

LEARNING MOTIVATION AND COGNITIVE DEVELOPMENT IN SOUTHEAST ASIAN STUDENTS: A BIBLIOMETRIC ANALYSIS (2014-2024)

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Article Information

Article History:

Received May 31, 2024

Revised June 14, 2025

Published June 30, 2025

DOI:

<https://doi.org/10.58557/eduinsights.v3i1.122>

Keyword:

Bibliometric Analysis

Learning Motivation

Cognitive Development

Southeast Asia

Educational Psychology

ABSTRACT

This study analyses research trends regarding students' learning motivation and cognitive development in Southeast Asia from 2014 to 2024 using bibliometric analysis. The study examines the necessity for an in-depth comprehension of the growth of educational psychology in this crucial location through the analysis of publishing trends, cooperation networks, and theme advancements. Employing quantitative bibliometric technique, data were gathered from the Scopus, Web of Science, and Google Scholar databases utilising systematic keyword combinations pertinent to learning motivation, cognitive development, and Southeast Asian nations. The investigation included co-occurrence mapping, temporal visualisation, and theme grouping with VOSviewer software. The findings indicate five primary thematic clusters that embody different theoretical views, illustrating a paradigmatic transition from neurobiological approaches (2014-2016) to contextual-pedagogical themes (2017-2019), ultimately leading to themes of digital-pandemic adaptability (2020-2024). The research delineates the confluence of Self-Determination Theory, Piaget's cognitive development theory, Vygotsky's social constructivism, and executive function theory into a cohesive framework. Prominent topics encompass cultural backdrop, linguistic development, and socioeconomic considerations, illustrating the distinctive complexity of Southeast Asia. The research illustrates the evolution from disparate disciplinary methods to a cohesive multi-theoretical framework, integrating achievement goal theory with growth mindset and the Technology Acceptance Model with self-regulated learning theory. These findings underscore the need for culturally sensitive and technology-enhanced educational techniques that utilise advancements in neuroscience and digital technologies to optimise student learning outcomes in the different socio-cultural contexts of Southeast Asia.

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1. INTRODUCTION

Pendahuluan Motivation for learning and cognitive growth in children are two essential aspects in educational psychology that have been the primary focus of academic research for several decades. Both factors are essential in influencing the efficacy of the learning process and students' academic progress throughout different educational tiers. Learning motivation, an internal and external impetus that compels individuals to participate in educational activities, has been identified as a crucial predictor of academic success and the caliber of student involvement in the learning process (Orji & Vassileva, 2023).

Cognitive development pertains to the progression of pupils' mental faculties in information processing, problem-solving, and the cultivation of metacognitive skills (Rivas et al., 2022). A profound comprehension of the interplay between learning motivation and cognitive development is crucial for formulating successful and adaptable educational practices in contemporary education (Darling-Hammond et al., 2020). Prior studies indicate that individuals with high motivation typically have superior cognitive development, whereas strong cognitive ability can enhance intrinsic drive to study (Van Iddekinge et al., 2018).

The Southeast Asian area, characterized by its varied educational systems, cultures, and socio-economic situations, offers a distinctive framework for examining learning motivation and students' cognitive development. Countries like Indonesia, Malaysia, Thailand, Singapore, Vietnam, and the Philippines exhibit diverse educational features, including curricular frameworks, pedagogical approaches, and distinct obstacles in the execution of educational policies. The contextual variations present substantial study possibilities to examine how cultural, social, and economic issues affect students' motivation and cognitive development in the region (Syafii et al., 2024).

Over the past decade (2014-2024), research on learning motivation and cognitive development in Southeast Asia has advanced considerably, coinciding with a growing recognition of the significance of evidence-based education and psychological well-being in the learning process. The digital change in education, particularly expedited by the COVID-19 pandemic, has unveiled new avenues in educational psychology research, leading to the emergence of subjects such as digital learning motivation, online cognitive engagement, and technology-enhanced learning environments. Bibliometric analysis provides a methodical framework for delineating the research landscape within a certain domain by quantitative evaluation of scientific publications, citation trends, research collaborations, and emergent thematic developments. The bibliometric technique in the study of learning motivation and cognitive development facilitates the identification of research gaps, the evolution of theoretical paradigms, institutional productivity, and scientific collaboration networks within the Southeast Asian area. Utilizing co-citation analysis, bibliographic coupling, and keyword co-occurrence analysis tools, study may elucidate the intellectual framework of this subject and comprehend the temporal evolution of knowledge (Kleminski et al., 2022). Despite numerous individual studies on learning motivation and cognitive development throughout several Southeast Asian nations, a complete bibliometric analysis mapping regional research patterns from 2014 to 2024 has yet to be conducted. This gap is crucial to address due to the necessity for a comprehensive knowledge of the evolution of educational psychology research in this pivotal region. This study seeks to examine research trends regarding learning motivation and cognitive development among students in Southeast Asia from 2014 to 2024 using a bibliometric approach, emphasizing publication productivity, collaboration patterns, topic evolution, and the intellectual structure of this field of research.

Li & Wong (2022) performed a bibliometric analysis of smart learning, revealing tendencies in the evolution of educational technology over the last twenty years. The research effectively delineated the conceptual progression from conventional technology-driven education to adaptive learning facilitated by artificial intelligence. Zhao et al (2019) devised a "smart bibliometrics" methodology that amalgamates scientific mapping with bibliometric analysis to yield enhanced understanding of the intellectual framework of a research domain. Boyack & Klavans (2010) advanced bibliometric approach by examining the efficacy of direct citation, co-citation, and bibliographic coupling in the identification of scientific themes. Their research indicates that integrating these three techniques can yield a more thorough comprehension of conceptual progression within a research topic.

2. METHOD

Pada This study employs a quantitative methodology utilizing bibliometric analysis to investigate research trends in learning motivation and cognitive development among students in Southeast Asia from 2014 to 2024. Bibliometric analysis was selected as the primary approach due to its capacity to furnish an objective and systematic overview of the evolution of a scientific domain through quantitative examination of scientific publications, citation trends, and research cooperation networks (Pessin et al., 2022). This technique facilitates the thorough identification of temporal trends, research output, intellectual structure, and collaborative patterns within the field of learning motivation and cognitive development research (Chen et al., 2021). The literature review was performed using prominent academic databases, including Scopus, Web of Science (WoS), and Google Scholar.

The choice of these databases was predicated on their extensive coverage of global scientific publications and their capacity to furnish complete bibliographic metadata for bibliometric research. The search strategy employed a combination of English keywords pertinent to the research topic, including: ("learning motivation" OR "academic motivation" OR "student motivation" OR "educational motivation") AND ("cognitive development" OR "cognitive growth" OR "cognitive skills" OR "metacognitive development") AND ("Southeast Asia" OR "ASEAN" OR "Indonesia" OR "Malaysia" OR "Thailand" OR "Singapore" OR "Vietnam" OR "Philippines" OR "Myanmar" OR "Cambodia" OR "Laos" OR "Brunei") AND ("student*" OR "pupil*" OR "learner*" OR "education*" OR "school*").

The search queries were amalgamated utilizing Boolean operators and implemented in the title, abstract, and keywords sections of the publication to guarantee the thoroughness of the search outcomes. The study's inclusion criteria encompassed scientific articles published from 2014 to 2024, research addressing students' learning motivation and/or cognitive development, studies conducted in Southeast Asian nations or involving subjects from the region, publications in English or the national languages of Southeast Asian countries accompanied by English abstracts, and publication formats including peer-reviewed journal articles, conference proceedings, and book chapters. The exclusion criteria encompassed articles lacking complete bibliographic information, publications not directly pertinent to the educational context, studies exclusively targeting adult populations or higher education, duplicate articles or non-final preprint versions, as well as editorials, commentaries, or review articles devoid of empirical data. The document selection procedure was conducted in three methodical steps to guarantee data quality and relevancy. The initial phase involved reviewing titles and abstracts to ascertain the topic's relevance to the study requirements. The second stage involved doing a comprehensive text review to verify adherence to the established inclusion-exclusion criteria. The third stage was data cleaning to remove duplicates and confirm the completeness of the bibliographic metadata necessary for the study. The complete selection process was conducted by two independent reviewers, achieving a minimum inter-rater reliability of 85% to guarantee consistency and impartiality in document selection.

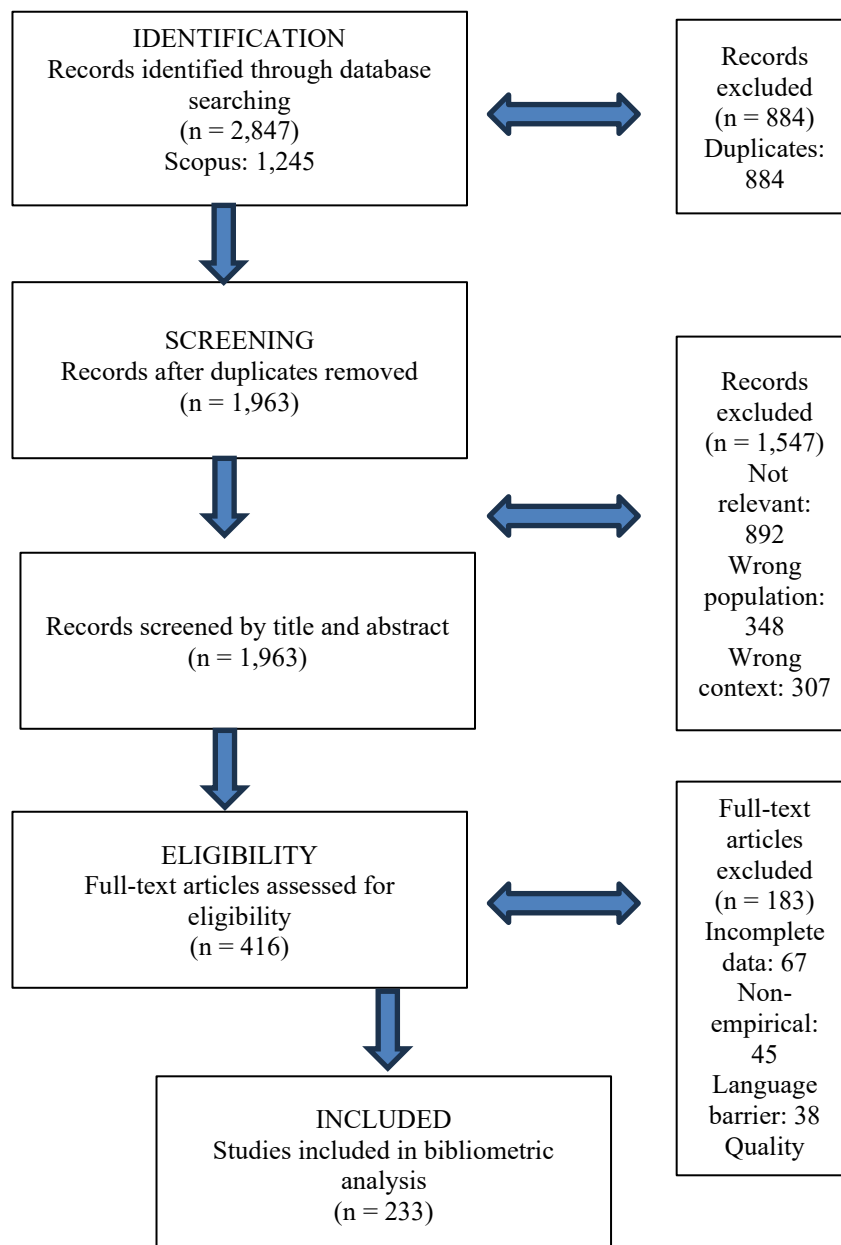
Comprehensive bibliographic data retrieved includes publication details (title, author, year, journal, volume, issue, page), institutional information, and author affiliation. Data extraction was performed via automated technologies from the database, thereafter subjected to manual verification

to verify correctness and completeness for analysis. Manual verification was conducted to prevent mistakes in the automated extraction process and to verify data format uniformity.

The bibliometric analysis included many complimentary methodologies. A descriptive study was conducted to delineate the annual distribution of publications, author productivity, country-wise distribution, the most prolific journals, and the most active institutions in generating relevant research. Citation analysis was employed to ascertain the most influential publications, temporal citation trends, and the half-life of literature, utilizing metrics such as total citations, citations per publication, h-index, and journal impact factor.

A co-authorship network analysis was conducted to delineate research partnerships across authors, institutions, and nations by finding collaboration clusters, network density, and centrality metrics. Keyword co-occurrence analysis identifies principal research themes, topic evolution, and emergent subjects via clustering algorithms. Co-citation and bibliographic coupling analyses are performed to delineate the conceptual framework of the study domain and the resemblance across publications based on common references.

Table 1. Prisma Flowchart



3. RESULT AND DISCUSSION (11 PT)

3.1. Publication Trends and Collaboration Networks in the Study of Learning Motivation and Students' Cognitive Development in Southeast Asia (2014–2024)

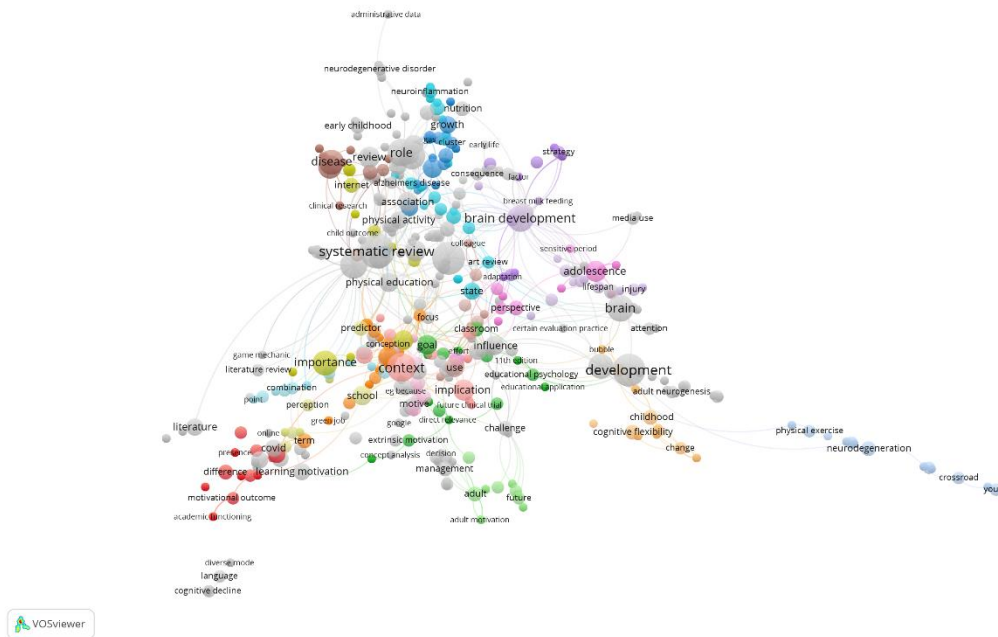


Figure 1. *Visual Mapping of Keyword Co-Occurrence in Students' Learning Motivation and Cognitive Development Research in Southeast Asia (2014–2024)*

The following graphic depicts bibliometric mapping derived from co-occurring terms, visualised with VOSviewer software. This visualisation illustrates the conceptual link and interconnectivity of primary themes in scientific literature regarding learning motivation and students' cognitive development in the Southeast Asian area during the past decade. Each node signifies a term that commonly appears in a compilation of publications, while the connecting lines denote the frequency of co-occurrence inside the same article. Distinct colours signify theme groupings that are autonomously generated based on subject importance.

Several key clusters have been identified that dominate the research landscape. The red cluster emphasises learning motivation, motivational outcomes, and rewards, highlighting the significance of internal variables in the learning process. The orange and yellow clusters emphasise topics including context, significance, and objectives, illustrating a contextual and implicative methodology in the advancement of motivation and cognition. The purple and light blue clusters seem to signify the domain of brain development (including brain development, adolescence, nutrition, and disease), which are intricately linked to neurocognitive factors during the student development period.

The green cluster is noteworthy due to its inclusion of phrases like strategy, dimension, and future, suggesting a propensity for research to inform strategy creation and forecast future advancements. Concurrently, the distinct dark blue cluster encompasses terms such as physical activity, neurodegeneration, and youth, potentially indicating a biological or physiological perspective in cognitive development research. The prevalence of terms like systematic review, context, development, and implication suggests that several research are literature reviews or theory-

driven, focussing on contextual comprehension and theoretical contributions. This mapping offers an extensive overview of prevalent research and identifies potential gaps for further investigation, particularly regarding the integration of psychological, pedagogical, and neurological approaches to enhance learning motivation and cognitive development among students in Southeast Asia.

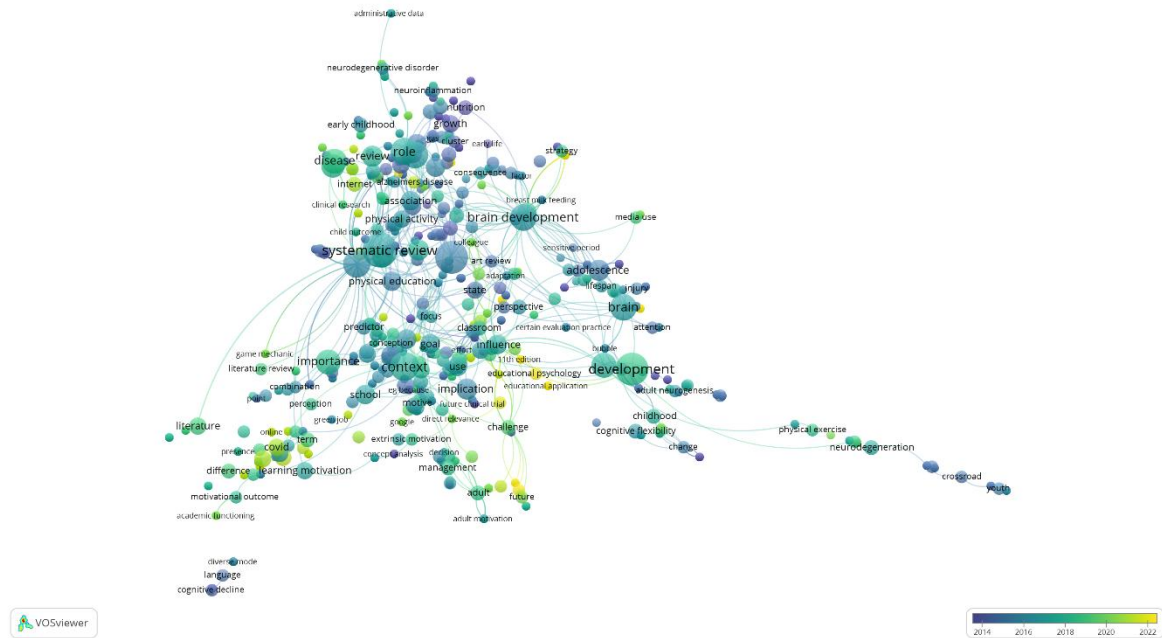


Figure 2. *Visualization of Temporal Co-Occurrence of Keywords in the Study of Learning Motivation and Cognitive Development of Students in Southeast Asia (2014–2024)*

The above image presents a bibliometric visual mapping employing the overlay visualisation technique from VOSviewer, depicting the temporal dynamics of keyword emergence in scientific literature concerning learning motivation and cognitive development of students in Southeast Asia from 2014 to 2024. The hue at each node represents the average year of the keyword's emergence in publications, with a colour gradient ranging from blue (earlier years, about 2014) to yellow (more recent years, nearing 2022).

The visualisation findings indicate that traditional issues such as brain development, systematic review, illness, and physical exercise are prominently represented in blue, signifying their longstanding significance in early research this decade. Terms such as adolescence, nutrition, and cognitive flexibility emerge earlier, signifying a preliminary emphasis on the biological and neurological dimensions of student development.

Simultaneously, recent subjects such as COVID-19, future prospects, learning motivation, and educational psychology are highlighted in yellow-green, indicating their present significance and heightened attention following the epidemic. The appearance of these phrases signifies a transition in study emphasis towards the pandemic's influence on learning motivation and psychologically-informed educational adaptability. Keywords like context, importance, and implication seen in the centre green region signify transitional themes that persist in relevance across the decade, linking earlier themes with contemporary subjects. This phenomena demonstrates continuity in research and the adaptation of theoretical frameworks to new concerns and technology.

This visualisation illustrates the conceptual framework of the discipline and elucidates the progression of issues that signify the academic community's reaction to global social, technological, and health transformations. It is essential for academics to discern historical trends, present research

which conceptualises learning motivation as a product of the interplay among fundamental psychological needs: autonomy, competence, and social relatedness.

The time trend depicted in the overlay visualisation indicates a significant paradigmatic change in this study. During the initial phase (2014-2016), research was primarily characterised by neurobiological and physiological methodologies, as seen by the frequent occurrence of phrases such as "brain development," "physical activity," and "nutrition" within the blue spectrum (Hisyam Syafii & Halim Purnomo, 2024). This underscores the significant impact of Piaget's cognitive development theory and the neuroscience perspective on education, highlighting the role of biological elements in influencing students' cognitive abilities (Mualem et al., 2024). This method aligns with the principle of neuroplasticity, indicating that physical exercise and diet significantly contribute to enhancing brain function during development (Marzola et al., 2023).

The shift to the intermediate era (2017-2019) indicates the growth of additional contextual and pedagogical themes, as seen by the terms "context," "strategy," and "educational psychology" emerging in the green spectrum (Syafii & Azhari, 2025). This transition illustrates the impact of Vygotsky's social constructivism theory, which underscores the significance of the socio-cultural environment in influencing motivation and cognitive development (Kharroubi & ElMediouni, 2024). The Zone of Proximal Development (ZPD) hypothesis is pertinent here, since optimum cognitive growth transpires through significant social interactions accompanied by suitable scaffolding (Xi & Lantolf, 2021).

The period from 2020 to 2024 is characterised by themes about the adaptation of learning in the digital and post-pandemic context, as seen by the prominence of the phrases "COVID-19," "online learning," and "digital motivation" in the vibrant yellow-green spectrum. This occurrence signifies a substantial conceptual shift, as research starts to amalgamate conventional incentive theories with the complexities of digital learning. The Technology Acceptance Model (TAM) and self-regulated learning theory are particularly pertinent here, since students need to cultivate new metacognitive techniques to sustain motivation in technology-mediated learning contexts (Nikolopoulou, 2023).

Cluster analysis reveals significant theoretical alignment between cognitive psychology and neuroeducation approaches. The nexus between "cognitive flexibility," "metacognitive development," and "executive function" signifies the implementation of executive function theory inside the Southeast Asian educational framework. This aligns with (Zelazo & Carlson, 2020) model of executive function, which posits that inhibitory control, working memory, and cognitive flexibility are fundamental to cognitive growth and academic achievement.

Thematic mapping also uncovered developing themes that illustrate the distinctive attributes of the Southeast Asian environment, including the focus on "cultural context," "multilingual development," and "socioeconomic factors." This illustrates the applicability of Bronfenbrenner's ecological systems theory in comprehending how macrosystem elements (culture, educational policy) and mesosystem factors (school, family) affect kids' learning motivation and cognitive development (El Zaatari & Maalouf, 2022). The region's cultural and linguistic variety complicates the comprehension of the learning process, necessitating a more holistic and culturally sensitive theoretical framework. This discovery also signifies a gradual amalgamation of accomplishment goal theory with the development mindset idea proposed by Dweck (Dweck & Yeager, 2019). The rise of the terms "mastery orientation," "performance goals," and "mindset development" indicates that research in Southeast Asia is beginning to embrace a more sophisticated understanding of how goal orientation affects the quality of motivation and, consequently, effects students' cognitive development (Syafi'i & Mulya, 2024). This theme growth signifies the theoretical advancement of the subject, wherein research has transitioned from fragmented disciplinary silos to a more holistic multi-theoretical integration in comprehending the complexities of student learning in the modern era (Hisyam Syafii et al., 2024).

4. CONCLUSION

A bibliometric examination of research trends in student learning motivation and cognitive development in Southeast Asia from 2014 to 2024 indicates a substantial paradigmatic shift in the region's educational research environment. The study effectively delineates the conceptual

progression from an early emphasis on neurobiological and physiological dimensions to a multi-theoretical synthesis incorporating viewpoints from cognitive psychology, neuroeducation, and educational technology. Co-occurrence analysis mapping reveals five principal thematic clusters that illustrate the theoretical sophistication of the field, wherein Self-Determination Theory, Piaget's cognitive development theory, Vygotsky's social constructivism, and executive function theory converge to establish a more comprehensive framework for comprehending student learning. The study reveals a distinct temporal shift in research focus, transitioning from the predominance of "brain development" and "physical activity" themes in the earlier period to the emergence of themes such as "digital motivation," "online learning," and "COVID-19 adaptation" in the present period. This shift exemplifies the academic reaction to global change and illustrates the Southeast Asian research community's adaptive capabilities in addressing modern concerns with a robust theoretical framework. The emergence of contextual themes such as "cultural context," "multilingual development," and "socioeconomic factors" signifies an acknowledgement of the distinctive complexity of the Southeast Asian region, consistent with the application of Bronfenbrenner's ecological systems theory within multicultural education. This study's primary theoretical contribution is the documentation of the transition from a unidimensional approach to an integrative framework that amalgamates achievement goal theory with growth mindset, alongside the gradual incorporation of the Technology Acceptance Model with self-regulated learning theory. This indicates that research on learning motivation and cognitive development in Southeast Asia has attained a level of theoretical sophistication that facilitates a comprehensive understanding of the intricate interactions among individual, social, technological, and cultural factors in the learning process. The practical implications of these findings indicate the necessity to create culturally responsive and technology-enhanced learning strategies that consider the region's diverse socio-cultural contexts while utilising advancements in neuroscience and digital technology to enhance student learning outcomes.

This study possesses certain limitations that must be recognized. The emphasis on English-language publications may neglect important contributions from research conducted in the native languages of Southeast Asian nations, which might offer a more comprehensive cultural viewpoint. The restricted investigation period to the past decade constrains comprehension of the long-term development of essential concepts in this field. Third, dependence on traditional bibliometric databases may inadequately reflect the contributions of institutional publications, government reports, and grey literature pertinent to the Southeast Asian educational landscape. This bibliometric study does not account for the methodological intricacies and quality of individual research, which are crucial for a thorough assessment of scientific advancement in this field. The diversity of educational systems and socio-cultural environments in Southeast Asia may not be adequately captured in this aggregate study, thereby masking significant variations in research methodologies and empirical outcomes among countries.

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