



Transforming The Doctoral Program in Geological Engineering Toward Excellent Accreditation: An Integrative Model of Academic Quality, Research Output, and Internationalization

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Abstract

The Doctoral Program in Geological Engineering at Universitas Pembangunan Nasional “Veteran” Yogyakarta is currently accredited “Very Good” by LAM Teknik. It faces increasing demands to achieve Excellent accreditation while strengthening its international competitiveness. This study aims to develop an integrative model and strategic roadmap to transform the program by improving academic quality, research performance, scholarly output, and internationalization. The study used a qualitative descriptive-analytical approach through document review, benchmarking with leading doctoral programs, gap analysis, SWOT analysis, stakeholder consultations, and conceptual modeling. The analysis identified six strategic priorities, including internationalization; leadership and networking; student recruitment and support; faculty capacity; research productivity; and scholarly publication. Key challenges include high faculty workloads, limited institutionalized international collaboration, low participation of doctoral students in international publications, and no international student enrollment. Based on these findings, the Academic–Research–Output–Internationalization (AROI) Model was developed as an integrative framework linking academic quality, research capacity, scholarly productivity, and global engagement. The model is supported by a five-year strategic roadmap comprising five phases: (1) assessment and strategic direction, (2) academic quality enhancement, (3) research and scholarly output strengthening, (4) international engagement expansion, and (5) consolidation and preparation for the next accreditation cycle. The study contributes an institutionally grounded framework for translating accreditation requirements and internationalization objectives into interconnected strategic priorities and phased institutional actions, offering a potentially adaptable approach for doctoral engineering programs seeking to strengthen academic and research performance.

Keywords *Excellent Accreditation; AROI Model; Internationalization*

INTRODUCTION

Quality assurance in higher education has increasingly shifted from compliance with formal requirements toward evidence of educational outcomes, research performance, and continuous improvement. Doctoral programs depend on strong supervision, a culture that supports research, institutional commitment, and close academic networks (Guarimata-Salinas et al., 2024; Parveen et al., 2025). Internationalization further extends these requirements by promoting cross-border collaboration, academic mobility, knowledge exchange, and international research networks. Recent research on doctoral education has likewise emphasized the importance of institutional structures and international engagement in strengthening doctoral quality and outcomes. A

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relevant benchmarking example is the Doctoral Program in Geological Engineering at Universitas Gadjah Mada (UGM), which has maintained Excellent accreditation and developed an international academic profile, including approximately 31 international students (Sukjairungwattana & Hu, 2025). That success is not random—it comes from years of dedication to high standards in teaching, research, and global engagement. In contrast, the Doctoral Program in Geological Engineering at Universitas Pembangunan Nasional “Veteran” Yogyakarta (UPNVYK) is currently accredited as “Very Good” by LAM Teknik. This contrast provides relevant institutional context for examining how the program can strengthen academic quality, research, and internationalization to achieve Excellent accreditation.

The latest accreditation review identified several areas requiring further improvement. These include faculty workload, limited formal research collaboration, insufficient institutionalized international networks, the absence of international students, and limited doctoral student participation in international publications. One big issue is workload—teaching and administrative duties are heavy, and it is well known that heavy workloads can seriously limit research output (Hesli & Lee, 2011). Research is often done alone, with few formal collaborations. International connections are mostly personal rather than institutional. Currently, the program has no international students, and doctoral students rarely contribute to international publications. However, research consistently shows that when students and researchers connect with overseas colleagues and spend time at different institutions, their scientific work often improves (Gu et al., 2024). The challenge, therefore, is not simply to fulfill accreditation requirements but to strengthen the underlying academic and research processes that generate sustainable evidence of program quality.

In engineering education, accreditation research has emphasized continuous quality improvement, learning outcomes, assessment, and evidence-based program evaluation (Prados et al., 2005). Studies of doctoral education, meanwhile, have highlighted supervision, research environments, institutional support, and internationalization as important dimensions of program quality (Guarimata-Salinas et al., 2024; Parveen et al., 2025). However, these dimensions are often addressed separately rather than as an integrated program-level strategy. This creates a gap in translating accreditation requirements and assessor recommendations into a coordinated framework that simultaneously connects academic quality, research performance, scholarly output, and internationalization, particularly in doctoral engineering programs.

To address this gap, this study develops the Academic–Research–Output–Internationalization (AROI) Model as an integrative framework for transforming the Doctoral Program in Geological Engineering at UPNVYK toward Excellent accreditation. The study examines the current condition relative to the accreditation target, identifies strengths, weaknesses, opportunities, and threats affecting academic quality, research, output, and internationalization, and translates these findings into an integrated strategic framework. The study also proposes a five-year roadmap to guide implementation, monitoring, and continuous improvement. Rather than treating accreditation recommendations as a checklist, the proposed approach connects them to the academic and research processes that generate sustainable program outcomes. The resulting framework provides a practical basis for strengthening program quality, research productivity, scholarly output, and international engagement while supporting the program's progression toward Excellent accreditation.

LITERATURE REVIEW

Recent studies indicate that quality in higher education and doctoral education is increasingly understood through continuous improvement, academic outcomes, research performance, and institutional support rather than formal compliance alone. In engineering

education, accreditation has emphasized learning outcomes, assessment, curriculum evaluation, and continuous quality improvement (Prados et al., 2005). For doctoral education, effective supervision, supportive research environments, peer interaction, and institutional support are important for students' academic and research development (Wang et al., 2023; Tikkanen et al., 2024; Guarimata-Salinas et al., 2024). Faculty capacity reduces time for research, supervision, and academic collaboration (Makhanya et al., 2022). These findings suggest that doctoral program quality depends on the interaction between academic management, faculty capacity, research environment, and student development.

Research output and internationalization represent additional dimensions of doctoral program quality. Collaboration between doctoral students and supervisors can strengthen students' integration into scientific communities and contribute to research impact (Cugmas et al., 2024; Chen et al., 2024). Internationalization can further expand research networks through academic mobility, international collaboration, and cross-border knowledge exchange (Haley et al., 2022; de Wit et al., 2024). Recent evidence shows that international academic mobility can increase research collaboration and publication performance among researchers and doctoral students (Gu et al., 2024; Pan et al., 2025). However, these dimensions are often examined separately: accreditation studies focus on quality assurance, doctoral education studies emphasize supervision and research environments, and internationalization studies focus on mobility and collaboration. An integrated program-level framework connects academic quality, research capacity, scholarly output, and internationalization as mutually supporting elements of continuous improvement and accreditation readiness. The AROI Model proposed in this study addresses this gap by integrating these four dimensions into a coordinated strategy for transforming a doctoral engineering program toward Excellent accreditation.

RESEARCH METHOD

This study employed a qualitative descriptive–analytical approach combining document review, benchmarking, gap analysis, SWOT analysis, stakeholder consultation, and conceptual modeling. Secondary data sources include internal program documents (Self-Evaluation Reports/LED, Study Program Performance Reports/LKPS, strategic plans for lecturers, tridharma progress reports, research roadmaps, and Outcome-Based Education/OBE curricula), the standards and guidelines of the 2025 LAM Teknik Accreditation Instrument, and relevant international literature on quality assurance, doctoral education, and internationalization. Primary data were obtained through surveys, interviews, and focus group discussions (FGDs) involving faculty members, doctoral students, and relevant stakeholders. Document analysis and triangulation were used to identify and validate recurring issues (Bowen, 2009).

The analysis was conducted through five stages: (1) document review and benchmarking against doctoral programs with Excellent accreditation, including the Geological Engineering doctoral program at UGM; (2) gap analysis comparing the current condition with the Excellent accreditation target using available quantitative indicators; (3) frequency-based SWOT analysis to identify recurring strengths, weaknesses, opportunities, and threats; (4) stakeholder consultation to validate research constraints, collaboration needs, and implementation challenges; and (5) synthesis of the findings into the Academic–Research–Output–Internationalization (AROI) Model and a five-year implementation roadmap. The frequency-based SWOT was used only as an initial descriptive measure and was not treated as a weighted SWOT score.

To maintain methodological transparency, we did not estimate or impute unavailable institutional statistics. Indicators such as publication participation, international student enrollment, and overseas partnerships were treated as baseline variables to be established through subsequent data collection. This approach grounds the proposed roadmap in verified evidence

while providing measurable indicators for future quality improvement and accreditation readiness.

The conceptual framework merges a holistic quality-assurance approach with an ecosystem perspective on internationalization (Sukjairungwattana & Hu, 2025). Building on this framework, the AROI Model integrates four interconnected dimensions to organize the identified strategic priorities and formulate the five-year roadmap toward accreditation readiness that are described as follows:

- a. **Academic (Academic Quality):** refining the research- or dissertation-based doctoral curriculum, rebalancing teaching and research workloads, developing faculty competencies, and improving the learning process; this pillar requires visionary program leadership and a reliable internal quality-management system.
- b. **Research (Research Quality):** developing a collaborative research culture, establishing cross-disciplinary research groups, advancing strategic research themes (e.g., geological hazard mitigation and environmental engineering), and securing competitive research grants as the foundation for scholarly output.
- c. **Output (Output Quality):** reputable journal publications, intellectual property rights (IPR), technical reports, and contributions to industry and society, with doctoral student involvement in a structured publication pipeline serving as an indicator of successful knowledge transfer.
- d. **Internationalization:** global networks through student and faculty exchange, cross-border joint research and publication, and the integration of international perspectives into the curriculum is not simply a formality of MOUs but the cultivation of a genuine global academic atmosphere.



Figure 1. The AROI Model: the causal chain of academic quality, research, output, and internationalization toward Excellent accreditation

These four pillars operate within a causal cycle: strong academic quality drives more productive research; high-quality research generates international output that boosts the

program's reputation; a stronger reputation, in turn, expands international networks and attracts prospective international students and faculty, which further reinforces academic quality. This approach aligns with the "Flow of Quality" framework, which begins with inputs, processes, and outputs in internationalization (Velkoska & Nuredin, 2024). The four pillars are underpinned by four cross-cutting levers, quality assurance, data governance, leadership, partnership, and supervision, that ultimately converge on sustainable excellence and Excellent accreditation, as summarized in the diagram in Figure 1.

FINDINGS AND DISCUSSION

Six Assessor Recommendation Priorities and Gap Mapping

The assessment findings identified six priority areas requiring further improvement toward Excellent accreditation: internationalization; leadership and networking; student recruitment and support, including international students; faculty development and workload management; research-based curriculum; and doctoral student research and publication output. These recommendations indicate that the main challenges extend beyond individual accreditation criteria and involve academic capacity, research activity, scholarly output, and international engagement. The six recommendations were translated into a gap map covering the current condition, identified gap, and initial strategic response, as presented in Table 1. The gap mapping provides the basis for identifying strategic priorities and subsequently developing the AROI Model and five-year transformation roadmap.

Table 1. Six priority areas and strategic-level gap map based on assessor recommendations

No	Evaluated Specifications	Current Conditions/Challenges	Development Direction / Improvement Strategy
1	Internationalization	Requires stronger integration into curriculum and research	Joint research/publication, faculty and student mobility
2	Leadership and networking	Networks remain personal; institutional optimization needed	Strategic networking and formal partnerships
3	Students	Limited number and quality, including international students	Targeted recruitment and scholarships
4	Faculty (DTPS)	Career development and workload not yet proportional	Workload and career mapping
5	Curriculum	Not yet fully research/dissertation-based	Alignment of curriculum–research–dissertation
6	Research and output	Low student involvement in publications	Research groups and publication pipeline

Benchmarking and Performance Indicators

Benchmarking shows that leading doctoral geology programs in Indonesia, including the Geological Engineering doctoral program at UGM, emphasize aligning doctoral curricula and research agendas with industry and international academic needs. The benchmark program has developed an international academic profile, including substantial international publication output and approximately 31 international students (Sukjairungwattana & Hu, 2025). By comparison, the UPNVIK Doctoral Program in Geological Engineering currently holds only a good rating (UPN "Veteran" Yogyakarta, n.d.), falling short of the Excellent target. Key indicators include the program vision and curriculum alignment, the proportion of international students, the average workload of permanent faculty, the extent to which faculty research informs dissertation topics, the doctoral

student publication ratio (RI), and the benefits and realization of partnerships, as summarized in Table 2. Consistent with the data-integrity principle outlined in the Method section, baseline values for most of these indicators have not yet been calculated. The roadmap must establish them in its first year.

Table 2. Key benchmarking indicators for Excellent accreditation (actual figures, none imputed)

Evaluation Aspect	Indicator / Measurement	Current Status
International students	Proportion of International Students (PMA); benchmark $\geq 1\%$ for a score of 4	Baseline not yet available
Faculty workload (DTPS)	Average credit-hour (SKS) load; benchmark 12–16 SKS for a score of 4	Not yet calculated
Research → dissertation	$\text{PPTM} = (\text{Number of Dissertation Topics Aligned with Faculty Research} / \text{Total Number of Dissertation Programs}) \times 100\%$	Not yet calculated
Doctoral student publications	$\text{RI} = (\text{Number of Category A4 + B3 Articles}) / \text{Number of Students}$	Not yet calculated
Partnerships	Benefit, realization, and partner satisfaction	Evidence requires compilation

SWOT Analysis

The SWOT analysis was conducted at two levels: (a) the frequency of issues within the six assessor recommendations as an initial proxy (Table 3), and (b) qualitative elaboration derived from document review and preliminary FGDs. At the frequency level, the strength area—encompassing the foundations of vision and mission, governance, human resources, teaching and learning, research, and quality assurance—appears consistently robust. In contrast, each of the five weakness areas (internationalization, leadership/networking, students, including international students, faculty career/workload, and research-based curriculum) appears once as an explicit recommendation, with research and student output also noted as concerns. This frequency measure is explicitly not a weighted SWOT score; final scoring must still be computed following further FGDs and surveys.

Table 3. Transparent SWOT analysis based on the frequency of assessor recommendations (not a weighted rating score)

SWOT	Key Finding / Assessor Recommendation	Frequency	Strategic Implication
S (Strengths)	Vision-mission foundations, governance, human resources, teaching and learning, research, and quality assurance	6 strong areas	Maintain and leverage these strengths as the foundation for continuous improvement and accreditation excellence
W (Weaknesses)	Internationalization remains informal	1	Establish a structured internationalization program with measurable targets
W (Weaknesses)	Leadership and networking require optimization	1	Strengthen strategic leadership, networking, and external

SWOT	Key Finding / Assessor Recommendation	Frequency	Strategic Implication
			engagement
W (Weaknesses)	Quantity and quality of students, including international students	1	Strengthen student recruitment, selection, retention, and international student attraction
W (Weaknesses)	Faculty career development and workload not yet proportional	1	Develop a faculty career-development system and rebalance academic/research workloads
W (Weaknesses)	Curriculum not yet fully research/dissertation-based	1	Revise the doctoral curriculum toward research-based, dissertation-driven learning
W (Weaknesses)	Student involvement in research and output	1	Integrate students more strongly into research groups, publications, conferences, and IPR
O/T (Opportunities/Threats)	Global networking opportunities and grants, amid growing inter-program competition	-	Convert opportunities into measurable internationalization and research programs
T – Threats	Growing competition among doctoral programs nationally and internationally may affect student recruitment, academic visibility, and competitiveness	-	Strengthen program differentiation, research excellence, international visibility, and graduate outcomes

The frequency measure was used only as a descriptive proxy for identifying recurring issues and was not treated as a weighted SWOT score. Formal prioritization should be supported by validated data from subsequent surveys and FGDs. Nevertheless, the analysis indicates that the identified weaknesses are interconnected. For example, faculty workload may constrain research engagement, limited research collaboration may restrict publication opportunities, and limited international engagement may reduce opportunities for doctoral students to participate in international research networks. These relationships support the need for an integrated rather than isolated improvement strategy.

The AROI Model in Practice

Within the Academic pillar, strengthening efforts include revising the doctoral curriculum toward an interdisciplinary, research- and dissertation-based orientation, rebalancing teaching and research workloads, and providing faculty with pedagogical and research-methodology training. In the initial phase, program management and the internal quality-assurance unit must strengthen performance benchmarks, key performance indicators (KPIs), and well-defined guidelines for workload implementation.

Within the Research pillar, the program is encouraged to build collaborative research across disciplines (e.g., engineering geology, hydrogeology, and environmental science) and across national and international networks, supported by seed funding and the formation of thematic research clusters. Empirical evidence confirms that high teaching loads significantly reduce the number of articles published ([Hesli & Lee, 2011](#)). Redistributing task loads is therefore a prerequisite for ensuring research receives adequate time.

Within the Output pillar, concrete achievements include reputable scientific publications, intellectual property rights, technical reports, and structured involvement of doctoral students in the publication pipeline. Consistent publication in indexed international journals is one of the outputs for attaining excellent status on prior research and academic inputs—consistent with the principles of accuracy and accountability embedded in the Flow of Quality framework ([Velkoska & Nuredin, 2024](#)).

Within the Internationalization pillar, strong academic and research achievements expand global networks through conference invitations and multinational partnerships. In contrast, internationalization gives students a global perspective. It improves the program's reputation—consistent with evidence that international mobility and joint effort are associated with higher scientific productivity ([Gu et al., 2024](#)) and constitute important indicators in quality assessment. The program must integrate these activities into its KPI targets to avoid them becoming a mere MOU formality.

Managerial Implications

The findings align with previous studies that emphasize the importance of academic support, research environments, faculty capacity, research collaboration, and international engagement in doctoral education and higher-education quality improvement. However, these dimensions are commonly examined as separate aspects of doctoral education, research productivity, quality assurance, or internationalization. The present study integrates them at the program level and links them directly to accreditation readiness. The study's novelty lies in developing the AROI Model as an integrated framework that connects the Academic, Research, Output, and Internationalization dimensions within a doctoral engineering program. Implementing the AROI Model requires responsive, evidence-based governance. The university should support a dedicated quality and accreditation coordination mechanism with adequate funding for research, open-access publication, and academic mobility. Faculty workload should be reviewed to provide sufficient research time, supported by an integrated performance dashboard. The program should engage international experts and overseas universities through guest lectures, joint research, co-supervision, and academic partnerships. The doctoral program should be given particular attention through dedicated workshops on international academic publishing, scientific English, and grant proposal development. To strengthen the quality and consistency of doctoral supervision, a co-supervision mechanism should also be introduced in accordance with international standards ([Guarimata-Salinas et al., 2024](#)); ([Westberg & Geiss, 2026](#)).

Five-Year Transformation Roadmap

The roadmap follows a sequence of diagnosis, strengthening academic quality, strengthening research and output, internationalization, and consolidation, as summarized in Table 4 and Figure 2.

Table 4. Five-year transformation roadmap for the Doctoral Program in Geological Engineering toward Excellent accreditation

No.	Strategic Focus / Stage	Strategic Focus / Stage
1	Diagnosis & alignment	Baseline indicators, gap matrix, action plan, establishment of the quality/accreditation team
2	Academic excellence	Research-based curriculum revision, dissertation milestones, workload restructuring
3	Research & output	Research groups, seed funding, indexed publications, intellectual property rights
4	Internationalization	Joint research/publication, mobility, strategic MOUs, international recognition
5	Consolidation	Continuous quality improvement, LED/LKPS preparation, mock assessment, readiness review

**Figure 2.** Roadmap for the Development of Doctoral Program in Geological Engineering (2027-2031)

Internationalization is positioned as a quality lever rather than an end in itself, operationalized through a global academic atmosphere in courses and seminars on global research themes; mobility through short-term fellowships and international colloquia; recruitment through overseas education fairs; and quality standardization aligned with international benchmarks, such as the ASEAN University Network. International networking is a key quality indicator in higher-education evaluation, and its effective implementation will strengthen the program's standing with BAN-PT/LAM Teknik.

CONCLUSIONS

Achieving Excellent accreditation requires an integrative transformation focused on the causal chain linking all four pillars, not on a single quality dimension. The proposed AROI Model stresses the relationship among vision, curriculum, research, dissertation, publication/IPR, recognition, and impact, with internationalization and data-based quality assurance as the principal levers: academic quality → excellent research → international output → global networking → sustainable excellence → Excellent accreditation. This strategy is guided by six assessor recommendations spanning internationalization, leadership and networking, student development, faculty career and workload management, research-based curriculum alignment, and student involvement in research and reputable output. Implementing the five-year roadmap, supported by continuous supervision, is expected to close the current quality gap.

This article deliberately refrains from presenting performance figures that are not yet officially available, in line with the principle of data correctness. Immediate next steps include establishing a three-year baseline dataset, conducting further surveys and FGDs, calculating a formally weighted SWOT score, and testing the AROI Model through staged implementation. Internationalization is an important quality lever that, when combined with strengthened academic, research, and output performance, can accelerate attainment of Excellent accreditation and international recognition.

Recommendations

- a. Establish a three-year baseline dataset and an integrated quality dashboard (academic, research, publication, internationalization) under the coordination of the program's quality/accreditation unit.
- b. Align the research roadmap of permanent faculty (DTPS) with doctoral dissertation themes so that research and supervision mutually reinforce one another.
- c. Develop a doctoral student publication pipeline through research groups, writing clinics, and publication incentives for reputable journals.
- d. Shift the orientation of partnerships from simple MOU signing toward activity- and output-based collaboration (joint research, joint publication, mobility).
- e. Conduct workload mapping and supervisor allocation to ensure a proportional balance among teaching, research, and supervision.
- f. Deliver human-resource development training-International publication writing, scientific English, and grant-proposal preparation — and engage international experts as guest speakers/examiners.
- g. Conduct an internal mock accreditation assessment prior to submission for Excellent status to ensure the readiness of LED/LKPS documents and supporting evidence.

LIMITATIONS

This study has several limitations. First, the analysis relied partly on assessor recommendations and available institutional documents, while some current performance indicators, such as doctoral student publication rates and international student enrollment, were not yet available as verified baseline data. Second, the SWOT analysis used issue frequency as an initial descriptive proxy rather than a weighted assessment, and therefore does not represent a final quantitative prioritization. Third, the AROI Model and five-year roadmap have not yet been evaluated through implementation or outcome-based validation. Consider these limitations when interpreting the proposed framework and roadmap.

REFERENCES

- Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, 9(2), 27–40. <https://doi.org/10.3316/QRJ0902027>
- Chen, G., Yan, W.-W., Wang, X.-Y., et al. (2024). The relationship between coauthorship and the research impact of medical doctoral students: A social capital perspective. *Humanities and Social Sciences Communications*, 11, 1256. <https://doi.org/10.1057/s41599-024-03813-9>
- Cugmas, M., Mali, F., & Kronegger, L. (2024). Longitudinal patterns of scientific collaboration in doctoral studies. *Scientometrics*, 129, 1055–1077. <https://doi.org/10.1007/s11192-023-04900-5>
- de Wit, H., de Gayardon, A., & Jones, E. (2024). Internationalisation in doctoral education. In *Internationalization of the Doctoral Experience: Models, Opportunities and Outcomes*. Routledge.
- Gu, J., Pan, X., Zhang, S., & Chen, J. (2024). International mobility matters: Research collaboration and scientific productivity. *Journal of Informetrics*, 18(2), 101522. <https://doi.org/10.1016/j.joi.2024.101522>
- Guarimata-Salinas, G., Carvajal, J. J., & López, M. D. J. (2024). Redefining the role of doctoral supervisors: a multicultural examination of labels and functions in contemporary doctoral education. *Higher Education*, 88(4), 1305–1330. <https://doi.org/10.1007/s10734-023-01171-0>
- Haley, A., Alemu, S. K., Zerihun, Z., & Uusimäki, L. (2022). Internationalisation through research collaboration. *Educational Review*, 74(3), 675–690.
- Hesli, V. L., & Lee, J. M. (2011). Faculty research productivity: Why do some of our colleagues publish more than others? *PS: Political Science & Politics*, 44(2), 393–408. <https://doi.org/10.1017/S1049096511000242>
- Makhanya, M. S., et al. (2022). Reconceptualizing faculty workload as a measure of human resource motivation and performance in higher education. *Social Sciences & Humanities Open*, 6(1), 100279.
- Pan, X., Wu, R., Huang, X., & Zhai, Y. (2025). The impact of international academic mobility on doctoral students' research collaboration and publication output. *Scientometrics*.
- Parveen, S., Yasmeen, J., & Ajmal, M. (2025). Unpacking the doctoral journey in India: Supervision, social support, and institutional factors influencing mental health and research engagement. *Social Sciences & Humanities Open*, 11(101282). <https://doi.org/10.1016/j.ssaho.2025.101282>
- Prados, J. W., Peterson, G. D., & Lattuca, L. R. (2005). Quality assurance of engineering education through accreditation: The impact of Engineering Criteria 2000 and its global influence. *Journal of Engineering Education*, 94(1), 165–184. <https://doi.org/10.1002/j.2168-9830.2005.tb00836.x>
- Sukjairungwattana, P., & Hu, H. (2025). From local to global: Systematically reviewing higher education internationalization in Asia. *Frontiers in Education*, 9(1473820). <https://doi.org/10.3389/educ.2024.1473820>
- Tikkanen, L., Ketonen, E., Toom, A., & Pyhältö, K. (2024). PhD candidates' and supervisors' wellbeing and experiences of supervision. *Higher Education*, 90, 1451–1469. <https://doi.org/10.1007/s10734-024-01385-w>
- UPN "Veteran" Yogyakarta. (n.d.). *Akreditasi program studi doktor Teknik Geologi UPNVYK 2021–2026*. <https://www.pasca.geologi.upnyk.ac.id/page/akreditasi-doktor>
- Velkoska, C., & Nuredin, A. (2024). Internationalization from the perspective of quality assurance and enhancement: A comprehensive framework for internationalization through novel lens "Flow of Quality." *JoHEPAL*, 5(3), 88–111. <https://doi.org/10.61186/johepal.5.3.88>

- Wang, F., Zeng, L. M., Zhu, A. Y., & King, R. B. (2023). Supervisors matter, but what about peers? The distinct contributions of quality supervision and peer support to doctoral students' research experience. *Studies in Higher Education*, 48(11), 1724–1740.
- Westberg, J., & Geiss, M. (2026). Adding a structure to mentoring: Seminar-based supervision in Swedish PhD education. *Perspective of Higher Education*. *Perspective of Higher Education*, 1(1), 46–51. <https://doi.org/10.1016/j.phe.2026.03.004>