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Community Service through the Russia-ASEAN Engineering Education Partnership: An Open Collaborative Framework for Sustainable Development Goals (SDGs)

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ABSTRACT

Community service can connect university knowledge, engineering education, and wider educational communities through training, mentoring, knowledge transfer, and institutional collaboration. This conceptual study proposes an open Russia-ASEAN community-service framework for improving engineering education and supporting the Sustainable Development Goals (SDGs). The study applies literature, historical, institutional, comparative, and system analyses. The proposed framework integrates joint research, university consortium development, training, master classes, round tables, practical activities, dissemination, stakeholder reflection, and educational outreach. Community service is positioned as the mechanism for transferring research findings and educational innovations from participating universities to broader academic communities. The framework provides a basis for strengthening educational quality, institutional capacity, international collaboration, and SDG-oriented development through sustained Russia-ASEAN cooperation.

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1. INTRODUCTION

Community service is an important function of higher education because universities can extend academic knowledge, research findings, and professional expertise beyond formal classroom activities. In engineering education, community service may include training, mentoring, workshops, technical consultation, public discussion, dissemination of educational innovations, and institutional support. These activities provide a mechanism for connecting universities with broader academic and educational communities.

Engineering education is increasingly influenced by digitalization, technological change, and the growing demand for interdisciplinary technical competencies. Digital technologies and professional skills have become closely connected with the development of contemporary engineering education, requiring universities to continuously adapt their educational approaches and institutional capacity (Klimov *et al.*, 2019). Technical understanding also depends on the ability of technical students to interpret specialized concepts and technical language systematically, indicating that educational quality is influenced by both disciplinary knowledge and the way technical knowledge is communicated (Nandiyanto and Yulistiani, 2024).

Continuity in engineering learning is another important consideration. Fundamental disciplines such as mechanics provide connections between school-level learning and higher engineering education and can support the development of technical reasoning across educational levels (Bogomaz and Chaban, 2026). Quality assurance and accreditation additionally require systematic evaluation of educational programs and institutional practices (Gerasimov *et al.*, 2013).

Project-based approaches are particularly relevant in periods of technological transformation because they connect theoretical knowledge, engineering design, creativity, collaboration, and problem-solving. Higher project education can therefore contribute to the adaptation of engineering education to emerging technological conditions (Glushchenko, 2024). However, improving engineering education requires more than curriculum development. Research findings and educational innovations must also be communicated, transferred, discussed, and adapted across institutions. Community-engaged learning provides one mechanism for linking engineering education with real social and sustainability challenges (Goggins and Hajdukiewicz, 2022). Service-learning in engineering education can similarly integrate technical learning with community-oriented activities and sustainable development objectives (Mintz *et al.*, 2014).

This perspective is particularly relevant to international cooperation. A Russia-ASEAN partnership can create opportunities for joint research, institutional learning, professional development, educational outreach, and knowledge exchange among universities. The project proposes cooperation through training, master classes, round tables, lectures, practical activities, stakeholder reflection, dissemination, and the establishment of a university consortium. These activities provide a practical foundation for reframing the project as an international community-service initiative in engineering education.

Community service in the present study is therefore defined as the organized transfer and application of academic knowledge, educational methods, research findings, and professional expertise through training, mentoring, workshops, public academic activities, institutional support, and educational outreach to broader academic and educational communities.

Such activities can also support sustainable development. Engineering education contributes to the preparation of technical human resources, technological innovation, infrastructure development, and institutional capacity. Recent studies have increasingly emphasized the need to connect engineering education with Sustainable Development Goals (SDGs) and broader societal responsibilities.

Despite these developments, an important gap remains. Engineering education, international academic cooperation, community engagement, and sustainable development are often discussed separately. Less attention has been given to how an international engineering-education partnership can systematically transform joint research into sustained community-service activities for educators, technical students, university managers, and participating institutions.

This study aims to develop an open community-service framework for Russia-ASEAN cooperation in engineering education to support educational quality and the SDGs. Specifically, the study addresses the following questions: (i) What areas of engineering education can be integrated into a Russia-ASEAN community-service partnership? (ii) How can joint research and educational innovation be transformed into community-service activities? (iii) How can a university consortium support continuous knowledge transfer, institutional capacity building, and SDG-oriented engineering education?

The novelty of this study lies in developing a conceptual Russia-ASEAN community-service framework in which collaborative engineering-education research is linked directly with knowledge transfer, training, mentoring, institutional support, public academic activities, and stakeholder engagement.

2. LITERATURE REVIEW

2.1. Transformation and Quality of Engineering Education

Engineering education is continuously affected by changes in technology, industry, professional competencies, and educational expectations. Digital transformation has strengthened the relationship among technical knowledge, digital skills, professional practice, and educational technologies (Klimov *et al.*, 2019). The quality of engineering education also depends on how technical concepts are communicated and understood. Technical language plays an important role in helping technical students interpret engineering concepts systematically, particularly when abstract mathematical and physical relationships are involved (Nandiyanto and Yulistiani, 2024). Continuity between earlier technical learning and higher engineering education is also important. Mechanics, mathematics, and other fundamental disciplines can provide conceptual foundations for later engineering learning and help connect different levels of technical education (Bogomaz and Chaban, 2026). Institutional quality mechanisms provide another dimension. Accreditation and systematic evaluation can support educational program improvement by identifying strengths, weaknesses, and areas requiring institutional development (Gerasimov *et al.*, 2013). These perspectives show that engineering-education quality is multidimensional. It involves content, technical understanding, curriculum continuity, professional competencies, institutional quality, and adaptation to technological change. **Table 1** summarizes the major dimensions of engineering-education development considered in this study.

Table 1. Major dimensions of engineering-education development.

DIMENSION	MAIN FOCUS	IMPLICATION FOR ENGINEERING EDUCATION
Technical knowledge	Understanding engineering concepts	Stronger disciplinary competence
Technical language	Interpretation of specialized terminology	Improved conceptual understanding
Curriculum continuity	Connection across educational levels	More coherent learning progression
Digitalization	Digital technologies and professional skills	Adaptation to technological transformation
Project-based education	Design, creativity, and problem solving	Practical application of engineering knowledge
Quality assurance	Evaluation and accreditation	Continuous institutional improvement
International collaboration	Exchange of knowledge and practices	Broader institutional learning

2.2. Community Service and Community-Engaged Engineering Education

Community service expands the function of engineering education beyond conventional teaching and research. It creates opportunities for universities to transfer academic knowledge and technical expertise to wider educational and professional communities. Community-engaged engineering education can connect technical learning with real community and sustainability challenges. Such approaches allow technical students and academic staff to apply disciplinary knowledge while engaging with broader social and institutional needs (Goggins and Hajdukiewicz, 2022). Service-learning provides a related approach by integrating academic learning with structured community-oriented activities. In engineering education, service-learning can combine technical problem-solving with social responsibility and sustainable development (Mintz *et al.*, 2014). Within higher education, community service can therefore include several mechanisms rather than a single activity. Training develops professional capacity; mentoring provides continuing academic support; workshops facilitate technical knowledge transfer; public discussions encourage exchange and reflection; and dissemination extends access to research and educational innovations. The proposed Russia-ASEAN project contains many of these elements. It includes training, master classes, round tables, lectures, practical classes, dissemination of research results, public presentation of project outcomes, and stakeholder feedback. **Table 2** summarizes these activities as community-service mechanisms in engineering education.

2.3. International Partnership and Sustainable Community Service

International cooperation can increase access to different educational experiences, technical practices, research traditions, and institutional approaches. In engineering education, such cooperation can support comparative learning and help universities respond collectively to technological transformation. The Russia-ASEAN framework is particularly suitable for this purpose because participating institutions operate within different national, economic, technological, and educational environments. Joint activities can therefore support reciprocal learning rather than one-directional knowledge transfer. The project proposes a consortium consisting of participating universities, with some institutions contributing advanced research and innovation while others contribute data, implementation experience, and local educational perspectives. The project also identifies 17 potential areas of collaboration, including transformation of engineering-education architecture, innovation systems, project-based learning, creative pedagogy, mentoring, participatory education, technological sovereignty, international cooperation, and student ecosystems.

Table 2. Community-service mechanisms in engineering education.

COMMUNITY-SERVICE MECHANISM	MAIN ACTIVITY	PRIMARY PARTICIPANTS	EXPECTED CONTRIBUTION
Training	Structured professional development	Lecturers, staff, technical students	Capacity building
Mentoring	Guidance and academic support	Technical students and junior academics	Professional development
Workshops	Application of methods and technical knowledge	Academic and educational communities	Knowledge transfer
Master classes	Expert-led learning activities	Lecturers and technical students	Advanced competency development
Round tables	Discussion of educational problems	Academics, managers, stakeholders	Knowledge exchange
Practical activities	Application of engineering and educational methods	Technical students and educators	Practice-oriented learning
Dissemination	Sharing reports, methods, and research findings	Participating institutions	Wider access to knowledge
Stakeholder reflection	Feedback and evaluation	Participants and beneficiaries	Continuous improvement

These themes can be reorganized into broader community-service dimensions, as shown in **Table 3**. Community service provides the connecting mechanism among these dimensions. Joint research generates new knowledge; training and mentoring transfer that knowledge; university collaboration supports adaptation; and community-oriented dissemination extends the benefits to broader educational communities. The conceptual sequence proposed in this study begins with joint research and continues through knowledge development, community service, institutional capacity building, improvement of engineering education, and contribution to the SDGs.

Table 3. Proposed Russia-ASEAN community-service dimensions.

DIMENSION	SELECTED PROJECT AREAS	COMMUNITY-SERVICE ORIENTATION
Educational transformation	Engineering-education architecture, adaptation, quality improvement	Institutional development
Pedagogical innovation	Project-based, creative, participatory, and game-based education	Training and educational workshops
Professional development	Mentoring and postgraduate development	Capacity building
Innovation and technology	Innovation systems and technological transformation	Technical knowledge transfer
International cooperation	Joint research and university collaboration	Cross-institutional learning
Student development	Student ecosystems and social development	Technical student engagement
Sustainability	SDGs and sustainable institutional development	Community-oriented educational impact

3. METHOD

3.1. Research Design

This study used a conceptual and qualitative analytical design. No primary empirical data were collected. The analysis focused on developing an international community-service framework from the proposed Russia-ASEAN engineering-education project. The study used literature analysis, historical analysis, comparative analysis, institutional analysis, and system analysis. These approaches were selected because the study examines relationships among engineering education, technological transformation, international cooperation, community service, and sustainable development.

3.2. Source and Unit of Analysis

The principal conceptual material was the proposed Russia-ASEAN engineering-education project. The framework contains 17 proposed areas of international cooperation related to engineering-education transformation, pedagogical innovation, institutional development, mentoring, project-based education, technological development, and the SDGs. The project also describes implementation mechanisms involving a university consortium, quarterly project activities, training, master classes, public discussion, dissemination, reporting, stakeholder feedback, and institutional participation. These components were treated as the units of conceptual analysis.

3.3. Literature Analysis

The literature analysis focused on four areas: (i) transformation and quality of engineering education; (ii) technical knowledge, technical language, and educational continuity; (iii) community service and community-engaged engineering education; and (iv) sustainable development and international academic cooperation. The literature was used to establish the theoretical basis for interpreting the project activities as community-service mechanisms.

3.4. Comparative and Institutional Analysis

Comparative analysis was used to examine how different project activities correspond to community-service functions. For example, joint research was interpreted as knowledge development; training and master classes as capacity-building mechanisms; round tables as knowledge-exchange activities; mentoring as professional development; and dissemination as educational outreach. Institutional analysis was used to examine the role of participating universities, project teams, academic staff, technical students, university managers, and other stakeholders within the proposed Russia-ASEAN consortium.

3.5. System Analysis

System analysis was used to connect the individual project components into an integrated community-service framework. The analysis considered the proposed project as a sequence consisting of knowledge generation, knowledge transfer, institutional implementation, stakeholder participation, reflection, and dissemination. This approach allowed community service to be positioned not as an additional activity after research but as the mechanism connecting research outputs with educational and institutional beneficiaries.

3.6. Conceptual Analysis Procedure

The conceptual analysis was conducted in five stages, as summarized in **Table 4**. In the first stage, engineering-education challenges associated with technological transformation, educational quality, technical competencies, and institutional adaptation were identified. In the second stage, the 17 proposed areas of Russia-ASEAN cooperation were reviewed and classified. In the third stage, activities with direct community-service functions were identified, including training, mentoring, master classes, round tables, practical activities, dissemination, and stakeholder reflection. In the fourth stage, these activities were grouped into educational transformation, pedagogical innovation, professional development, innovation and technology, international cooperation, student development, and sustainability. In the fifth stage, the dimensions were integrated into a conceptual framework linking joint research, community service, institutional capacity building, engineering-education improvement, and SDG contribution.

Table 4. Stages of the conceptual analysis.

STAGE	ANALYTICAL ACTIVITY	MAIN OUTPUT
1	Identification of major engineering-education challenges	Engineering-education development dimensions
2	Review of the 17 proposed Russia-ASEAN project areas	Project activity inventory
3	Identification of community-service mechanisms	Training, mentoring, workshops, dissemination, and engagement
4	Grouping of project activities into broader community-service dimensions	Community-service classification
5	Integration of research, community service, institutional development, and SDGs	Proposed Russia-ASEAN conceptual framework

4. RESULTS AND DISCUSSION

4.1. Community-Service Orientation of the Russia-ASEAN Partnership

The analysis indicates that the proposed Russia-ASEAN engineering-education partnership can be interpreted not only as an international research initiative but also as a structured community-service framework. The proposal includes training, master classes, round tables, lectures, practical activities, dissemination of research findings, public presentation, and stakeholder reflection. These activities provide mechanisms for transferring academic knowledge and educational innovations to participating universities and wider educational communities. This interpretation is consistent with community-engaged engineering education, in which academic learning and technical knowledge are connected with broader social and sustainability challenges (Goggins and Hajdukiewicz, 2022). Service-learning also demonstrates that engineering education can combine technical learning with community-oriented activities and sustainable-development objectives (Mintz *et al.*, 2014). Community-oriented innovation within advanced engineering schools further shows that research activities can be linked with wider institutional and community benefits (Emilio *et al.*, 2026). Thus, community service in the proposed partnership is not treated as an isolated outreach activity. It functions as the mechanism through which collaborative research, educational methods, and professional expertise can be transferred to lecturers, technical students, university managers, and other academic stakeholders. **Table 5** summarizes how the original project activities can be transformed into specific community-service functions.

Table 5. Transformation of Russia-ASEAN project activities into community-service functions.

PROJECT ACTIVITY	COMMUNITY-SERVICE FUNCTION	EXPECTED BENEFICIARY
Joint research	Knowledge generation and sharing	Universities and academic staff
Training	Professional capacity building	Lecturers and technical students
Master classes	Expert knowledge transfer	Academic communities
Round tables	Discussion and knowledge exchange	Researchers and stakeholders
Practical activities	Application of educational methods	Technical students and educators
Mentoring	Professional and academic support	Students and junior academics
Dissemination	Educational outreach	Wider academic communities
Stakeholder reflection	Evaluation and improvement	Participating institutions

4.2. Community-Service Dimensions

The project identifies 17 areas of cooperation, including transformation of engineering-education architecture, innovation systems, project-based education, mentoring, creative pedagogy, participatory education, international cooperation, technological sovereignty, and student ecosystems. The present analysis reorganizes these areas into seven broader community-service dimensions: educational transformation, pedagogical innovation, professional development, innovation and technology, international cooperation, student development, and sustainability. These dimensions and their expected community-service contributions are summarized in **Table 6**.

Table 6. Community-service dimensions of the proposed Russia-ASEAN partnership.

DIMENSION	MAIN ORIENTATION	COMMUNITY-SERVICE CONTRIBUTION
Educational transformation	Quality and adaptation of engineering education	Institutional capacity building
Pedagogical innovation	Project-based, creative, and participatory approaches	Training and methodological support
Professional development	Mentoring and academic development	Human-resource capacity
Innovation and technology	Digital and technological transformation	Technical knowledge transfer
International cooperation	Russia-ASEAN academic collaboration	Cross-institutional learning
Student development	Technical student ecosystems	Student participation and development
Sustainability	SDGs and institutional sustainability	Long-term educational and social contribution

The educational-transformation dimension responds to the continuing need for institutions to adapt engineering education to technological change. Digital technologies, technical competencies, and educational technologies are increasingly interconnected within engineering education (Klimov *et al.*, 2019). Technical language and systematic explanation are also important for strengthening students' understanding of engineering concepts (Nandiyanto and Yulistiani, 2024). Curriculum continuity provides another important dimension. Fundamental technical subjects such as mechanics can connect school-level learning with higher engineering education and strengthen technical reasoning across educational stages (Bogomaz and Chaban, 2026). Program evaluation and accreditation can additionally support continuous institutional improvement (Gerasimov *et al.*, 2013). Project-based education is particularly relevant within the pedagogical-innovation dimension because it connects technical knowledge with design, creativity, collaboration, and problem-solving (Glushchenko, 2024). These activities can subsequently be transferred through training, workshops, and mentoring as community-service mechanisms.

4.3. University Consortium as a Community-Service Mechanism

The proposed university consortium provides an institutional structure for implementing community service continuously. The project distinguishes universities contributing advanced research and innovation from participating institutions contributing information, implementation experience, and local educational perspectives. This structure allows knowledge exchange to operate in multiple directions. Participating universities can simultaneously become knowledge producers, community-service providers, users of educational innovations, and beneficiaries of institutional development. This reciprocal approach is particularly important in international collaboration because participating institutions may have different technological capacities, educational traditions, and institutional priorities. The proposed project also includes quarterly research activities, dissemination, public discussion, stakeholder feedback, and preparation of joint scientific outputs. These repeated activities can transform international collaboration from a temporary project into a continuous community-service cycle. Community-oriented higher-education initiatives also show that capacity building can be strengthened through structured training and knowledge transfer. Community-service activities involving educational technology and professional development provide examples of how academic expertise can be extended to wider learning communities (Emilio *et al.*, 2026). Community-based approaches can additionally support participation, inclusion, and sustainable social development when local needs and stakeholder engagement are incorporated into program design (Daud, 2026). The proposed consortium therefore extends the conventional research-to-publication process into a broader sequence involving research, knowledge transfer, community service, institutional learning, and educational improvement.

4.4. Contribution to Engineering Education and the SDGs

The proposed framework can contribute to engineering-education quality through professional development, technical knowledge transfer, curriculum discussion, mentoring, pedagogical innovation, and institutional collaboration. Technological transformation requires engineering programs to continuously update both educational content and methods. Digital skills and educational technologies have become important components of engineering education (Klimov *et al.*, 2019), while new fields such as nanotechnology demonstrate the need for curriculum adaptation, interdisciplinary integration, and continuing development of engineering-education strategies (Nandiyanto *et al.*, 2026). Technical understanding should remain central to this transformation. Clear technical language and step-by-step interpretation can support technical students in understanding complex engineering concepts (Nandiyanto and Yulistiani, 2024). Project-based education can complement this conceptual understanding by providing opportunities for practical application and problem-solving (Glushchenko, 2024). The relationship with sustainable development is also important. Engineering education contributes indirectly to the SDGs by strengthening human capital, innovation capacity, institutional quality, and technical competence. Recent discussions of engineering education increasingly position the SDGs as a framework for aligning technical education with environmental, social, and economic responsibilities (Denissova *et al.*, 2026). Institutional development also depends on human capital, work culture, leadership, and organizational conditions within higher education. These dimensions influence the capacity of institutions to implement educational innovations and sustain long-term improvement (Hartono *et al.*, 2026). Community service can therefore support the SDGs not only through direct community activities but also through stronger universities and more capable academic communities.

The proposed framework does not assume that a single program directly achieves the SDGs. Instead, it positions community service as a supporting mechanism through which engineering-education knowledge, professional capacity, and institutional practices can contribute to sustainable development.

4.5. Integrated Community-Service Framework

The principal conceptual result of this study is an integrated framework connecting international research cooperation, community service, institutional development, and sustainable engineering education. The proposed framework begins with the Russia-ASEAN partnership and proceeds through joint research, knowledge development, community service, institutional capacity building, improvement of engineering education, and contribution to the SDGs. This integrated relationship is illustrated in **Figure 1.**

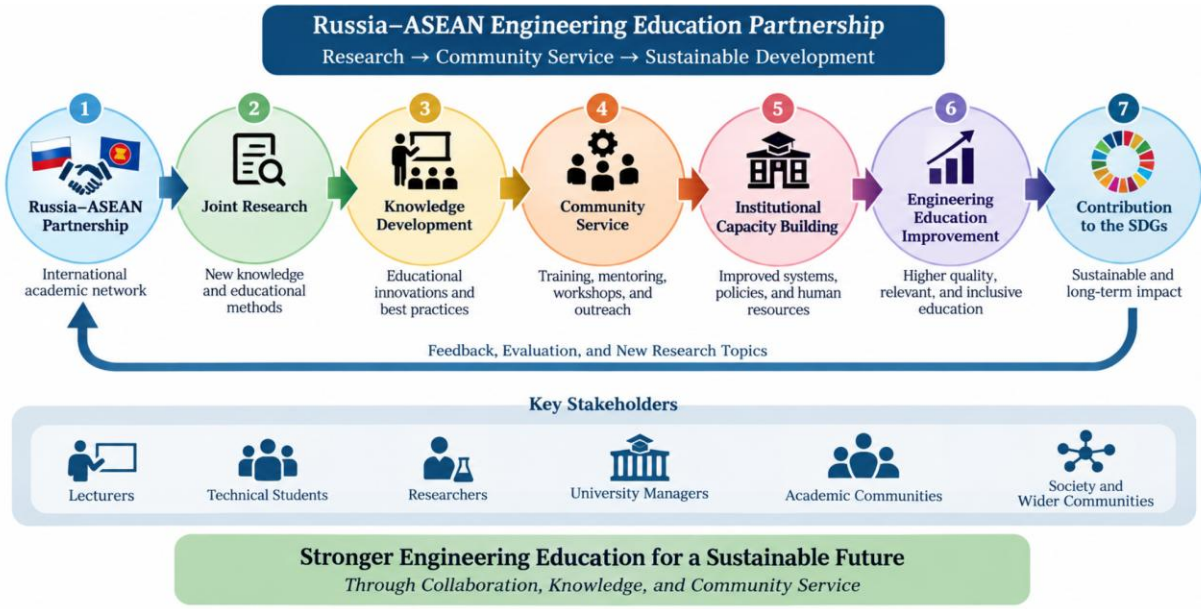

Figure 1. Integrated Russia-ASEAN community-service framework for engineering education and Sustainable Development Goals (SDGs).

The framework shows that community service functions as the central mechanism connecting knowledge development with institutional capacity building and engineering-education improvement. Training, mentoring, workshops, and educational outreach enable research findings and educational innovations to be transferred to lecturers, technical students, researchers, university managers, academic communities, and wider society. The feedback mechanism further indicates that evaluation and stakeholder reflection can generate new research topics and support continuous improvement of the partnership.

Table 7 summarizes the stages, main processes, and expected outputs represented in **Figure 1.** The framework is cyclical rather than linear. Stakeholder reflection and institutional evaluation can identify new educational problems, which subsequently become topics for collaborative research. Community service therefore connects knowledge production with implementation, evaluation, and renewed research.

Table 7. Integrated Russia-ASEAN community-service framework.

STAGE	MAIN PROCESS	MAIN OUTPUT
1	Russia-ASEAN collaboration	International academic network
2	Joint research	New knowledge and educational methods
3	Community service	Training, mentoring, workshops, and outreach
4	Institutional implementation	Capacity and practice improvement
5	Stakeholder reflection	Feedback and identification of new needs
6	Educational improvement	Stronger engineering-education quality
7	Sustainable development	Long-term institutional and community contribution

This cyclical model is compatible with community-engaged learning approaches that emphasize interaction between academic knowledge and real-world needs (Goggins and Hajdukiewicz, 2022). It also reflects service-learning principles in which learning, application, reflection, and community contribution are mutually connected (Mintz *et al.*, 2014). The proposed framework consequently positions the Russia-ASEAN partnership not simply as an international research network but as a continuing platform for research, knowledge transfer, community service, institutional learning, and sustainable engineering-education development.

5. CONCLUSION

This study developed a Russia-ASEAN community-service framework for engineering education by connecting joint research with training, mentoring, workshops, knowledge transfer, institutional support, and stakeholder engagement. Seventeen cooperation areas were reorganized into seven dimensions covering educational transformation, pedagogical innovation, professional development, technology, international cooperation, student development, and sustainability. The proposed university consortium enables continuous exchange among researchers, lecturers, technical students, and participating institutions. Community service therefore functions as the bridge between research outputs and educational implementation. Future studies should implement the framework and evaluate participation, capacity building, institutional improvement, engineering-education quality, and contributions to sustainable development.

5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper is free from plagiarism.

6. REFERENCES

Bogomaz, I. V., & Chaban, E. A. (2026). Mechanics as the basis of continuity of school and higher engineering education. *Tomsk State Pedagogical University Bulletin, 2026*(2), 108-116.

Daud, K. D. (2026). Community-based empowerment and social inclusion for the Mëranaw diaspora: A service-learning approach to combating discrimination in the Philippines toward Sustainable Development Goals (SDGs). *ASEAN Journal of Community Service and Education, 5*(2), 73-84.

Denissova, O., Sánchez-García, E., Martínez-Falcó, J., Konurbayeva, Z., Marco-Lajara, B., *et al.* (2026). Reimagining engineering education through the lens of sustainable development goals. *Circular Economy and Sustainability, 6*, Article 185.

Emilio, I. B. P., Zhdanovich, O. A., & Glushchenko, V. V. (2026). Enhancing research efficiency in advanced engineering schools through customization and community-oriented innovation. *ASEAN Journal of Community Service and Education, 5*(1), 33-40.

Gerasimov, S. I., Shaposhnikov, S. O., & Yatkina, E. Y. (2013). Standard interview questions for educational program accreditation in the Association for Engineering Education of Russia. *Engineering Education, 12*, 60-65.

Glushchenko, V. V. (2024). Formation of pedagogy of higher project education in the period of the new 18th-century technological order. *Indonesian Journal of Teaching in Science, 4*(2), 205-258.

Goggins, J., & Hajdukiewicz, M. (2022). The role of community-engaged learning in engineering education for sustainable development. *Sustainability, 14*(13), 8208.

Hartono, H., Robani, A., Muhid, A., & Rachmadtullah, R. (2026). Human capital, work culture, and job satisfaction scales for higher education institutions: A bibliometric and literature review with scale development and validation toward the Sustainable Development Goals (SDGs). *ASEAN Journal of Educational Research and Technology, 5*(3), 415-434.

Klimov, A. A., Kupriyanovsky, V. P., Sokolov, I. A., Zarechkin, E. Yu., & Kupriyanovskaya, Yu. V. (2019). Digital technologies, skills, engineering education for the transport industry and educational technology. *International Journal of Open Information Technologies, 7*(10), 98-127.

Mintz, K., Talesnick, M., Amadei, B., & Tal, T. (2014). Integrating sustainable development into a service-learning engineering course. *Journal of Professional Issues in Engineering Education and Practice, 140*(1), 05013001.

Nandiyanto, A. B. D., Kurniawan, T., Bilad, M. R., Al-Obaidi, A. S. M., Farobie, O., & Hammouti, B. (2026). How to integrate nanotechnology into chemical engineering education: A bibliometric and technological review of curriculum standards, research trends, pedagogical challenges, and future prospects. *ASEAN Journal of Educational Research and Technology, 5*(2), 245-260.

Nandiyanto, A. B. D., & Yulistiani, F. (2024). How technical language supports students' understanding in engineering education: Definitions and step-by-step interpretation of dimensionless parameters (Re, Pr, Pe, Nu, Gr, Ra, Bi, and Fo) in heat transfer. *International Journal of Language Education, 8*(4), 885-900.