

Unveiling Indonesia's Independent Curriculum: a Bibliometric Exploration

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Abstract: Based on the data analyzed, the Independent Curriculum has gained significant scholarly attention, with a rapid increase in publications from 2022 to 2024, particularly focusing on its application in primary education, personalized learning, and culturally contextualized teaching practices such as Islamic education. Key contributors to this research are concentrated in Indonesian public universities, with some international collaboration, highlighting the curriculum's national relevance. The thematic clusters identified in the analysis reveal strong trends in project-based learning, differentiated instruction, and cultural preservation, demonstrating the curriculum's versatility and adaptability across different educational levels and contexts. However, gaps remain in long-term outcome studies, equitable access to personalized learning, and broader cultural implementation, providing opportunities for future research to address these critical areas. This research indicates that several themes regarding the Independent Curriculum still warrant exploration, including studies on the implementation and outcomes of the curriculum across various levels of education, examinations of personalized and differentiated instruction within the curriculum, and investigations into the cultural and contextual adaptation of the Independent Curriculum. Addressing these areas will contribute to a more comprehensive understanding of the curriculum's impact and effectiveness in diverse educational settings.

Keywords: Bibliometric; Global landscape; Independent curriculum

INTRODUCTION

Education stands as one of the fundamental pillars in the development of a nation (Eko et al., 2020; Salto, 2021; Saputra et al., 2023). In Indonesia, the educational curriculum has continually evolved in tandem with the dynamic needs of society and global challenges. One of the most recent innovations in Indonesian education is the introduction of the Independent Curriculum (*Kurikulum Merdeka*) (Anwar, 2021; Dewi et al., 2023; Hatmanto et al., 2023; Suharno et al., 2023a). Implemented by the Ministry of Education, Culture,

Research, and Technology, this curriculum responds to the demand for a more adaptive, innovative education system oriented toward the holistic development of students' potentials (Samsudi et al., 2024; Wulansari, 2022).

The Independent Curriculum aims to provide flexibility for schools and teachers in designing learning processes tailored to the characteristics and needs of their students (Rusilowati et al., 2024; Wulansari, 2022). This approach emphasizes project-based learning, the development of 21st-century competencies, and the integration of technology into the learning process. Consequently, it aspires to cultivate students' critical thinking, creativity, collaboration, and communication skills (Khusna et al., 2022; Purnomo et al., 2023; Suyadi et al., 2022).

Since its inception, the Independent Curriculum has garnered significant attention from educators, academics, and researchers alike in Indonesia. Numerous studies have been conducted to examine the effectiveness, implementation, and impact of this curriculum on the learning process and student outcomes (Harlanu et al., 2024; Samsudi et al., 2024; Syamsulrizal et al., 2024). For instance, Rahmah et al. (2024) find that the Independent Curriculum significantly increases student motivation and engagement, particularly through project-based learning approaches. However, many teachers struggle with innovative teaching methods and require more training (Setyaningsih et al., 2024). Additionally, studies focusing on the role of teachers highlight the necessity for enhanced teacher competencies and professionalism to support the successful implementation of the curriculum.

However, despite the burgeoning research, several challenges persist in the implementation of the Independent Curriculum. Firstly, there is an uneven understanding and preparedness among teachers regarding its application (Yudho Prastowo & Elvi, 2023). Many educators struggle to design learning experiences that align with the curriculum's principles, particularly in executing project-based learning and incorporating technology effectively. Secondly, limitations in facilities and infrastructure in certain regions impede the optimal execution of the curriculum (Setyaningsih et al., 2024). Thirdly, varying interpretations and implementations across different schools lead to inconsistencies in achieving national educational objectives (Rohmah et al., 2024).

These challenges underscore the need for a deeper understanding of the Independent Curriculum from a research perspective. This necessity elevates the importance of conducting a bibliometric analysis. Bibliometric analysis serves as a method to map and analyze scientific publications within a specific field. Through this method, we can glean insights into research trends, predominant

topics, collaborative networks among researchers, and the progression of knowledge within the domain.

By employing bibliometric analysis on studies concerning the Independent Curriculum, we can identify areas that have been extensively explored and highlight gaps requiring further investigation (Arjaya et al., 2024; Rosário & Raimundo, 2024; Verma et al., 2024). Based on the above background, this research aims to analyze publication trend, author analysis, document analysis, co-occurrence analysis and future research direction in the field of Independent Curriculum.

RESEARCH METHODOLOGY

This study undertakes a bibliometric analysis to systematically map and evaluate the scholarly research on the Independent Curriculum (*Kurikulum Merdeka*) in Indonesia. The methodology encompasses data retrieval from a reputable academic database, precise keyword selection using Boolean operators, and data analysis employing specialized bibliometric software tools (Arjaya et al., 2024; Jetty & Afshan, 2024; Liu et al., 2024). In the context of education setting focusing on independent curriculum, bibliometric analysis provides useful insights into the scholarly landscape (Kozhakhmet et al., 2023; Liu et al., 2024; Nuryana et al., 2023; Tigre et al., 2023). It enables researchers to look at the variables affecting a person's desire to start a digital business, comprehend the intellectual framework of the area, and discover research gaps. Researchers are able to discover influential publications, significant contributions, and developing areas for study in the field of digital entrepreneurship by mapping citation networks and co-citation pattern.

Data Source and Search Strategy

The primary data source for this study is the Scopus database, renowned for its comprehensive coverage of peer-reviewed literature across various disciplines (Pham-Duc et al., 2022; Rejeb et al., 2023). To ensure the retrieval of relevant and high-quality publications, a strategic Boolean search was formulated and executed. The search query was designed to capture documents related to the Independent Curriculum using both English and Indonesian terminologies. The specific search string used was:

(TITLE-ABS-KEY (curriculum AND merdeka) OR TITLE-ABS-KEY (merdeka AND belajar) OR TITLE-ABS-KEY ("independent curriculum"))

This search strategy encompasses publications that mention "curriculum" and "merdeka" (the Indonesian word for "independent" or "freedom") in their titles, abstracts, or keywords, as well as those that specifically

reference "merdeka belajar" ("independent learning") and "independent curriculum." The inclusion of these terms ensures a comprehensive capture of literature pertaining to the Independent Curriculum movement in Indonesia.

The search was conducted on October 2024, yielding a total of 171 documents. These documents include a variety of publication types such as journal articles, conference proceedings, book chapters, and reviews, reflecting the multidisciplinary interest in the topic.

Data Analysis Procedure

1. **Data Import and Preprocessing:** The exported data from Scopus were imported into VOSviewer and Biblioshiny. Data cleaning procedures were performed to address inconsistencies, such as variations in author names and affiliations, to ensure accuracy in the analysis.
2. **Descriptive Analysis:** Biblioshiny was used to generate descriptive statistics, including the annual distribution of publications, authorship metrics, and source impact indicators like the h-index and g-index.
3. **Network Analysis:**
 - a. **Co-authorship Analysis:** VOSviewer mapped the collaboration networks among authors and institutions, highlighting key contributors and collaborative relationships.
 - b. **Document Analysis:** analyzed to determine influential works among publications.
 - c. **Co-occurrence Analysis:** Keyword co-occurrence networks were constructed to identify prevalent research themes and topics within the literature
4. **Thematic Mapping:** Biblioshiny facilitated thematic evolution analysis, allowing the identification of emerging and declining research themes over time.

Limitations

While Scopus is a comprehensive database, the exclusive use of a single database may result in the omission of relevant literature indexed elsewhere, such as in Web of Science or regional databases. Additionally, language limitations may exist if relevant studies are published in languages other than English or Indonesian and are not indexed in Scopus).

RESULTS AND DISCUSSION

Descriptive Analysis and Research Trend

The table 1. Bellow provides an overview of the data collected from bibliometric analysis within the timespan of 2022 to 2024. The data includes 171 documents from 91 sources, including journals, books, and other publications. The annual growth rate of research publications is 116.43%, with an average document age of 0.591 years and an average of 0.9942 citations per document. The analysis shows a total of 6682 references and includes 225 Keywords Plus (ID) and 454 Author's Keywords (DE). Additionally, 681 authors contributed to these documents, with only 5 single-authored works, and the percentage of international co-authorship is 14.62%. The document types are predominantly articles (110), followed by conference papers (56), book chapters (3), conference reviews (1), and reviews (1).

Table 1. Main Information

No	Description	Results
Main Information About Data		
1	Timespan	2022:2024
2	Sources (Journals, Books, etc)	91
3	Documents	171
4	Annual Growth Rate %	116.43
5	Document Average Age	0.591
6	Average citations per doc	0.9942
7	References	6682
Document Contents		
8	Keywords Plus (ID)	225
9	Author's Keywords (DE)	454
Authors		
10	Authors	681
11	Authors of single-authored docs	5
12	International co-authorships %	14.62
Document Types		
13	Article	110
14	Book Chapter	3
15	Conference Paper	56
16	Conference Review	1
17	Review	1

According to table 1 above, the data suggests a rapid growth in publications related to the topic within the recent timespan, as evidenced by the high annual growth rate of 116.43%. This shows that there is a high interest from Indonesian researchers in studying more deeply about the implementation of this independent curriculum (Ahmadi & Iswara, 2024; Nurdiyanti et al., 2024; Suharno et al., 2023b; Wulansari, 2022). The significant number of international co-authorships (14.62%) reflects a growing global interest and collaboration in this research field, despite a relatively low number of single-authored documents. The distribution of document types highlights the prominence of journal articles and conference papers, indicating that most contributions come from peer-reviewed and academic discussions. The breadth of keywords used also suggests a wide exploration of topics within the Independent Curriculum research, signaling diverse interests and methodologies being applied in this evolving field.

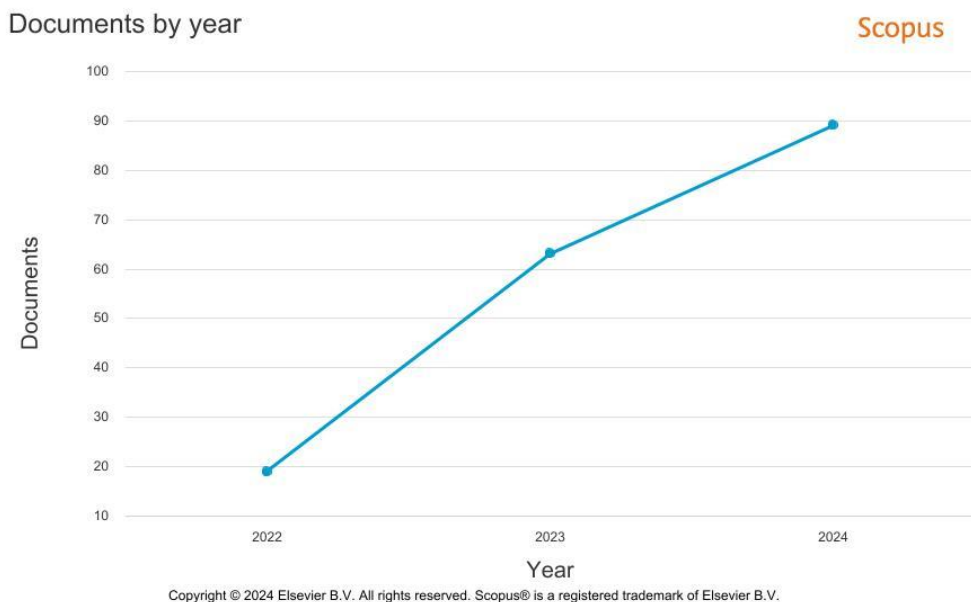


Figure 1. Publication growth

To examine the publication trends on the topic of the Independent Curriculum, we present Figure 1, which shows a line graph depicting the growth of publications from 2022 to 2024. In 2022, approximately 20 documents were published, followed by a significant increase in 2023 with about 60 documents. The upward trend continues in 2024, with nearly 90 documents published by the time of data collection. The graph demonstrates a steady and marked growth in scholarly output over the three-year period. The data highlights a rapid increase in research interest and scholarly contributions related to the

Independent Curriculum. This growth could be attributed to the increasing importance and adoption of the curriculum in educational reforms in Indonesia. The sharp rise from 2022 to 2024 indicates that researchers are increasingly recognizing the relevance of the Independent Curriculum in shaping modern educational practices. This trend suggests a continued trajectory of growth, reflecting both the ongoing development of the curriculum and its growing impact on academic discourse and policy development in the field of education (Dharin & Rohmad, 2022; Prabawati et al., 2023).

Co-authorship Analysis

Figure 2 below shown most productive authors, with Zulkardi being the most productive author, having contributed nearly 3 documents. Other prominent contributors include Fajrianti, E.D., Halil, N.I., Hamamah, H., Junining, E., Marmoah, S., Poerwanti, J.I.S., Pramono, S.E., Prasetyo, Z.K., and Purwanta, E., each with approximately 2 documents published. The chart indicates a relatively uniform contribution from these authors, with slight differences in document count.

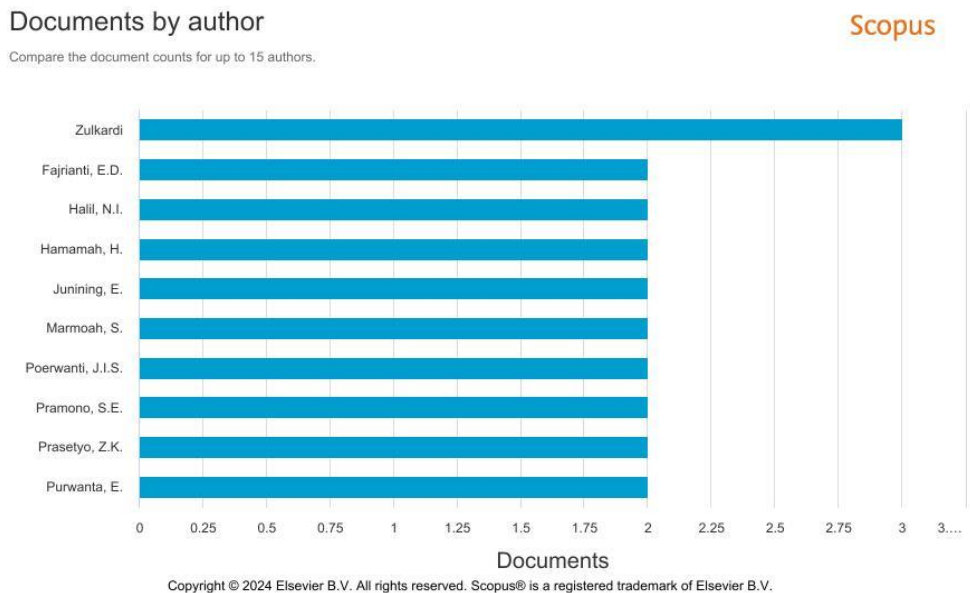


Figure 2. Most Productive Author

This distribution highlights Zulkardi's prominence in research related to the Independent Curriculum, reflecting either a leading role or significant engagement in this domain. The concentration of publications among a small group of authors indicates focused research efforts within a core community of scholars. This suggests a potential for collaboration and expertise exchange

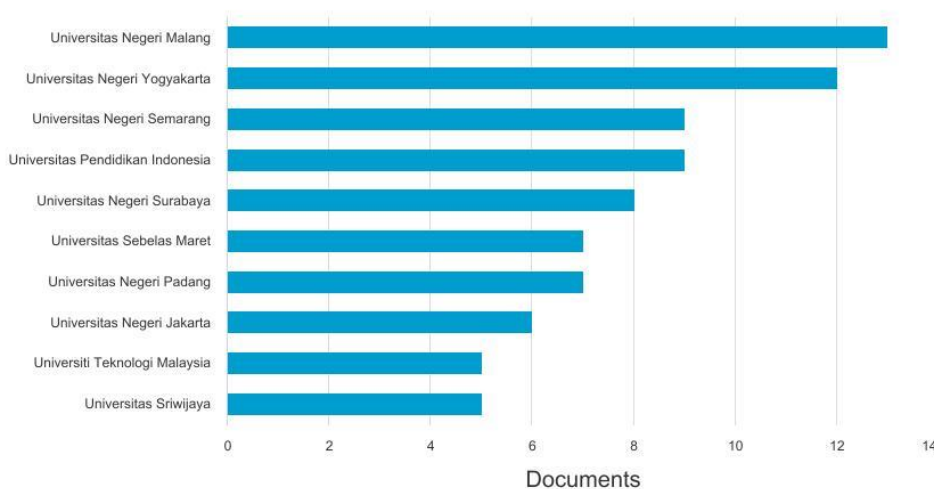
within this network. However, it also implies that the field may benefit from a broader diversification of contributors to encourage varied perspectives and approaches to research on the Independent Curriculum.

Figure 3. illustrates the document counts of the top 10 institutions contributing to research on the Independent Curriculum. Universitas Negeri Malang and Universitas Negeri Yogyakarta lead with the highest number of publications, each contributing around 12 documents. Following closely are Universitas Negeri Semarang and Universitas Pendidikan Indonesia, each with approximately 8 documents. Other significant contributors include Universitas Negeri Surabaya, Universitas Sebelas Maret, Universitas Negeri Padang, Universitas Negeri Jakarta, Universiti Teknologi Malaysia, and Universitas Sriwijaya, with contributions ranging from 3 to 6 documents.

Documents by affiliation

Compare the document counts for up to 15 affiliations.

Scopus



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Figure 3. Most Productive Affiliation

Based on figure 3. Indonesian public universities are the primary institutions producing research on the Independent Curriculum, suggesting a strong national focus on educational reform. The presence of Universiti Teknologi Malaysia highlights some degree of international collaboration, albeit limited. The concentration of research within a small number of institutions reflects a strong academic interest in curriculum development within these universities. However, the relatively low international contribution underscores a need for broader global collaboration to enhance cross-border insights and the development of best practices in curriculum design. Expanding participation

from more diverse affiliations could enrich the research landscape and foster a more holistic understanding of the curriculum's impact.

Document Analysis

Table 2 lists the top five most cited research papers related to the Independent Curriculum. The most cited document, by Sumarmi et al. (2022), has received 11 citations and focuses on the integration of environmental volunteering with service learning to improve students' environmental attitudes and soft skills. The second most cited paper, by Purnomo et al. (2023), with 10 citations, discusses embedding Sustainable Development Goals (SDGs) in support of the Independent Curriculum through biotechnology projects. Aliyyah et al. (2023) received 8 citations for a study on elementary school teachers' perceptions of the curriculum's implementation during the COVID-19 pandemic. Suyadi et al. (2022), with 7 citations, addresses the recognition of "COVID-19 ambassadors" in humanitarian projects through the "Merdeka Belajar Kampus Merdeka" program. Lastly, Halil et al. (2024) has 6 citations for work on preserving the Tolaki Mekongga language using local subject teaching modules based on the Independent Curriculum.

Table 2 reveals that the most cited studies are primarily focused on the intersection of the Independent Curriculum with broader societal and educational issues, such as environmental sustainability, COVID-19 adaptations, and cultural preservation. This indicates that research connecting the curriculum to real-world challenges and social impact is highly valued within the academic community. Additionally, the variety of topics covered by the top-cited works suggests that the Independent Curriculum is being applied in diverse contexts, ranging from environmental education to language preservation. These citations also reflect the academic community's interest in exploring how the curriculum responds to contemporary global and local challenges, emphasizing its adaptability and relevance across different educational domains.

Table 2. Most Cited Document

No	Author	Title	Total Citations
1	Sumarmi et al. (2022)	The Effect of Environmental Volunteer Integrated with Service Learning (EV_SL) to Improve Student's Environment Care Attitudes and Soft Skills	11

No	Author	Title	Total Citations
2	Purnomo et al. (2023)	Embedding Sustainable Development Goals to Support Curriculum Merdeka Using Projects in Biotechnology	10
3	Aliyyah et al. (2023)	Perceptions of elementary school teachers towards the implementation of the independent curriculum during the COVID-19 pandemic	8
4	Suyadi et al. (2022)	COVID-19 ambassadors: Recognizing Kampus Mengajar at the Merdeka Belajar Kampus Merdeka program humanitarian projects in the tertiary education curriculum	7
5	Halil et al. (2024)	Preservation of Tolaki Mekongga Language Through Merdeka Curriculum-Based Local Subject Teaching Modules	6

Co-occurrence Analysis

Table 3 presents the top 10 keywords that appeared most frequently in the analyzed documents, along with their occurrence counts. The keyword "merdeka curriculum" tops the list with 21 occurrences, followed by "independent curriculum" with 14 occurrences. Other notable keywords include "independent learning" (8 occurrences), "curriculum" (7 occurrences), and "education" (6 occurrences). Additionally, "merdeka belajar" and "indonesia" each appeared 6 and 5 times, respectively. Keywords such as "islamic education", "differentiated instruction", and "project-based learning" were also frequently used, each with 4 to 5 occurrences.

According to table 3, keywords most associated with research on the Independent Curriculum are closely related to the core concept of curriculum reform and learning freedom, as seen in the high occurrence of "merdeka curriculum" and "independent curriculum". The frequent appearance of "independent learning" reflects the curriculum's emphasis on student autonomy and flexible learning pathways. Meanwhile, terms like "islamic education" and "differentiated instruction" highlight the curriculum's application in specific educational contexts, showcasing its adaptability to diverse teaching approaches and cultural needs. The keyword frequency suggests a research focus on educational transformation, cultural relevance, and innovative learning methods within the Indonesian education system.

Table 3. Most Cited Document

No	Keyword	Occurrences
1	Merdeka Curriculum	21
2	Independent Curriculum	14
3	Independent Learning	8
4	Curriculum	7
5	Education	6
6	Merdeka Belajar	6
7	Indonesia	5
8	Islamic Education	5
9	Differentiated Instruction	4
10	Project-Based Learning	4

After we Conduct most cited document, next we make a co-occurrence analysis using VOSviewer. Figure 4 titled Network Visualization is a network map generated using VOSviewer, depicting the relationships between keywords frequently occurring in research on the Independent Curriculum. Each node in the visualization represents a keyword, while the connecting lines indicate co-occurrences between keywords within the analyzed documents. Larger nodes and shorter lines indicate more frequent occurrences and stronger relationships between keywords, respectively. The colors reflect different clusters of related keywords, signifying thematic groupings within the research field.

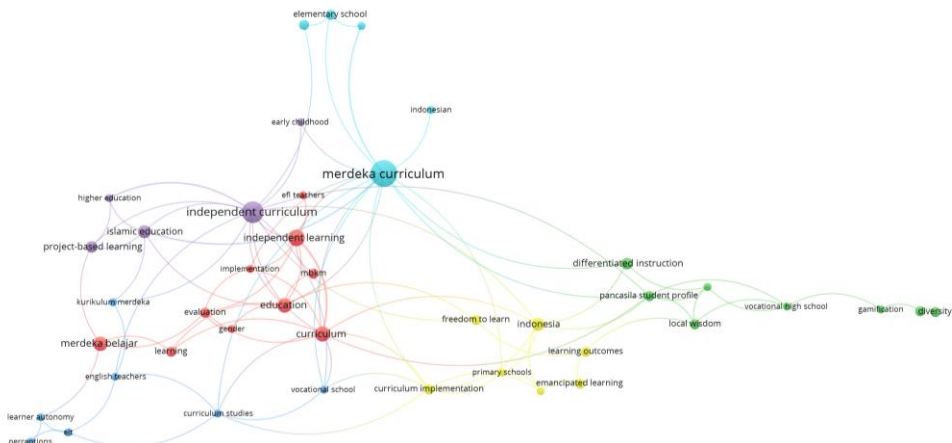


Figure 4. Network Visualization

The network visualization reveals several distinct clusters:

1. **Blue Cluster:** This cluster centers on the keyword "merdeka curriculum" and includes terms such as "elementary school," "early childhood," and "indonesian." This grouping suggests a strong focus on the application of the Independent Curriculum within primary education and its contextual relevance in Indonesia's education system.
2. **Red Cluster:** The "independent curriculum" node dominates this cluster, which also includes "independent learning," "education," "evaluation," and "project-based learning." This cluster highlights research related to the pedagogical principles of student-centered learning and curriculum evaluation, with a focus on innovative instructional methods such as project-based learning.
3. **Green Cluster:** This smaller cluster includes terms like "differentiated instruction," "pancasila student profile," and "vocational school." It points to research focused on personalized learning and its implementation in various educational settings, including vocational education.
4. **Yellow Cluster:** This cluster features keywords such as "freedom to learn," "primary schools," and "learning outcomes," indicating studies that focus on curriculum outcomes and the implementation of flexible learning strategies in primary education.
5. **Purple Cluster:** Keywords such as "islamic education," "merdeka belajar," and "curriculum implementation" appear here, suggesting a thematic focus on integrating the Independent Curriculum with Islamic education and exploring its implementation across different educational contexts.

Future Research Direction

Based on the data from the network visualization and bibliometric analysis, one promising direction for future research is the further exploration of the implementation and outcomes of the Independent Curriculum across various levels of education, especially in primary and early childhood settings. The blue cluster, which focuses on primary education and early childhood, reveals a significant interest in these stages. However, research could expand to investigate the long-term impact of the curriculum on students' academic achievements and social-emotional development. Additionally, comparative studies could be conducted to analyze the effectiveness of the Independent Curriculum in different educational stages, such as secondary or vocational education, offering a more holistic understanding of its impact across the entire educational spectrum.

Another future research direction involves a deeper examination of personalized and differentiated instruction within the Independent Curriculum, as highlighted by the green cluster in the network visualization. With growing attention to differentiated instruction and the "pancasila student profile," research could focus on how the curriculum accommodates diverse learning needs, especially among students with different abilities and learning preferences. Investigating the practical strategies used by teachers to implement personalized learning, as well as evaluating the outcomes for students with special educational needs, could provide valuable insights. Additionally, studies could explore how technology and digital tools can support differentiated learning approaches within the curriculum, addressing potential gaps in access and resource availability in different regions.

A third area for future research lies in examining the cultural and contextual adaptation of the Independent Curriculum, particularly in Islamic education and other local contexts, as indicated by the purple cluster. Research could investigate how the principles of the Independent Curriculum are being integrated into Islamic educational institutions and other culturally specific settings, exploring the challenges and opportunities of merging modern educational practices with traditional cultural and religious values. This line of research could also address the curriculum's adaptability to regional diversity within Indonesia, including its application in rural, remote, or under-resourced areas. By focusing on cultural relevance and contextual challenges, future studies could provide recommendations to ensure equitable access and culturally sensitive implementation of the Independent Curriculum across the diverse Indonesian landscape.

CONCLUSION

Based on the data analyzed, the Independent Curriculum has gained significant scholarly attention, with a rapid increase in publications from 2022 to 2024, particularly focusing on its application in primary education, personalized learning, and culturally contextualized teaching practices such as Islamic education. Key contributors to this research are concentrated in Indonesian public universities, with some international collaboration, highlighting the curriculum's national relevance. The thematic clusters identified in the analysis reveal strong trends in project-based learning, differentiated instruction, and cultural preservation, demonstrating the curriculum's versatility and adaptability across different educational levels and contexts. However, gaps remain in long-term outcome studies, equitable access to personalized learning, and broader cultural implementation, providing opportunities for future research to address these critical areas. This research indicates that several themes regarding the

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