative, and interpersonal influence as foundations of emerging teacher leadership. Colomeischi and Ursu (2024) also demonstrate the relevance of emotional regulation to professional resilience. These identified needs guided the selection of programme materials, learning activities, case scenarios, and discussion topics within the Indonesia–Malaysia educational setting (Wibowo, Suhud, Utami, et al., 2026).

3.4 Programme Implementation Stages

Programme implementation comprised five sequential stages. First, the partner institutions coordinated responsibilities, determined the schedule, prepared learning materials, adapted case scenarios, and tested the required learning media. Anselmann et al. (2023) underline the importance of alignment among programme objectives, learning activities, and evaluation procedures. Second, facilitators introduced the programme objectives and invited participants to describe their expectations and professional concerns. Third, the principal sessions addressed innovative teaching, professional communication, young-teacher leadership, educational technology, and global education. Tomczyk (2024) demonstrate that technology-rich instruction can support preservice teachers' pedagogical readiness. Fourth, participants engaged in discussions and case-based problem-solving concerning collegial conflict, responsibility allocation, school decision-making, stress management, and communication with senior teachers. Anselmann et al. (2023) show that contrasting cases can strengthen professional interpretation, while Anselmann et al. (2023) associate critical incidents with reflective competence. Finally, participants reflected on the programme and participated in interviews (Pertiwi, Suhud, Wibowo, et al., 2026). Observations were undertaken throughout these stages to document engagement, interaction, and collaborative learning (Sihotang, Suhud, Rizan, 2025).

3.5 Observation and Interview Procedures

Programme evaluation employed structured observation and semi-structured interviews. Observations focused on participants' attentiveness, frequency and quality of contributions, willingness to ask questions, responses to different viewpoints, involvement in group discussions, and ability to formulate solutions to professional cases. Brief field notes were recorded during each programme stage and subsequently expanded to preserve contextual detail. The interviews explored participants' expectations, learning experiences, perceived professional challenges, interpretations of the programme materials, and intentions to apply the acquired insights (Merina, Suhud, Sihotang, Hidayah, et al., 2026). Open-ended questions allowed participants to explain their experiences in their own terms, while follow-up questions clarified important statements. Compare et al. (2022) emphasise that stakeholder engagement supports contextually responsive programme evaluation. Anselmann et al. (2023) demonstrate that reflective accounts can reveal how preservice teachers interpret critical professional situations. Anselmann et al. (2023) further establish that explanations of teaching cases provide insight into professional reasoning. The observation and interview guides should be reviewed by educational experts to ensure clarity, relevance, cultural appropriateness, and consistency with the programme objectives (Merina, Suhud, Sihotang, Abdillah, et al., 2026).

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3.6 Qualitative Analysis and Ethical Considerations

Observation notes and interview accounts were examined through thematic analysis. The analysis began with repeated reading to develop familiarity with the material, followed by the identification of meaningful statements concerning teaching innovation, professional communication, collaboration, leadership, stress management, technological readiness, and global competence. Related statements were grouped into preliminary codes and broader themes. Interpretations derived from interviews were compared with observed participant behaviour to identify convergence, differences, and contextual explanations. The analytical process should retain an audit trail documenting coding decisions, theme development, and interpretative revisions (Sihotang, Suhud, Handaru, 2025). Ethical procedures protected voluntary participation, privacy, confidentiality, and participants' right to withdraw. Pietrzykowski and Smilowska (2021) emphasise the importance of complete and comprehensible consent information, while Pietrzykowski and Smilowska (2021) demonstrate that the manner in which consent is presented affects participant understanding. Participants should therefore receive clear information concerning the evaluation's academic purpose, observation procedures, interview recording, use of anonymised quotations, data protection, publication, and the absence of penalties for declining participation. Photographs should only be used with appropriate consent (Cholifah, Suhud, Sihotang, Lestari, et al., 2026).

4. RESULTS AND DISCUSSION

4.1 Programme Implementation and Participant Engagement

The programme was implemented as an international community-engagement activity involving Indonesian and Malaysian higher-education institutions. Evidence concerning programme implementation was derived from direct observation, facilitators' field notes, activity documentation, and interviews with participants and programme organisers. Observations focused on attendance, participation in discussions, responses to facilitators' questions, completion of collaborative tasks, and involvement in case-based activities. Participant engagement was reflected in their willingness to express opinions, request clarification, respond to contrasting perspectives, and contribute to group decisions. Compare and Albanesi (2024) associate active participation with opportunities to develop transferable professional capabilities. Johler et al. (2022) similarly emphasise interaction and feedback as important components of professional learning. Johler et al. (2022) indicate that collaborative activities allow future teachers to practise communication and teamwork. Johler et al. (2022) connect collaborative problem-solving with shared responsibility, while Johler et al. (2022) demonstrate that professional dialogue can reveal how future teachers interpret educational issues (Hernita, Hellyani, Arfiany, et al., 2026). These observed behaviours provide a contextual basis for evaluating engagement without relying on statistical measurement.

4.2 Participants' Initial Professional Conditions

Participants' initial professional conditions were identified through observations conducted during the opening activities and interviews concerning their experiences, expectations, and perceived challenges as future educators. The evidence indicated varying levels of familiarity with leadership, professional communication, teamwork, emotional self-management, educational technology, teaching innovation, and global education. Some participants appeared comfortable discussing technological applications, whereas others required further explanation regarding their pedagogical relevance (Permana, Pramawati, Saputra, et al., 2026). Interview responses also revealed concerns about managing professional disagreements, communicating with senior colleagues, and adapting teaching strategies to diverse learners. Spittle et al. (2022) associate professional preparedness with confidence in undertaking teaching responsibilities. Tomczyk (2024) explain that digital competence includes pedagogical, collaborative, ethical, and technological dimensions. Tomczyk (2024) further demonstrate that responsible technology use forms part of professional readiness. Tomczyk (2024) emphasise the multidimensional nature of teacher competence, while Sokal and Parmigiani (2022) identify intercultural exposure as an important foundation for global professional development. These initial conditions informed the interpretation of participants' subsequent engagement (Murti, Gunawan, Arifiansyah, et al., 2026).

4.3 Delivery of Innovative Teaching and Global Education Materials

The innovative-teaching session introduced learner-centred instruction, collaborative learning, digital platforms, artificial intelligence, problem-based activities, and the responsible integration of educational technology. Observational notes indicated that participants paid particular attention to examples demonstrating how technological tools could support interaction, lesson preparation, and differentiated learning. Interviews conducted following the session suggested that practical examples helped participants understand that educational innovation involves purposeful pedagogical adaptation rather than merely adopting new devices or applications. Tomczyk (2024) demonstrate that structured digital training can strengthen future teachers' technological capabilities. Baharuddin et al. (2024) similarly show that professional learning communities facilitate the practical application of educational technology. Tomczyk (2024) connect digital teaching competence with inclusive and sustainable education. Tomczyk (2024) explain that digital competence combines technical ability with pedagogical and ethical judgement. Baharuddin et al. (2024) further emphasise the importance of continuous professional learning. Global-education materials complemented these themes by encouraging reflection on cultural diversity and educational practices across Indonesia and Malaysia (Saputra, Permana, Utami, et al., 2026).

4.4 Development of Leadership and Professional Communication

The leadership and communication activities positioned future teachers as professionals expected to exercise initiative, negotiate responsibilities, and participate constructively in school decision-making. Observations showed that participants progressively contributed to discussions concerning collegial conflict, task distribution, and communication with senior teachers. Interview accounts indicated that the scenarios encouraged participants to reconsider leadership as a relational practice rather than a function restricted to formal positions. Wang et al. (2023) explains that teacher leadership develops through professional dialogue centred on educational improvement. Quaisley et al. (2023) similarly associate leadership identity with participation in authentic professional responsibilities. Johler et al. (2022) identify responsiveness, respect, and effective communication as central

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elements of relational competence. Ataş et al. (2024) demonstrate that collaborative partnerships can create meaningful professional-development experiences. Johler et al. (2022) further describe contemporary teaching as work requiring flexibility, communication, collaboration, and professional judgement (Indriani, Hamilah, Ridwan, et al., 2026). The observed discussions and interview narratives consequently suggest that contextualised leadership activities helped participants connect theoretical principles with the interpersonal demands of school environments.

4.5 Case-Based Learning and Collaborative Problem-Solving

Case-based activities addressed disagreements over teaching responsibilities, communication with senior colleagues, competing instructional priorities, and conflict during school programmes. Observations focused on how participants identified central problems, considered stakeholder interests, proposed alternatives, challenged initial assumptions, and negotiated collective decisions. Interview responses indicated that realistic cases made abstract concepts of leadership and professionalism more understandable because participants could relate them to anticipated workplace situations. Dewi and Rahayu (2023) demonstrate that case analysis can develop diagnostic argumentation and the justification of professional decisions. Johler et al. (2022) associate collaborative problem-solving with perspective-taking, shared regulation, and coordinated decision-making. Dewi and Rahayu (2023) show that authentic challenges can encourage engagement, teamwork, and problem-solving. Johler et al. (2022) explain that collaborative dialogue enables future teachers to reconsider professional interpretations. Johler et al. (2022) similarly connect cooperative and problem-based learning with stronger communication and collaboration. Differences between Indonesian and Malaysian educational experiences enriched the discussion by exposing participants to alternative professional expectations and institutional practices.

4.6 Observed Changes in Understanding and Professional Readiness

Changes following the programme were examined through comparisons between observations made during the opening and closing activities and through interviews concerning participants' learning experiences. Rather than relying on numerical differences, the analysis considered changes in the clarity of participants' explanations, willingness to contribute, ability to justify decisions, use of professional terminology, and recognition of alternative solutions. Several participants demonstrated more structured reasoning when responding to later cases, particularly by identifying stakeholders, anticipating consequences, and explaining the basis of collective decisions. Interview statements also suggested increased awareness of the connections among communication, leadership, technology, collaboration, and global competence. Johler et al. (2022) demonstrate that collaborative teacher education can provide opportunities to practise twenty-first-century capabilities. Wang et al. (2023) links professionally focused dialogue with teacher-leadership development. Tomczyk (2024) associate structured learning activities with stronger technological confidence. Johler et al. (2022) emphasise practice and reflection in developing relational competence. Nevertheless, these observations represent immediate programme-related developments and should not be interpreted as evidence of enduring behavioural transformation.

4.7 Discussion of Programme Effectiveness

The programme's effectiveness can be understood through the integration of explanation, dialogue, case analysis, collaborative decision-making, and reflection. Facilitator presentations provided conceptual foundations, while discussions enabled participants to compare the concepts with their educational experiences. Case activities subsequently required participants to apply innovative teaching, leadership, professional communication, technological literacy, and global competence to plausible school situations. Observational evidence indicated that interaction became more focused when learning materials were linked with practical problems. Interviews further suggested that collaborative discussion helped participants recognise viewpoints that had not been considered individually. Johler et al. (2022) emphasise that interaction and feedback support meaningful professional learning. Johler et al. (2022) demonstrate that collaborative learning simultaneously develops knowledge and transferable professional capabilities. Wang et al. (2023) connects purposeful dialogue with emerging teacher leadership. Sokal and Parmigiani (2022) show that cross-border learning can expand intercultural understanding. Johler et al. (2022) further establish the contribution of reflection to relational competence. Programme effectiveness therefore arose from contextualised participation rather than the passive transmission of information.

4.8 Tridharma, International Collaboration, and Programme Sustainability

The programme illustrates the integration of teaching, research, and community engagement within the Indonesian Tridharma framework. Knowledge developed through university teaching was shared with future educators, while observations and interviews generated reflective evidence concerning programme implementation and participants' experiences. These findings can inform curriculum refinement, future community-engagement programmes, and collaborative educational studies. Coelho and Menezes (2021) argue that university–community engagement should promote reciprocal learning and socially relevant knowledge application. Compare et al. (2022) similarly positions community engagement as an institutional responsibility rather than an occasional outreach activity. Wahyuni et al. (2025) emphasise that sustainability requires institutional commitment and meaningful stakeholder participation. Ekin and Balaman (2024) identify university–school collaboration as an important mechanism for professional learning and knowledge exchange. Quintana-Ordorika et al. (2024) demonstrate that international collaboration can strengthen professional and intercultural awareness. Programme continuity could therefore be supported through sequential workshops, online professional-learning communities, mentoring, shared teaching resources, collaborative publications, and follow-up interviews examining how participants apply programme insights in educational settings.

5. CONCLUSION, IMPLICATIONS, AND RECOMMENDATIONS

5.1 Conclusion

This programme aimed to strengthen future teachers' leadership, professional communication, collaborative problem-solving, teaching innovation, technological readiness, and global competence through an international community-engagement initiative involving Indonesian and Malaysian institutions. The

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programme combined expert presentations, interactive dialogue, case-based activities, and collective reflection. Observations indicated that participants became increasingly willing to articulate ideas, examine contrasting perspectives, and contribute to group decisions. Interviews similarly suggested improved understanding of the relationships among leadership, communication, technology, and professional responsibility. The most visible development occurred in [insert the competence most strongly supported by observation and interview evidence], particularly through clearer explanations, better-structured arguments, and greater responsiveness during collaborative activities. These developments correspond with evidence that community-engaged learning supports academic and social outcomes (Guanlao et al., 2025). Compare and Albanesi (2024) underline the importance of participation quality, while Maravé-Vivas et al. (2022) demonstrate the developmental value of experiential engagement. Wolor et al. (2025) associate learning agility with innovative behaviour. Gathmyr et al. (2025) further highlight the importance of institutional support for technology-enabled development.

5.2 Practical and Institutional Implications

The programme indicates that teacher-education institutions should integrate leadership, professional communication, collaborative decision-making, teaching innovation, and global competence across coursework, practicum activities, and community engagement. Teacher educators can employ realistic cases, guided reflection, and intercultural dialogue to connect pedagogical knowledge with school-based responsibilities. Coelho and Menezes (2021) show that service-learning contributes to students' professional and civic development. Mpuangnan and Ntombela (2024) emphasise the importance of incorporating community voices into curriculum development. Within Indonesia, institutional readiness should be assessed before introducing technology-supported programmes because organisational characteristics influence implementation sustainability (Estradha et al., 2025). Gathmyr et al. (2025) similarly demonstrate that technological advancement requires supportive organisational arrangements. International collaboration should move beyond ceremonial cooperation towards jointly designed learning experiences. Ekin and Balaman (2024) show that transnational lesson planning creates opportunities for collaborative pedagogical decision-making. Community-engagement organisers should therefore undertake needs assessments, establish observable outcomes, document implementation systematically, and involve partner institutions in programme evaluation and follow-up planning.

5.3 Limitations

Several limitations require proportionate acknowledgement. The programme was implemented without a comparison group; consequently, observed developments cannot be attributed exclusively to the intervention. The short implementation period also prevented examination of whether participants applied their learning in subsequent teaching practice. Tzovla and Kedraka (2023) demonstrate that immediate professional-development outcomes may differ from longer-term patterns. The limited number of participants and single institutional setting restrict transferability to other teacher-education contexts. Interview accounts may have been influenced by participants' desire to provide favourable responses, a concern supported by Lavidas et al. (2022). Observations may likewise reflect researcher interpretation. Zahle (2025) explains that qualitative enquiry requires deliberate strategies to reduce researcher bias. Jiang et al. (2024) illustrate the value of longitudinal evidence when examining professional development, while Lira et al. (2022) caution that reported competencies can vary according to participants' reference standards. Nevertheless, these constraints do not eliminate the programme's contextual and developmental value.

5.4 Recommendations and Follow-up Programme

Future programmes should employ comparison groups where appropriate and conduct follow-up evaluation after three or six months to examine the durability and practical application of learning. Evaluation may combine teaching observations, interviews, reflective journals, lesson plans, and project-based assessments. Tzovla and Kedraka (2023) demonstrate the importance of longitudinal follow-up because immediate gains may not remain stable. Sims et al. (2025) indicate that professional development becomes more effective when insight, motivation, practical techniques, and classroom enactment are addressed together. Accordingly, the present workshop should be developed into a continuing learning series supported by mentoring, peer feedback, and professional-learning communities. Wolor et al. (2023) show that social capital supports collective participation and community development. Gaffar et al. (2022) further demonstrate that digital transformation requires organisational adaptation, not simply technology adoption. International cooperation could be expanded through virtual teaching practicums, collaborative lesson design, shared teaching projects, and student-teacher exchanges. Quintana-Ordorika et al. (2024) confirm that collaborative online international learning can strengthen technology-supported educational design among preservice teachers.

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