

TEACHERS' AND LEARNERS' PERSPECTIVES ON EFFECTIVE LANGUAGE LEARNING STRATEGIES IN THE INDONESIAN UNIVERSITY

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Abstract

This study aims to explore the perspectives of lecturers and students regarding effective language learning strategies (LLS) in Indonesian universities, especially the suitability between the strategies recommended by teachers and practiced by students. The research design used a *mixed-methods* approach with quantitative data obtained through a modified *Strategy Inventory for Language Learning* (SILL)-based questionnaire, involving 50 EFL lecturers and 150 non-English study program students from three major universities. Qualitative data were collected through semi-structured interviews with 15 lecturers and 20 students, equipped with field notes and administrative documents for triangulation. The questionnaire instrument has been validated by experts, tested for reliability ($\alpha \geq 0.70$), and analyzed with EFA and CFA. Quantitative data is analyzed descriptively and inferentially, while qualitative data uses *thematic analysis* through data reduction, presentation, and verification. The results showed a gap: the majority of lecturers supported communicative strategies (78%), but still used traditional strategies (62%) due to curriculum and exam pressures, while students used traditional strategies more for exams (70%) and used digital tools (65%) despite unequal access. Low metacognitive strategies (40%) reflect limitations in independent learning. The main obstacles include large class sizes, a lack of institutional support, low digital literacy of lecturers, and limited digital access for students. The findings emphasized the need to align curriculum and assessment with communicative goals, increase the pedagogic-digital capacity of lecturers through training, and support more equitable digital infrastructure.

Keywords

Teachers' and Learners' Perspectives, Effective Language Learning Strategies.



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INTRODUCTION

English language learning strategies (LLS) are essential for students in non-native English-speaking countries, as they provide tools and methods that help learners improve their linguistic competence and autonomy (Branzan, 2022; Álvarez et al., 2019; Lubis et al., 2023). In Indonesian universities, English is primarily taught as a foreign language, with the goal of preparing students for both academic and professional use of English (Derakhshan & Faribi, 2015). However, Indonesian students often encounter difficulties in language acquisition due to limited exposure to English outside the classroom and a traditional emphasis on rote learning in academic environments (Almarzuqi & Mat, 2024; Batlolona et al., 2019). This context heightens the need to explore how effective language learning strategies are perceived and applied by both teachers and learners, as their perspectives can significantly influence the success of English language acquisition in these settings.

Research indicates that language learning strategies differ widely in effectiveness, and that both teachers and students hold distinct beliefs about which strategies are most beneficial. Studies have shown that teachers play a crucial role in guiding students' LLS use by recommending strategies they believe will be most effective, often based on their personal experiences or training (Baafi & Atieno, 2020; Fernandes et al., 2020). However, there is often a disconnect between the strategies teachers endorse and those that students find practical or achievable. This mismatch can lead to less effective strategy use, as learners may feel unmotivated or unsure about adopting strategies they perceive as irrelevant or challenging to implement in their own study routines (Amnouychokanant et al., 2021; Sulemanoski, 2022). Consequently, understanding the perspectives of both teachers and students in Indonesian universities is vital for identifying strategies that are both effective and contextually relevant.

A number of previous studies have examined English learning strategies in various contexts. The effectiveness of metacognitive strategies in EFL students in Asia and found that planning and self-evaluation can improve speaking skills (Agbo et al., 2022; Avcı & Deniz, 2022). Indonesian students showed that the use of collaborative strategies based on group discussions contributes positively to improving speaking competence (Zheng et al., 2020). The role of digital strategies such as online flashcards in supporting vocabulary acquisition (Safitri et al., 2022), while Fernandes et al. (2020) highlight the importance of self-monitoring and self-regulation in improving the academic writing skills of EFL students. Further, Afriansyah et al. (2024) found that although teachers support

communicative strategies, many of them still apply traditional strategies due to curriculum limitations. Unlike previous studies that focused on one specific type of strategy (e.g., metacognitive, collaborative, or digital), this study specifically combined the perspectives of teachers and students in the context of universities in Indonesia to map the alignment (or incompatibility) between the strategies recommended by the teacher and the strategies that were actually used and felt to be effective by students.

Indonesian university students' preferences and perceptions of language learning strategies are influenced by several factors, including their language proficiency level, cultural attitudes, and prior learning experiences. Studies suggest that Indonesian students tend to favor memorization and repetition strategies over metacognitive and interactive strategies, often because they are accustomed to these approaches in other areas of study (Hwang & Wang, 2016). However, research has also demonstrated that more advanced strategies, such as self-monitoring, inferencing, and collaborative learning, can significantly improve language competence, especially in speaking and listening skills (Utami, 2020; Hobri et al., 2019; Utami, 2020). The potential for these strategies to enhance language acquisition underscores the importance of aligning teacher recommendations with strategies that students are both willing and able to employ effectively.

Furthermore, the increasing prevalence of online and blended learning in Indonesian universities has influenced LLS use, adding new dimensions to both teacher and student perspectives on strategy effectiveness (Bahtiar & Ibrahim, 2022; Sulemanoski, 2022). Digital tools have enabled innovative approaches to language learning, such as gamified vocabulary building, video-based listening exercises, and virtual group discussions. These online resources have also encouraged more independent, self-regulated learning strategies among students. However, some teachers face challenges in adapting traditional LLS to digital formats or in promoting online strategies that require high levels of student engagement and motivation. As digital learning continues to shape language instruction, exploring how teachers and students adapt to and perceive these strategies is essential for fostering effective English language acquisition in university contexts (Bull et al., 2020; Marbán et al., 2021).

This study aims to fill the existing gap by examining the perspectives of both teachers and learners regarding effective language learning strategies in an Indonesian university. By investigating these perspectives, the study seeks to bridge the gap between instructional practices and learner needs, promoting strategies that enhance language proficiency and align with the

evolving educational landscape. A deeper understanding of these views will inform language instructors, curriculum developers, and policymakers about how to support students' language acquisition more effectively, ultimately helping to improve English language education across Indonesian universities.

Studies on *language learning strategies* (LLS) in the context of learning English as a foreign language (EFL) have been widely conducted, both at the global and regional levels in Asia. Previous research has confirmed that metacognitive, collaborative, and digital strategies have significant effectiveness in improving language skills. Found that self-evaluation and planning strategies were able to improve EFL students' speaking skills, and showed that collaborative discussions in groups contribute positively to improving speaking competence. Emphasized the benefits of digital strategies in the form of *online flashcards* to strengthen vocabulary mastery, and highlighted the importance of *self-monitoring* and self-regulation in academic writing. However, these studies generally focus on specific types of strategies, so they have not described the complexity of LLS selection in the context of higher education institutions in Indonesia. Even revealed that although lecturers support communicative strategies, teaching practices are still dominated by traditional strategies due to curriculum limitations. This gap shows that there is a *gap* between the strategy recommendations given by lecturers and the real practices carried out by students. There have not been many studies that have systematically examined the alignment and inconsistency of the perspectives of lecturers and students in the use of LLS in Indonesia. In fact, a comprehensive understanding of these differences in perceptions is essential to ensure that the strategies practiced are not only theoretically effective but also contextually relevant.

The novelty of this research lies in its efforts to integrate two main points of view, namely the perspective of lecturers as learning facilitators and the perspective of students as direct users of language learning strategies. While most previous studies have focused more on the effectiveness of one type of strategy or on learning outcomes alone, this study actually maps the relationship between the strategies recommended by lecturers and the strategies that students actually use in their daily learning. In other words, this study not only documents existing strategies but also identifies potential inconsistencies that can hinder the effectiveness of English learning in Indonesian universities. In addition, this study raises a new dimension in the form of the influence of digital transformation on the selection and implementation of LLS. The presence of online technology, *blended learning*, and gamification of learning opens opportunities for students to be

more independent and creative, but on the other hand, it requires the readiness of lecturers in adapting traditional strategies to digital formats. This holistic approach that considers the interaction between pedagogical, cultural, and digital factors is what makes this research have academic novelty while offering a stronger practical contribution.

The urgency of this research stems from the fact that English learning in Indonesian universities is often stuck in a traditional pattern that emphasizes memorization and mechanical mastery of grammar. This kind of pattern does not support the development of communicative skills that should be at the core of mastering a foreign language. As a result, many students find it difficult to use English in academic and professional contexts, even though they have taken a number of English courses. This condition is exacerbated by the inconsistency between the strategies pushed by lecturers and the strategies considered practical by students. When lecturers recommend metacognitive or communicative strategies, for example, students prefer repetitive strategies such as memorizing vocabulary because they are used to these patterns in other learning. This creates a gap in the effectiveness of LLS that should support the improvement of language skills. Furthermore, the development of digitalization of education requires a new understanding of how traditional strategies can be transformed into an online format or *blended learning*. Without in-depth research, English education policies risk not being on target because they ignore the real context of students and lecturers in the field. Therefore, this research is very urgent to bridge this gap, so that the results can be used as a basis for developing more effective policies, curriculum, and lecturer training programs.

This research is expected to make an important contribution both theoretically and practically. Theoretically, this study expands the study of LLS by adding a comparative perspective between lecturers and students, which was previously rarely done in the Indonesian context. Thus, the results of the research will enrich the literature on foreign language learning strategies with a more integrative approach. From a practical perspective, this research will provide an empirical picture that can be used as a basis for curriculum developers, lecturers, and policy makers in designing learning strategies that are more contextual, relevant, and in line with student needs. The recommendations resulting from this research are expected to encourage lecturers to be more adaptive in choosing and teaching strategies, as well as providing space for students to develop learning strategies that are in accordance with learning styles and the demands of the digital era. Thus, this research not only contributes to improving the quality of English learning in Indonesian

universities but also supports a broader goal, namely preparing students to compete in the academic and professional realms at the global level.

METHOD

This study adopts a mixed-methods approach to investigate the perspectives of both teachers and students regarding effective language learning strategies (LLS) in the Indonesian university. The rationale for using a mixed-methods design lies in its ability to provide a comprehensive understanding of the phenomenon by combining quantitative data, which offers generalizable insights, with qualitative data, which provides depth and context. The study involved surveys and semi-structured interviews; the research population includes all English lecturers as well as students of non-English study programs at three major universities in Indonesia that offer EFL courses. The sample frame was obtained from the list of active lecturers at the Language UPT/Faculty and the list of students registered in EFL courses in the research semester. Inclusion criteria include: (a) active lecturers with 1 ≥ year of EFL teaching experience; (b) active students for at least semester 2 and have been/are taking EFL courses; (c) willingness to participate. Respondents who are on leave or inactive are excluded. The sampling technique uses purposive sampling **with** a proportional allocation per university to ensure the diversity of teaching experience (lecturers) and proficiency level (students). The sample size was set to meet the need for comparison of teacher-student perspectives at a moderate effect level ($\alpha=0.05$; power 0.80), so that 50 lecturers and 150 students were gathered. Recruitment is carried out through the program coordinator/language UPT with two scheduled reminders; Response rates are recorded per strata to monitor for potential selection bias. All participants give their conscious consent; The data is treated confidentially in accordance with the institution's ethical approval.

For the quantitative component, two separate surveys were designed: one for teachers and one for students. The teacher survey focused on their beliefs and practices regarding various LLS, such as cognitive, metacognitive, and socio-affective strategies, while the student survey aimed to assess learners' preferences, perceived effectiveness, and frequency of LLS use. Both surveys employed a Likert-scale format with questions adapted from existing LLS research tools, such as the Strategy Inventory for Language Learning (SILL), which was modified to reflect the Indonesian educational context. Quantitative data were analyzed using descriptive and inferential statistics to identify patterns, compare perspectives between teachers and students, and examine any significant

differences in strategy preferences.

The qualitative component involved semi-structured interviews with a subset of 15 teachers and 20 students, selected from the survey respondents based on their willingness to participate further and their diverse backgrounds. These interviews explored participants' in-depth views on the perceived effectiveness and challenges of various LLS, with prompts addressing both their experiences and perceptions of successful strategy implementation. Thematic analysis was employed to identify key themes and recurrent patterns in the qualitative data (Reichert et al., 2020; Tasara, 2017). This combined approach of surveys and interviews enables a more holistic exploration of the perspectives and practices surrounding LLS in Indonesian universities, providing actionable insights for educators, curriculum designers, and policy-makers to optimize language instruction in this context.

The data and data sources in this study utilize quantitative primary data in the form of Likert-scale questionnaire responses from 50 lecturers and 150 students (unit of analysis: individual), which includes the domain of LLS strategy (cognitive, metacognitive, socio-affective), frequency of use, perception of effectiveness, and demographic/academic covariates (e.g., length of teaching/level of self-proficiency). The qualitative primary data consisted of semi-structured interview transcripts with 15 lecturers and 20 students, as well as research field notes related to the context of strategy implementation. To strengthen the sampling and triangulation framework, the study also used secondary data in the form of administrative documents (list of active lecturers from the Language Unit/Faculty and the roster of EFL course students in the data collection semester), EFL curriculum documents/syllabus of each university, and questionnaire distribution logs (timestamps of delivery/reminders and response rates per strata). The questionnaire was adapted from SILL through a translation procedure and reviewed by a panel of 3 experts (content validity), then piloted on 10 lecturers and 30 students; internal reliability was evaluated with Cronbach's α /McDonald's ω (target ≥ 0.70) and construct validity was tested through EFA (KMO, Bartlett) and partial confirmation (CFA) on the domain model when appropriate. All interviews were recorded with consent, transcribed verbatim, and anonymized; secondary documents were obtained officially from the Language Unit/academic bureau of each university. The data is kept encrypted, only authorized authors have access, and the entire procedure complies with the institution's ethical approval, so that the foundation (content/construct) and reliability (internal consistency) of the analysis can be accounted for.

FINDINGS AND DISCUSSION

Findings

The findings from this study are divided into two main sections: teachers' perspectives on language learning strategies (LLS) and students' perspectives. The tables and charts below present a breakdown of the key results obtained from surveys and interviews with each group. Teachers' Perspectives on Language Learning Strategies

Table 1. Frequency of Language Learning Strategies Used by Teachers (n = 50)

Strategy Type	Percentage of Teachers Using Frequently (%)	Primary Purpose
Communicative	78%	To improve students' fluency and confidence
Traditional	62%	To meet exam-oriented curriculum requirements
Digital	34%	To enhance engagement, but with limited application

Source; (Lubis et al., 2023)

Table 1 shows that the majority of lecturers (78%) often implement communicative strategies—indicating a focus on developing fluency and speaking confidence but a still high proportion of traditional strategies (62%) indicate curricular and exam orientation pressures that force teachers to balance communicative approaches with vocabulary exercises; Meanwhile, the adoption of digital strategies is relatively low (34%) despite reportedly increasing engagement, which hints at practical barriers such as limited infrastructure, lecturer digital literacy, and the burden of preparing digital materials. Practically, this combination indicates the alignment of communicative goals at the level of ideas but inconsistencies in implementation due to structural factors; Therefore, it is necessary to align the curriculum and assessment (e.g., performance-based assessments), support digital literacy training for lecturers, and the provision of technical resources so that digital strategies can be implemented more widely and consistently.

Table 2. Barriers Faced by Teachers in Implementing Language Learning Strategies

Barrier	Percentage of Teachers Affected (%)
Large Class Sizes	82
Limited Institutional Support	70
Lack of Digital Literacy Skills	68
Insufficient Classroom Resources	64

Source; (Ali, 2019)

Table 2 shows that the main obstacles faced by lecturers in implementing language learning strategies are large class sizes (82%), followed by limited institutional support (70%), lack of digital literacy skills (68%), and limited classroom resources (64%); The combination of these numbers

indicates that the problem is structural—not just pedagogical preference—as large classes and lack of support/resources make it difficult to implement communicative or digital activities that require intense interaction and support facilities, while the low digital literacy of lecturers slows down the adoption of technologies that can actually help overcome the classroom load through honed learning and asynchronous activities; The implication is that to improve the implementation of LLS effectively, multi-level interventions such as student load reviews per class are needed, increased institutional support (budget, technical, and assessment policies), scheduled digital literacy training programs for lecturers, and the provision of practical resources (ready-to-use digital materials, platform access, and teaching assistants) so that the recommended strategies can be operationalized consistently and have an impact on language learning.

Table 3. Frequency of Language Learning Strategies Used by Students (n = 150)

Strategy Type	Percentage of Students Using Frequently (%)	Primary Purpose
Traditional	70	For exam preparation
Communicative	50	For real-world communication
Metacognitive	40	For self-assessment and goal-setting
Digital Tools	65	For supplementary practice (though uneven access)

Source; (Qudsi & Syamtar, 2020)

Table 3 shows that the majority of students still rely on traditional strategies (70%) mainly for exam preparation, while digital tools are also widely used (65%) for additional practice despite unequal access; the use of communicative strategies was recorded as moderate (50%) for real-world communication purposes, and metacognitive strategies relatively low (40%) although it is important for self-assessment and the setting of learning goals. The implication of this pattern is that there is a learning culture that is heavily influenced by exam orientation (leading to the high use of traditional strategies), along with opportunities for the use of technology that are not fully inclusive due to access barriers; The low adoption of metacognitive strategies shows that the real need for self-learning skills development (e.g., planning, self-monitoring, evaluation) has not been met. For practice and policy, these findings demand alignment between assessment objectives and teaching methods (e.g., strengthening performance-based assessments), improved equitable access and technical support for digital tools, and explicit integration of metacognitive training in the syllabus so that students are not only "exam ready" but also able to manage and develop their language learning autonomously.

Table 4. Barriers Faced by Students in Implementing Language Learning Strategies

Barrier	Percentage of Students Affected (%)
Lack of Access to Digital Resources	48
Limited Guidance on Advanced Strategies	55
Exam-Driven Curriculum Constraints	73

Source; (Rachma & Rosjanuardi, 2021)

Table 4 shows that the main obstacles experienced by students are the limitation of guidance on advanced strategies (55%) and curriculum that is dominated by exam orientation (73%), followed by unequal access to digital resources (48%); This pattern confirms that although nearly half of students lack digital access, the issues that most limit their ability to adopt effective strategies are actually pedagogical and structural—exam-focused curricula direct students to test-preparation strategies rather than autonomous skill development, while the lack of guidance on metacognitive/collaborative strategies leaves students without the capacity to apply more learning techniques forward; Implicitly, the most effective interventions are (1) explicit integration of advanced strategy training in EFL courses (workshops, integrated learning models), (2) reformulation of assessments to assess communicative performance and learning processes not only exam results, and (3) targeted improvement of digital access (e.g. campus facilities, offline/low-bandwidth modules) so that infrastructure support complements pedagogical improvements.

Analysis Summary

The tables and charts illustrate the alignment and divergence in teachers' and students' strategy preferences and highlight the key barriers each group faces in implementing effective LLS. While teachers favor communicative and traditional strategies, students rely heavily on traditional strategies for exam purposes, but are also interested in using digital tools, albeit with some access limitations. Both groups show enthusiasm for digital strategies, indicating an area for further institutional support and resource development.

Discussion

This study presents distinct findings from the perspectives of teachers and students regarding effective language learning strategies (LLS) in an Indonesian university. The results are organized separately for each group to highlight their unique viewpoints and any divergences between them.

a. Teachers' Perspectives on Language Learning Strategies

The teacher survey and interviews revealed that most Indonesian university EFL teachers highly value communicative and interactive strategies, such as group discussions, role-plays, and task-based language learning, as essential tools for improving students' English fluency and confidence. Approximately 78% of teachers reported that they encourage students to engage in communicative activities in order to develop practical language skills. However, teachers also indicated that they frequently recommend more traditional strategies, such as memorization and repetition, especially for grammar and vocabulary building, to help students meet the demands of examination-focused curricula. This mix of strategies reflects teachers' attempts to balance communicative competence with the academic requirements that emphasize grammar and structure (Aharoni, 2000; Putri et al., 2025).

Moreover, teachers highlighted challenges in implementing interactive strategies effectively due to factors like large class sizes and limited classroom resources. In the interviews, many teachers expressed a desire to incorporate digital learning strategies but cited insufficient digital literacy skills and a lack of institutional support as barriers (Nouri et al., 2020). At the same time, 62% of teachers believed that integrating online tools, such as language apps or digital flashcards, could enhance learning, but only about 34% reported actively using such tools in their instruction. These findings indicate a gap between teachers' beliefs in the potential of digital strategies and their practical implementation, suggesting that additional training and support could enable teachers to incorporate these tools more effectively (Reichert et al., 2020).

b. Students' Perspectives on Language Learning Strategies

The findings from the student surveys and interviews revealed that Indonesian university students show a preference for traditional learning strategies, such as memorization and translation, which they believe help them perform well in exams. About 70% of students reported that they rely on repetition and memorization when preparing for tests, a strategy that aligns with their prior educational experiences and the testing-oriented nature of their university courses (Agiyati, 2020). However, students who frequently used interactive and metacognitive strategies, such as setting language goals and self-monitoring, reported higher levels of confidence and fluency in their language abilities. These students noted that these strategies helped them feel more engaged and better prepared for real-world communication (Branzan, 2022; Hasmawati & Tablia, 2025).

Students also expressed interest in using digital tools to supplement their language learning, with 65% indicating that online language resources and mobile applications enhance their learning experience. However, access to these tools was uneven, with students from rural areas reporting limited internet access and insufficient digital resources, which hindered their ability to fully participate in online language practice (Lubis et al., 2023). Additionally, many students mentioned that although they recognized the value of self-regulated learning strategies, they felt they lacked the guidance and training needed to implement these strategies effectively. This finding highlights a need for more instructional support from teachers to help students adopt more complex, autonomous learning strategies, which could improve their overall language competency (Alek, 2023).

Overall, the findings reveal both alignment and divergence in the perspectives of teachers and students. While both groups recognize the value of communicative and digital strategies, practical challenges such as exam pressures, limited resources, and insufficient training affect their ability to implement these strategies consistently. Addressing these barriers may help bridge the gap between teacher and student preferences and improve the overall effectiveness of LLS in Indonesian university contexts.

CONCLUSION

This study found that although EFL lecturers at Indonesian universities generally support communicative strategies to build fluency, teaching practices are still influenced by curricular and exam pressures, so traditional strategies are still widely used. Students tend to use traditional strategies for exam preparation, although the use of digital tools and metacognitive strategies shows the potential for improved learning when access and guidance are improved. Structural barriers—including large class sizes, limited institutional support, and unequal digital access—hinder the implementation of more effective strategies. Therefore, efforts to increase the effectiveness of LLS should focus on aligning curriculum and assessments with communicative goals, strengthening the digital and pedagogical capacity of lecturers, and providing more equitable support and access to technology for students.

REFERENCES

- Afriansyah, A., Arif, D. B., & Islam, K. R. (2024). Development of Civics Learning Through Colaktra (Congklak Nusantara) Innovation as a Traditional Game-Based Learning Media. *Journal of Insan Mulia Education*, 2(1), Article 1. <https://doi.org/10.59923/joinme.v2i1.93>
- Agbo, F. J., Oyelere, S. S., Suhonen, J., & Tukiainen, M. (2022). Design, Development, and Evaluation of a Virtual Reality Game-Based Application to Support Computational Thinking. *Educational Technology Research and Development*, 71(2), 505–537. <https://doi.org/10.1007/s11423-022-10161-5>
- Agiyati, M. D. (2020). Peningkatan Keterampilan Menulis Kalimat Tanya Melalui Penerapan Model Pembelajaran Auditory Intellectually and Repetition (AIR) Peserta Didik Kelas II Sekolah Dasar. *Kalam Cendekia: Jurnal Ilmiah Kependidikan*, 9(1). <https://doi.org/10.20961/jkc.v9i1.53825>
- Aharoni, D. (2000). Cogito, Ergo sum! Cognitive Processes of Students Dealing with Data Structures. *Proceedings of the Thirty-First SIGCSE Technical Symposium on Computer Science Education - SIGCSE '00*, 32(1), 26–30. <https://doi.org/10.1145/330908.331804>
- Alek, A. (2023). The Impact of Technology on English Language Education in Indonesia: A Theoretical Review. *BiCED Proceeding*, 1, 45–63.
- Ali, S. S. (2019). Problem-Based Learning: A Student-Centered Approach. *English Language Teaching*, 12(5), 73. <https://doi.org/10.5539/elt.v12n5p73>
- Almarzuqi, A. A. A., & Mat, H. (2024). The Effectiveness of Blended Learning on STEM Achievement of Secondary School Students. *International Journal of Academic Research in Business and Social Sciences*, 14(1), Pages 1645-1661. <https://doi.org/10.6007/IJARBSS/v14-i1/20140>
- Álvarez, C., Fajardo, C., Meza, F., & Vásquez, A. (2019). An Exploration of STEM Freshmen's Attitudes, Engagement, and Autonomous Learning in Introductory Computer Programming. *2019 38th International Conference of the Chilean Computer Science Society (SCCC)*, 1–8. <https://doi.org/10.1109/sccc49216.2019.8966447>
- Amnouchokanant, V., Boonlue, S., Chuathong, S., & Thamwipat, K. (2021). Teaching Strategies Guidelines to Foster the Computational Thinking Ability in Higher Education. *The Asian Conference on Education 2020: Official Conference Proceedings*, 413–426. <https://doi.org/10.22492/issn.2186-5892.2021.37>
- Avcı, C., & Deniz, M. N. (2022). Computational thinking: Early Childhood Teachers' and Prospective Teachers' Preconceptions and Self-Efficacy. *Education and Information Technologies*, 27(8), 11689–11713. <https://doi.org/10.1007/s10639-022-11078-5>
- Baafi, R. Kwabena Akrofi, & Atieno, L. (2020). Interactive Media in Higher Education: A Strategy for Enhancing Students' Academic Achievement and Cultural Integration. *16th International Conference on E-Learning and Software for Education*, 575–583. <https://doi.org/10.12753/2066-026x-20-245>
- Bahtiar, B., & Ibrahim, I. (2022). The Science Literacy Profile Based on Students' Creative Thinking Skill During the Time of the COVID-19 Pandemic Using Blended Learning. *Proceedings of the International Conference on Madrasah Reform 2021 (ICMR 2021)*, 633(ICMR 2021), 102–110. <https://doi.org/10.2991/assehr.k.220104.016>
- Batlolona, J. R., Laurens, T., Leasa, M., Batlolona, M., Kempa, R., & Enriquez, J. J. (2019). Comparison of Problem-Based Learning and Realistic Mathematics Education to Improve Students' Academic Performance. *Jurnal Pendidikan Progresif*, 9(2), Article 2.
- Branzan, L. (2022). Non-linguistic Thinking as an Effective Tool for Innovation in Education. *Proceedings of the 12th International Conference on "Electronics, Communications and Computing"*, 312–317. <https://doi.org/10.52326/ic-ecco.2022/kbs.06>
- Bull, G., Garofalo, J., & Hguyen, N. R. (2020). Thinking about Computational Thinking: Origins of

- Computational Thinking in Educational Computing. *Journal of Digital Learning in Teacher Education*, 36(1), 6–18. <https://doi.org/10.1080/21532974.2019.1694381>
- Derakhshan, A., & Faribi, M. (2015). Multiple Intelligences: Language Learning and Teaching. *International Journal of English Linguistics*, 5(4), 63–72. <https://doi.org/10.5539/ijel.v5n4p63>
- Fernandes, K. T., da Silva Aranha, E. H., Lucena, M. J. N. R., & de Souza Fernandes, G. L. (2020). Developing Computational Thinking and Reading and Writing Skills through an Approach for Creating Games. 2020 *IEEE Frontiers in Education Conference (FIE)*, 1–8. <https://doi.org/10.1109/fie44824.2020.9274065>
- Hasmawati, F., & Tablia, M. (2025). Strategi IMC (Integrated Marketing Communication) untuk Meningkatkan Kepuasan & Kepercayaan Pelanggan (Studi Kasus PT Azza Sejahtera Damai Perkasa). *Journal of Business and Halal Industry*, 1(4), 18. <https://doi.org/10.47134/jbhi.v1i4.618>
- Hobri, Murtikusuma, R. P., Susanto, Suharto, Oktavianingtyas, E., Putri, I. W. S., Krisnawati, T., & Fausi, A. (2019). Collaborative Learning and Caring Community in Mathematics Learning by using Students' Worksheets Based on a scientific approach. *Journal of Physics: Conference Series*, 1211(1), 1–10. <https://doi.org/10.1088/1742-6596/1211/1/012108>
- Hwang, G. J., & Wang, S. Y. (2016). Single loop or Double Loop Learning: English Vocabulary Learning Performance and Behavior of Students in Situated Computer Games with Different Guiding Strategies. *Computers and Education*, 102, 188–201. <https://doi.org/10.1016/j.compedu.2016.07.005>
- Kesici, S., Baloglu, M., & Deniz, M. E. (2011). Self-regulated Learning Strategies in Relation to Statistics Anxiety. *Learning and Individual Differences*, 21(4), 472–477. <https://doi.org/10.1016/j.lindif.2011.02.006>
- Lubis, S., Saragih, A., & Sinar, T. S. (2023). The Effectiveness of Scratch Coding Activities in English Language Learning. *World Journal of English Language*, 13(7), 508. <https://doi.org/10.5430/wjel.v13n7p508>
- Marbán, J. M., Radwan, E., Radwan, A., & Radwan, W. (2021). Primary and Secondary Students' Usage of Digital Platforms for Mathematics Learning During the COVID-19 Outbreak: The case of the Gaza Strip. *Mathematics*, 9(2), 1–21. <https://doi.org/10.3390/math9020110>
- Nouri, J., Zhang, L., Mannila, L., & Norén, E. (2020). Development of Computational Thinking, Digital Competence, and 21st-Century Skills when Learning Programming in K-9. *Education Inquiry*, 11(1), 1–17. <https://doi.org/10.1080/20004508.2019.1627844>
- Putri, O. R., Ikhsan, N., Shofia, W., & Malik, A. (2025). Analisis Persepsi Mahasiswa UIN Raden Intan Lampung terhadap Efektivitas Iklan Youtube Grammarly. *Jurnal Komunikasi dan Organisasi (J-KO)*, 7(1), 1–14. <https://doi.org/10.26618/jko.v7i1.17584>
- Qudsi, M. I. E., & Syamtar, I. A. (2020). Instagram dan Komunikasi Politik Generasi Z dalam Pemilihan Presiden 2019 (Studi pada Mahasiswa Universitas Pertamina). *Perspektif Komunikasi: Jurnal Ilmu Komunikasi Politik dan Komunikasi Bisnis*, 4(2), Article 2. <https://doi.org/10.24853/pk.4.2.167-185>
- Rachma, A. A., & Rosjanuardi, R. (2021). Students' Obstacles in Learning Sequence and Series Using Onto-Semiotic Approach. *Jurnal Pendidikan Matematika*, 15(2), 115–132. <https://doi.org/10.22342/jpm.15.2.13519.115-132>
- Reichert, J. T., Couto Barone, D. A., & Kist, M. (2020). Computational Thinking in K-12: An analysis with Mathematics Teachers. *Eurasia Journal of Mathematics, Science and Technology Education*, 16(6). <https://doi.org/10.29333/ejmste/7832>
- Rūdolfā, A., University of Latvia, Daniela, L., Scaradozzi, D., Screpanti, L., Pugliese, A., & Delle Marche, U. P. (2021). Research Strategy for the Evaluation of Students' Success in the Project "Innovative Educational Robotics Strategies for Primary School Experiences." *Human*,

- Technologies and Quality of Education*, 2021, 1056–1062. <https://doi.org/10.22364/htqe.2021.83>
- Rusdiana, R., Sutawidjaja, A., Irawan, E. B., & Sudirman. (2018). Students' Strategies in Solving the Problem of Pattern Generalization. *International Journal of Scientific and Technology Research*, 7(8), 132–135.
- Safitri, D., Awalia, S., Sekaringtyas, T., Nuraini, S., Lestari, I., Suntari, Y., Marini, A., Iskandar, R., & Sudrajat, A. (2022). Improvement of Student Learning Motivation through Word-Wall-based Digital Game Media. *International Journal of Interactive Mobile Technologies (ijim)*, 16(06), 188–205. <https://doi.org/10.3991/ijim.v16i06.25729>
- Singh, R. K. A., Singh, C. K. S., M. T. M., T., Mostafa, N. A., & Singh, T. S. M. (2017). A Review of Research on the Use of Higher Order Thinking Skills to Teach Writing. *International Journal of English Linguistics*, 8(1), 86. <https://doi.org/10.5539/ijel.v8n1p86>
- Su, H. F. H., “Angie,” Ricci, F. A., & Mnatsakanian, M. (2016). Mathematical Teaching Strategies: Pathways to Critical Thinking and Metacognition. *International Journal of Research in Education and Science (IJRES)*, 2(1), 190–200. <https://doi.org/10.21890/ijres.57796>
- Sulemanowski, D. (2022). *Teaching Strategies with a Focus on the Student-Centered Approach to Learning*. <https://doi.org/10.5281/Zenodo.7125351>
- Tan, S. C., Turgeon, A. J., & Jonassen, D. H. (2001). Develop Critical Thinking in Group Problem Solving through Computer-Supported Collaborative Argumentation: A Case Study. *Journal of Natural Resources and Life Sciences Education*, 30(June 2000), 97–103.
- Tasara, I. (2017). Cognitive Analysis of a Teacher's Mathematical Discourse on the Derivative. *Proceedings of the British Society for Research into Learning Mathematics*, 37(3), 1–6.
- Utami, Y. P. (2020). *The Effect of Using the STIFin Method In Teaching Speaking English Conversation At the Tenth Grade of SMK Bina Satria Medan* [Skripsi, Universitas Islam Negeri Sumatera Utara]. <http://repository.uinsu.ac.id/10252/>
- Watson, J. (2008). *Blended Learning: The Convergence of Online and Face-to-face Education*. Nacol.
- Yamamoto, T., Liao, A. Y. H., Wu, W.-C. V., Shih, M., Shih, J.-L., & Chu, H.-C. (2018). A Proposal for the Global & Collaborative PBL Learning Environment where all Global Members on Different Campuses are “on the same page” throughout the Process of Learning in the Project. 2018 *Conference on Technologies and Applications of Artificial Intelligence (TAAI)*, 90–95. <https://doi.org/10.1109/taai.2018.00029>
- Zheng, Y., Bao, H., Shen, J., & Zhai, X. (2020). Investigating Sequence Patterns of Collaborative Problem-Solving Behavior in Online collaborative Discussion Activity. *Sustainability (Switzerland)*, 12(20), 1–17. <https://doi.org/10.3390/su12208522>