Mapping ASEAN Research Trends on Digital Parenting and Digital Literacy

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Abstract: Mapping ASEAN Research Trends on Digital Parenting and Digital Literacy. Objectives: This study aims to map research trends on digital parenting and digital literacy in the ASEAN region during 2020–2024, identifying publication growth patterns, leading contributors, dominant themes, and existing research gaps. **Methods:** A bibliometric approach was employed to analyze documents retrieved from the Scopus database, focusing on publications addressing parental roles, digital literacy, and children's education. Data were processed using Biblioshiny and VOSviewer to examine publication types, author collaboration, geographic distribution, and keyword co-occurrence for thematic mapping. **Findings:** A total of 387 documents were analyzed based on annual growth, types of publications, author collaboration, geographical distribution, frequently occurring keywords, and the most highly cited articles. The findings indicate a significant increase in the number of publications, particularly in 2024. Indonesia emerged as the leading contributor, followed by Malaysia and Thailand. Keyword analysis revealed that terms such as digital literacy, students, e-learning, and media literacy dominated the literature. Keyword analysis showed an early dominance of *digital literacy* (344 occurrences), *students* (43), and *e-learning* (36), later shifting to *media literacy* (17), *disinformation*, and *fake news*, indicating a shift from technical online learning topics to important digital parenting issues. Despite the positive growth, international collaboration and systematic review publications remain limited. **Conclusion:** This study provides insights into the thematic evolution and identifies research gaps in the ASEAN region, highlighting the need for specific actions such as establishing ASEAN-wide research networks, developing culturally adapted parental digital literacy training, and promoting collaborative systematic reviews to strengthen evidence-based policies. These findings are expected to provide a foundation for creating a sustainable family digital literacy ecosystem in the digital transformation era.

Keywords: digital parenting, digital literacy, media literacy, ASEAN.

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◼ INTRODUCTION

The rapid advancement of digital technology over the past two decades has profoundly impacted family life, including parenting practices. This transformation has given rise to the concept of *digital parenting*, which refers to the strategies and approaches employed by parents to guide their children's interactions with digital media. This encompasses supervision, direction, and education on the safe, productive, and responsible use of technology (Livingstone & Blum-Ross, 2020; Tan et al., 2024). As children's

exposure to digital devices, social media, and online learning increases, parental involvement in developing children's digital literacy has become increasingly crucial. Numerous studies have shown that parents play a dual role, not only as regulators but also as facilitators of learning and role models for positive technology use (Dong et al., 2020; Livingstone & Blum-Ross, 2020).

Children's digital literacy is defined as the ability to access, evaluate, and use digital information effectively, safely, and ethically (Lou et al., 2024). These skills are strongly influenced by the quality of interaction and support provided by parents within the family context. Previous research indicates that active parental engagement through supervision, open dialogue, and exemplary digital behavior can significantly improve children's digital literacy (Chaudron et al., 2018; Livingstone et al., 2018). On the other hand, overly restrictive parenting styles or a lack of interaction may hinder the development of children's critical thinking skills and digital awareness. Thus, parents' digital competence, including their understanding of online risks, is a critical factor in fostering healthy digital behavior in children.

Several studies have explored these dimensions from various perspectives. A meta-analysis by Tan et al. (2025) involving 88 studies on digital parenting revealed that positive mediation, restrictive mediation, and co-use strategies significantly influence children's overall digital well-being. A scoping review conducted by Jäggi et al. (2025) emphasized the effectiveness of digital parenting interventions during early childhood, particularly in low- and middle-income countries, and highlighted the importance of adapting programs to cultural contexts. Meanwhile, a narrative review by Fox et al. (2025) examined online child protection policies and practices across countries,

incorporating dimensions of mental health and public policy. While these studies offer valuable insights, they primarily focus on global or national perspectives and do not provide a dedicated analysis of the ASEAN region.

In Southeast Asia, digital parenting faces distinctive challenges. Variations in technology access, differences in parental educational backgrounds, and limited availability of participatory digital literacy programs contribute to diverse digital parenting practices in each country (Hutt et al., 2018). The COVID-19 pandemic emphasized the importance of parents as learning partners at home (Dong et al., 2020; Saez et al., 2021). The shift to distance learning revealed that low digital literacy and limited access to devices and internet connectivity exacerbated educational inequalities. This situation highlights the urgent need for systematic strategies to enhance family digital capacity across ASEAN.

A UNICEF report in 2021 highlights various regional initiatives to strengthen digital literacy, including ASEAN conferences on online child protection, youth digital literacy campaigns, and the development of cross-border digital learning platforms. Nonetheless, empirical evidence on the academic development of research in this area within ASEAN remains limited. The absence of systematic mapping of publication trends, researcher collaborations, and evolving research themes has created a knowledge gap that may hinder evidence-based policymaking.

In addition to its regional challenges, the ASEAN context offers unique opportunities for advancing digital parenting research through its diverse cultural, linguistic, and socio-economic landscapes. The region's rapid digital transformation, driven by increasing internet penetration, smartphone adoption, and e-commerce expansion, creates a dynamic environment in which parenting practices continuously adapt to technological changes. This

diversity enables comparative analysis of digital parenting models, revealing how cultural norms, policy frameworks, and technological infrastructures shape parental mediation strategies and children's digital literacy development(Tan et al., 2024). Such a multi-faceted perspective is crucial for designing interventions that are not only effective but also culturally sensitive, ensuring that programs resonate with local values while meeting global standards of child online safety and empowerment.

Moreover, the integration of digital literacy into broader sustainable development agendas, such as the United Nations Sustainable Development Goals (SDGs), underscores its strategic importance for ASEAN. Digital literacy intersects with SDG 4 (Quality Education) by fostering lifelong learning skills, and SDG 16 (Peace, Justice, and Strong Institutions) by equipping children to navigate the digital information ecosystem responsibly, thus combating misinformation and fostering civic engagement (Wu et al., 2018). Placing digital parenting within this sustainable development framework emphasizes the dual role of families as both recipients and promoters of digital inclusion (Ogutu & Oughton, 2024). This perspective reinforces the urgency for evidence-based, regionally tailored policies that empower parents as critical stakeholders in building resilient and equitable digital ecosystems in Southeast Asia.

The novelty of this study lies in its application of a comprehensive bibliometric approach to map the development of research on digital parenting and digital literacy in the ASEAN context between 2020 and 2024. This approach enables quantitative identification of publication trends, author and institutional collaboration networks, and emerging thematic areas. Unlike previous studies, which tend to be descriptive or focus on individual countries, this research integrates a regional perspective with bibliometric methods to provide a holistic overview of the scholarly landscape. Furthermore, it highlights newly emerging issues such as media literacy, disinformation, e-commerce, and financial literacy that are increasingly relevant in the literature yet remain underexplored in ASEAN.

The research gap identified is the lack of studies that combine bibliometric analysis with an ASEAN-specific focus on digital parenting and digital literacy. While the global literature in this field has grown rapidly (Anthonysamy et al., 2020; Khan et al., 2022; Lim & Tan, 2020), the understanding of ASEAN countries' contributions, institutions, and cross-national collaborations remains limited. As a result, opportunities to develop contextually relevant, evidence-based policies are constrained. This study addresses this gap by providing a structured and regionally relevant research map that can serve as a foundation for developing inclusive and sustainable family digital literacy programs.

Based on this background, the study aims to answer three primary research questions: (1) What are the publication trends on digital parenting and digital literacy in ASEAN between 2020 and 2024? (2) Which countries, institutions, and authors are the most active contributors to this field? (3) What thematic patterns and emerging issues can be identified through keyword and collaboration network analysis? By addressing these questions, this study seeks to make a significant scholarly contribution while serving as a reference for policymakers and education practitioners in building a resilient family digital literacy ecosystem in Southeast Asia.

■ METHOD
Research Design

This study employed a bibliometric approach, a quantitative method used to examine the structure, patterns, and development of

scientific literature within a particular field. Bibliometric analysis enables researchers to identify publication trends, dominant keywords, author and institutional collaborations, as well as visually map the main themes within academic literature (Aria & Cuccurullo, 2017). This design was chosen for its ability to provide a systematic overview of research contributions related to digital parenting and digital literacy in the ASEAN region over the past five years (2020–2024). The study is exploratory-descriptive in nature, focusing on the analysis of metadata from reputable academic publications. The research objectives include: (1) Identifying publication trends on digital parenting and digital literacy in the ASEAN region from 2020 to 2024. (2) Analyzing the contributions of authors, institutions, and countries within ASEAN most actively involved in developing research on digital parenting and digital literacy. (3) Mapping major themes in the scientific literature through keyword analysis to reveal conceptual evolution and frequently addressed issues.

Search Strategy

The data source for this study was Scopus, one of the largest and most reputable databases of peer-reviewed literature. The search was conducted at the end of 2024, covering publications from 2020 to 2024. To ensure topical relevance to digital parenting in the ASEAN context, the following query was used in the Scopus Advanced Search field: TITLE-ABS-KEY ("digital parenting" OR "online parenting" OR "digital literacy"). The TITLE-ABS-KEY operator was chosen because it retrieves documents in which the search terms appear in the title, abstract, or keywords, thereby ensuring that the selected publications have a direct and substantial focus on the topics of interest rather than only incidental mentions in the full text. After retrieving the search results, filtering was applied to include only documents affiliated with authors from ASEAN member countries: Indonesia, Malaysia, Thailand, the Philippines, Singapore, Vietnam, Myanmar, Cambodia, Laos, and Brunei Darussalam.

Table 1. Document search criteria

Criteria	Description
Source Database	Scopus
Search within	Article title, abstract, keyword
Documents found	12.341
Years	2020-2024
Publication Stage	Final
Publication Language	English
Documents Final	387

After screening for title and abstract relevance and conducting a manual review process, a total of 387 articles were selected and used as the primary dataset for analysis.

Inclusion and Exclusion Criteria

The inclusion criteria for this study were as follows: (1) publications must explicitly address topics related to *digital parenting*, *online parenting*, or *digital literacy*, as identified through the TITLE-ABS-KEY search; (2) at least one author must be affiliated with an institution located in an ASEAN member country (Indonesia, Malaysia, Thailand, the Philippines, Singapore, Vietnam, Myanmar, Cambodia, Laos, or Brunei Darussalam); (3) the publication must be peer-reviewed and categorized as a journal article, conference proceeding, or book chapter;

(4) the document must have been published between January 1, 2020, and December 31, 2024; (5) publication must be written in English; and (6) the publication must have a final publication status.

The exclusion criteria included: (1) documents that mentioned the search terms only incidentally without substantive discussion of the topic; (2) publications authored entirely by researchers outside the ASEAN region; (3) editorials, opinion pieces, news items, or other non-peer-reviewed materials; (4) duplicate records with identical metadata; and (5) publications in languages other than English.

Data Analysis Procedure

The data retrieved from Scopus were downloaded in CSV format, including information such as article titles, author names, institutional affiliations, countries, publication years, journals, citation counts, and keywords. The analysis was conducted using two primary tools: Biblioshiny (a web interface for the bibliometrix R package) and VOSviewer. In VOSviewer, keyword co-occurrence mapping was generated using the association strength normalization method, with a minimum occurrence threshold of five for author keywords and a minimum of two for country collaborations. The analysis procedure involved several steps: First, data cleaning was conducted to consolidate variations in the spelling of author or institution names. Second, clustering was performed based on co-occurrence strength among elements (e.g., frequently co-appearing keywords or countries with frequent collaboration). Finally, the visualized results were interpreted qualitatively to understand the directions and trends of research on digital parenting in the ASEAN region.
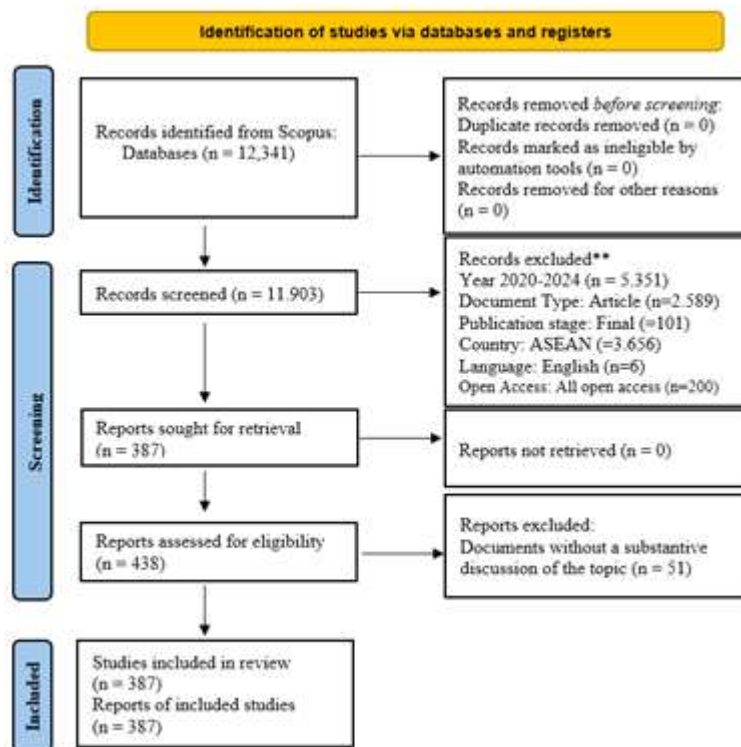

Figure 1. Flow diagram for systematic reviews

■ **RESULT AND DISCUSSION**

Results

The following section provides general information on the characteristics of the documents analyzed in this bibliometric study, which includes publications related to digital parenting and digital literacy in the ASEAN region from 2020 to 2024. The general information of the documents analyzed can be seen in Table 2.

Table 2. General information

Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	2020:2024
Sources (Journals, Books, etc)	247
Documents	387
Annual Growth Rate %	36.29
Document Average Age	2.43
Average citations per doc	6.349
References	17122
DOCUMENT CONTENTS	
Keywords Plus (ID)	831
Author's Keywords (DE)	1244
AUTHORS	
Authors	1198
Authors of single-authored docs	41
AUTHORS COLLABORATION	
Single-authored docs	42
Co-Authors per Doc	3.53
International co-authorships %	7.494
DOCUMENT TYPES	
article	282
book chapter	18
conference paper	79
data paper	1
letter	1
review	6

This bibliometric analysis encompassed 387 documents published between 2020 and 2024, covering a range of publication types, including journal articles, conference proceedings, book chapters, and review papers. A total of 247 sources (e.g., journals, books, etc.) served as publication outlets for topics related to digital parenting in the ASEAN region and beyond. The high diversity of sources indicates the multidisciplinary nature of the topic, spanning the fields of education, information technology, family psychology, and communication studies. The annual growth rate of publications reached 36.29%, reflecting a rapidly increasing academic interest in digital parenting issues, particularly following the COVID-19 pandemic, which accelerated the digitalization of education and family life. The documents analyzed have an average age of 2.43 years, indicating that the literature in this field is still relatively recent and evolving.

In terms of authorship contribution, a total of 1,198 authors were involved in the 387 documents, with an average of 3.53 authors per

document, suggesting a collaborative trend in this field. However, the proportion of single-authored documents remains considerable (42 documents or 10.8%), implying that some research on this topic is still conducted individually. Only 7.49% of publications involved international collaboration, indicating that cross-border research partnerships are still limited and highlighting the potential to strengthen regional scientific networks, especially among ASEAN countries. Regarding document types, journal articles dominate (282 documents), followed by conference papers (79), book chapters (18), and review articles (6). This suggests that most researchers disseminate their findings through primary, empirical publications. The average citation per document is 6.35, suggesting a merate but promising level of scholarly impact. From a thematic content perspective, the dataset includes 1,244 author keywords and 831 Keywords Plus, reflecting a high conceptual diversity in how researchers approach digital parenting. This diversity provides a strong foundation for conducting co-occurrence keywrd analysis to identify thematic foci and dominant conceptual clusters within the digital parenting literature.
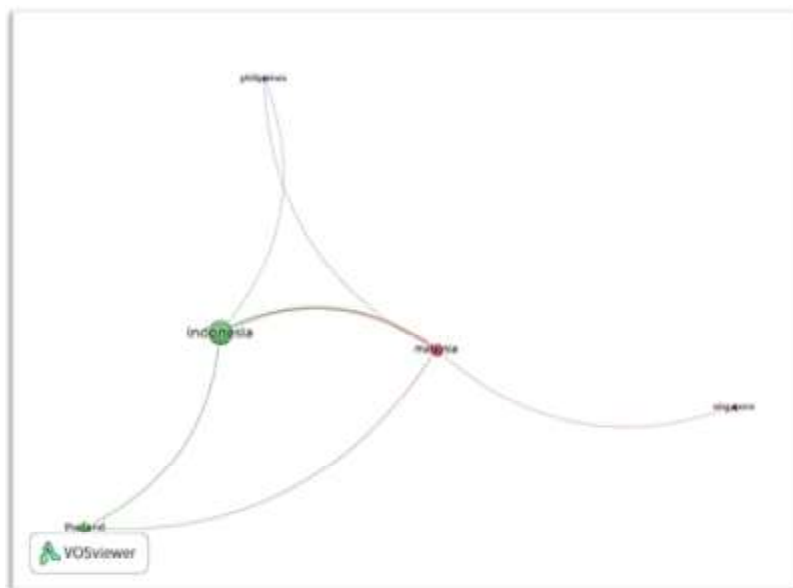

Figure 2. Co-authorship network analysis by country

Trends in Scientific Publications on Digital Parenting and Digital Literacy in the ASEAN Region (2020–2024)

Over the past five years, the number of scholarly publications addressing the topic of digital parenting in the ASEAN region has shown a consistent and significant upward trend. The trends in scientific publication from 2020 to 2024 can be seen in Figure 3. In 2020, a total of 40 documents were published, marking the initial scholarly attention to this issue, particularly driven by the increased reliance on digital technologies during the COVID-19 pandemic. The number of publications rose to 56 documents in 2021 (a 40% increase from the previous year), followed by 74 documents in 2022. This upward trajectory reflects the growing and sustained interest in the role of parents in children's digital education, as well as in emerging issues related to online learning and heightened digital activity within families. In 2023, the trend continued with 79 documents published. However, the highest increase happened in 2024, with 138 documents, nearly 75% more than the previous year. This sharp rise
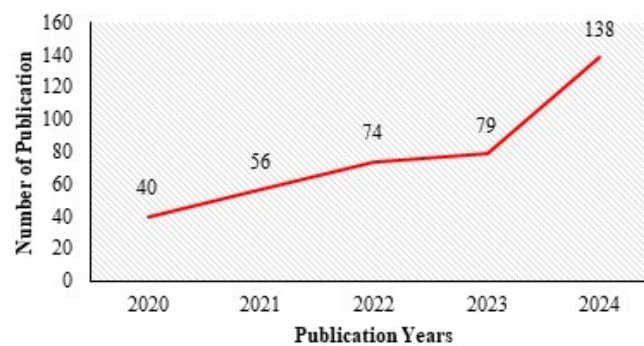
Figure 3. Trends in scientific publications from 2020 to 2024

indicates that digital parenting has become a central focus in academic discourse, driven by the increasing complexity of digital technologies and the urgent need for evidence-based policies in digital parenting practices. Overall, these data indicate that research in the field of digital parenting and family digital literacy in ASEAN is currently in a rapid growth phase, an emerging research front propelled by social transitions linked to digitalization, post-pandemic impacts, and rising awareness of digital literacy as a key component of family resilience in the digital age.
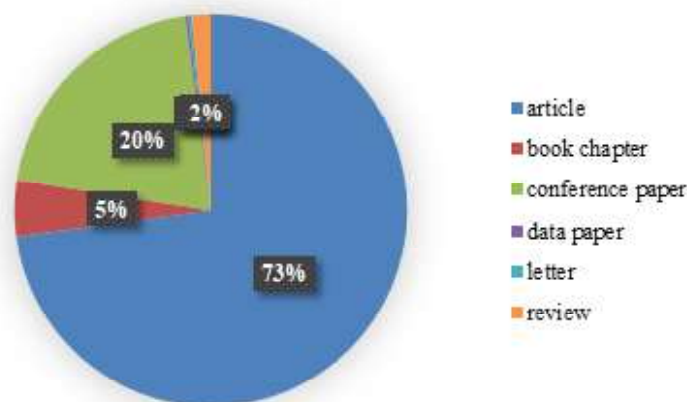

Figure 4. Document types in ASEAN-Based digital parenting publications

The document types in ASEAN-Based Digital Parenting Publications can be seen in Figure 4. Among the 387 documents analyzed in this study, scientific publications related to digital parenting in ASEAN are dominated by journal articles, totaling 282 documents (73%). This dominance reflects that most findings in this field are disseminated through primary empirical articles, employing quantitative, qualitative, or mixed-method approaches. Journal articles remain the main channel for disseminating up-to-date research and demonstrate that the topic of digital parenting has secured a position within the mainstream scholarly discourse. Additionally, 79 documents (20%) were published as conference papers, indicating that the topic is also widely discussed in academic forums such as seminars and conferences. This suggests that many initial ideas or preliminary findings are presented in academic gatherings before being further developed into full journal articles.

A total of 18 book chapters (5%) were identified, typically appearing in multidisciplinary edited volumes or monographs focusing on digital

literacy, family education, or children's digital media. Although their contribution is smaller, book chapters often provide broader theoretical frameworks or policy reflections. Other types of documents, such as data papers and letters, were minimal, with one document each (~0.3%), while review articles accounted for only six documents (2%). The limited number of review articles indicates that synthesis studies and systematic evaluations in this area are still relatively underdeveloped, highlighting the need and opportunity for further development of systematic literature reviews or scoping reviews in the future.

Table 3. Author productivity and citation frequency

Top Ten Productivity		Top Ten Citation Frequency	
Author	**Total**	**Author**	**Total**
Luthfia	7	Anthonysamy	168
Narmaditya	5	Hew	154
Afrilyasanti	4	Koo	154
Basthomi	4	Narmaditya	111
Kholifah	4	Kholifah	102
Ramadanty	4	Nurtanto	101
Ridzuan	4	Muthohhari	85
Rizal	4	Wibowo	85
Suparno	4	Purnama	84
Wibowo	4	Samsudin	74

The author's productivity and citation frequency can be seen in Table 3. In terms of publication count, Luthfia stands out as the most productive author, with a total of seven publications over the past five years. She is followed by Narmaditya (5 publications), and other authors, including Afrilyasanti, Basthomi, and Kholifah, with four publications each. These authors are predominantly affiliated with institutions in Indonesia and have consistently contributed to the literature on digital literacy, family education, and digital transformation within the Southeast Asian context. Their dominance in publication output indicates strong engagement with locally grounded research, particularly in relation to digital adaptation in parenting and child education.

In terms of academic influence, as measured by citation frequency, the most productive authors do not always correspond with the most cited ones. Anthonysamy ranks first with 168 citations, followed by Hew and Koo with 154 citations each. This suggests that their publications carry high impact, indicating notable scientific quality and influence. Interestingly, Narmaditya and Kholifah appear on both lists of productivity and citation frequency, indicating that they are both prolific and influential. Other highly cited authors, such as Nurtanto, Purnama, and Samsudin, also demonstrate significant academic impact, although they are not included in the ten most productive authors.

The geographic and institutional distribution can be seen in Table 4 and Figure 5. The data

Table 4. Geographic and institutional distribution

Top Nine Geographic Distribution		Top Ten Institutional Affiliation	
Country	**Total**	**Affiliation**	**Total**
Indonesia	296	Universitas Negeri Malang	30
Malaysia	74	Universitas Pendidikan Indonesia	28

Thailand	57	Universitas Negeri Jakarta	23
Philippines	14	Universitas Negeri Yogyakarta	21
Singapore	14	Bina Nusantara University	21
Vietnam	8	Universiti Kebangsaan Malaysia	16
Brunei Darussalam	2	Universiti Teknologi MARA	15
Cambodia	1	Universitas Sebelas Maret	13
Laos	1	Universitas Negeri Padang	12
		Universitas Negeri Surabaya	11

indicate that Indonesia dominates publication output in this field, with 296 documents, representing over 76% of the total publications analyzed. This shows that Indonesia is the main center for academic research on digital parenting in the ASEAN region. The high contribution aligns with the country's dynamic social context, digital education policies, and the growing academic community focused on family digital literacy. In second place, Malaysia recorded 74 publications, reflecting strong engagement as well, particularly in areas of school- and family-based digital literacy policy development. Thailand follows with 57 publications, while the Philippines and Singapore each contributed 14 documents, and Vietnam produced 8. Countries such as Brunei Darussalam, Cambodia, and Laos had minimal contributions (1–2 publications), indicating minimal research or scholarly output from institutions in these countries on this topic.

The concentration of research in a few countries has two major implications. First, it creates a knowledge gap for countries such as Brunei Darussalam, Cambodia, and Laos, each of which produces only 1–2 publications, where the lack of scholarly output may hinder the development of evidence-based digital parenting policies. Second, the asymmetry in publication output highlights the need for regional research collaboration mechanisms, particularly to transfer knowledge, share resources, and adapt best practices to different socio-cultural contexts across ASEAN. Strengthening cross-border research networks could help underrepresented countries build local expertise while ensuring that digital parenting strategies are inclusive and regionally coherent.

At the institutional level, Universitas Negeri Malang leads with 30 publications, followed by Universitas Pendidikan Indonesia (28) and

Figure 5. Regional distribution of research on digital parenting and digital literacy in ASEAN

Universitas Negeri Jakarta (23). These top three teacher training universities highlight the strong development of digital parenting research within educational environments, particularly in relation to teacher education, family engagement, and online learning. Other active contributors include Universitas Negeri Yogyakarta and Bina Nusantara University (each with 21 publications), representing both pedagogical and technology-focused institutions. From outside Indonesia, Universiti Kebangsaan Malaysia (UKM) and Universiti Teknologi MARA (UiTM) are the most significant contributors from Malaysia, with 16 and 15 publications, respectively. Out of the top 10 institutions, eight are based in Indonesia, highlighting the national dominance in knowledge production in this field. While the research remains largely localized, the findings also point to ample opportunities for strengthening cross-national collaboration, particularly among ASEAN countries.

Mapping Key Themes in the Scientific Literature through Keyword Analysis: Conceptual Evolution and Dominant Issues

The result of trend analysis in popular articles on digital parenting and digital literacy can be seen in Table 5. Analysis of the ten most cited articles

Table 5. Trend analysis in popular articles on digital parenting and digital literacy

No	Author's name	Article Title	Total of Citation
1	(Anthonysamy et al., 2020)	Self-regulated learning strategies in higher education: Fostering digital literacy for sustainable lifelong learning	115
2	(Mutohhari et al., 2021)	Difficulties in implementing 21st-century skills competence in vocational education learning	78
3	(Purnama et al., 2021)	Does digital literacy influence students' online risk? Evidence from COVID-19	72
4	(Khan et al., 2022)	Connecting digital literacy in higher education to the 21st-century workforce	68
5	(Sariwulan et al., 2020)	Entrepreneurial Performance: The Role of Literacy and Skills	54
6	(Rusandi et al., 2023)	No worries with ChatGPT: building bridges between artificial intelligence and education with critical thinking soft skills	49
7	(Pranita et al., 2023)	Blockchain Technology to Enhance Integrated Blue Economy: A Case Study in Strengthening Sustainable Tourism on Smart Islands	39
8	(Tandoc-JR & Yee, 2021)	Developing a Perceived Social Media Literacy Scale: Evidence from Singapore	37
9	(Dewi et al., 2021)	The Urgency of Digital Literacy for Generation Z Students in Chemistry Learning	35
10	(Lim & Tan, 2020)	Frontliners fighting fake news: global perspectives on mobilising young people as media literacy advocates	35

on digital parenting and digital literacy between 2020 and 2024 reveals strong thematic tendencies toward issues such as digital literacy in higher education, online safety, and 21st-century skill readiness. The most cited article by Anthonysamy et al. (2020), with 115 citations, explores self-

regulated learning strategies and the role of digital literacy in promoting lifelong learning in higher education. This highlights the significance of developing independent and adaptive learners in the digital era. The second most cited article by Mutohhari et al., (2021) (78 citations) discusses challenges in implementing 21st-century competencies in vocational education, emphasizing that limited digital literacy among teachers and students is a primary barrier to integrating modern skills into the education system. Similarly, Purnama et al. (2021) (72 citations) examine the relationship between digital literacy and online risks faced by students during the COVID-19 pandemic, asserting digital literacy as both a protective factor and a tool for developing critical awareness. Other influential works by Khan et al. (2022) and Sariwulan et al. (2020) (with 68 and 54 citations, respectively) link digital literacy to workforce readiness and entrepreneurial performance, framing it as a strategic competency beyond formal education, with implications for economic integration and productivity. Emerging technological themes are evident in Rusandi et al. (2023) (49 citations), who explore the relationship between artificial intelligence (AI) and critical thinking, marking a shift from traditional digital literacy to AI literacy. Regional and instrument-development approaches are also featured, as seen in Tandoc-JR & Yee. (2021) (37 citations), who developed a social media literacy scale tailored to the Singaporean context, highlighting the value of culture-based measurement tools. Lastly, Lim & Tan (2020) (35 citations) emphasize the role of youth as media literacy advocates in combating misinformation, linking media literacy to global digital citizenship. Collectively, these high-impact articles demonstrate that digital literacy has evolved into a central theme in digital parenting and education discourse, encompassing not only technical but also critical, social, and economic dimensions. The high citation levels reflect the global urgency and relevance of these topics, underscoring their influence on policy, curriculum development, and digital literacy interventions.

Table 6. Top 10 key words

Key Word	Occurrences	Total Link Strength
digital literacy	344	499
students	43	162
e-learning	36	167
Indonesia	28	96
digital technology	17	58
digital transformation	17	33
social media	17	38
online learning	16	63
covid-19	12	29
information literacy	12	29

The visual mapping generated using VOSviewer (minimum keyword occurrence threshold of 5) shows that digital literacy is the most dominant keyword, forming the central node that connects multiple thematic clusters (Figure 6). Its strong and thick linkages to terms such as digital skills, information and communication, digital technology, and e-learning indicate a well-established and mature research connection between digital literacy, educational practices, and technological integration. Conversely, thinner connecting lines, such as those linking media literacy to critical thinking skills, or social media to lifelong learning, suggest emerging or weaker
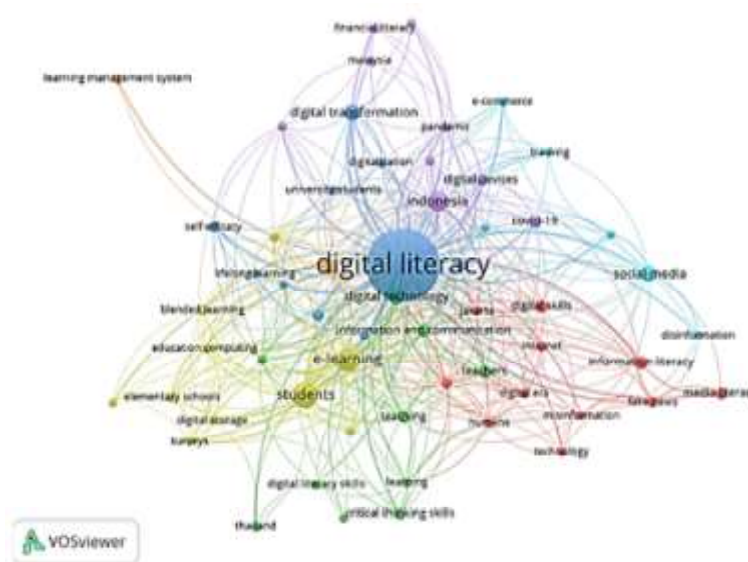
Figure 6. Keyword Co-occurrence mapping from ASEAN-Based digital parenting and literacy publications

relationships that may represent underexplored intersections, offering potential for future interdisciplinary research that bridges digital parenting with broader socio-educational competencies.

Peripheral nodes, such as financial literacy and e-commerce, are positioned at the edges of the map and exhibit relatively fewer connections to the central cluster. Their placement indicates that these are emerging themes expanding the conceptual scope of digital literacy beyond traditional educational and parenting contexts, potentially integrating economic and entrepreneurial dimensions into family digital practices. As these areas are still loosely connected, they offer fertile ground for cross-sectoral research linking digital parenting to financial education, online safety in commerce, and economic empowerment.

The spatial arrangement of clusters also reveals varying degrees of conceptual proximity. For example, the education-focused cluster (students, e-learning, blended learning, teachers) is positioned close to the digital skills cluster, reflecting a strong thematic alignment. In contrast, the social media and misinformation cluster is situated at a greater distance from the education cluster, highlighting a research gap between pedagogical digital literacy approaches and the management of online risks within family contexts. Addressing this gap could help develop integrated models that combine digital safety education with formal learning strategies, thereby strengthening the holistic role of digital parenting in ASEAN.

The overlay visualization generated by VOSviewer can be seen in Figure 7. It illustrates a significant evolution in research themes on digital parenting and digital literacy in ASEAN from 2020 to 2024. In the early phase (2020–2021), keywords highlighted in blue, such as students, e-learning, blended learning, elementary schools, and lifelong learning, reflect a literature focus dominated by the COVID-19 response, with particular concern for how education systems adapted to online learning and how teachers and students navigated digital tools. During 2021–2022, the visualization shifts to green, with emerging keywords such as teachers, learning, self-efficacy, critical thinking skills, and digital literacy skills. This phase marks a conceptual broadening from digital literacy as a purely technical skill to a pedagogical and psychosocial

Figure 7. Overlay visualization of research trends on digital parenting and digital literacy

construct, highlighting teacher empowerment, critical thinking, and lifelong learning.

This thematic expansion aligns with prior studies emphasizing that effective digital parenting involves not only facilitating children's access to technology but also fostering critical digital skills, ethical online behavior, and resilience against online risks (Chaudron et al., 2018; Khan et al., 2022; Salsabila et al., 2024). Within this framework, parents act as both role models and active co-learners in the digital environment, shaping children's ability to critically assess digital content and promoting responsible digital citizenship. This connection between digital parenting and educational outcomes underscores the growing convergence of family-based and school-based digital literacy initiatives.

In the most recent phase (2023–2024), keywords shaded in yellow dominate, including media literacy, disinformation, fake news, digital transformation, e-commerce, and financial literacy. These indicate that digital literacy research has evolved to address informational awareness, media education, and the socioeconomic impacts of technology use. The appearance of terms such as financial literacy and e-commerce, often positioned on the periphery of the visualization signals emerging interdisciplinary themes that expand the scope of digital literacy into economic and consumer education, representing promising directions for future research. Meanwhile, the connections between media literacy and terms like disinformation and fake news are characterized by strong linkages, as indicated by thicker connecting lines. In contrast, weaker linkages between clusters suggest underexplored intersections, such as integrating digital parenting strategies with financial and entrepreneurial literacy.

Country names such as Indonesia, Malaysia, and Thailand appear in the brighter spectrum, highlighting their active role in driving comprehensive digital transformation through both educational reforms and parenting policies. Overall, the overlay visualization suggests a shift from reactive and functional digital literacy toward more reflective, critical, and strategic approaches. This evolution reflects the maturation of academic discourse over the past five years and signals strong potential for advancing interdisciplinary and collaborative approaches in building sustainable family digital literacy ecosystems in Southeast Asia.

CONCLUSION

This bibliometric analysis demonstrates that research on digital parenting and digital literacy in the ASEAN region has experienced substantial growth over the past five years, both in publication volume and thematic diversity. Indonesia, Malaysia, and Thailand lead in research output, with predominant themes covering parental involvement in children's digital engagement, media literacy challenges, and online risks. The evolution of keywords reveals a shift from early technical concerns in online learning, such as e-learning and students, to focusing on critical and socially embedded issues, including media literacy, disinformation, and children's digital resilience. These findings highlight the crucial role of parents in shaping children's digital literacy and affirm that strengthening parental competencies is integral to fostering safe, ethical, and effective technology use in education. For the field of education and learning, these insights suggest that digital literacy should not be viewed solely as a technical skill but as a holistic competence embedded within formal and informal learning environments, supported by partnerships among schools, families and communities.

The study's implications are twofold. First, the limited international collaboration (7.49%) and minimal contributions from certain ASEAN countries point to an urgent need for cross-sectoral interventions such as ASEAN-wide research networks and culturally adapted parental digital literacy training targeted to contexts with lower research capacity. Second, the low number of systematic reviews (only 2% of documents) indicates an underdeveloped synthesis of evidence, which constrains the formulation of comprehensive education policies. This research contributes by providing a region-specific bibliometric mapping that identifies both dominant and emerging themes, offering a foundation for targeted policy and program development. However, its reliance solely on the Scopus database and English-language publications limits coverage of local language scholarship and non-indexed sources, which may underrepresent community-level innovations in digital parenting. Addressing these gaps through multilingual, multi-database studies and interdisciplinary collaboration will be essential for building a sustainable, inclusive family digital literacy ecosystem in ASEAN.

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