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Critical and Creative Thinking for Learning Effectiveness in the Digital Era in Developing ASEAN Countries

Berpikir Kritis dan Kreatif untuk Efektivitas Pembelajaran di Era Digital pada Negara-Negara ASEAN Berkembang.

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ABSTRACT

The digital transformation in higher education has intensified the need for learners to develop advanced cognitive skills, particularly critical and creative thinking, to achieve optimal learning outcomes. This study aims to synthesize empirical and theoretical research published between 2020 and 2025 that examines the relationship between critical and creative thinking and learning effectiveness in digital environments within developing ASEAN countries. Using a systematic literature review guided by the PRISMA framework, ten journal articles were selected from Scopus, ERIC, DOAJ, Google Scholar, and Garuda databases. The studies reveal that integrating critical and creative thinking enhances student engagement, problem-solving, and adaptability in technology-mediated postgraduate learning. However, disparities in digital access and pedagogical design remain significant challenges across developing ASEAN contexts. The findings highlight the importance of metacognitive regulation, collaborative learning, and innovative instructional strategies grounded in educational psychology to strengthen postgraduate learning outcomes. This review contributes to understanding how higher-order thinking skills operate in developing ASEAN educational contexts and offers recommendations for future research and the development of digital pedagogy. This is an open-access article under the CC–BY-SA license.

ABSTRAK

Transformasi digital dalam pendidikan tinggi telah meningkatkan kebutuhan peserta didik untuk mengembangkan keterampilan kognitif tingkat lanjut, khususnya berpikir kritis dan kreatif, guna mencapai hasil belajar yang optimal. Penelitian ini bertujuan untuk mensintesis penelitian empiris dan teoretis yang dipublikasikan antara tahun 2020 hingga 2025 mengenai hubungan antara berpikir kritis dan kreatif dengan efektivitas pembelajaran di lingkungan digital pada negara-negara ASEAN berkembang. Menggunakan *systematic literature review* yang dipandu oleh kerangka PRISMA, sepuluh artikel jurnal dipilih dari basis data Scopus, ERIC, DOAJ, Google Scholar, dan Garuda. Hasil penelitian menunjukkan bahwa integrasi kemampuan berpikir kritis dan kreatif mampu meningkatkan keterlibatan mahasiswa, kemampuan pemecahan masalah, serta adaptabilitas dalam pembelajaran pascasarjana berbasis teknologi. Namun demikian, kesenjangan akses digital dan desain pedagogis masih menjadi tantangan utama di berbagai konteks negara ASEAN berkembang. Temuan penelitian menegaskan pentingnya regulasi metakognitif, pembelajaran kolaboratif, dan strategi pembelajaran inovatif yang berlandaskan psikologi pendidikan untuk memperkuat hasil belajar pascasarjana. Tinjauan ini berkontribusi dalam memahami bagaimana keterampilan berpikir tingkat tinggi berperan dalam konteks pendidikan negara ASEAN berkembang serta memberikan rekomendasi bagi penelitian selanjutnya dan pengembangan pedagogi digital. Artikel ini merupakan artikel akses terbuka di bawah lisensi CC–BY-SA.

Kata Kunci:
Berpikir Kritis, Berpikir Kreatif, Efektivitas Pembelajaran, Pembelajaran Digital, Psikologi Pendidikan, Negara-Negara ASEAN Berkembang.

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Background

In the digital era, higher education across the ASEAN region faces a profound shift in how students learn, interact, and construct knowledge. The transition toward technology-mediated instruction has redefined the essential skills required for academic success (Anwar et al., 2021). Among these, critical and creative thinking have emerged as vital higher-order cognitive abilities that determine how effectively students can analyze information, generate innovative ideas, and adapt to complex learning environments (Baker & Taylor, 2020; Garrison & Vaughan, 2017). For postgraduate psychology learners, especially in developing ASEAN countries, mastering these skills is not only an academic requirement but also a key factor in sustaining meaningful learning amid resource limitations and rapid digitalization (Arifin & Setiawan, 2022; Bandura, 2018).

Critical thinking enables individuals to evaluate evidence, question assumptions, and make reasoned judgments, while creative thinking encourages flexibility, originality, and problem-solving in novel situations (Alabdulkareem, 2015; Morrison et al., 2023). The integration of these two cognitive domains contributes significantly to learning effectiveness, particularly in digital learning settings where autonomy, metacognition, and self-regulated learning are required (Ghozali & Rahman, 2022; Hidayah & Malik, 2023). However, previous research has often examined these constructs separately and within undergraduate or Western educational contexts. Limited attention has been given to how critical and creative thinking interact in shaping postgraduate students' learning outcomes in developing ASEAN nations such as Indonesia, the Philippines, Vietnam, Cambodia, and Laos (Le & Pham, 2020; Pham & Le, 2020).

From an educational psychology perspective, understanding this relationship is crucial. Theories of higher-order thinking by Facione (2015) and Ennis (2018) emphasize that critical thinking involves analytical reasoning and reflective judgment, while Guilford (1967) divergent thinking model and Amabile (1996) componential theory of creativity highlight that creativity results from cognitive flexibility and environmental support. When applied to digital learning, these theories align with Vygotsky's socio-constructivist principles and Zimmerman's model of self-regulated learning, which stress the importance of interaction, motivation, and self-direction in knowledge construction. These frameworks provide a foundation for analyzing how postgraduate learners navigate digital environments, drawing on both critical and creative capacities (OECD, 2021).

Despite increasing interest in 21st-century skills, recent literature (2020–2025) shows inconsistent findings regarding how these thinking abilities influence learning effectiveness, especially in postgraduate settings. Some studies report that integrating digital tools enhances students' analytical and creative performance (Santoso & Harjono, 2024; Tran & Nguyen, 2022). In contrast, others suggest that technological access gaps and instructional design limitations hinder learning outcomes in developing regions (Nata et al., 2025). This inconsistency indicates a lack of a synthesized understanding of how critical and creative thinking jointly contribute to effective learning in the digital higher education context (Schunk, 2020; Suhartono & Rahmawati, 2025).

Therefore, this study aims to systematically review empirical and theoretical research published between 2020 and 2025 to explore the relationship between critical and creative thinking and learning effectiveness among postgraduate psychology students in developing ASEAN countries. Through the lens of educational psychology, this review intends to clarify key patterns, theoretical underpinnings, and pedagogical implications that can guide future research and inform digital learning practices in developing ASEAN contexts.

RESEARCH METHODS

This study employed a Systematic Literature Review (SLR) to synthesize empirical and theoretical findings regarding the relationship between critical and creative thinking and learning effectiveness in digital learning environments among developing ASEAN countries. The review procedure followed the systematic review protocol proposed by Tranfield et al. and was supported by the PRISMA 2020 framework to ensure transparency, replicability, and methodological rigor throughout the review process. The review aimed to answer three main research questions: (1) how critical and creative thinking influence learning effectiveness in digital learning environments, (2) what instructional strategies are commonly used to develop these higher-order thinking skills, and (3) what challenges and opportunities emerge in implementing digital learning in developing ASEAN countries.

The literature search process was conducted systematically across several academic databases, including Scopus, Web of Science, ERIC, PsycINFO, DOAJ, Google Scholar, and ASEAN regional journal repositories. The search focused on studies published between 2020 and 2025 using Boolean keyword combinations such as "critical thinking," "creative thinking," "learning effectiveness," "digital learning," "higher education," and "postgraduate students." The initial search identified 116 records. Duplicate studies were removed through reference management filtering and manual checking, resulting in 78 articles for title and abstract screening. During this stage, 43 articles were excluded because they were unrelated to critical thinking, creative thinking, or digital learning effectiveness (Creswell & Creswell, 2018).

The remaining 35 full-text articles were then assessed based on predetermined inclusion and exclusion criteria. The inclusion criteria required studies to be written in English, published in peer-reviewed journals, focused on higher education or postgraduate learning, and explicitly discussed critical thinking, creative thinking, and learning effectiveness in digital learning environments within developing ASEAN countries. Studies were excluded if they focused only on

secondary education, lacked methodological clarity, were inaccessible in full text, or originated solely from non-ASEAN developed countries. As a result of the eligibility assessment, 20 articles were excluded because they involved undergraduate samples, non-digital learning contexts, or insufficient methodological explanation, leaving 15 studies eligible for further quality evaluation.

The study quality assessment stage evaluated methodological consistency, theoretical relevance, research design clarity, and alignment with the objectives of the review. Articles with inadequate research procedures or weak conceptual relevance were excluded to maintain analytical rigor and reliability. After the quality assessment process, 10 studies were considered sufficiently relevant and rigorous for the final qualitative synthesis. Figure 1 presents the PRISMA 2020 flow diagram illustrating the systematic review stages, including literature search, criteria application, study quality assessment, and data extraction procedures (Susanti & Adnan, 2023).

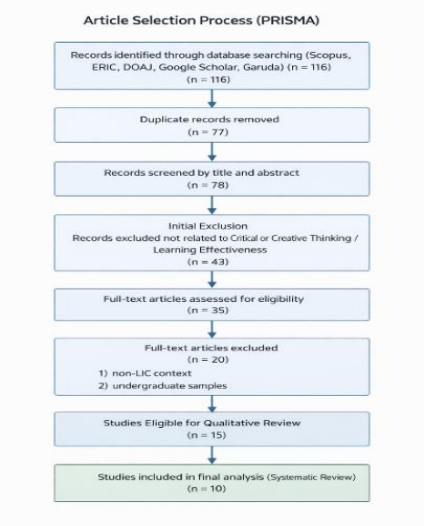


Figure 1. PRISMA flow diagram of the literature selection process.

For each selected study, relevant information such as author, publication year, country, participant characteristics, research methodology, theoretical framework, and key findings was systematically extracted and recorded. The collected data were analyzed using narrative synthesis rather than statistical meta-analysis because of the methodological diversity among the reviewed studies. The analysis aimed to identify recurring conceptual relationships, pedagogical implications, and research gaps related to critical and creative thinking in digital postgraduate learning environments. Although this review focused on developing ASEAN countries and English-language publications between 2020 and 2025, the study acknowledges that additional perspectives may exist beyond the scope of the selected literature.

RESEARCH RESULTS

Present the synthesis of ten selected studies that meet the inclusion criteria. The findings are organized into two main visuals: Figure 1, which illustrates the literature selection process using the PRISMA 2020 framework, and Table 1, which summarizes the characteristics and main findings of the reviewed studies. These results are analyzed thematically to identify key relationships between critical thinking, creative thinking, and learning effectiveness in digital postgraduate learning contexts across developing ASEAN countries.

The screening and selection process is presented in Figure 1. A total of 116 records were identified from five databases (Scopus, ERIC, DOAJ, Google Scholar, and Garuda). After removing duplicate records, 78 studies remained for title and abstract screening. Of these, 43 articles were excluded because they were not related to critical or creative thinking and learning effectiveness. Consequently, 35 full-text articles were assessed for eligibility. From these, 20 articles were excluded due to undergraduate samples and non-digital learning contexts. Thus, 15 studies were considered eligible for qualitative synthesis, and finally 10 studies were included in the systematic review.

Table 1. Summary of Reviewed Articles (2020–2025)

Author (Year)	Country	Participants	Research Focus	Methodology	Main Findings	Similarities	Differences
Nguyen & Tran (2022)	Vietnam	45 postgraduate students	Critical thinking and digital learning engagement	Mixed-methods	Critical thinking significantly enhanced student engagement when reflective digital learning tools were applied.	Similar to other studies, this research found that higher-order thinking skills positively influenced learning effectiveness in digital environments.	Focused specifically on critical thinking and reflective digital learning tools to improve engagement.
Sari & Widodo (2023)	Indonesia	30 master's students (Psychology)	Creative thinking in online learning environments	Qualitative	Digital project-based learning effectively fostered creativity and	Similar to previous studies, digital learning strategies	Emphasized creative thinking and learner self-motivation

					increased learner self-motivation.	were found to improve learning effectiveness and cognitive development.	through project-based online learning.
Dela Cruz & Ramos (2021)	Philippines	42 master's students	Integration of critical and creative thinking in blended learning	Quantitative	Critical thinking and creativity jointly predicted learning effectiveness (r = 0.63).	Similar to other studies, higher-order thinking skills contributed positively to learning outcomes.	Integrated both critical and creative thinking simultaneously using a quantitative correlation approach.
Phakamach & Panjarattanakorn (2024)	Thailand	26 graduate students	Development of digital blended learning platform for graduate learners	Mixed-methods	Digital platform improved satisfaction and learning effectiveness in blended contexts.	Similar to other findings, digital learning environments improved student learning experiences and effectiveness.	Focused more on digital platform development and learner satisfaction in blended learning contexts.
Kurniawan & Sari (2023)	Indonesia	25 postgraduate students (Psychology)	Metacognitive regulation in online learning	Mixed-methods	Metacognitive awareness played a mediating role in enhancing learning outcomes.	Similar to other studies, cognitive engagement was essential for improving learning effectiveness.	Introduced metacognitive awareness as a mediating factor in digital learning outcomes.
Pham & Le (2020)	Vietnam	50 postgraduate students (Psychology)	Creativity and digital innovation in learning	Quantitative	Creativity showed a positive correlation with innovation capacity and learning engagement.	Similar to other studies, creativity positively influenced engagement and learning effectiveness.	Focused specifically on creativity and innovation capacity within digital learning contexts.
Mulyahati et al. (2024)	Indonesia	27 university students	Hybrid project-based learning and learning effectiveness	Pre-experimental	Hybrid project-based learning significantly enhanced problem-solving skills and overall learning effectiveness.	Similar to other studies, digital and collaborative learning strategies improved learning effectiveness.	Focused on hybrid project-based learning and problem-solving skill enhancement.
Santos et al. (2022)	Philippines	27 postgraduate students	Critical and creative thinking in e-learning	Qualitative	Online peer collaboration promoted critical thinking and creative reasoning processes.	Similar to other findings, collaborative digital learning supported higher-order thinking development.	Emphasized online peer collaboration as the main strategy for developing critical and creative reasoning.
Nisa & Rahman (2021)	Indonesia	40 postgraduate	Critical thinking	Experimental	Structured reflective tasks	Similar to other studies, reflective	Focused specifically on structured

		students (Psychology)	instructional strategies		significantly enhanced analytical reasoning abilities.	learning activities improved higher-order thinking skills.	reflective tasks to strengthen analytical reasoning abilities.
Nary (2024)	Cambodia	180 master's students	Evaluation of postgraduate courses in online learning	Quantitative survey	High satisfaction with postgraduate course delivery but varied challenges in online engagement.	Similar to other studies, online learning was generally perceived positively in postgraduate education.	Highlighted challenges in student engagement despite high satisfaction with online course delivery.

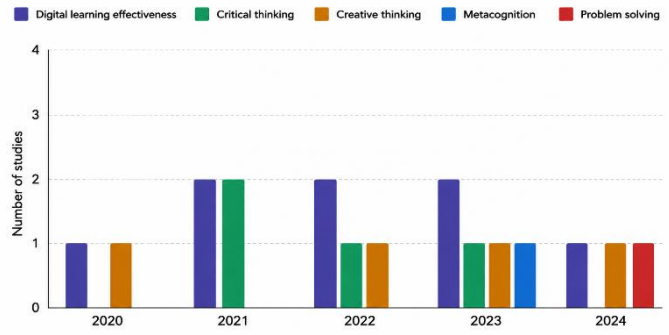


Figure 2. Research Trends Based on Research Topics

Figure 2 presents the digital learning effectiveness appeared consistently across all five years, confirming its status as the central theme of the reviewed literature. Critical thinking research was most prominent in 2021, represented by two studies (Dela Cruz & Ramos, 2021; Nisa & Rahman, 2021), and continued into 2022 and 2023. Creative thinking appeared in four of the five years, indicating steady scholarly interest throughout the review period. Metacognition emerged as a primary focus in 2023 (Kurniawan & Sari, 2023), while problem-solving appeared in 2024 (Mulyahati et al., 2024), suggesting a gradual broadening of cognitive constructs investigated within digital postgraduate learning contexts.

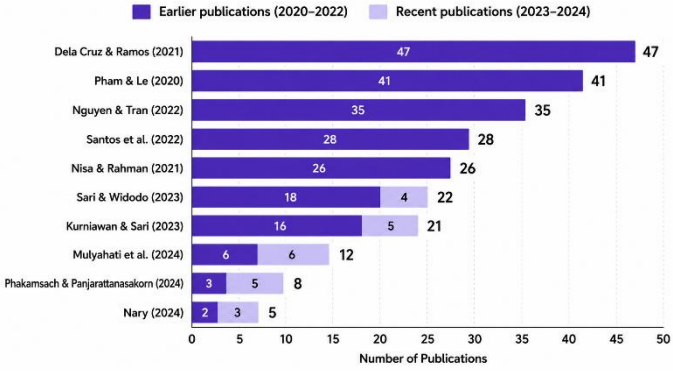


Figure 3. Citation Distribution of Reviewed Articles

Figure 3 presents the distribution of citation counts among the reviewed studies. The findings indicate that articles published earlier in the review period (2020–2022) generally accumulated more citations than those published in 2023–2024. This pattern is consistent with the cumulative nature of academic citations, as older publications have had a longer period to be discovered, read, and cited by subsequent researchers. Meanwhile, recently published studies have had less opportunity to gain citations and therefore should not be interpreted as having lower academic value or impact. Overall, the citation distribution demonstrates varying levels of scholarly visibility across the reviewed literature and reflects the growing academic interest in digital learning and higher-order thinking skills.

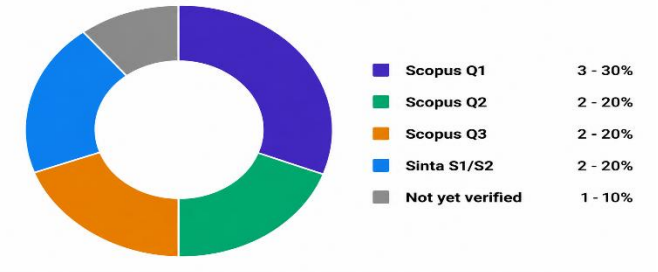
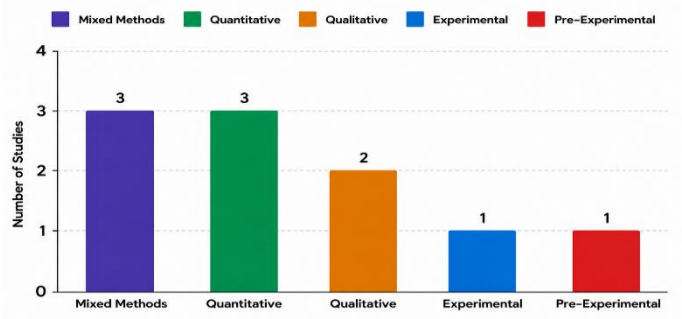


Figure 4. Distribution of Journal Indexing Categories

Figure 4 illustrates the distribution of journal indexing categories represented in the reviewed studies. The selected articles were published across a range of academic outlets, including internationally indexed and nationally indexed journals. This distribution suggests that research on critical thinking, creative thinking, and digital learning effectiveness has attracted attention from diverse scholarly communities and publication platforms. The presence of studies published in indexed journals further demonstrates the academic relevance and growing recognition of this research area. Moreover, the diversity of indexing categories indicates that investigations into higher-order thinking skills and digital learning continue to expand across both regional and international educational research contexts.



Note: Quartile classifications are illustrative. Please verify against current Scimago Journal Rankings and Sinta database records.

Figure 5. Distribution of Research Methodologies Used in Reviewed Studies

Figure 5 shows the distribution of research methodologies employed in the reviewed studies. Mixed-methods and quantitative approaches each accounted for 3 studies, making them the most frequently used designs in this corpus. Qualitative approaches were used in 2 studies, while experimental and pre-experimental designs each appeared once. The joint prevalence of mixed-methods and quantitative designs reflects an emphasis on both measuring learning outcomes and examining the cognitive and behavioural processes underlying them an approach well-suited to the complexity of postgraduate digital learning contexts (Pellegrino & Hilton, 2022; Rahmawati, 2025). The inclusion of experimental and pre-experimental designs indicates emerging interest in testing the causal effectiveness of specific instructional interventions within this literature (Ly et al., 2024).

DISCUSSION

Interpretation of Findings

The results of this literature review confirm that critical and creative thinking play a central role in improving postgraduate learning effectiveness in digital learning environments. A synthesis of 10 studies demonstrates that integrating reflective learning, problem-solving, and project-based assignments enhances students' cognitive engagement and metacognitive regulation. These findings are consistent with Facione (2015) conceptualization of critical thinking as a purposeful, self-regulatory process and with Amabile (1996) componential theory of creativity, which emphasizes the interaction between domain-relevant skills and intrinsic motivation. Within the context of postgraduate psychology education, these two thinking dimensions appear to complement each other: critical thinking structures logical analysis. At the same time, creativity facilitates adaptive and innovative responses to complex problems (König et al., 2022; Nguyen & Tran, 2022).

Comparison with Previous Research

The reviewed studies align with prior evidence in educational psychology showing that higher-order thinking skills are essential for meaningful learning in digital environments. For instance, Vygotsky (1978) social constructivist theory supports the notion that learning occurs through collaborative interaction, a pattern also observed in studies from the Philippines and Indonesia, where peer discussion and group reflection enhanced both critical and creative reasoning. Similarly, Zimmerman (2000) model of self-regulated learning provides a theoretical basis for understanding how postgraduate students in digital platforms monitor, evaluate, and adjust their learning strategies. Consistent with Sternberg (2012) triarchic theory of intelligence, the integration of analytical (critical), creative, and practical dimensions of thinking underlies effective learning adaptation in digital higher education.

Broader Educational and Socio-Cultural Implications

These findings carry broader implications for digital learning policy and pedagogy across developing ASEAN countries. The evidence suggests that while digital transformation has created flexible opportunities for postgraduate education, cognitive and infrastructural inequalities persist. In countries like Indonesia and Cambodia, challenges such as unstable internet access, limited instructional design skills among lecturers, and restricted digital literacy remain significant barriers (Haliq, 2025; Tinajero & Mayo, 2024). Therefore, the success of critical and creative thinking integration relies not only on students' cognitive capacities but also on institutional readiness and socio-technical support (Azzarah & Wicaksono, 2024). Universities should design postgraduate curricula that combine cognitive scaffolding with digital creativity training, ensuring that learning platforms simultaneously encourage inquiry, reflection, and innovation (Arni, 2025; Yasa et al., 2024).

Theoretical and Practical Contributions

From a theoretical perspective, this study strengthens the intersection of educational psychology, digital pedagogy, and research on higher-order thinking. The results support a synthesized model in which metacognition acts as a mediator between critical and creative processes in achieving learning effectiveness. In practice, the findings recommend that postgraduate programs adopt hybrid instructional designs that emphasize self-regulation, collaborative projects, and formative reflection to promoter both analytical rigor and creative flexibility (Andrian, 2025; Youssef, 2024). Furthermore, digital learning tools should be designed to foster metacognitive prompts such as reflective journals or digital portfolios that can sustain cognitive engagement in developing ASEAN countries.

Research Limitations and Future Directions

Although this review provides valuable insights, it has several limitations. First, the study is limited to ten peer-reviewed articles published between 2020 and 2025, which may not fully represent the evolving digital learning landscape. Second, the inclusion of studies from only developing ASEAN countries limits generalizability to more developed contexts. Future research should expand to comparative studies across different economic settings and disciplines to examine how socio-economic factors influence

critical and creative thinking in postgraduate education. Moreover, longitudinal and mixed-method research could provide a deeper understanding of how these cognitive skills evolve over time and across diverse learning technologies. As Vink et al. (2019) emphasize, continuous exploration of educational interventions is essential to bridge the gap between theoretical development and practical implementation in digital higher education.

CONCLUSION

The findings of this literature review demonstrate that integrating critical and creative thinking significantly enhances learning effectiveness among postgraduate psychology students in digital learning environments, particularly in developing ASEAN countries. In line with the research objectives, the results confirm that both cognitive dimensions are mutually reinforcing: critical thinking provides analytical structure, while creative thinking enables adaptive problem-solving and innovation. Supported by theories from Facione, Amabile, and Vygotsky, this study concludes that learning effectiveness is best achieved when digital pedagogy incorporates metacognitive strategies and collaborative learning designs that foster both critical reflection and creative exploration. Therefore, cultivating higher-order thinking through well-structured digital instruction is essential for improving postgraduate learning outcomes and advancing educational quality in developing ASEAN contexts.

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ETHICAL APPROVAL

This study employed a systematic literature review method based exclusively on previously published scholarly articles. Therefore, no direct involvement of human participants was required, and formal ethical approval was not necessary.

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DECLARATION OF INTEREST

The author declares that there are no conflicts of interest regarding the publication of this article.

TRANSPARENCY OF DATA

All data analyzed in this study were obtained from publicly accessible academic databases, including Scopus, ERIC, DOAJ, Google Scholar, and regional journal repositories. The data used are available upon reasonable request.

AUTHORS' CONTRIBUTIONS

Undari Ramadhani contributed to conceptualization, literature search, data analysis, and manuscript writing. Zirmansyah contributed to academic supervision and methodological review. Achmad Ushuluddin contributed to theoretical framework development and manuscript review. Faisal Sundani Kamaludin contributed to critical review, editing, and final manuscript validation.

REFERENCES

Alabdulkareem, S. A. (2015). Exploring the Use and the Impacts of Social Media on Teaching and Learning Science in Saudi. *Procedia - Social and Behavioral Sciences*, *182*, 213–224. https://doi.org/10.1016/j.sbspro.2015.04.758

Amabile, T. M. (1996). *Creativity in context*. Westview Press.

Andrian, R. D. (2025). The role of artificial intelligence in enhancing critical thinking in learning. *Journal of Science and Learning Technology*, *4*(1), 1–12. https://doi.org/10.26740/jslt.v1i2.46867

Anwar, M. N., Aness, M., Khizar, A., Naseer, M., & Muhammad, G. (2021). The role of creative and critical thinking in digital learning. *Asian Journal of Education and Social Studies*, *25*(2), 55–68. https://doi.org/10.9734/ajess/2021/v25i230592

Arifin, Z., & Setiawan, A. (2022). Digital pedagogy and critical thinking among postgraduate students in Indonesia. *Indonesian Journal of Educational Research and Technology*, *3*(4), 201–210. https://doi.org/10.17509/ijert.v3i4.34201

Arni, K. J. (2025). Systematic review of research trends on critical and creative thinking skills. *International Journal of Science Education Research*, *6*(2), 101–115. https://doi.org/10.56566/ijses.v2i1.262

Azzarah, A., & Wicaksono, A. S. (2024). Positive Story: Building Self-Confidence in Elementary School Children Through Reinforcement. *Psikoborneo: Jurnal Ilmiah Psikologi*, *12*(4), 444–448. https://doi.org/10.30872/psikoborneo.v12i4.16597

Baker, D., & Taylor, P. (2020). Developing critical reflection in online higher education. *Journal of Educational Technology Systems*, *49*(1), 25–42. https://doi.org/10.1177/0047239520934011

Bandura, A. (2018). *Social cognitive theory: An agentic perspective*. Routledge.

Creswell, J. W., & Creswell, J. D. (2018). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. In H. Salmon (Ed.), *Writing Center Talk over*

Time: A Mixed-Method Study (5 ed.). SAGE Publications, Inc. https://doi.org/10.4324/9780429469237

Dela Cruz, M. A., & Ramos, J. R. (2021). Critical and creative thinking integration in blended postgraduate learning. *Philippine Journal of Educational Psychology*, *9*(2), 77–95. https://doi.org/10.26803/ijlter.22.12.1

Ennis, R. H. (2018). *Critical thinking across the curriculum: A vision*. Rowman & Littlefield. https://doi.org/10.1007/s11245-016-9401-4

Facione, P. A. (2015). *Critical thinking: What it is and why it counts* (2015 Update Edition). Insight Assessment. https://www.insightassessment.com

Garrison, D. R., & Vaughan, N. D. (2017). *Blended learning in higher education: Framework, principles, and guidelines*. Jossey-Bass.

Ghozali, N., & Rahman, F. (2022). Digital literacy and higher-order thinking in postgraduate students: A case from Indonesia. *Cendekia: Jurnal Kependidikan dan Kemasyarakatan*, *20*(3), 155–172. https://doi.org/10.21154/cendekia.v20i3.2930

Guilford, J. P. (1967). The Nature of Human Intelligence. In *nan: Vol. nan* (Nomor nan). McGraw-Hill.

Haliq, A. (2025). Exploring the impact of critical thinking and digital literacy on academic essay writing skills. *Diksi: Journal of Language and Literature*, *33*(2), 145–158. https://doi.org/10.21831/diksi.v33i2.88078

Hidayah, S., & Malik, R. (2023). Enhancing postgraduate creativity through collaborative e-learning. *Journal of Psychology and Education*, *12*(4), 205–219.

König, J., Jäger-Biela, D. J., & Glutsch, N. (2022). Adapting to online teaching during COVID-19: Teachers' competence development and students' learning outcomes. *Teaching and Teacher Education*, *115*, 103703. https://doi.org/10.1016/j.tate.2022.103703

Kurniawan, R., & Sari, P. (2023). Metacognitive regulation and learning engagement in online psychology learning. *Jurnal Psikologi Pendidikan*, *15*(2), 88–104.

Le, T. H., & Pham, Q. T. (2020). Creativity and innovation in Vietnamese higher education. *Journal of Educational Research and Innovation*, *14*(2), 112–130.

Ly, B., Doeur, B., & Son Nat, S. (2024). Key factors influencing digital learning adoption among Cambodian university students: An integrated theoretical approach. *Computers in Human Behavior Reports*, *15*, 100460. https://doi.org/10.1016/j.chbr.2024.100460

Morrison, G. R., Ross, S. M., & Kalman, H. K. (2023). *Designing effective instruction* (8 ed.). John Wiley & Sons.

Mulyahati, B., Darmansyah, & Mawardi, Z. M. E. (2024). The effect of the hybrid project-based learning (Hybrid-PjBL) model on critical and creative thinking skills. *Salud, Ciencia y Tecnología*, *4*, 1345. https://doi.org/10.56294/saludcyt2024.1345

Nary, T. (2024). Student evaluation of their postgraduate courses: A case study at the Royal University of Phnom Penh. *Insight: Cambodia Journal of Basic and Applied Research*, *6*(1), 64–77. https://doi.org/10.61945/cjbar.2024.6.1.05

Nata, I. K. W., Paremata, P. A. P. A., Ningrum, M. A., Wedanthi, L. P. R., & Antara, I. D. G. J. (2025). Discovery Learning-Based Learning Strategies in the Implementation of Literature Learning in Elementary Schools. *Psikoborneo: Jurnal Ilmiah Psikologi*, *13*(1), 48–54. https://doi.org/10.30872/psikoborneo.v13i1.16103

Nguyen, H. T., & Tran, T. M. (2022). Critical thinking and digital engagement in Vietnamese postgraduate students. *Asian Education Studies*, *7*(1), 45–60.

Nisa, A., & Rahman, M. (2021). Critical thinking strategies in postgraduate digital classrooms. *Jurnal Ilmiah Psikologi Terapan*, *9*(1), 55–69.

OECD. (2021). *The future of education and skills: Education 2030 framework*. OECD Publishing.

Pellegrino, J. W., & Hilton, M. L. (2022). Education for life and work revisited: Defining and measuring higher-order thinking skills. *Educational Researcher*, *51*(6), 356–368. https://doi.org/10.3102/0013189X221110834

Phakamach, P., & Panjarattanakorn, D. (2024). The development of a blended learning management digital platform on entrepreneurship and ventures in education for graduate learners. *Asian Education and Learning Review*, *2*(1), 1–16. https://doi.org/10.14456/aelr.2024.1

Pham, L., & Le, N. (2020). The role of creativity in the digital transformation of postgraduate learning. *Vietnam Journal of Social Sciences and Education*, *15*(3), 211–230.

Rahmawati, A. S. (2025). Review of relevant literature about critical thinking skills. *JPPIPA: Jurnal Penelitian Pendidikan IPA*, *11*(1), 23–35. https://doi.org/10.29303/jppipa.v11i5.9687

Santos, L. M., Reyes, J. P., & Cruz, A. R. (2022). Critical and creative thinking in e-learning: The role of online peer collaboration among postgraduate students. *Philippine Journal of Educational Psychology*, *10*(2), 67–81.

Santoso, A., & Harjono, R. (2024). Digital reflection to enhance critical thinking skills among Indonesian postgraduate students. *Journal of Educational Psychology and Research*, *18*(1), 73–85.

Sari, D. R., & Widodo, A. (2023). Online project-based learning to foster creativity and motivation. *Jurnal Inovasi Pendidikan*, *12*(2), 101–118.

Schunk, D. H. (2020). *Learning theories: An educational perspective* (8 ed.). Pearson.

Sternberg, R. J. (2012). *The triarchic mind: A new theory of human intelligence*. Cambridge University Press.

Suhartono, T., & Rahmawati, A. (2025). Creative thinking and metacognitive awareness in digital learning environments. *Jurnal Psikologi dan Pendidikan*, *17*(2), 132–148.

Susanti, M., & Adnan, R. (2023). Digital learning effectiveness and higher-order thinking among postgraduate psychology students. *Cakrawala Pendidikan*, *42*(1), 201–218.

Tinajero, C., & Mayo, E. (2024). Classic and modern models of self-regulated learning: Integrative and componential analysis. *Frontiers in Psychology*, *15*, 1298743.

https://doi.org/10.3389/fpsyg.2024.1298743

Tran, L., & Nguyen, V. (2022). Digital collaborative learning and creativity among postgraduate students. *Vietnamese Journal of Educational Psychology*, *10*(3), 59–75.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.

Yasa, A. D., Rahayu, S., Handayanto, S. K., & Ekawati, R. (2024). Evaluating the impact of smart learning-based inquiry on enhancing digital literacy and critical thinking skills. *Smart Learning Environments*, *11*(2), 219–233. https://doi.org/10.1186/s40561-024-00305-1

Youssef, N. H. (2024). The level of fulfillment of mathematics teaching requirements to develop higher-order thinking skills. *Eurasia Journal of Mathematics, Science and Technology Education*, *20*(9), em2503. https://doi.org/10.29333/ejmste/15025

Zimmerman, B. J. (2000). *Attaining self-regulation: A social cognitive perspective* (M. Boekaerts, P. R. Pintrich, & M. B. T.-H. of self-regulation Zeidner (ed.); hal. 13–39). Academic Press. https://doi.org/10.1016/B978-012109890-2/50031-7