



A Systematic Review of Open Educational Resources (OER) Research (2017–2025): Trends, Thematic Shifts, and Future Directions

Une revue systématique de la recherche sur les ressources éducatives libres (REL) (2017–2025) : tendances, évolutions thématiques et orientations futures

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Abstract

This study presents a systematic literature review of research on open educational resources published between 2017 and 2025. Using the PRISMA guidelines, 18 studies were selected and a thematic analysis approach was used to identify research trends, thematic shifts, and future directions. Five themes emerged: open pedagogy and co-creation; integrated pedagogical strategies; empirical achievement and equity; behavioural and identity typologies; and barriers to adoption. The findings indicate a clear shift in OER research from access-oriented discussions towards pedagogically grounded and empirically informed studies. Directions for future research are proposed to support meaningful and sustainable OER implementation.

Keywords

Open educational resources (OER), education, learning outcomes, future directions, systematic review

Résumé

Cette étude présente une revue systématique de la littérature sur la recherche relative aux ressources éducatives libres (REL) en éducation, publiée entre 2017 et 2025. Guidées par le cadre PRISMA, 18 études ont été sélectionnées et analysées à l'aide d'une analyse thématique afin d'identifier les tendances de recherche, les évolutions thématiques et les orientations futures. Cinq thèmes principaux ont émergé : la pédagogie ouverte et la co-création, les stratégies pédagogiques intégrées, les résultats empiriques et l'équité, les typologies comportementales et identitaires, ainsi que les obstacles à l'adoption. Les résultats indiquent une évolution nette de la recherche sur les REL, passant de discussions centrées sur l'accès à des études davantage ancrées pédagogiquement



et fondées sur des données empiriques. Des orientations pour les recherches futures sont proposées afin de soutenir une mise en œuvre significative et durable des REL.

Mots-clés

Ressources éducatives libres (REL), éducation, résultats d'apprentissage, orientations futures, revue systématique

Introduction

Open Educational Resources (OER) were informally initiated in the mid-1990s through projects supported by the National Science Foundation (NSF), particularly those focusing on the development of authoring tools, followed by the launch of MERLOT (Multimedia Educational Resource for Learning and Online Teaching), which emphasized the sharing of educational resources. In 1998, Wiley introduced the concept of open content, which was subsequently followed by the launch of the OpenCourseWare (OCW) initiative by the Massachusetts Institute of Technology (MIT), serving as a major catalyst for the open education movement. The term OCW was later formally recognized by UNESCO (2002) following a meeting held in Paris. Since then, OER have continued to develop in a more structured manner, notably through the establishment of the OER Foundation in 2009 and the adoption of the 2012 Paris OER Declaration by UNESCO (2012).

The proliferation of OER has addressed the critical issue of accessibility and adaptability. OER provide freely accessible (UNESCO, 2019), high-quality, and openly licensed materials that can be retained, reused, revised, remixed, and redistributed (the 5Rs) (Wiley, 2014). For pre-university students and those entering specialized fields like ICT, OER democratize access (Kenchakkanavar et al., 2024) to current and specialized content, ensuring that socio-economic barriers do not impede learning (Subrahmanyam, 2026). Furthermore, OER empower instructors to customize curriculum rapidly, adapting materials to students and contextual needs (Schuwer & Klusters, 2014). The convergence of these two approaches suggests a powerful potential synergy for enhancing deep learning outcomes.

The primary purpose of this paper is to conduct a systematic review of the literature to identify, evaluate, and synthesize the empirical evidence concerning the impact of OER on student learning. To achieve this goal, the review addresses the following four core research questions:

- What are the publication year trends in studies investigating OER from 2017 to 2025?
- What is the regional distribution of OER studies from 2017 to 2025?
- What trends and thematic shifts define the evolving landscape of OER studies from 2017 to 2025?
- What are the future directions for OER research?

Literature Review

A critical analysis of 11 existing systematic, bibliometric, meta-analysis, and scoping reviews of OER indicates that, despite differences in scope and methodology, the literature is largely unified in its emphasis on access, adoption, and policy-related outcomes. Reviews continue to emerge, with Gurav and Nagarkar (2025) and LeMire (2025) representing recent contributions that shift

the focus toward institutional barriers and global policy. Collectively, these reviews consistently report that OER reduce costs and expand access to learning materials and educational resources (Thompson, 2023) while also supporting equity in education (Gurav & Nagarkar, 2025). Hilton (2020) synthesized evidence from 121,168 participants, concluding that students using OER consistently achieve the same or better learning outcomes compared to those using traditional commercial textbooks. while benefiting from significant financial savings.

Nevertheless, important limitations persist. Zhang et al. (2020) and Moon and Park (2021) observe that accessibility and interaction for learners with disabilities remain underdeveloped and under-theorized. Similarly, Otto et al. (2021) report that much of the existing evidence base lacks robust evaluation of learning impact. Similarly, Tlili et al. (2023) conducted a quantitative meta-analysis which found that OER and Open Educational Practices (OEP) have a significant yet “negligible” effect on achievement, suggesting that simply changing a license from proprietary to open is insufficient to drive substantial learning gains.

Across the reviews, OER are predominantly conceptualized as a resource or policy intervention (Gurav & Nagarkar, 2025; Thompson, 2023) rather than as a pedagogical element embedded within instructional design (Otto et al., 2021). As a result, learning outcomes receive limited attention. Reviews such as those by Zhang et al. (2020) and Moon and Park (2021) focus mainly on accessibility, interaction, or inclusion, with comparatively little emphasis on academic achievement or higher-order cognitive skills.

A critical limitation of previous OER reviews is their tendency to treat openness as a static resource intervention rather than a dynamic pedagogical driver. While foundational reviews like Hilton (2020) and Tlili et al. (2023) successfully mapped the landscape of affordability and general efficacy, they did not focus enough on the instructional “how” and “for whom”. Furthermore, Mishra (2025) notes that the methodological quality of previous review research remains inconsistent.

Therefore, the present systematic literature review is necessary to move the academic discourse beyond the broad “access hypothesis” and into a granular investigation of the instructional mechanisms. This study explicitly addresses the research gaps left by previous foundational reviews by shifting the focus from OER as a static resource toward their role as a dynamic pedagogical driver integrated with specialized learning strategies. Furthermore, this work establishes a necessary evidence base for sustainable, pedagogy-first OER adoption in the modern educational landscape.

Methods

This study employed a systematic literature review (SLR) design guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework (Page et al., 2021). The review aimed to rigorously identify, evaluate, and synthesize the best available empirical evidence on the integration of OER and their impact on student learning. The SLR followed a structured process comprising several key stages, including the search strategy, study selection process, and data synthesis. Adherence to established SLR guidelines ensured a transparent, systematic, and comprehensive review process, thereby minimizing potential bias and enhancing the reliability of the findings (Moher et al., 2009).

Search Strategy

The literature search was conducted across four major academic databases: Google Scholar, SCOPUS, ScienceDirect, and Web of Science (WoS). Publications were restricted to the period from 2017 to 2026 to capture the full development and integration of modern OER and digital collaborative tools in educational contexts. The search strings were developed using a three-pronged strategy that combined terms related to the thematic focus, intervention or strategy, and outcome or target group, thereby ensuring high precision and comprehensive coverage.

The chosen search strings were applied to the title, abstract, and keyword fields (TITLE-ABS-KEY) in all databases and are presented in Table 1.

Table 1
Search Strings

Search string	Database	n
“Open Educational Resources” OR “OER” AND “Education” OR “Teaching” OR “Learning” NOT “meta-analysis” NOT “review” NOT “meta-synthesis”	Google Scholar	192
“Open Educational Resources” AND “Education”	ScienceDirect	521
	SCOPUS	255
	Web of Science (WoS)	120
TOTAL		1088

Selection Process

The study selection process comprised four main phases: Identification, Screening, Eligibility, and Inclusion. The results are visually summarized in the PRISMA Flow Diagram (see Figure 1).

Phase 1: Identification

A total of 1,088 records were identified through the combined database search prior to formal screening. Of these, 192 records were retrieved from Google Scholar, 255 from SCOPUS, 120 from Web of Science (WoS), and 521 journal articles from ScienceDirect.

Phase 2: Screening

During this phase, the identified records were screened using predefined exclusion criteria to remove studies that did not fall within the scope of the review. The screening process was conducted independently by the authors in pairs, and any discrepancies were discussed and resolved through consensus, thereby enhancing the validity and reliability of the screening process. The exclusion criteria included:

- Review and conceptual articles, and editorials
- Articles published before 2017
- Non-English publications
- Duplicate records
- Articles without accessible full-text versions

Phase 3: Eligibility

In the eligibility phase, the full texts of 28 articles were retrieved and assessed against the predefined inclusion criteria. Studies were included in the review if they met all of the following criteria:

- Empirical journal articles reporting original research findings
- Articles published from 2017 onwards
- Publications written in English
- Studies with full-text availability
- Articles that were unique records after duplicate removal

At this stage, studies were examined in greater detail to ensure sufficient methodological rigour and relevance to the review objectives. A total of nine articles were excluded following full-text assessment. Of these, four studies were excluded due to insufficient methodological rigour, including unclear research design, limited description of the intervention, or inadequate outcome measurement. An additional five articles were excluded because the findings were not reported comprehensively, i.e., incomplete presentation of results or insufficient linkage between the intervention and learning outcomes. At the end of this process, 18 studies were retained for inclusion in the final synthesis, having met all the eligibility criteria.

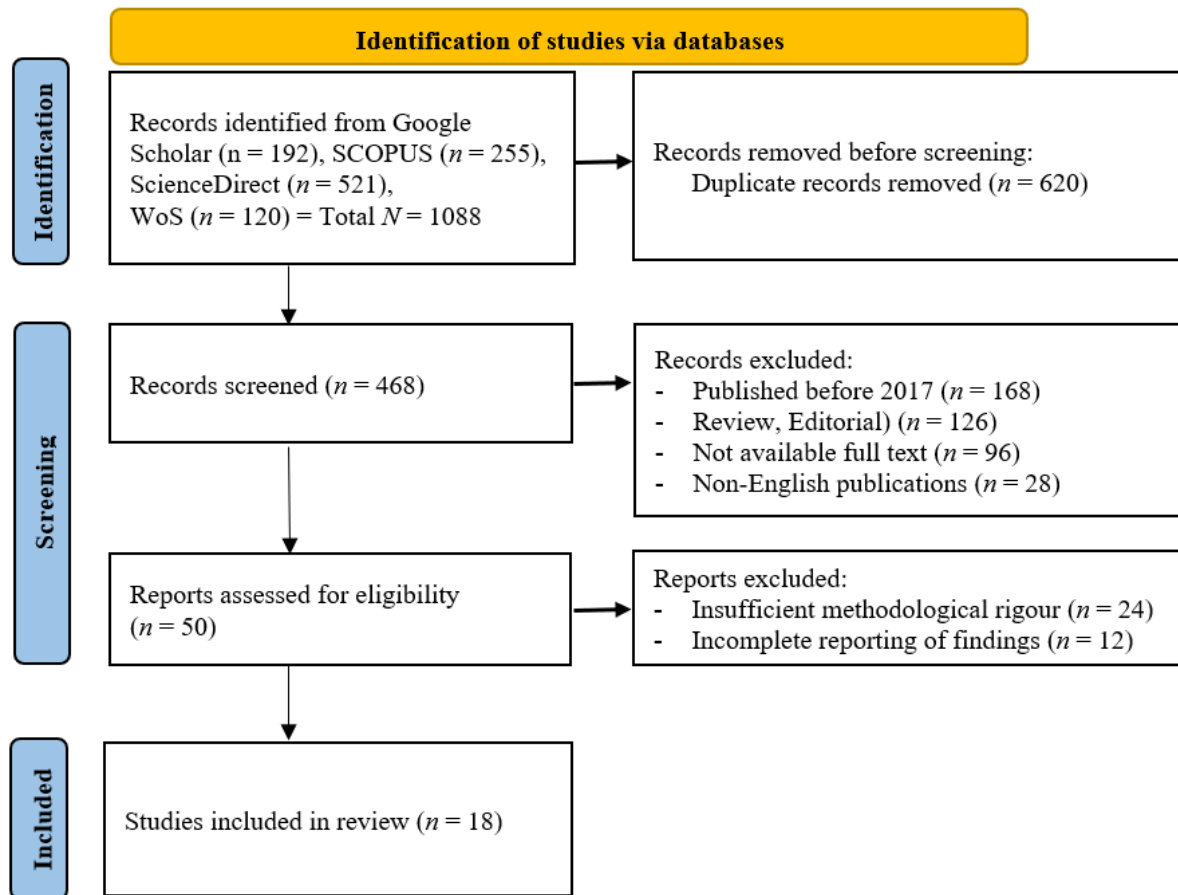


Figure 1
PRISMA Flow Diagram for Study Selection

Data Analysis

Data analysis was conducted using a combination of quantitative descriptive and thematic analysis techniques to systematically address the research questions. Quantitative descriptive analysis was used to summarize the distribution of studies based on demographic characteristics, including

publication year, global classification, region, study design, education level, and field of study. Frequencies and percentages were calculated, and the results were presented in tables to illustrate the distribution of the reviewed studies. In addition, descriptive statistics were used to present publication-year trends of OER studies using a line graph, as well as the distribution of OER research by region and the main-theme occurrence frequency across years using bar graphs.

A general inductive approach to thematic analysis, as proposed by Thomas (2006), was employed to organize and synthesize findings related to the impact of OER on student learning, as well as to identify methodological gaps in the literature. This approach involved a systematic process of reading the included studies, coding relevant segments of findings, and grouping similar codes into common themes aligned with the review objectives. Two coders, the authors of this study, independently analyzed all 18 included articles. Each coder first conducted independent coding of the articles, after which the coders met to compare and discuss the themes generated from their analyses. Intercoder reliability was calculated using percentage agreement, resulting in an agreement rate of 84 percent. Any differences in coding were resolved through discussion until consensus on the final themes was achieved. The identified codes and themes were presented in tables, and a heatmap matrix was also developed to illustrate the evolving landscape of OER research.

Results

Table 2 presents the demographic distribution of the 18 studies reviewed. Although the selection was not guided by any effort to ensure geographic balance, the studies nonetheless reflect an even split between the Global North and Global South. The sample spans multiple regions, including North America, South Asia, Africa, South America, and the Caribbean.

Table 2
Distribution of Studies Based on Demographic Variables

Demographic Variable	Category	<i>n</i>	%
Publication Year	2017	2	11%
	2018	3	16%
	2020	4	22%
	2022	2	11%
	2023	5	28%
	2024	1	6%
	2025	2	11%
Global Classification	Global North	9	50%
	Global South	9	50%
Region	North America (USA, Canada)	8	44%
	Europe (Germany, Austria)	1	6%
	South America (Brazil)	1	6%
	Caribbean (Trinidad & Tobago)	1	6%
	South Asia (India, Pakistan, Sri Lanka)	4	22%
	Africa (Nigeria, Tanzania)	3	17%

Publication Year Trends of OER Studies (2017 to 2025)

The publication year trends of OER studies from 2017 to 2025 are illustrated in Figure 2. Overall, the trend shows fluctuations across the period. The highest number of studies were published in 2020 and 2023, followed by 2018. Lower publication counts were observed in 2017, 2022, and 2025, with the fewest studies appearing in 2024. These variations suggest shifts in research attention to OER over time, rather than a steady upward trend. A similar pattern was noted in the review-of-reviews conducted by Mishra (2025).

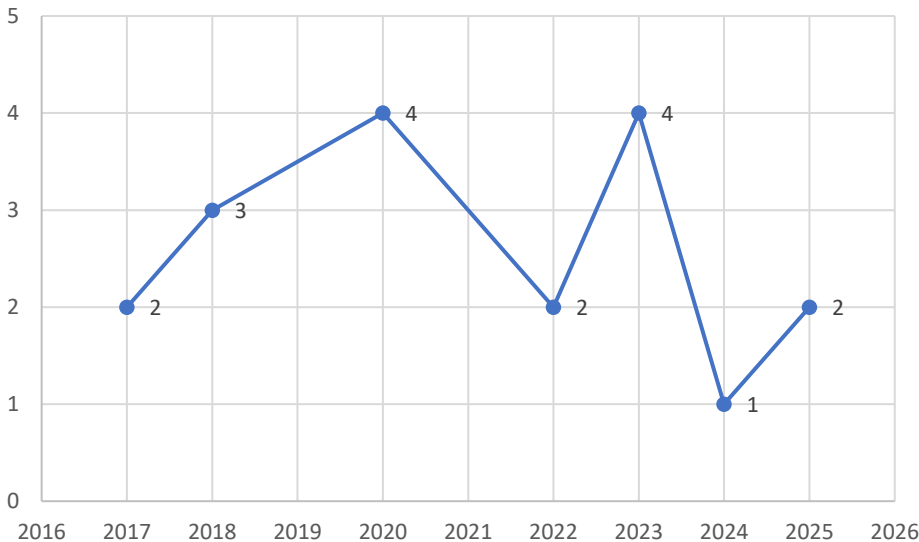


Figure 2

Trends of OER Studies Based on Years (2017-2025)

Regional Distribution of OER Research (2017 to 2025)

Table 3 presents the distribution of OER studies by global classification, distinguishing between the Global North and Global South. In this review, the Global North refers to high-income countries such as the United States, Canada, and parts of Europe, while the Global South includes low- and middle-income regions across Africa, Asia, Latin America, and the Caribbean. Although this classification was not used as a selection criterion, the reviewed studies are evenly divided between the two groups (50% each), offering broader geographic coverage than many previous reviews. Studies such as Moon and Park (2021) and Thompson (2023) have focused primarily on general trends or effectiveness, often without considering the geographical context.

The regional distribution of the 18 reviewed studies, illustrated in Figure 3, reflects a balanced representation. The Global North includes eight studies from North America and one from Europe. The Global South is represented by four studies from Asia, three from Africa, one from the Caribbean, and one from South America. Mishra (2025) stressed that most of the OER studies he reviewed were published in North America, suggesting a concentration of research in that region. Notably, Tlili et al. (2023) reported that OER studies conducted in Asia tend to show higher mean effect sizes compared to those from North America. Therefore, the inclusion of an equal number of studies from the Global North and Global South in this review offers a more balanced perspective. Recognizing these varied contexts supports a more comprehensive understanding of OER, particularly in relation to local challenges such as infrastructure, access, and institutional awareness, which are often underrepresented in the existing literature.

Table 3
Distribution of OER Studies by Global Classification (2017–2025)

Global Classification	Region	Country	No. of Studies	Studies
Global North (50%)	North America	USA	6	Rich et al. (2025); Tilinghast (2023); Makhmalbaf (2023); Harvey & Bond (2022); Phillips et al. (2020); Colvard et al. (2018)
		USA & Canada	1	Wang & Wang (2017)
		Canada	1	Metersky et al. (2024)
	Europe	Germany & Austria	1	Schroeder & Donat (2023)
Global South (50%)	Caribbean	Trinidad & Tobago	1	McGreal & Hill (2025)
	Asia	Pakistan	1	Shams et al. (2020)
		India	1	Malge (2023)
		Sri Lanka	1	Hettige et al. (2022)
		Indonesia	1	Sulisworo & Syarif (2018)
	Africa	Tanzania (Zanzibar)	1	Ismail et al. (2019)
		Nigeria	2	Alimi et al. (2020); Anthony et al. (2018)
	South America	Brazil	1	Torres et al. (2017)

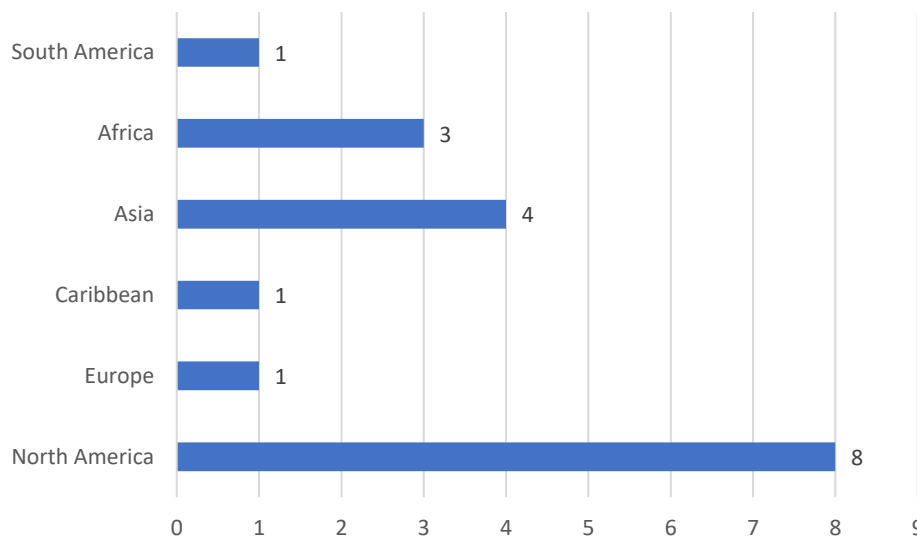


Figure 3
Distribution of OER Research Based on Region

Trends and Thematic Shifts in the OER Research Landscape (2017 to 2025)

Table 4 presents the trends and thematic shifts in the evolving landscape of OER research from 2017 to 2025. Based on the review of 18 selected articles (see Appendix A), five main themes emerged:

- Open Pedagogy and Co-Creation
- Integrated Pedagogical Strategies
- Empirical Achievement and Equity
- Behavioural and Identity Typologies and
- Adoption Barriers

Table 4*Trends and Thematic Shifts in the Evolving Landscape of OER Research from 2017 to 2025*

Theme	Codes	Region	Related Studies	Uniqueness/Departure from Previous Reviews
Open Pedagogy & Co-Creation	Student-as-producer; Science communication; Policy co-creation; Collaborative development	North America	Rich et al. (2025).	Moves from passive consumption to active knowledge creation and science literacy.
		Caribbean, South America	McGreal & Hill (2025), Torres et al. (2017).	
Integrated Pedagogical Strategies	OER with Flipped Classrooms; Problem-Based Learning (PBL); Active Learning; Case-based learning	North America	Makhmalbaf (2023), Metersky et al. (2024), Wang & Wang (2017).	Identifies that OER is most effective when paired with active learning frameworks rather than used in isolation.
		Asia	Malge (2023), Sulisworo & Syarif (2018)	
Empirical Achievement & Equity	Impact on underserved populations; Disaggregated success metrics (non-White, Pell-eligible); Student performance	North America	Colvard et al. (2018), Phillips et al. (2020), Makhmalbaf (2023), Harvey & Bond (2022).	Provides granular evidence that OER disproportionately benefit marginalized learners and reduce achievement gaps.
		Asia	Malge (2023)	
Behavioural & Identity Typologies	Teacher user types (A-D); Author vs. Reuser; Information literacy; Credibility assessment	Europe	Schroeder & Donat (2023)	Explores the psychological and behavioural profile of users, identifying authorship as a primary motivator over reuse.
		Asia	Hettige et al. (2022), Shams et al. (2020)	
Adoption Barriers	Skill paradox (Literacy vs. Creation); Infrastructure (Power/Internet); Awareness gaps	Africa	Alimi et al. (2020), Ismail et al. (2020), Anthony et al. (2018).	Highlights context-specific hurdles in developing nations that go beyond simple copyright concerns.
		Asia	Hettige et al. (2022), Shams et al. (2020), Malge (2023)	




















An interesting pattern emerged from the analysis: all five themes were identified in studies conducted in both the Global North and the Global South, with the exception of Adoption Barriers, which appeared exclusively in studies conducted in the Global South, particularly in African and Asian contexts. This finding suggests that while pedagogical innovation and learner-centred OER practices are globally distributed, structural and infrastructural challenges remain more pronounced in developing regions.

Overall, OER research is not confined to countries in the Global North but reflects growing scholarly engagement from the Global South. In this study, Global North refers to economically developed regions such as North America and Europe, while the Global South encompasses

regions including Asia, Africa, South America, and the Caribbean, which are often characterized by emerging or developing educational infrastructures.

To further examine the distribution of themes across time, a heatmap matrix and timeline analysis are presented in Table 5.

Table 5
Timeline Heatmap/Matrix of OER Research Based on the Themes

Theme ↓ / Year →	2017	2018	2020	2022	2023	2024	2025
Open Pedagogy & Co-Creation	 Global South						 /  North & South
Integrated Strategies	 Global North	 Global South			 /  North & South	 Global North	
Empirical Achievement & Equity		 Global North	 Global North	 Global North	 /  North & South		
Behavioural & Identity Types			 Global South	 Global South	 Global North		
Adoption Barriers		 Global South	 Global South		 Global South		

Note:  = Global South (developing and emerging economies),  = Global North (developed, high-income countries).

Based on the matrix, the themes of Open Pedagogy and Co-Creation and Integrated Pedagogical Strategies appeared in the early phase of the review period in 2017 and re-emerged in the later years of 2024 and 2025, indicating a renewed scholarly focus on participatory and pedagogically integrated uses of OER. In contrast, the remaining three themes, namely Empirical Achievement and Equity, Behavioural and Identity Typologies, and Adoption Barriers, were predominantly observed during the middle phase of the review period between 2018 and 2023. Overall, the timeline matrix illustrates the evolving focus of OER research, showing a shift from early explorations of pedagogical innovation towards empirical validation, behavioural understanding, and contextual challenges, before returning to more advanced and collaborative pedagogical approaches in recent years.

Future Directions of OER Research

Figure 4 presents a conceptual framework that synthesizes the emerging themes identified in this review and maps them to future directions for advancing OER research.

The framework highlights a progression from pedagogical practices and learner engagement towards empirical validation, equity considerations, and context-sensitive adoption. It organizes the themes identified from the SLR into three broader research trajectories.

The first trajectory concerns pedagogical advancement, focusing on the integration of OER within structured instructional designs and learner-centred pedagogies. The second trajectory relates to empirical and equity-oriented research, which examines learning outcomes and equity impacts across diverse learner populations. The third trajectory addresses systemic and context-sensitive

research, including institutional support, policy alignment, and infrastructural conditions influencing OER implementation.

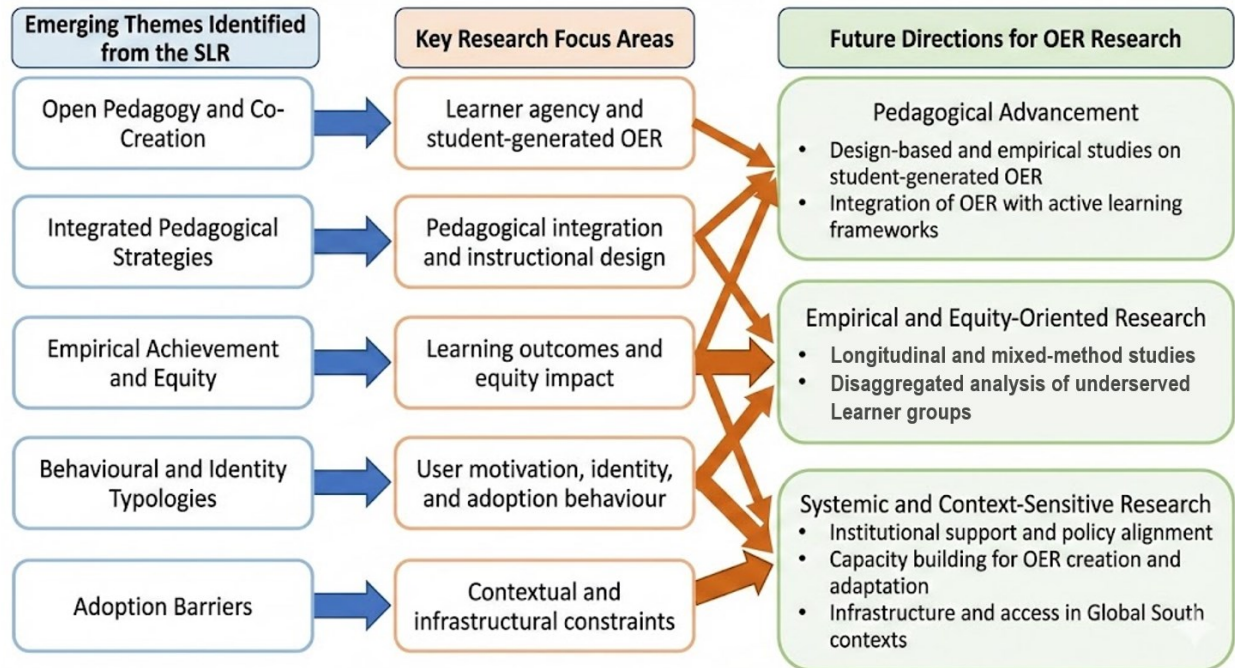


Figure 4
A Conceptual Framework for Future Directions in OER Research

This synthesis provides a structured pathway for advancing OER research beyond descriptive studies towards more integrated, sustainable, and impactful educational practices.

Discussion

The findings indicate that OER research between 2017 and 2025 does not follow a steady upward trajectory but instead demonstrates noticeable fluctuations, with publication peaks occurring in 2020 and 2023. This pattern suggests that OER research activity is responsive to contextual and systemic factors rather than being driven by sustained theoretical consolidation. The surge around 2020 aligns with the global disruption of educational practices during the COVID-19 pandemic, which intensified interest in alternative and open forms of educational provision, as also noted in previous large-scale reviews (Mishra et al., 2022; Thompson, 2023). The subsequent increase in 2023 may reflect a renewed scholarly focus on evaluating pedagogical effectiveness and equity outcomes after emergency adoption phases. Similar non-linear publication trends were reported by Mishra (2025), who observed that although OER research has expanded over time, its growth remains uneven and episodic, reinforcing the need for more sustained and theory-driven research agendas.

The regional distribution of the reviewed studies reveals an equal representation of research conducted in the Global North and the Global South, offering broader geographic coverage than many earlier reviews, which were heavily skewed towards North American contexts (Hilton, 2020; Thompson, 2023). North America remains a dominant contributor largely due to long-standing institutional support for OER initiatives, strong policy alignment, and the availability of large-scale educational datasets that facilitate empirical investigations, particularly studies examining learning achievement and equity outcomes (Colvard et al., 2018; Harvey & Bond, 2022; Phillips

et al., 2020). At the same time, a substantial body of work from Asia, Africa, South America, and the Caribbean reflects growing scholarly engagement from diverse educational systems, often driven by contextual needs related to access, affordability, and capacity building. This balanced distribution enables a more detailed understanding of how OER are conceptualized, implemented, and evaluated across varied socio-economic and infrastructural contexts.

Importantly, the inclusion of studies from the Global South brings to light contextual challenges and pedagogical opportunities that are often underrepresented in prior reviews. Studies from Africa and Asia consistently emphasize issues related to infrastructure, awareness, and capacity building (Alimi et al., 2020; Ismail et al., 2020; Shams et al., 2020), while also demonstrating strong learner engagement when OER are effectively integrated (Malge, 2023; Sulisworo & Syarif, 2018). This finding supports earlier assertions by Tlili et al. (2023) that the regional context matters, particularly in shaping learning outcomes and effect sizes. Collectively, the results underscore the importance of moving beyond geographically narrow evidence bases to develop context-sensitive and globally relevant OER research.

Next, the thematic analysis reveals a clear evolution in the focus of OER research over the review period, marked by five dominant themes: Open Pedagogy and Co-Creation, Integrated Pedagogical Strategies, Empirical Achievement and Equity, Behavioural and Identity Typologies, and Adoption Barriers. Early studies in 2017 primarily explored the participatory and collaborative dimensions of OER, positioning learners as active contributors rather than passive consumers (Torres et al., 2017; Wang & Wang, 2017). This early emphasis reflects an initial shift away from the cost-saving aspect of OER and towards the pedagogical potential, although empirical validation at this stage remained limited.

Between 2018 and 2023, OER research increasingly prioritized empirical evaluation and behavioural understanding. Large-scale quantitative studies from North America provided robust evidence regarding student performance, equity outcomes, and cost savings, particularly for underserved populations (Colvard et al., 2018; Harvey & Bond, 2022; Phillips et al., 2020). Concurrently, studies examining behavioural and identity typologies highlighted how user motivation, authorship preferences, and credibility assessment practices shape OER adoption (Hettige et al., 2022; Schroeder & Donat, 2023). These findings address gaps identified in earlier reviews, which criticized the predominance of perception-based and descriptive studies (Mishra, 2025; Otto et al., 2021).

More recent studies (2024–2025) signal a renewed focus on advanced pedagogical integration and collaborative knowledge production. Research on student-generated OER and policy co-creation demonstrates a maturation of the field, where OER are increasingly embedded within instructional design and institutional practices (McGreal & Hill, 2025; Rich et al., 2025). This thematic shift responds directly to critiques raised in prior reviews that OER have been treated as a static resource rather than a dynamic pedagogical driver (Gurav & Nagarkar, 2025; Thompson, 2023). Overall, the evolving thematic landscape suggests a gradual movement away from access-oriented discourse towards pedagogically grounded and empirically substantiated OER research. This progression mirrors the broader trajectory often observed in the adoption of educational innovations, where initial attention to novelty and access gradually shifts towards pedagogical integration and instructional effectiveness. In this sense, OER research appears to be moving towards a stage of normalization in which its use becomes embedded within routine teaching practices rather than being treated as a distinct innovation.

Based on the synthesis of emerging themes, future OER research could prioritize pedagogical advancement through deeper integration of OER within structured learning designs. While earlier studies established that OER do not negatively affect learning outcomes (Hilton, 2020), recent evidence indicates that stronger educational gains occur when OER are embedded within active learning frameworks such as flipped classrooms, problem-based learning, and collaborative projects (Makhmalbaf, 2023; Metersky et al., 2024). Future studies could therefore adopt design-based and intervention-oriented methodologies to examine how specific pedagogical configurations influence learning processes and outcomes.

A second critical direction involves strengthening empirical and equity-oriented research. Although substantial progress has been made in demonstrating the benefits of OER for underserved learners (Colvard et al., 2018; Phillips et al., 2020), existing evidence remains concentrated in higher education and North American contexts. Longitudinal and mixed-method studies are needed to assess sustained learning impacts, particularly in K–12 and vocational settings, as well as across diverse cultural and socio-economic environments. Such research would address concerns raised by Tlili et al. (2023) regarding the modest overall effect sizes reported in meta-analytic studies.

Future research could also further explore the behavioural and identity dimensions of OER engagement. Findings from Europe and Asia indicate that faculty and students are more motivated to create rather than reuse OER, suggesting that authorship and professional identity play a central role in adoption decisions (Schroeder & Donat, 2023; Shams et al., 2020). Investigating how incentives, communities of practice, and institutional recognition systems influence these behaviours can help explain uneven adoption patterns noted in previous reviews (LeMire, 2025; Mishra, 2025).

Finally, addressing systemic and context-sensitive adoption barriers remains essential, particularly in the Global South. Persistent challenges related to infrastructure, digital literacy, and institutional support continue to constrain meaningful OER implementation (Alimi et al., 2020; Ismail et al., 2020). Future research could therefore adopt a systems-level perspective that integrates policy analysis, capacity building, and institutional readiness. By aligning pedagogical innovation with structural support mechanisms, OER research can move beyond isolated success stories towards sustainable and scalable educational transformation.

Conclusion

This systematic literature review examined trends, regional distribution, thematic shifts, and future directions of OER research in education between 2017 and 2025. The findings demonstrate that OER research has evolved in a non-linear manner, with publication activity influenced by contextual and systemic factors, while also achieving broader geographic representation across both the Global North and the Global South. This balanced distribution provides a more comprehensive view of how OER are conceptualized and implemented across diverse educational and socio-economic contexts.

The thematic analysis reveals a clear progression in the OER research landscape, moving from early access- and adoption-oriented studies towards more pedagogically integrated and empirically grounded investigations. Recent studies increasingly position OER as a dynamic component of instructional design, emphasizing student-generated content, collaborative knowledge production, and integration with active learning frameworks. At the same time, empirical evidence regarding

achievement and equity outcomes, alongside insights into behavioural and identity-related factors, reflects this field's growing maturity.

Importantly, this review highlights that access and affordability alone do not guarantee meaningful learning outcomes, underscoring the need for pedagogy-first approaches to OER adoption. Persistent adoption barriers, particularly in Global South contexts, further emphasize the importance of context-sensitive, systemic, and institutionally supported research. Overall, this study contributes to the literature by advancing a synthesized understanding of OER research as a pedagogical endeavour rather than a purely resource-based intervention, and by offering a structured pathway to guide future research towards more sustainable, equitable, and impactful educational practices.

Limitations of Study and Future Research

This systematic literature review has several limitations that should be acknowledged. First, the review was limited to 18 studies published between 2017 and 2025, which may not fully represent the breadth of OER research across all databases and publication contexts. The review was restricted to peer-reviewed journal articles written in English; grey literature and studies published in other languages were excluded. As a result, some relevant findings may not have been captured. In addition, the review relied on thematic analysis rather than meta-analytic techniques, which limits the ability to estimate the magnitude of any OER effects on learning outcomes.

Future research could address these limitations by including a wider range of databases, multilingual sources, and grey literature in its scope. Empirical studies could prioritize longitudinal, mixed-method, and design-based approaches to examine how OER function as a pedagogical driver rather than merely a resource intervention. In line with the conceptual framework proposed in this study, future research could focus on pedagogical integration, equity-oriented outcomes, behavioural and identity-related factors, and context-sensitive adoption, particularly in the Global South, to support sustainable and high-quality OER implementation.

Notes

Data Availability

No data supporting the article were collected during the research.

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Conflict of Interest Statement

The authors declare no conflicts of interest.

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