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Original Research Article

Curriculum and Pedagogical Practices at School Level: A Bibliometric Analysis (2015–2024)

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Abstract: Curriculum and pedagogy are the fundamental dimensions of any education system. Timely evaluation of these aspects is essential for active student participation and achieving quality outcomes in education. The present bibliometric study examines the research trends and productivity in curriculum and pedagogical practices at the school level based on published articles from 2015 to 2024. Initially, we identified 1,560 studies from the Scopus database using selected search string. Finally, we selected 775 articles for analysis after filtering by articles, book chapters, and conference papers published in English. Utilizing VOS viewer software, we observed a significant upward trend in publications from 2020 to 2024. Most studies were in social sciences, and the USA is the dominant contributor, followed by the United Kingdom, Spain, Australia, and India. Volman, M. is the most prolific author and the most prominent theme based on the author's keywords is "Critical Approaches to Inclusive Curriculum and Pedagogy in Secondary Education". This study provides valuable insight into the research landscape of curriculum and pedagogical practices at the school level. The study suggests a comprehensive review and meta-analysis of relevant studies for improved generalization.

Keywords: Curriculum, Pedagogical Practices, School Level, Bibliometric Analysis, Research Trends.

INTRODUCTION

Among the various components of education, curriculum and pedagogy are very important components which play a vital role in the overall development of students at the school level (Ylimaki & Brunderman, 2022). Present-day teaching methods are integrated with various innovative techniques, technologies, and cultures, increasing the quality of education (Borzenko *et al*., 2024). A good curriculum is just as important to the overall development of a child as it is to national development. The curriculum needs to be updated in line with social, cultural and scientific progress. Hence, the need for curriculum evaluation arises (Bharvad, 2010). Assessment is a process that can contribute to curriculum design, predict academic success, or improve existing courses through data collection, analysis, and interpretation (Westbury, 1970). This ambitious curriculum evaluation research program encompasses learning, teaching and institutional processes. Potential applicants, teachers, students, teaching staff, managers, employers, subject colleagues, funding agencies, research councils, government and taxpayers also participate in this assessment process (Leathwood & Phillips, 2000). Curriculum evaluation is a significant part of most program evaluations, especially educational programs (Nouraey *et al*., 2020). Curriculum plays an important role in the success or failure of any educational program (Drakos, 2005). It combines what is to be taught in an educational context with a set of pre-determined methods, delivery methods, assessment criteria, teaching materials and teacher education (Nouraey *et al*., 2020). Curriculum evaluation is the process of studying the merit or value of a curriculum. Which includes curriculum design, learning environment, instructional process, resources and materials used in the learning process (Bharvad, 2010). Curriculum evaluation is a practical activity tied to specific conditions. It helps the curriculum developers enhance the quality of the curriculum (Lewy, 1973). Curriculum evaluation has two important aspects: i.e. formative and summative (Scriven, 1967). Formative assessment provides a means

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of obtaining information that is used to improve a course. On the other hand, summative assessment provides a basis for decisions about curriculum adoption and effective use (Welch, 1969). In the context of the current rapidly developing global education market, increased competition, and the move towards mass education, concerns about standards and demands for public accountability have become prominent. A growing interest in curriculum evaluation in universities can be seen as a response to this scenario (Leathwood & Phillips, 2000). The scope and focus of assessment in general, and curriculum assessment in particular, have changed significantly in recent times. With the move towards school-based curriculum development, an increasing number of aspects of curriculum development are now being emphasized, reflecting the need to collect and judge information about all aspects of curriculum activities from planning to implementation (Woods, 1988). Because school-level curriculum and pedagogy are very important in laying the foundation for students' future lives, it facilitates holistic development by shaping their knowledge, skills, values and attitudes. In order to improve school education, it is necessary to analyze the existing research in the school education curriculum.

From this perspective, the research on curriculum and pedagogy in school education through curriculum development. Such an investigation is considered important to provide a roadmap for future research examining the relationship between curriculum development and students' self-esteem encouragement at school. In addition, some previous studies have been conducted employing bibliometrics with the keywords of curriculum and pedagogy (Kaya, 2023; Sandström, 2009; Ural & Özdemir, 2025). However, there has been no specific research on the curriculum and pedagogy at the school level. Therefore, this study presented research trends in curriculum and pedagogical practices at the school level through bibliometric analysis. Bibliometric analysis is a systematic method to evaluate publications, authors, institutions, and geographical distribution in specific research areas (Hussain, 2024; Mohakud *et al*., 2024). Therefore, this research investigated Scopus-indexed journals published in the last 10 years (2015-2024). The results of these publications were analyzed in detail to discover the research trends in curriculum and pedagogical practices at the school level and provide a roadmap for future studies investigating this topic. From the presented analysis, this study proposed five research questions (RQ):

RQ 1: What are the research trends in curriculum and pedagogical practices at the school level?
RQ 2: What are the major subjects being researched the most in curriculum and pedagogical practices at the school level?
RQ 3: Which country contributes the most to the publication of the curriculum and pedagogical practices at the school level?
RQ 4: Who are the leading and influential authors in curriculum and pedagogical practices at the school level?
RQ 5: To what extent are different countries working together on the basis of co-authorship in terms of curriculum and pedagogical practices at the school level?
RQ 6: What are the major thematic clusters of the author's keywords in this field?

METHODOLOGY

Present research was conducted using the bibliometric analysis method, which is the quantitative technique for analyzing data from the scientific literature based on bibliographic characteristics (Ural & Özdemir, 2025). Bibliometric studies have become widely used because they analyze huge numbers of research studies conducted in a field and provide essential information about evolving research trends (Zupic & Cater, 2015). Therefore, in the present study, we used the Scopus database to search the literature, which is one of the world's largest databases. Search keywords were identified based on previous literature. We constructed a search string to search for data in the titles, abstracts, and keywords search field of the Scopus advance search on April 11, 2025.

Search String: "Curricula" OR "curriculum" AND "pedagogical" OR "pedagogical practice" OR "pedagog" AND "school education" OR "secondary education" OR "higher secondary education" OR "school level".

Data Collection Process

We entered the search string into Scopus and got 1,560 documents. This obtained data was refined through screening (inclusion and exclusion criteria). First, we filtered publication years from 2015 to 2024 and removed 493 records. Subsequently, specific some subjects (social sciences, computer science, arts and humanities, psychology, mathematics, environmental science, business, management and accounting, economics, econometrics and finance, multidisciplinary, chemistry, agricultural and biological sciences) were included, resulting in the exclusion of 55 records. Similarly, document types (journal articles, book chapters, and conference papers) were included, excluding 76 records. Further, 161 records were removed after filtering the English language. Finally, 775 documents were selected for analysis, and all eligible data were exported to CSV files.

Data Analysis

This study analyzed publication trends, scientific productivity, performance analysis, and science mapping in curriculum and pedagogical practices at the school level. Specifically, we examined yearly productivity, distribution of subject areas, author's ranks, countries' collaboration, leading institutions, sources, and influential articles based on the number of publications and citations. Further, we explored thematic clusters by employing co-occurrence analysis of the

author's keywords. This study employed VOSViewer, and Microsoft Excel to data analysis and visualization (Mohakud *et al*., 2024). These are freely available computer programs to build and view bibliometric maps.

RESULTS AND DISCUSSION

Publications Trends

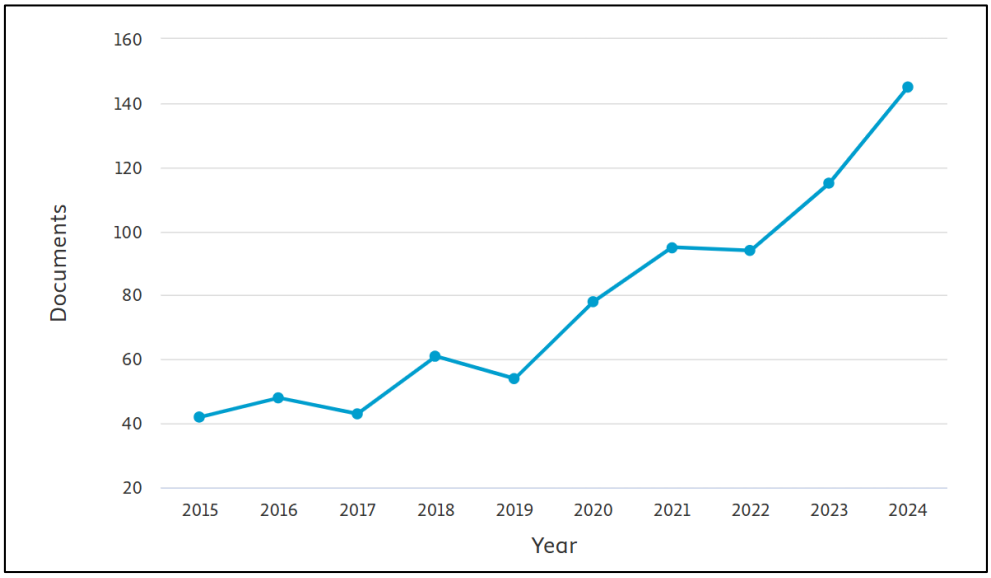

Figure 1: Research Trends of Annual Scientific Production

Figure 1 shows the total number of publications per year related to curriculum and pedagogical practices at the school level from 2015 to 2024. In this case, it is seen that the trend of publishing is continuously increasing, especially in the last five years, this trend is much higher than before. The growth is constant from 2020 onwards. However, 2024 was the most productive year, as 145 documents were published. In this case, this upward trend indicates a growing academic and professional interest in improving and analyzing curriculum and pedagogical practices at the school level. This increase, particularly the spike since 2020 (from 78 in 2020 to 145 in 2024), may reflect increased awareness of the need to reevaluate pedagogical strategies in light of the challenges posed by COVID-19. This same trend was seen in Avila-Garzon, and Bacca-Acosta's, (2025) research.

Distribution of Subject Areas

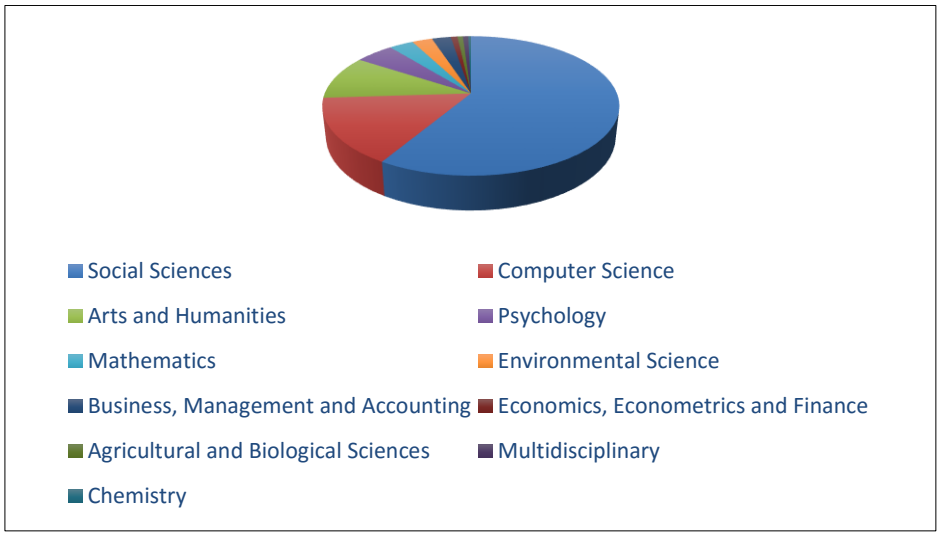

Figure 2: Distribution of subject area

Figure 2 displays the distribution of subject areas. The highest number of studies published in social sciences is 59% of the total area, followed by computer science (15%) and arts and humanities (10%) respectively. Since education is inherently a social construct, the majority of publications are expected to be in the social sciences. However, the 15% share of computer science indicates the rise of digital teaching,

indicating a growing interest in integrating technology into education. Unfortunately, only 10% of publications in arts and humanities revealed a risk of marginalizing important areas such as ethics, cultural identity, aesthetics, and historical consciousness in curriculum and pedagogical practices. Almost the same results were found in Avila-Garzon, and Bacca-Acosta's, (2025) research. The most curriculum-related research was found in social sciences and computer science field.

Most Leading Countries

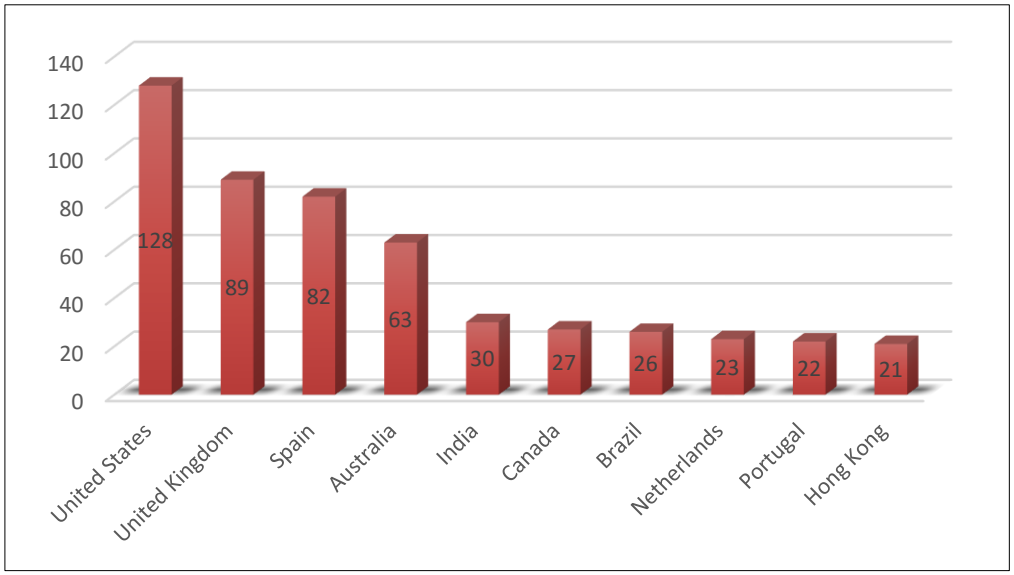

Figure 3: Most Leading Countries

Figure 3 demonstrates the top 10 leading countries that published the highest number of articles. The United States published the most articles (128), followed by the United Kingdom, Spain, Australia, and India with 89, 82, 63, and 30 publications, respectively. Similar result found by Yurt, (2023) and Kaya, (2023). In this regard, the significant dominance of Western countries, especially the United States, in the publication trend of research on curriculum and pedagogical practices at the school level indicates that these countries have strong educational infrastructure, strong funding, and a long-standing commitment to educational innovation and reform. Although there are relatively few publications, India's presence in the top five indicates a growing research interest in curriculum and pedagogical practices.

Most Prolific Authors

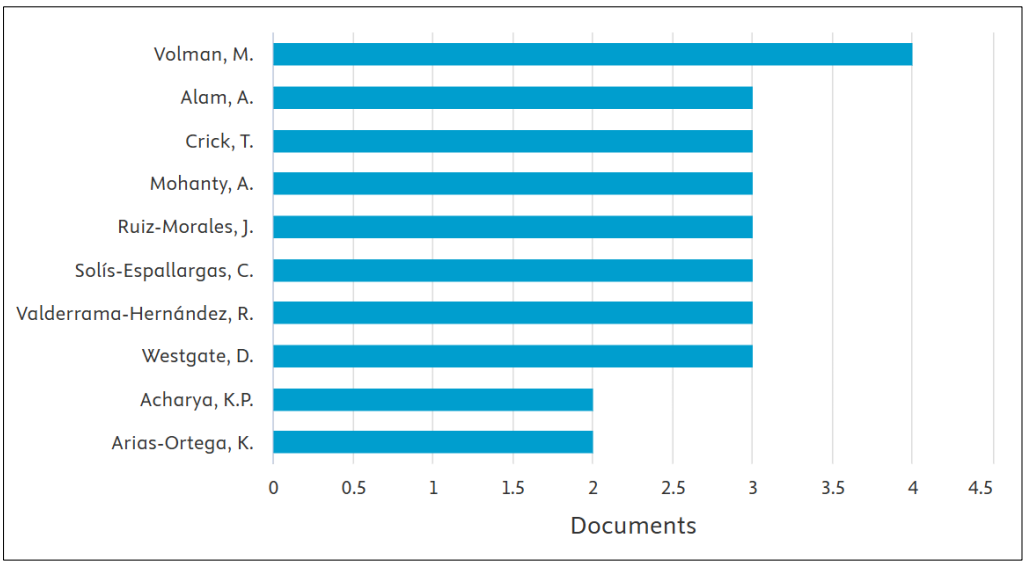

Figure 4: Most Prolific Authors

Figure 4 presents the most productive and influential authors. The top prolific author is Volman, M., who published the highest number of articles (4). This was followed by Alam, A., Crick, T. Mohanty, A.

and some others who published three articles each. While the presence of no single author is overwhelmingly influential in this regard, the presence of a small body of scholars indicates that curriculum and pedagogical practices have great potential as a field of ongoing research. However, just as the relatively low number of publications per author indicates a continuum of research, it also highlights a lack of long-term research.

Co-authorship with Countries

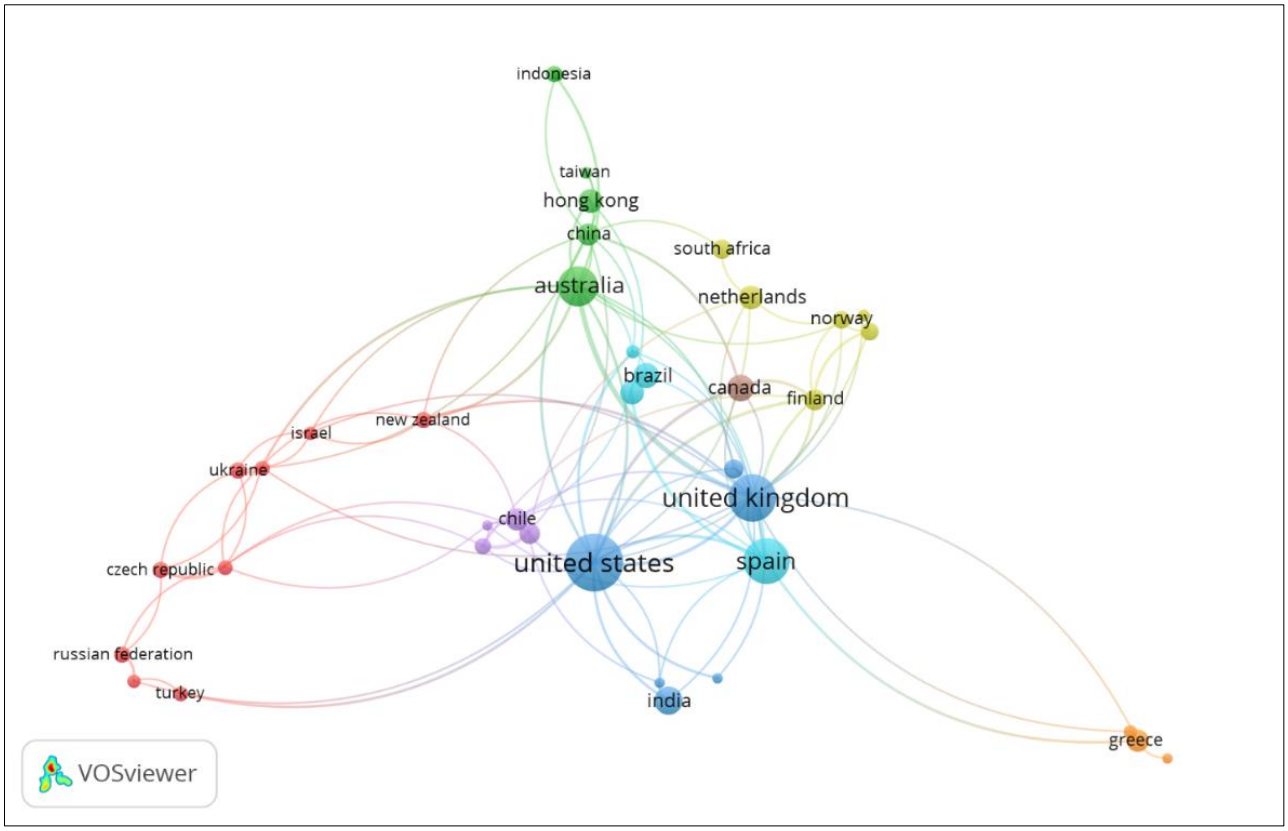

Figure 5: Co-authorship with Countries

Figure 5 shows the network among 39 countries of international co-authorship based on published the number of articles, citations, and total link strength. In this view, countries are indicated by a label and by a circle. The more important a country, the larger its label and its circle. The size of each circle shows the number of papers written by authors from the country. Each link among circles of different countries indicates a co-authorship between those countries. The hights number of collaborators with USA is 17 and the total link strength is 32 with 128 publications. The main partners of the USA are the UK, Spain, Australia and India. Almost as remarkably, the citation of UK is 1497, and the total link strength is 31 on the topic of curriculum and pedagogical practices at the school level. Interestingly India holds the fifth position of publications (30) in this field. It is clear from this that the central hubs of research on curriculum and educational practice remain the United States and the United Kingdom. The UK's leading citation numbers highlight global relevance and quality. Although India's documentation is sparse, it indicates emerging research interests and India's growing participation in global academic discourse. For a clearer understanding, the top five countries' co-authorship with countries analysis based on the number of publications, citations, and total link strength is presented below in a table (Table 1).

Table 1: Co-authorship with Countries

Country	Documents	Citations	Total Link Strength
United States	128	1115	32
United Kingdom	89	1497	31
Spain	82	878	17
Australia	63	878	23
India	30	129	4

Co-occurrence of Author's keywords and Thematic Clusters

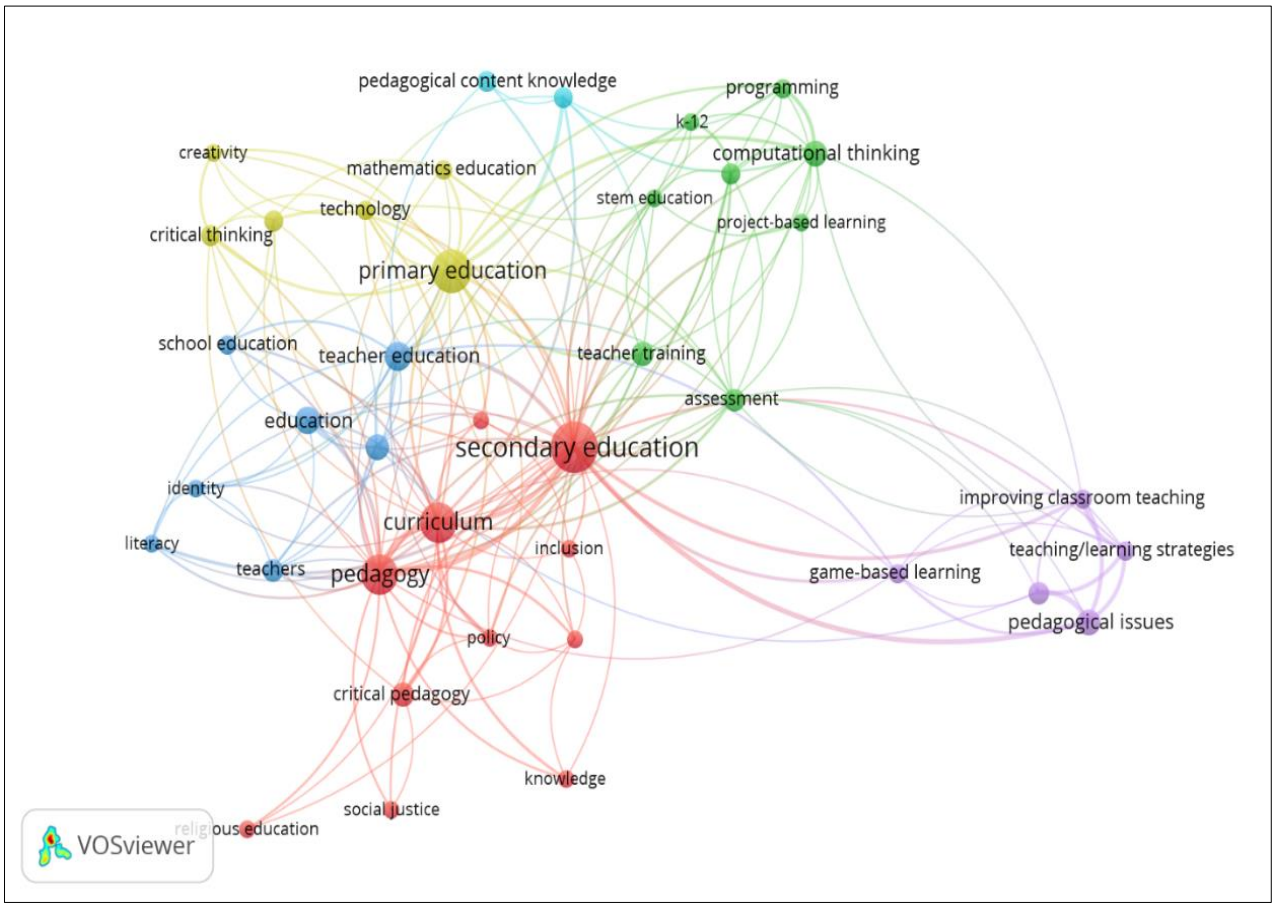

Figure 6: Co-occurrence of Author's Keywords

Figure 6 revealed the co-occurrence analysis of the author's keywords. This threshold is formed by 39 authors' keywords, which determine the size and distance of the bubble, the co-occurrence of the keywords, and the number of associational links. These 39 keywords fall under six main clusters. Each colour represents the Cluster with associational links among the keywords. The largest Cluster (with a red color) represented the studies relating to "Critical Approaches to Inclusive Curriculum and Pedagogy in Secondary Education". These clusters discuss critical pedagogy, curriculum, inclusion, knowledge, pedagogy, physical education, policy, religious education, secondary education, secondary school and social justice. Meanwhile, green represented the second Cluster, "Advancing K–12 Computer Science Education through STEM, Computational Thinking, and Assessment". This Cluster is associated with assessment, computational thinking, computer science education, k-12, programming, project-based learning, stem education and teacher training. The blue Cluster is the third Cluster related to "Exploring Identity and Literacy Across School, Teacher, and Higher Education". It contains studies on education, higher education, identity, literacy, school education, teacher education and teachers. Similarly, the yellow colour cluster "Fostering Creativity and Critical Thinking in Mathematics and Science through Technology" highlights creativity, critical thinking, mathematics education, primary education, science education and technology. The purple colour represented cluster 5, related to "Innovative Teaching Strategies and Pedagogical Issues in Post-Secondary Game-Based Learning", including game-based learning, improving classroom teaching, pedagogical issues, post-secondary education and teaching/learning strategies. Lastly, the indigo colour in cluster 6 highlighted the "Strengthening Pedagogical Content Knowledge through Professional Development" topic related to pedagogical content knowledge and professional development. These findings suggested that future researchers, practitioners, policymakers, and academicians should investigate these themes and revolutionize pedagogical approaches. For a clearer understanding, the entire co-occurrence analysis of the author's keywords is presented below in a table (Table 2).

Table 2: Thematic Cluster based on Authors' Keywords

Cluster	Themes	Keyword	Occurrences	Total Link Strength
Cluster - 1 (Red)	"Critical Approaches to Inclusive Curriculum and Pedagogy in Secondary Education"	critical pedagogy	16	11
		curriculum	59	69
		inclusion	7	6
		knowledge	7	7
		pedagogy	58	68
		physical education	8	9
		policy	8	13
		religious education	7	4
		secondary education	101	86
		secondary school	7	10
		social justice	7	5
Cluster - 2 (Green)	"Advancing K–12 Computer Science Education through STEM, Computational Thinking, and Assessment"	assessment	14	22
		computational thinking	20	22
		computer science education	12	13
		k-12	7	11
		programming	9	14
		project-based learning	7	7
		stem education	8	9
		teacher training	15	13
Cluster - 3 (Blue)	"Exploring Identity and Literacy Across School, Teacher, and Higher Education"	education	21	15
		higher education	18	14
		identity	7	9
		literacy	7	10
		school education	9	8
		teacher education	26	23
		teachers	13	12
Cluster - 4 (Yellow)	"Fostering Creativity and Critical Thinking in Mathematics and Science through Technology"	creativity	7	8
		critical thinking	12	14
		mathematics education	9	8
		primary education	66	50
		science education	12	10
		technology	9	12
Cluster - 5 (Purple)	"Innovative Teaching Strategies and Pedagogical Issues in Post-Secondary Game-Based Learning"	game-based learning	9	14
		improving classroom teaching	9	22
		pedagogical issues	19	35
		post-secondary education	13	20
		teaching/learning strategies	9	22
Cluster - 6 (Indigo)	"Strengthening Pedagogical Content Knowledge through Professional Development"	pedagogical content knowledge	12	4
		professional development	12	15

CONCLUSION

The present bibliometric study provides valuable insights into the evolving landscape of research on curriculum and pedagogical practices at the school level from 2015 to 2024. This domain has rapidly increased in popularity since 2020. This increase was mainly due to successive outbreaks of publication in countries such as the United States and the United Kingdom. Although the dominance of Western countries is seen in this regard, India is the only country in Asia that ranks fifth, so the curriculum of Asian countries, along with the weaker countries, is also seen in the fact that most of the research is organized on social sciences. However, other aspects may be neglected due to the excessive focus on social sciences. Unfortunately, the limited number of authors on curriculum and educational practices at the school level indicates that this area may still be an emerging research area. Therefore, there is a need for more scholars across the world to contribute individually and collectively to this field actively. More institutional support and international cooperation are needed to increase publishing, especially in countries like India. Finally, the themes formed based on author keywords will help future researchers determine the research direction in this field. Above all, through in-depth study of the curriculum and pedagogical practices, the quality of education at the school level will increase and the objectives of education will be achieved.

Finally, it can be said that the research was conducted using specific keywords and was limited to the Scopus database only. Again, the study was conducted only at the school level so that future studies could explore the curriculum and pedagogical practice analysis trend at the higher education level. In the same way, the research can be conducted by adding some more keywords and some more databases. Furthermore, this study could have undergone a comprehensive review and meta-analysis of relevant research for improved generalizability. Despite these limitations, the study thoroughly overviews the school-level curriculum and pedagogical practice area.

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