ASEAN Journal of Educational Research and Technology 4(3) (2025) 507-522

ASEAN Journal of Educational Research and Technology

Journal homepage: https://ejournal.bumipublikasinusantara.id/index.php/ajert

How to Do Research in Science and Engineering Education: A Methodological Framework with Lessons Learned from Common Research Failures, Bibliometric Analysis, and Practical Insights

*Aay Susilawati[1], Sri Rosalin Nandiyanti[2], Nor Azwadi Che Siddik[3], Asep Bayu Dani Nandiyanto[4,]**

[1]Universitas Muhammadiyah Sukabumi, Sukabumi, Indonesia
[2]Yayasan Bumi Publikasi Nusantara, Bandung, Indonesia
[3]Semarak Ilmu Publishing, Kajang, Malaysia
[4]Universitas Pendidikan Indonesia, Bandung, Indonesia
*Correspondence: E-mail: nandiyanto@upi.edu

A B S T R A C T

This paper presents a practical guide for improving research quality in science and engineering education based on lessons learned from real manuscript revision processes. Although many researchers aim to conduct studies in this field, research quality is often weakened by misalignment between stated scope, scientific content, engineering processes, and methodological descriptions. This study analyzes several research manuscripts that underwent academic coaching and were successfully revised and published in reputable journals, completed with a bibliometric analysis. Research quality can be significantly improved without altering core research designs, but through clearer articulation of scientific concepts, explicit description of engineering or technological interventions, and stronger alignment between methodology and research objectives. This paper offers actionable and experience-based guidance for researchers seeking to produce more rigorous, coherent, and impactful studies in science and engineering education.

© 2025 Bumi Publikasi Nusantara

A R T I C L E I N F O

Article History:
Submitted/Received 09 Aug 2025
First Revised 26 Aug 2025
Accepted 14 Nov 2025
First Available online 16 Nov 2025
Publication Date 01 Dec 2025

Keyword:
Bibliometric Analysis,
Engineering Education,
Research Quality,
Research Revision,
Science Education.

1. INTRODUCTION

Research in science and engineering education has experienced rapid growth over the past decades, driven by increasing demands for interdisciplinary learning, technological integration, and innovation-oriented educational practices (Solehuddin et al., 2025). Several examples of the research in science and engineering education are presented in **Table 1**. This growth is reflected in the expanding body of literature that combines science content, engineering design, and educational methodologies to address complex learning challenges in diverse contexts. However, the increasing volume of publications has also raised concerns regarding research quality, methodological clarity, and alignment between stated research scope and actual study content.

A recurring issue in science and engineering education research is the tendency to emphasize learning outcomes and instructional effectiveness without sufficiently articulating the underlying scientific concepts, engineering processes, or technological products involved. Many studies claim to fall within the domain of science or engineering education, yet their analyses remain largely pedagogical, with limited discussion of how scientific knowledge is structured, how engineering principles are applied, or how educational technologies are systematically designed and developed. This misalignment weakens the theoretical contribution of the research and reduces its relevance to the broader science and engineering education community.

Based on our previous studies (Nandiyanto & Azizah, 2022), this paper addresses this need by presenting a practical methodological guide for improving the quality of research in science and engineering education. Rather than proposing abstract or purely theoretical recommendations, this study focuses on what researchers can concretely do to enhance their manuscripts. The discussion is grounded in real experiences of academic coaching and manuscript revision, where research papers were systematically improved and successfully published in reputable journals.

The study highlights key actions that contribute to higher research quality, including clarifying scientific content, strengthening the description of engineering or technological design, aligning research methods with the stated scope, and presenting results that clearly reflect the implemented interventions. By analyzing multiple cases of revised manuscripts, this paper demonstrates how targeted methodological improvements can transform initial studies into robust science and engineering education research. This paper serves as a practical reference for researchers who wish to conduct and publish high-quality studies in science and engineering education, offering clear guidance on the steps needed to improve research rigor, coherence, and relevance.

2. METHOD

This study employed a qualitative case analysis approach to examine how research manuscripts in science and engineering education can be improved through systematic revision and academic coaching. The analysis focused on identifying common research weaknesses and the strategies used to address them in order to enhance research quality and methodological alignment. As models, six research manuscripts were selected based on their participation in an academic coaching process and their successful publication in reputable journals within the scope of science, engineering, and technology education. These manuscripts were analyzed comparatively by examining their initial and revised versions, as summarized in **Table 2**.

Table 1. Selected articles published in 2024 regarding science education and engineering education research.

No	Title	Ref.
1	Bibliometric analysis using VOSviewer with Publish or Perish of computational thinking and mathematical thinking in elementary school	Abidin et al. (2025)
2	Industrial engineering students' readiness towards industrial revolution 4.0 at technical and vocational university: A literature review	Anwar and Minghat (2024)
3	Problem based learning (PBL) learning model for increasing learning motivation in chemistry subject: A literature review with bibliometric analysis	Arifiani et al. (2025)
4	Identifying and dispelling students' misconceptions about electricity and magnetism using inquiry-based learning in selected junior high schools	Assem et al. (2024)
5	Structural equation modelling of factors influencing confidence in mathematics	Bendol and Dalayap Jr. (2025)
6	Bibliometric analysis for understanding the correlation between chemistry and special needs education using VOSviewer indexed by Google	Bilad (2022)
7	Gender as a predictor of students' performance in PhET simulation of chemistry content in secondary schools	Bolaji et al. (2025)
8	How to make a cognitive assessment instrument in the Merdeka curriculum for vocational high school students: A case study of generating device materials about the Stirling engine	Fiandini et al. (2024)
9	Advancing sustainability and green engineering in mechanical engineering education: Concepts, research trends, challenges, and implementation strategies	Fiandini et al. (2025)
10	Utilization of visual basic software and its effect on students' computer programming performances	Gatchalian et al. (2024)
11	The paradigm of curriculum differentiation in higher IT education	Glushchenko (2024)
12	Adaptive strategies for technical and vocational education and training (TVET) science educators: Navigating online home-based learning	Hashim et al. (2024)
13	Examining climate change issues for improving cross-generation awareness in 21st century agenda: A bibliometric approach	Ibrahim et al. (2024)
14	Competence-based educational cluster model for developing future physics teachers toward quality education to support sustainable development goals (SDGs)	Magbarkhanovich et al. (2026)
15	Can the inquiry learning model improve students' system thinking skills?	Nelvarina et al. (2024)
16	The emergence of new technologies in metalwork/automobile industries: Issues, challenges and opportunities for delivery of technical education in a pandemic era	Ogundele et al. (2025)
17	Bibliometric analysis on artificial intelligence research in Indonesia vocational education	Rahmiyanti (2024)
18	Effectiveness of the phenomenon-based approach in enhancing senior high school students' mathematical achievement and problem-solving skills	Sabugal and Apellido Jr. (2025)
19	Preparing future geography teachers through problem-based learning technology: A short review	Saidirasilovna (2025)
20	A bibliometric analysis of global trends in engineering education research	Susilawati (2024)

The analysis was conducted using a set of predefined indicators covering key components of academic research writing, including research scope alignment, scientific content clarity, integration of technology or engineering elements, methodological consistency, and presentation of results.

Particular attention was given to identify:

(i) conceptual or methodological errors in the initial manuscripts,
(ii) revisions made to the research methods or intervention descriptions, and
(iii) additional data, products, or results included to strengthen the final publications.

Data analysis followed a descriptive and reflective procedure, where each case was examined to extract methodological insights and lessons learned from the revision process. The results of this analysis are presented as case-based discussions, illustrating how targeted methodological improvements can transform educational studies into research that more clearly reflects the principles of science and engineering education.

Table 2. Summary of initial manuscripts, revisions, and key improvements after coaching.

Case No	Initial Content	Revised Title	Key Improvements	Ref.
1	Geo-activity learning: Implementing TdBA and RADEC-based outdoor learning towards environmental literacy	Development of an augmented reality learning e-module based on TdBA–RADEC to improve students' environmental literacy	Addition of AR technology design process and development of an AR-based learning product	(Pratama et al., 2026)
2	The impact of free nutritious meals on improving deep learning among elementary school students in Bima regency	Integrating nutrition and cognitive readiness: Impact of free nutritious meals on deep learning and the sustainable development goals in primary schools	Inclusion of nutrition science theory and analysis of tested nutritional values of meals	(Yamin et al., 2025)
3	Generative AI as a personal learning assistant: A qualitative analysis of user perceptions in mathematics	Perceptions of undergraduate mathematics students on generative AI as an algebra lesson planning tool	Specification of scientific content by focusing on algebra as a mathematics topic	(Supriyadi et al., 2025)
4	STEAM sustainable city project in the implementation of the pancasila student profile strengthening project (P5) to improve elementary students' ecoliteracy	Integrating science, technology, engineering, arts, and mathematics (STEAM) and sustainable development goals (SDGs) in sustainable city projects to improve ecoliteracy of elementary school students	Integration of SDGs framework and more detailed ecoliteracy content	(Suryanti et al., 2026)
5	Enhancing 21st Century Skills through the "Code and Speak" Learning Model	Development of a scratch-based educational game to enhance creative and communication skills through english and coding integration aligned with SDGs	Addition of coding-based technology through game development	(Zuhdi et al., 2025)
6	Literacy learning using android-based augmented reality technology to improve students' literacy skills	An android-based learning tool for traffic sign recognition among students with disabilities	Development of Android-based learning technology and inclusion of disability-focused learning content	(Ariyanto et al., 2025)

3. RESULTS AND DISCUSSION

A bibliometric analysis was conducted using the TITLE-ABS-KEY search query "science AND engineering AND education", covering publications from 1922 to 2025, which yielded a total of 62,232 documents (**Figure 1**). This study adds new information regarding bibliometric analysis, as reported elsewhere (Ruzmetov & Ibragimov, 2023; Dewi, 2025; Oktaviani, 2025; Samsuri et al., 2025; Sesrita et al., 2026; Henny, 2025).

The results indicate a slow and relatively stable publication trend from the early twentieth century until the late 1980s, followed by a gradual increase during the 1990s. A sharp and sustained growth is evident from the early 2000s onward, reflecting the rising global emphasis on interdisciplinary integration between science, engineering, and education. The most significant acceleration occurs in the last decade, with a notable surge in annual publications after 2015, indicating that science and engineering education has become a highly active and expanding research field.

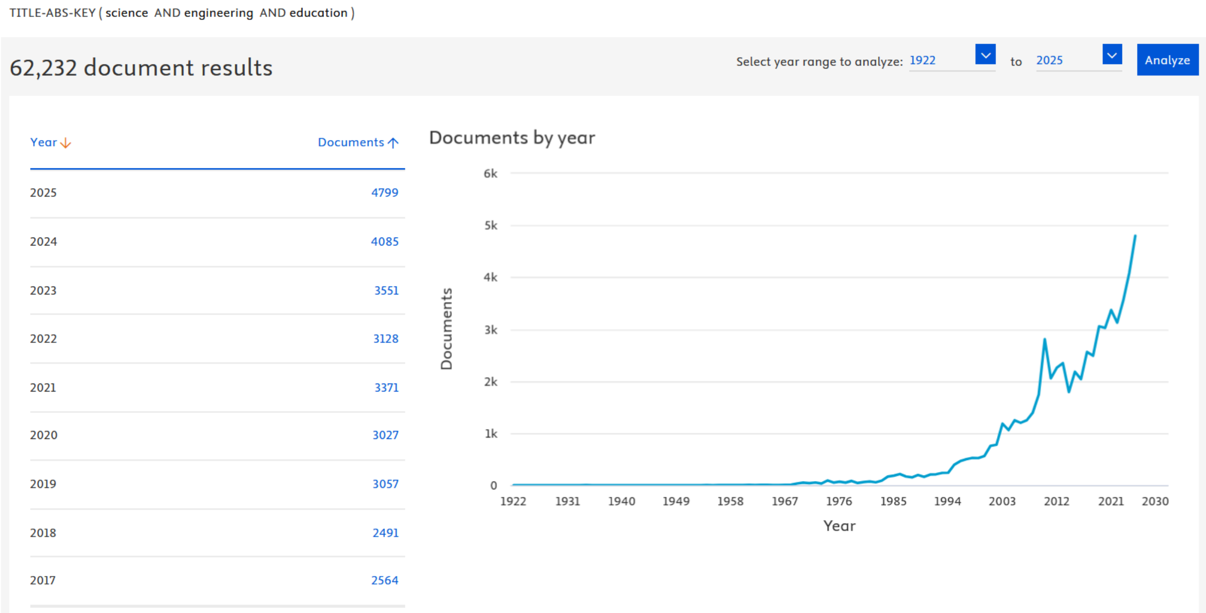


Figure 1. Annual number of publications related to science, engineering, and education based on TITLE-ABS-KEY search results (1922–2025) in the Scopus database.

To examine this issue, this study analyzes several manuscripts that underwent an academic coaching and revision process before publication. These papers were initially identified as having methodological or conceptual weaknesses, but were later revised and successfully published in reputable journals. **Table 2** presents six representative cases, comparing the initial and revised titles and summarizing the key additions made during revision.

The most common revisions involved clarifying scientific content, strengthening the description of technological design or application, and aligning the studies with broader frameworks such as the Sustainable Development Goals (SDGs). These cases form the basis for the subsequent analysis, which systematically discusses the nature of the initial errors, the methodological revisions required, and the outcomes achieved after revision.

3.1. Case 1

Several points for case 1 are as follows (Pratama et al., 2026):

(i) **What was incorrect:** The initial version of the paper was predominantly oriented toward **educational outcome analysis** and did not clearly present the **technology product** used in the study. The concept of **environmental literacy** was treated merely as a measured variable, rather than as a **scientific construct embedded in the learning content**. As a result, the core elements of **science, engineering, and technology** were not explicitly articulated, and the study appeared similar to a conventional educational effectiveness study.

(ii) **What needed to be revised in the methodology:** The research design, which employed a **quantitative quasi-experimental approach**, was appropriate and therefore retained. However, the methodology section required revision to explicitly describe the **technological intervention**. The revised version included a clear explanation of the **design and implementation of the Augmented Reality (AR) e-module** as the treatment for the experimental group, thereby strengthening the engineering and technology dimensions of the study.

(iii) **Revisions implemented and outcomes obtained:** The revised paper incorporated **visual and technical evidence** of the intervention. **Figure 2** presents the **design flow and structure of the AR-based e-module**, while **Figure 3** illustrates the **integration of ecological concepts** within the AR learning environment. These revisions clarified the relationship between scientific content, technological design, and learning outcomes. The results showed a **significant improvement in environmental literacy**, with the experimental group achieving an **increase** compared to the control group, indicating a strong positive effect of the AR-based intervention.

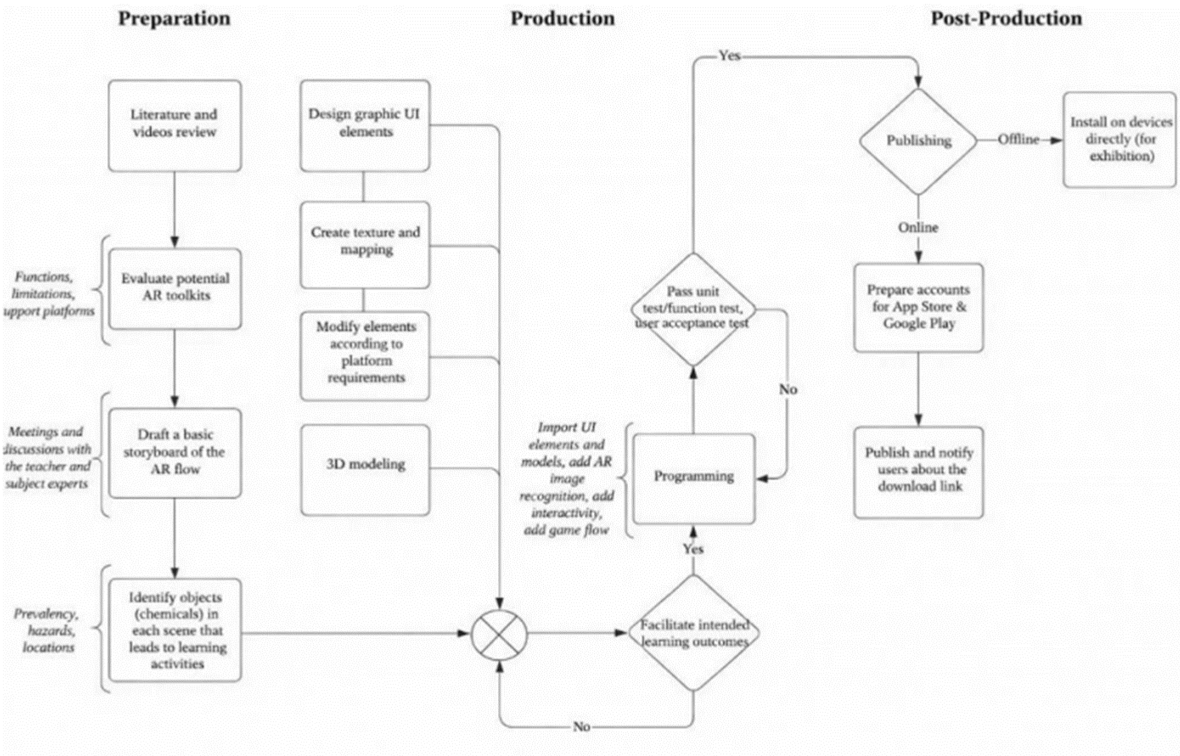


Figure 2. Design flow and structure of the AR-based e-module used as the learning intervention. The figure was adopted from reference (Pratama et al., 2026).

Figure 3. Integration of ecological concepts within the AR learning environment: (a) e-module interface, (b) AR visualization, and (c) system-based learning structure. The figure was adopted from reference (Pratama et al., 2026).

3.2. Case 2

Several points for case 2 are as follows (Yamin et al., 2025):

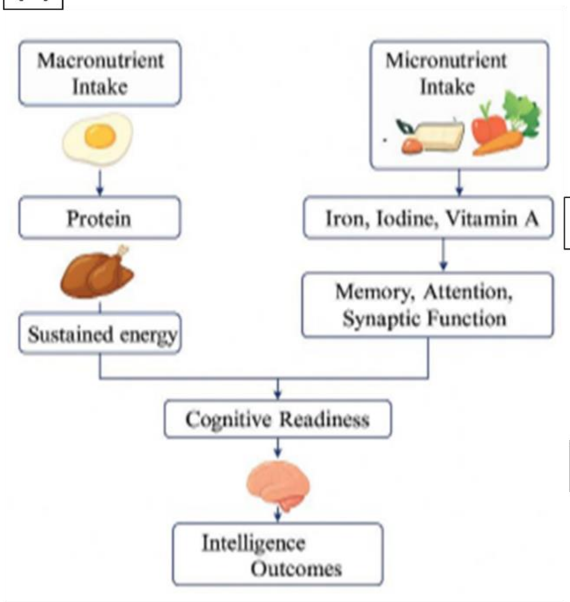
(i) <u>**What was incorrect:**</u> The initial version of the paper primarily emphasized the **impact of free nutritious meals on learning outcomes** without sufficiently explaining the **scientific basis of the intervention**. The study lacked a clear discussion of the **nutritional science aspects**, such as the types and quantities of nutrients provided, and did not demonstrate how these nutrients were theoretically and empirically linked to cognitive improvement. Consequently, the science component was underrepresented, and the study appeared descriptive rather than analytically grounded in science and technology.

(ii) <u>**What needed to be revised in the methodology:**</u> The qualitative descriptive approach used in both the initial and final versions was methodologically appropriate and therefore maintained. However, the methodology required revision to include a **systematic description of the nutritional components** of the meal program. The revised version clarified the **composition of the meals**, the **nutritional indicators analyzed**, and the rationale for examining their relationship with cognitive performance, thereby strengthening the scientific rigor of the methodology.

(iii) <u>**Revisions implemented and outcomes obtained:**</u> The revised paper incorporated **scientific and empirical evidence** to support the intervention. A conceptual illustration (**Figure 4a**) was added to explain the **influence of macro- and micronutrients on cognitive**

functions. In addition, a table (**Figures 4b, 4c, and 4d**) presented the **meal menu, nutritional values, and observed cognitive performance outcomes**. The results demonstrated that the provision of nutritious meals contributed to improved cognitive performance among students and showed relevance to **SDG 2 (Zero Hunger), SDG 3 (Good Health and Well-Being), and SDG 4 (Quality Education)**, highlighting the integration of science, education, and development goals.

(a)



(b) **Table 1. School sample characteristics and program description.**

School Name	Number of Students	Program Duration	Meal Menu Type	Observed Participation Rate
SDN Mpuri	48	4 weeks	Rice, eggs, tempeh, vegetables, banana, water	95%
SDN Dena	42	4 weeks	Rice, chicken, tofu, spinach, orange, water	92%
SDN Woro	39	4 weeks	Rice, egg, fish, leafy greens, apple, water	90%

(c) **Table 2. Macronutrient and micronutrient estimate per meal.**

Nutrient	Average Value per Meal	% RDA (Children aged 6–12)
Energy (kcal)	480 kcal	30–35%
Protein (g)	19 g	40%
Carbohydrate(g)	60 g	30%
Fat (g)	18 g	32%
Iron (mg)	6.5 mg	43%
Vitamin A (mcg)	400 mcg	50%
Calcium (mg)	320 mg	32%

(d) **Table 3. Observed changes in attendance, participation, and cognitive performance.**

Indicator	Before MBG Program	After MBG Program	% Change
Average Attendance Rate	85%	94%	+9%
Active Participation	3.1 (out of 5)	4.3 (out of 5)	+38.7%
Working Memory Score	68.2	76.5	+12.2%
Attention Score	71.4	79.0	+10.6%

Figure 4. Scientific basis of the nutrition-based intervention: (a) conceptual model of macro- and micronutrient influence on cognitive functions, (b) meal menu provided to students, (c) nutritional values of the meals, and (d) observed cognitive performance indicators. The figure was adopted from reference (Yamin et al., 2025).

3.3. Case 3

Several points for case 3 are as follows (Supriyadi et al., 2025):

(i) <u>**What was incorrect**:</u> The initial version of the paper focused mainly on **users' perceptions of Generative AI in mathematics learning** without clearly specifying the **scientific content domain** involved. The discussion remained generic and did not identify a particular area of mathematics, which weakened the representation of the **science component**. In addition, the technology aspect was limited, as the study relied on an **existing Generative AI platform** without demonstrating any form of technological development, design, or specialization. As a result, the paper did not fully align with the scope of science and engineering education research.

(ii) <u>**What needed to be revised in the methodology**:</u> The research method used in both the initial and final versions did not undergo substantial changes, as the study analyzed data that had already been collected. However, the methodology and literature review required refinement to explicitly define the **specific mathematical content** examined in the study. In the revised paper, the scope of analysis was narrowed to **algebra**, and the role of Generative AI was clarified as a tool for supporting **algebra lesson planning and instructional design**, thereby strengthening the scientific focus of the study.

(iii) **Revisions implemented and outcomes obtained:** The revised paper incorporated a more focused discussion of **algebraic content** as the core scientific domain. **Figure 5** presents a detailed overview of algebra topics discussed in the literature review, demonstrating deeper engagement with mathematical science. **Figure 6** illustrates students' perceptions of using **Generative AI–assisted lesson plans** specifically for algebra instruction. The results indicate that students perceived Generative AI as useful for developing algebra teaching materials, generating lesson plan ideas, and supporting instructional efficiency. From an educational perspective, Generative AI was shown to assist in designing practice problems, creating illustrative examples, and providing immediate feedback. But, the findings highlight the need for further research to examine the broader pedagogical implications of Generative AI beyond functional support.

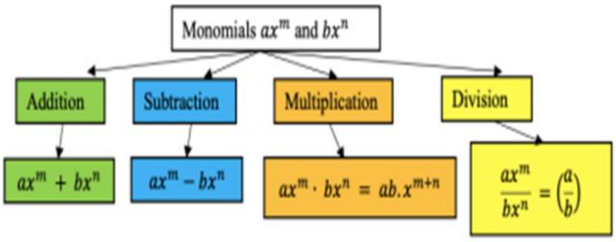


Figure 5. Overview of algebraic content addressed in the literature review for Generative AI–assisted mathematics instruction. The figure was adopted from reference (Supriyadi et al., 2025).

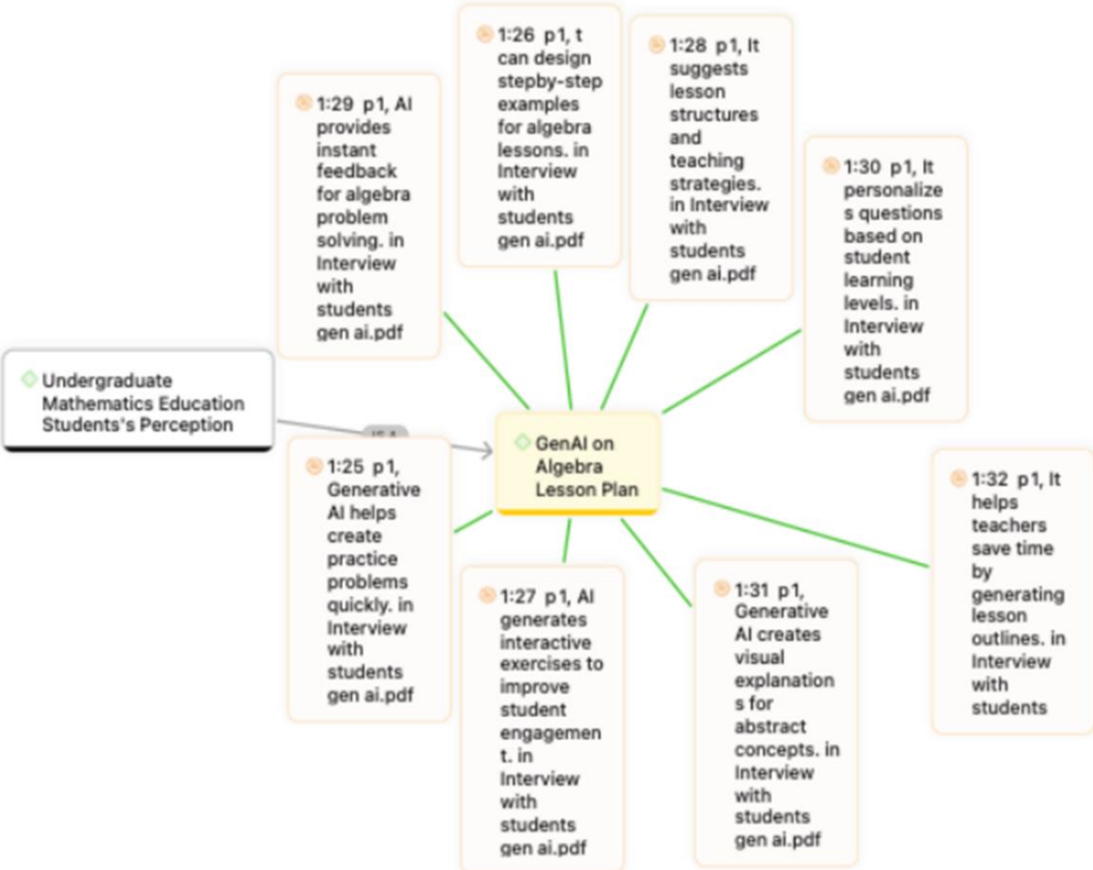


Figure 6. Students' perceptions of using Generative AI for algebra lesson planning and instructional support. The figure was adopted from reference (Supriyadi et al., 2025).

3.4. Case 4

Several points for case 4 are as follows (Suryanti et al., 2026):

(i) **<u>What was incorrect</u>**: The initial version of Paper 4 placed excessive emphasis on the **instructional process of STEM learning**, with a strong focus on general educational aspects. The discussion did not sufficiently address **scientific content** or **engineering and technological dimensions** of the learning intervention. The paper lacked clarity regarding how science concepts and project-based engineering processes were embedded in the learning activities, resulting in a study that appeared primarily pedagogical in nature.

(ii) **<u>What needed to be revised in the methodology:</u>** The research methods used in the initial and final versions were generally similar; however, the initial manuscript focused predominantly on **educational data collection procedures**. In the revised paper, the methodology section was strengthened by providing a clearer description of the **implementation process of the STEAM Sustainable City Project**, including the integration of science, technology, engineering, arts, and mathematics within the project-based learning activities. This revision improved the alignment between the intervention design, methodological approach, and research objectives.

(iii) **<u>Revisions implemented and outcomes obtained</u>**: The revised paper emphasized **conceptual framework of STEAM education** and provided a detailed explanation of the **Sustainable City Project** as the core intervention. **Figure 7** illustrates the framework and stages of the STEAM Sustainable City Project discussed in the literature review, clarifying the integration of scientific concepts and engineering-oriented project processes. The results highlighted the **effectiveness of the STEAM Sustainable City Project** in improving students' eco-literacy, demonstrating a clear positive impact of the project-based STEAM approach on students' understanding of sustainability-related concepts.

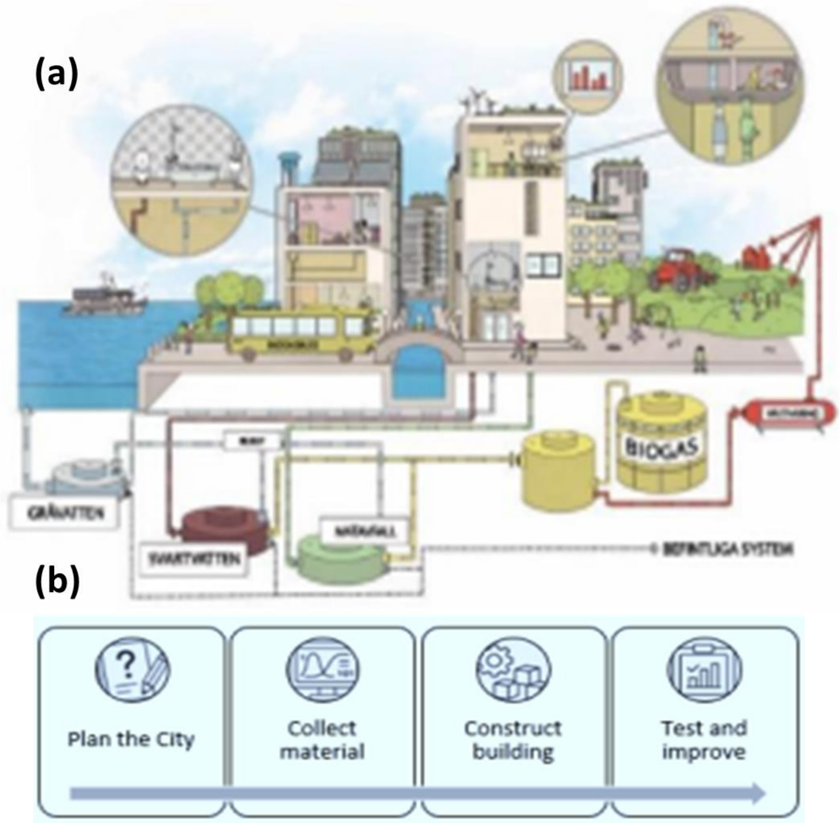


Figure 7. Framework and stages of the STEAM Sustainable City Project: (a) example of a sustainable city project and (b) implementation process of the project-based STEAM approach. The figure was adopted from reference (Suryanti et al., 2025).

3.5. Case 5

Several points for case 5 are as follows (Zuhdi et al., 2025):

(i) **What was incorrect:** The initial version of Paper 5 relied heavily on **literature-based discussion** of coding in learning without presenting any **technology development process** or **empirical data**. No educational technology product was designed or implemented, and coding was discussed conceptually rather than as an applied engineering practice. As a result, the paper did not adequately represent the technology and engineering dimensions expected in science and engineering education research.

(ii) **What needed to be revised in the methodology:** Both the initial and revised versions adopted the **ADDIE development model**, which was methodologically appropriate. However, the initial manuscript focused mainly on conceptual discussion and did not progress beyond the analysis and design stages. In the revised paper, the methodology was strengthened by explicitly detailing the **development, implementation, and evaluation stages**, including game prototyping, classroom trials, and alignment of learning activities with the **SDGs**.

(iii) **Revisions implemented and outcomes obtained:** The revised paper introduced the **development of a Scratch-based educational game** integrated into English learning and coding activities. **Figure 8** illustrates the **game design process and the final game product** used in classroom implementation. The results focused on the **instructional impact of the developed game**, highlighting improvements in students' engagement, creative expression, and communication skills through coding-supported English learning. The findings demonstrate that the integration of game-based coding activities can effectively support active learning and differentiated instruction in digital learning environments.

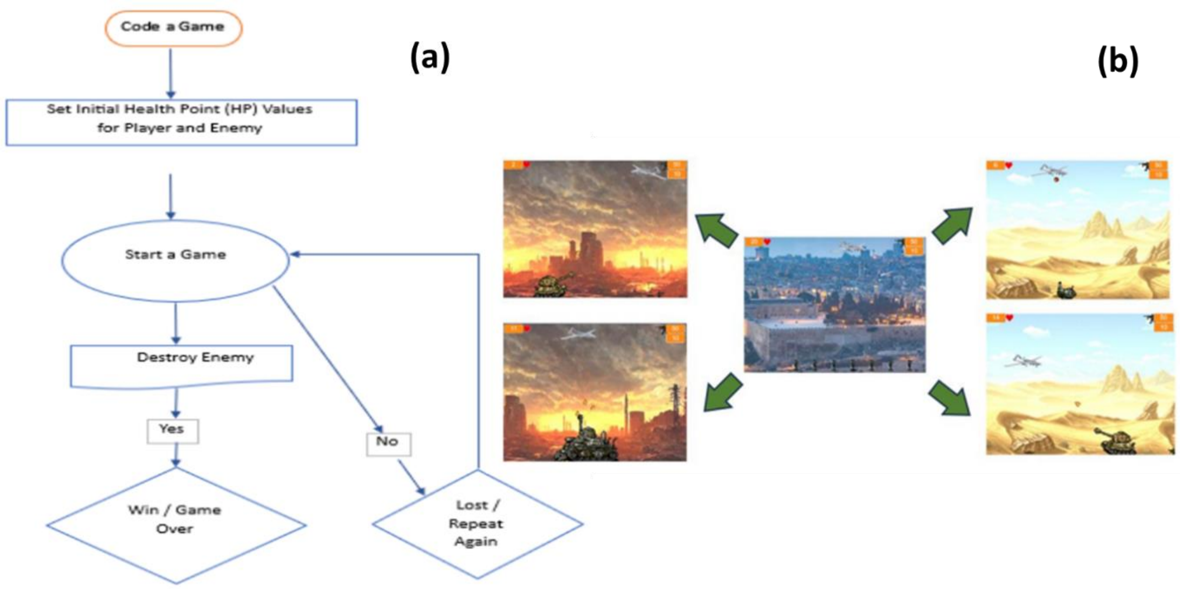


Figure 8. Development of the Scratch-based educational game: (a) initial game design sketch and (b) final game product used in classroom implementation. The figure was adopted from reference (Zuhdi et al., 2025).

3.6. Case 6

Several points for case 6 are as follows (Ariyanto et al., 2025):

(i) **What was incorrect:** The initial version of Paper 6 focused primarily on the **use of learning models and existing technologies** to improve learning outcomes, without sufficiently addressing the **design and development of a technology tailored to learners' specific needs**. The discussion emphasized instructional effectiveness rather than the **engineering process of developing educational technology**, resulting in a limited representation of engineering education principles.

(ii) **What needed to be revised in the methodology:** In the initial paper, the research employed an **R&D and quantitative approach** that concentrated on measuring the effectiveness of learning implementation. In the revised version, the methodology was reoriented toward a **Design-Based Research (DBR) approach**, which allowed greater emphasis on the **iterative design, development, and refinement** of an educational technology product. This methodological shift strengthened the engineering education dimension by focusing on how learning media were systematically designed to address the needs of students with disabilities.

(iii) **Revisions implemented and outcomes obtained:** The revised paper focused on the **design and development of an Android-based application** specifically created to support learners with disabilities. **Figure 9** illustrates the **development process and the final application product**, highlighting the engineering considerations embedded in the design. The results emphasized the **development process and functional characteristics of the application**, demonstrating how a needs-driven technological design can support inclusive learning and improve the relevance of educational technology within engineering education contexts.

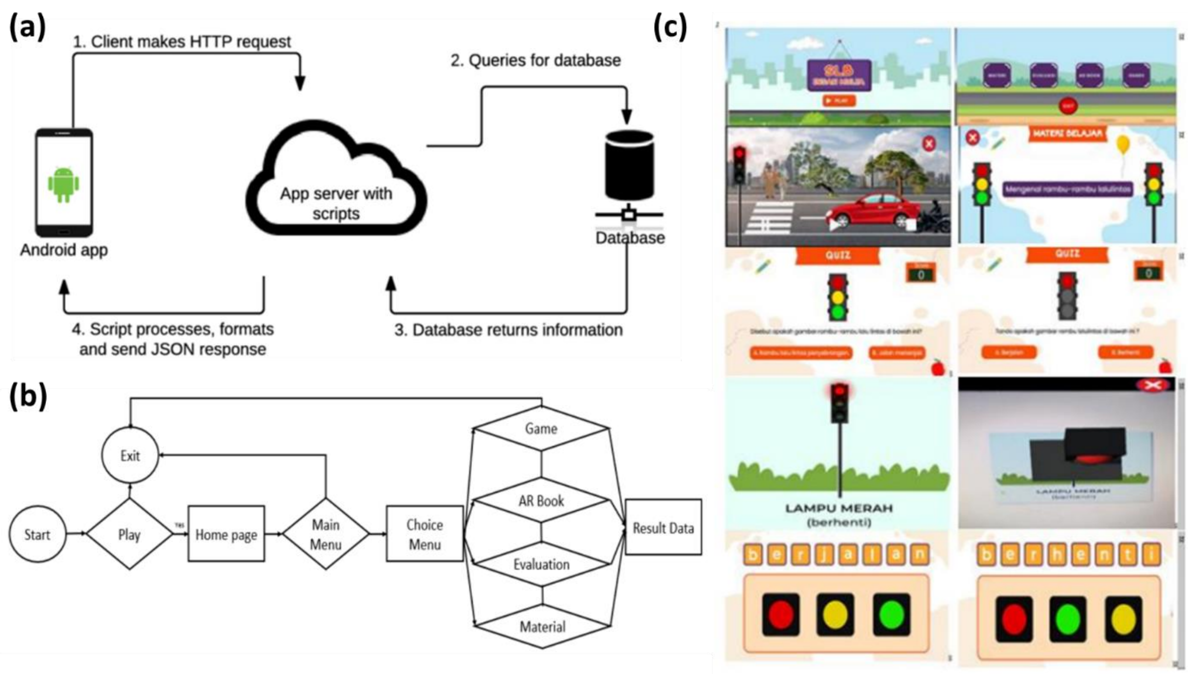


Figure 9. Development of the Android-based learning application for students with disabilities: (a) Android system architecture, (b) application flowchart, and (c) final application interface. The figure was adopted from reference (Ariyanto et al., 2025).

3.7. Lessons Learned from Common Research Failures and Practical Insights

The case analysis (as shown in **Table 2**) indicates that a recurring problem in science and engineering education research is the misalignment between the stated research scope and the actual content of the study, where many studies emphasize learning outcomes without clearly articulating scientific concepts, engineering processes, or technological interventions. Similar concerns have been highlighted in previous studies, which note that insufficient specification of disciplinary content weakens the contribution of educational research to science and engineering domains (Assem et al., 2024; Nelvarina et al., 2024).

Another common issue is the limited explanation of technological or engineering design, where technology is treated merely as a supporting tool rather than as an engineered product or system. Studies in engineering and vocational education emphasize that meaningful integration of technology requires explicit discussion of design processes, system functionality, and implementation contexts (Anwar & Minghat, 2024; Fiandini et al., 2025). Bibliometric evidence also suggests that research quality improves when methodological rigor and technological clarity are aligned with disciplinary expectations (Abidin et al., 2025; Rahmiyanti, 2024).

Importantly, these weaknesses rarely stem from inappropriate research designs. Prior research demonstrates that common methodological approaches (such as inquiry-based learning, problem-based learning, and development-oriented frameworks) remain valid when properly aligned with scientific and engineering objectives (Arifiani et al., 2025; Saidirasilovna, 2025). Therefore, improving research quality in science and engineering education requires conceptual clarity, explicit articulation of science and engineering elements, and coherent methodological alignment, rather than the adoption of more complex research designs (Susilawati, 2024).

4. CONCLUSION

This paper provides a practical methodological guide for improving the quality of research in science and engineering education. By combining bibliometric insights with a case-based analysis of revised manuscripts, the study demonstrates how research quality can be strengthened through clearer articulation of scientific content, explicit integration of engineering or technological design, and alignment between research scope, methodology, and outcomes. The six cases illustrate that most weaknesses originate not from inappropriate research designs, but from insufficient explanation of science and engineering elements. This paper offers actionable guidance for researchers seeking to conduct and publish more rigorous, coherent, and impactful studies in science and engineering education.

5. ACKNOWLEDGMENT

We acknowledged Yayasan Bumi Publikasi Nusantara for supporting this study.

6. AUTHORS' NOTE

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

7. REFERENCES

Abidin, Z., Herman, T., Wahyudin, W., and Farokhah, L. (2025). Bibliometric analysis using VOSviewer with Publish or Perish of computational thinking and mathematical thinking in elementary school. *ASEAN Journal for Science Education, 4*(1), 7–16.

Anwar, N. B. B., and Minghat, A. D. (2024). Industrial engineering students' readiness towards industrial revolution 4.0 at technical and vocational university: A literature review. *ASEAN Journal for Science Education, 3*(1), 95–112.

Arifiani, I., Nurul H. L., and Rahmawan, S. (2025). Problem based learning (PBL) learning model for increasing learning motivation in chemistry subject: A literature review with bibliometric analysis. *ASEAN Journal for Science Education, 4*(1), 17–30.

Ariyanto, R., Hufad, A., Susetyo, B., and Sholihah, Q. (2025). An Android-based learning tool for traffic sign recognition among students with disabilities. *Journal of Engineering Science and Technology, 20*(4), 182–188.

Assem, H. D., Owusu, M., Issah, S., and Issah, B. (2024). Identifying and dispelling students' misconceptions about electricity and magnetism using inquiry-based learning in selected junior high schools. *ASEAN Journal for Science Education, 3*(1), 13–32.

Bendol, R. L., and Dalayap Jr., R. H. (2025). Structural equation modelling of factors influencing confidence in mathematics. *ASEAN Journal of Educational Research and Technology*, *4*(2), 107-124.

Bilad, M. R. (2022). Bibliometric analysis for understanding the correlation between chemistry and special needs education using VOSviewer indexed by Google. *ASEAN Journal of Community and Special Needs Education*, *1*(2), 61-68.

Bolaji, H. O., Ahmed, A. T., Ibrahim, A., Jimba-Na'allah, F. K., Oyeyemi, W. T., Hassan-Ibrahim, R., Abdulazeez, B. T. A., and Luwoye, A. (2025). Gender as a predictor of students' performance in PhET simulation of chemistry content in secondary schools. *ASEAN Journal of Community and Special Needs Education*, *4*(1), 73-86.

Dewi, N. S. (2025). Correlation of metabolomics and functional foods research in 2020 to 2023: Bibliometric analysis. *ASEAN Journal for Science and Engineering in Materials*, *4*(1), 75-86.

Fiandini, M., Hofifah, S. N., Ragadhita, R., and Nandiyanto, A. B. D. (2024). How to make a cognitive assessment instrument in the Merdeka curriculum for vocational high school students: A case study of generating device materials about the Stirling engine. *ASEAN Journal for Science Education, 3*(1), 65–86.

Fiandini, M., Mukhamedov, G. I., Khimmataliev, D. O., and Nandiyanto, A. B. D. (2025). Advancing sustainability and green engineering in mechanical engineering education: Concepts, research trends, challenges, and implementation strategies. *ASEAN Journal for Science and Engineering in Materials*, *4*(2), 169-224.

Gatchalian, C. B., Handig, J. E. R., and Baluyot, F. (2024). Utilization of visual basic software and its effect on students' computer programming performances. *ASEAN Journal for Science Education, 3*(2), 155–172.

Glushchenko, V. V. (2024). The paradigm of curriculum differentiation in higher IT education. *ASEAN Journal for Science Education, 3*(1), 87–94.

Hashim, S., Luta, G. R. A., and Nincarean, D. (2024). Adaptive strategies for technical and vocational education and training (TVET) science educators: Navigating online home-based learning. *ASEAN Journal for Science Education, 3*(2), 113–128.

Henny, H., Budi, A. H. S., Andriyansyah, M., Ar Rozzak, M. R., Baru, M. M., and Masek, A. (2025). Hazard identification, risk assessment, and determining control (HIRADC) for workplace safety in manufacturing industry: A risk-control framework complete with bibliometric literature review analysis to support sustainable development goals (SDGs). *ASEAN Journal for Science and Engineering in Materials*, *4*(2), 267-284.

Ibrahim, I. M., Suryadi, K., Darmawan, C., and Nurbayani, S. (2024). Examining climate change issues for improving cross-generation awareness in 21st century agenda: A bibliometric approach. *ASEAN Journal for Science Education, 3*(2), 173–182.

Magbarkhanovich, T. A., Akhrolivech, E. U., To'ychiyevna, F. D., Sultanova, A., Uktam, U. A., Shamsiddin, I. S., Khairulla, K. Y., and Eshbekova, M. J. (2026). Competence-based educational cluster model for developing future physics teachers toward quality education to support sustainable development goals (SDGs). *ASEAN Journal of Educational Research and Technology*, *5*(2), 211-218.

Nandiyanto, A. B. D., and Azizah, N. N. (2022). Analysis of common mistake in writing scientific article in "engineering" undergraduate student. *Journal of Engineering Science and Technology*, *17*(1), 156-170.

Nelvarina, N., Agustina, T. W., and Solikha, M. (2024). Can the inquiry learning model improve students' system thinking skills? *ASEAN Journal for Science Education, 3*(1), 55–64.

Ogundele, A. G., Umar, I. Y., and Idris, A. M. (2025). The emergence of new technologies in metalwork/automobile industries: Issues, challenges and opportunities for delivery of technical education in a pandemic era. *ASEAN Journal for Science Education, 4*(1), 1–6.

Oktaviani, R. (2025). The use of zeolite material as a filtration media in waste treatment: Bibliometric analysis. *ASEAN Journal for Science and Engineering in Materials*, *4*(1), 87-96.

Pratama, D. F., Sopandi, W., and Riandi, R. (2026). Development of augmented reality learning e-module based on TdBA–RADEC towards improving students' environmental literacy to support Sustainable Development Goals (SDGs). *Journal of Engineering Science and Technology*, *21*, 73–80.

Rahmiyanti, H. (2024). Bibliometric analysis on artificial intelligence research in Indonesia vocational education. *ASEAN Journal for Science Education, 3*(2), 183–192.

Ruzmetov, A., and Ibragimov, A. (2023). Past, current and future trends of salicylic acid and its derivatives: A bibliometric review of papers from the Scopus database published from 2000 to 2021. *ASEAN Journal for Science and Engineering in Materials*, *2*(1), 53-68.

Sabugal, B. T., and Apellido Jr., E. E. (2025). Effectiveness of the phenomenon-based approach in enhancing senior high school students' mathematical achievement and problem-solving skills. *ASEAN Journal of Educational Research and Technology*, *4*(2), 153-160.

Saidirasilovna, U. N. (2025). Preparing future geography teachers through problem-based learning technology: A short review. *ASEAN Journal for Science Education, 4*(1), 39–44.

Samsuri, S., Anwar, S., Harini, S., Kartini, T., Monaya, N., Warizal, W., and Setiawan, A. B. (2025). Techno-economic feasibility and bibliometric literature review of integrated waste processing installations for sustainable plastic waste management. *ASEAN Journal for Science and Engineering in Materials*, *4*(2), 225-244.

Sesrita, A., Adri, H. T., Suherman, I., Rasmitadila, R., and Fanani, M. Z. (2025). Production of wet organic waste ecoenzymes as an alternative solution for environmental conservation supporting sustainable development goals (SDGs): A techno-economic and bibliometric analysis. *ASEAN Journal for Science and Engineering in Materials*, *4*(2), 245-266.

Solehuddin, M., Nandiyanto, A. B. D., Muktiarni, M., Rahayu, N. I., Al Husaeni, D. N., Ragadhita, R., and Fiandini, M. (2025). Engineering research and scientific contributions at Universitas Pendidikan Indonesia: Trends, challenges, and future directions. *Journal of Engineering Science and Technology*, *20*(3), 816-836.

Supriyadi, E., Luritawaty, I. P., Mutoffar, M. M., and Pahmi, S. (2025). Perceptions of undergraduate mathematics students on generative AI as an algebra lesson planning tool. *Journal of Engineering Science and Technology, 20*, 68-75.

Suryanti, S., Wiryanto, W., Choirunnisa, N. L., Abidin, Z., and Kusumaningtyas, D. (2026). Integrating science, technology, engineering, arts, and mathematics (STEAM) and Sustainable Development Goals (SDGs) in sustainable city projects to improve ecoliteracy of elementary school students. *Journal of Engineering Science and Technology, 21*, 25–32.

Susilawati, A. (2024). A bibliometric analysis of global trends in engineering education research. *ASEAN Journal of Educational Research and Technology*, *3*(1), 103-110.

Yamin, M., Awaluddin, R., Haryanto, L., and Al'adawiah, N. R. (2025). Integrating nutrition and cognitive readiness: Impact of free nutritious meals on deep learning and the Sustainable Development Goals in primary schools. *Journal of Engineering Science and Technology, 20*, 1–8.

Zuhdi, U., Sukartiningsih, W., Mariana, N., and Suryanti, S. (2025). Development of a Scratch-based educational game to enhance creative and communication skills through English and coding integration aligned with SDGs. *Journal of Engineering Science and Technology, 20*(6), 33–40.