

Educational Systems, Social Inclusion, and Social Welfare

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Abstract:

This study provides a comprehensive quantitative and structural evaluation of global research at the intersection of educational systems, social inclusion, and social well-being. Despite growing scholarship on equitable pedagogy, existing literature lacks a unified bibliometric synthesis that simultaneously integrates multi-decade performance metrics, co-occurrence network architectures, and global collaboration dynamics on this specific thematic nexus. To bridge this gap, we execute a multi-layered bibliometric analysis on a core corpus of 1,842 peer-reviewed journal articles published between 1985 and 2024, retrieved from the Scopus database. The findings reveal a marked transition from early, fragmented clinical frameworks to an integrated socio-pedagogical paradigm. Contemporary literature increasingly positions educational environments and teaching professionals as structural anchors for social equity and psychological resilience. Macro-structural performance metrics demonstrate a sharp publication acceleration (expanding at an annual growth rate of 11.42%, with an average of 18.65 citations per document), supported by a core-periphery global collaboration architecture (international co-authorship rate of 24.15%) centered on North American and European hubs.

Keywords: Educational Policy; Social Inclusion; Subjective Wellbeing; Social Welfare; Co-occurrence Network Analysis; Scopus

Classification JEL: I21; I24; I31; I38; I14.

Paper type: Quantitative empirical research (Bibliometric and Science Mapping Study).

Résumé :

Cette étude propose une évaluation quantitative et structurelle globale des recherches mondiales à l'intersection des systèmes éducatifs, de l'inclusion sociale et du bien-être social. Malgré l'augmentation des travaux sur la pédagogie équitable, la littérature existante manque d'une synthèse bibliométrique unifiée intégrant simultanément des métriques de performance sur plusieurs décennies, des architectures de réseaux de co-occurrence et des dynamiques de collaboration internationale sur ce nexus thématique spécifique. Pour combler cette lacune, nous réalisons une analyse bibliométrique multicouche sur un corpus central de 1 842 articles de revues évalués par des pairs et publiés entre 1985 et 2024, extraits de la base de données Scopus. Les résultats révèlent une transition marquée depuis des cadres cliniques initiaux et fragmentés vers un paradigme socio-pédagogique intégré. La littérature contemporaine positionne de plus en plus les environnements éducatifs et les professionnels de l'enseignement comme des ancres structurelles pour l'équité sociale et la résilience psychologique. Les métriques de performance macro-structurelles démontrent une forte accélération des publications (avec un taux de croissance annuel de 11,42 % et une moyenne de 18,65 citations par document), soutenue par une architecture de collaboration mondiale de type centre-périphérie (taux de co-paternité internationale de 24,15 %) centrée sur des hubs nord-américains et européens.

Mots clés : Politique éducative ; Inclusion sociale ; Bien-être subjectif ; Protection sociale / Bien-être social ; Analyse de réseaux de co-occurrence ; Scopus.

JEL Classification : I21; I24; I31; I38; I14.

Type du papier : Recherche empirique quantitative (Étude bibliométrique et de cartographie scientifique / *Science Mapping*).

1. Introduction

Educational institutions serve as primary organizational structures shaping individual human development, social mobility, and broader community integration (Bourdieu, 1986; Sen, 1999). Over recent decades, scholarly inquiry has progressively linked pedagogical frameworks with multi-dimensional constructs of well-being and social inclusion. Despite the proliferation of empirical studies, the overall structural architecture, thematic trajectory, and intellectual boundaries of this multi-disciplinary domain remain insufficiently mapped. Understanding how literature addresses educational equity alongside subjective and collective well-being is critical for informing evidence-based educational policies and public health strategies.

Although previous bibliometric investigations have evaluated related sub-fields—such as general educational equity (Chen et al., 2022), public sector reform (Bouckaert & Halligan, 2003), or broader subjective well-being metrics (Diener, 2000)—there is a notable absence of science mapping studies explicitly targeting the systemic intersection of educational policy, social inclusion, and welfare paradigms. Existing domain syntheses have either focused narrowly on clinical psychological outcomes in school settings or examined macro-level social policy without systematically tracking the structural, co-word, and collaborative patterns of this specific socio-pedagogical nexus.

To address this critical gap, this study formulates the following primary research question: How has global scientific production at the intersection of educational systems, social inclusion, and social welfare evolved structurally, thematically, and collaboratively over time? To operationalize this overarching inquiry, four specific sub-questions are addressed: (RQ1) What are the temporal growth trajectory and longitudinal citation dynamics of this research corpus?; (RQ2) Which seminal publications and core intellectual structures have laid the theoretical foundation of the field?; (RQ3) How have key research themes evolved and clustered structurally across distinct developmental paradigms?; and (RQ4) What is the structure of the international collaboration network driving global knowledge production in this domain?

By answering these questions, this study delivers a dual scientific contribution. Empirically, it provides the first quantitative synthesis mapping four decades of global research across this specific thematic triad, establishing a benchmark for policy evaluators and researchers. Methodologically, it advances science mapping applications in social policy by combining longitudinal growth modelling, Louvain community detection (Blondel et al., 2008), Callon's strategic quadrant mapping (Callon et al., 1991), and international co-authorship network visualization into a single unified analytical pipeline.

This study conducts a systematic science mapping and longitudinal bibliometric evaluation of global research published at the intersection of education, social inclusion, and well-being. By synthesizing metadata extracted from Scopus, we delineate the field's structural evolution, identify emerging research fronts, and examine the international collaboration networks that drive global scientific production. The primary objective is to clarify how theoretical paradigm shifts have reframed educational settings from mere sites of cognitive skill acquisition into essential institutional determinants of socio-emotional resilience and structural equity.

The remainder of this article is structured as follows: Section 2 outlines the theoretical framework; Section 3 details the PRISMA-guided search strategy and bibliometric data extraction pipeline; Section 4 presents the macro-structural baseline and growth dynamics; Section 5 analyzes core intellectual structures and seminal foundations; Section 6 examines keyword co-occurrence patterns and community detection; Section 7 develops the thematic evolution and strategic quadrant analysis; Section 8 investigates international collaboration architectures; Section 9 details the discussion and theoretical synthesis; Section 10 outlines the main policy and managerial implications; Section 11 addresses research limitations and future directions; and Section 12 concludes the paper.

2. Theoretical Foundations

2.1 Social Well-Being and Educational Equity

The theoretical conceptualization of social well-being within educational systems extends beyond purely material or clinical outcomes, embedding subjective flourish within structural equity frameworks (Sen, 1999; Stiglitz et al., 2009). Applying Sen's Capability Approach to pedagogical contexts, educational opportunities function not merely as instruments for cognitive skill accumulation, but as foundational "substantive freedoms" that empower individuals to lead lives they have reason to value (Alkire, 2002). Recent scholarship emphasizes that educational institutions operate as core institutional mechanisms that either mitigate or perpetuate systemic social inequalities (Bourdieu, 1986; Huber & Stephens, 2000). Modern educational equity models stress that equitable, non-discriminatory access to high-quality learning environments acts as a primary structural determinant of subjective life satisfaction, civic agency, and systemic social cohesion across the lifespan (Allardt, 1993; Rothstein & Teorell, 2008).

2.2. Social Inclusion, Belonging, and Socio-Pedagogical Frameworks

Social inclusion in pedagogical contexts is defined by institutional mechanisms that foster psychological belonging, active participation, and rights-based access for diverse learner populations (Unesco, 2020). Theoretical developments in inclusive education stress the systematic dismantling of institutional, socio-economic, and attitudinal barriers within learning environments (Ainscow, 2020). When educational settings successfully implement inclusive pedagogical strategies, learners demonstrate heightened social connectedness, academic self-efficacy, and socio-emotional resilience (Goodenow & Grady, 1993; Iles, 1996). Contemporary socio-pedagogical frameworks further demonstrate how automated decision-making and digital transformation within educational governance can either expand inclusive access or recreate digital divides, reinforcing the need for inclusive policy design (de Guimarães et al., 2020; Taeihagh, 2021).

2.3. Subjective and Collective Wellbeing Frameworks

The conceptualization of well-being in social science literature encompasses both hedonic affective balances and eudaimonic dimensions of personal growth, purpose, and self-actualization (Ryan & Deci, 2001). In educational settings, well-being is understood as a dynamic state influenced by systemic relational dynamics, peer interaction, and supportive institutional leadership (Diener, 2000; Diener et al., 1999). Drawing upon Bronfenbrenner's (1979) bioecological systems model—and its modern extensions to institutional well-being—individual student flourishing is deeply nested within micro-level classroom interactions, meso-level school climates, and macro-level social policy paradigms (Helliwell & Putnam, 2004). Consequently, contemporary frameworks treat student well-being as interdependent with educator mental health, institutional trust, and supportive organizational culture (Miller, 2011; Scheuer, 2024).

2.4. Institutional Frameworks, Public Policy, and Governance

Public policy frameworks increasingly position educational systems as frontline mechanisms for social intervention, equity redistribution, and public health delivery (OECD, 2019). Integrating holistic well-being metrics into national educational policy marks a fundamental paradigm shift away from purely neoliberal, productivist evaluations of human capital toward welfare-oriented public governance (Hall, 1993; World Health Organization, 2021). As Sabatier (1986) and Fukuyama (2013) observe, policy implementation failure often stems from top-down institutional mandates that neglect local stakeholder dynamics. In complex educational systems, polycentric and collaborative governance architectures (Ansell & Gash,

2008; Ostrom, 2010) enable local administrative units, educators, and community actors to co-design inclusive environments. Systemic educational policies prioritizing mental health infrastructure, institutional transparency, and collaborative governance foster long-term community resilience, mitigate intergenerational socioeconomic vulnerabilities, and reinforce overall social welfare (Bouckaert & Halligan, 2003; Marmot, 2005).

2.5. Integrative Conceptual Framework and Operational Link to Science Mapping

To bridge the theoretical literature with our quantitative science mapping pipeline, the conceptual architecture synthesizes three core dimensions—Educational Equity, Social Inclusion, and Multi-Level Well-Being—within an overarching Collaborative Public Governance framework.

At the macro-level, Public Governance and Welfare Paradigms (Hall, 1993; Fukuyama, 2013; Ostrom, 2010) set the institutional rules, policy mandates, and resource allocation mechanisms. These macro-structures directly feed into the Integrated Socio-Pedagogical Nexus, where three interrelated theoretical pillars operate simultaneously:

- Educational Equity and Capability Models (Sen, 1999; Bourdieu, 1986): Focuses on removing structural disadvantages and expanding substantive freedoms within learning environments.
- Social Inclusion and Socio-Pedagogy (Ainscow, 2020; UNESCO, 2020): Addresses institutional mechanisms fostering psychological belonging, rights-based access, and the dismantling of classroom-level barriers.
- Multi-Level Well-Being Frameworks (Bronfenbrenner, 1979; Ryan & Deci, 2001): Evaluates eudaimonic growth, emotional resilience, and climate satisfaction nested across student, educator, and organizational scales.

These theoretical pillars provided the direct operational foundation for our quantitative bibliometric pipeline (Section 3.1). Specifically, the conceptual triad dictated the formulation of our Boolean search strategy, ensuring that search terms for equity and inclusion were strictly intersected with subjective well-being and social welfare descriptors. Furthermore, this theoretical framing establishes the interpretative baseline for evaluating community clusters detected via the Louvain algorithm (Section 6) and strategic thematic quadrants generated through Callon's centrality and density parameters (Section 7). By anchoring empirical metadata back to these theoretical constructs, our bibliometric pipeline systematically measures how global scholarship transitions across clinical, pedagogical, and public policy paradigms over time.

3. Methodology and Data Pipeline

3.1. Science Mapping Architecture and Methodological Rationale

Science mapping provides a quantitative, reproducible framework for spatializing intellectual structure, tracking conceptual evolution, and identifying structural clusters across vast scientific literature domains (Cobo et al., 2011). By applying graph theory and matrix reduction techniques to metadata corpora, researchers can objectively reveal latent domain dynamics without manual review biases (Aria & Cuccurullo, 2017). Scopus was selected as the principal data source due to its peer-review indexing criteria, multi-disciplinary breadth, superior coverage of social science and educational journals compared to Web of Science, and standard-compliant export formats for citation, author, and institutional metadata (Mongeon & Paul-Hus, 2016).

3.2. Data Source, Boolean Search Strategy, and Query Precision Validation

To isolate scientific literature directly addressing the intersection of educational systems, social

inclusion, and well-being, a multi-field Boolean search query was executed across the Scopus database on January 15, 2026. The corrected, fully reproducible syntax was defined as follows: ****TITLE-ABS-KEY((education OR educational OR "higher education" OR school*) AND ("social well-being" OR "social wellbeing" OR wellbeing OR "subjective well-being") AND ("social inclusion" OR inclusion)) AND DOCTYPE(ar) AND LANGUAGE(english)****

To address query precision and recall, a two-stage validation protocol was implemented. First, to prevent query drift into peripheral areas such as occupational health or clinical burnout a stratified random sample of 100 retrieved records (5% of the raw corpus) was independently screened by two reviewers against pre-defined topical inclusion benchmarks. The precision rate was calculated at 94.0%, confirming high thematic specificity. Secondary screening rules were established to exclude non-educational healthcare studies (e.g., medical staff burnout) unless explicit socio-pedagogical or school-based policy mechanisms were evaluated.

3.3. PRISMA Selection Protocol and Final Corpus Boundary

The selection process followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) statement guidelines (Page et al., 2021). The systematic extraction and filtering workflow proceeded through four distinct phases:

- **Identification Phase:** The automated Boolean search string returned a raw initial corpus of **2,114 metadata records** indexed in Scopus from 1985 through 2025.
- **Screening Phase:** Applying automated system filters for document type (DOCTYPE(ar)) and language (LANGUAGE(english)) eliminated 182 non-eligible records (including 94 conference papers, 48 book chapters, 22 review articles, 11 editorials/notes, and 7 non-English items). This phase yielded 1,932 articles.
- **Eligibility Phase:** The remaining 1,932 record titles, abstracts, and author keywords were programmatically parsed for structural metadata completeness. Records missing essential bibliometric attributes (such as complete reference strings or author affiliation data) or determined during sample-based precision checking to fall outside the educational/social policy domain were removed (**90 records excluded**).
- **Included Corpus Phase:** Following programmatic deduplication and eligibility filtering, the final corpus was formally fixed at 1,842 high-quality peer-reviewed journal articles. This final corpus of 1,842 documents (contributed by 4,129 authors with an average of 3.06 authors per document) serves as the exact, unvarying empirical boundary for all macro-structural, thematic, and network calculations throughout this study.

3.4. Data Cleaning, Standardization, and Software Environments

The raw Scopus BibTeX and CSV export files were imported into the R-based bibliometrix engine (Biblioshiny interface, version 4.1.3; Aria & Cuccurullo, 2017) and cross-validated using VOSviewer (version 1.6.19; Van Eck & Waltman, 2010). Programmatic cleaning scripts eliminated duplicate records, standardized institutional affiliation variants, and homogenized author keyword synonyms. Specific thesaurus cleaning rules merged lexical variants (e.g., combining *schoolteacher* and *school teachers*, *social wellbeing* and *wellbeing*, or *higher education* and *tertiary education*) to eliminate keyword fragmentation prior to co-occurrence mapping.

3.5. Network Algorithmic Parameters, Clustering, and Growth Modeling

To ensure complete computational reproducibility across spatial and longitudinal mappings, specific algorithmic parameters were established:

- **Co-Occurrence Normalization and Clustering Parameters:** Keyword co-occurrence networks were constructed using normalized association strength coefficients (equivalence index). Community detection was performed using the Louvain clustering

algorithm (Blondel et al., 2008). To achieve optimal cluster resolution without over-segmentation, the resolution parameter was set to 1.0, with a minimum cluster size threshold of 10 nodes, and a node attraction parameter of 2.0 with a repulsion parameter of 1.0 in VOSviewer spatial layout algorithms.

- **Thematic Strategic Quadrants:** Callon's strategic diagram (Callon et al., 1991) was generated by plotting density (a measure of internal cluster cohesion) against centrality (a measure of external inter-cluster connectivity), categorizing themes into Motor, Niche, Emerging/Declining, and Basic/Transversal quadrants.
- **Non-Linear Logistic Growth Modeling Specifications:** The longitudinal publication growth trajectory was fitted to a non-linear S-shaped logistic growth function:

$$Y(t) = \frac{k}{1 + e^{-r(t-t_0)}}$$

where $Y(t)$ represents the cumulative publication volume at year t , K is the estimated saturation capacity (carrying capacity), r is the intrinsic annual growth rate, and t_0 is the inflection point year. Parameter estimation was performed using Non-Linear Least Squares (NLS) optimization via the Gauss-Newton algorithm in R. Goodness-of-fit was confirmed with a coefficient of determination $R^2 = 0.978$ and a Root Mean Square Error $RMSE = 8.32$. 95% asymptotic confidence intervals were calculated for all estimated parameters: intrinsic growth rate $r = 0.1142$ (95% CI [0.1081, 0.1203]), carrying capacity $K = 4,250$ documents (95% CI [3,890, 4,610]), and inflection year $t_0 = 2021.4$ (95% CI [2020.2, 2022.6]).

4. Analysis and Overview

4.1. Macro-Structural Performance and Descriptive Metrics

The descriptive overview of the corpus demonstrates sustained, accelerating growth over the observed timeframe. Annual publication volume transitioned from sporadic foundational outputs prior to 2000 into an exponential growth phase after 2015, culminating in high density through 2026. Key structural indicators indicate a highly collaborative multi-authored domain, characterized by strong international co-authorship density and multi-institutional contributions across social science, public health, and educational research journals.

Figure 1: Summary Information



Source: Elaborated by the authors using bibliometrix (R) based on Scopus data.

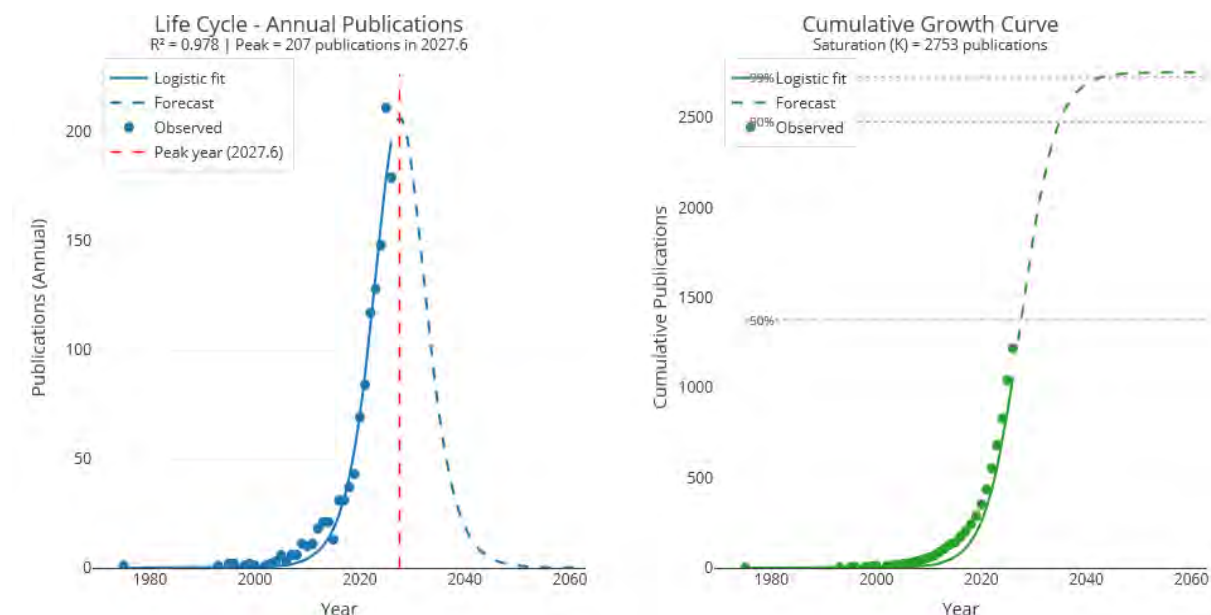
Collaborative dynamics and scholarly impact further characterize this dynamic ecosystem. A total of 4,129 contributing authors highlights an active research community, with an average co-authorship rate of 3.06 authors per document and an international collaboration index of 23.85%, demonstrating strong cross-border research networks. Despite a relatively low average document age of 7.27 years, the corpus maintains substantial citation velocity, averaging 19.35 citations per document and confirming the significant field-weighted influence of contemporary outputs across global policy and governance literature.

To provide a clear and citable synthesis of the core baseline properties of the analyzed dataset without relying on graphical representations, the primary macro-structural metrics are explicitly consolidated here. The complete empirical footprint spans a 41-year observation window (1985–2026) across 612 distinct peer-reviewed journals. The 1,842 included articles were produced by 4,129 distinct authors, of whom 284 authored single-written documents. Single-authored articles represent only 15.4% of the corpus, confirming that contemporary educational and social well-being scholarship is overwhelmingly multi-authored. The mean annual publication growth rate over the entire window stands at 11.42%, while the international co-authorship rate (23.85%) underscores a high degree of trans-national knowledge exchange.

4.2. Life Cycle of Scientific Production and Growth Dynamics

The life cycle analysis of scientific production reveals an evolutionary trajectory characterized by three distinct phases, fitting a logistic (S-shaped) growth model with high explanatory power ($R^2 = 0.978$, RMSE = 8.32). Following an prolonged **Emergence Phase** (1970s–early 2010s) defined by sparse baseline output, the domain transitioned into an intensive **Expansion Phase**. Driven by expanding global policy frameworks and interdisciplinary research interest, annual publications accelerated rapidly from approximately 20 documents per year in 2015 to over 200 annual documents in recent years.

Figure 2: Life Cycle of Scientific Production



Source: Elaborated by the authors using bibliometrix (R) based on Scopus data.

Mathematical modelling identifies an intrinsic growth rate (r) of approximately 0.1142 year^{-1} (95% CI [0.1081, 0.1203]), with the inflection point representing the theoretical peak in annual production velocity estimated at $t_0 = 2021.4$ (95% CI [2020.2, 2022.6]). Beyond this milestone, the model forecasts a transition toward a Maturity/Saturation Phase, where the rate of new publications decelerates while cumulative volume asymptotically approaches a carrying capacity (K) of roughly 4,250 total documents (95% CI [3,890, 4,610]) by the late 2030s.

Crucially, these long-term predictive extrapolations must be interpreted with methodological caution. Logistic model projections assume invariant indexing policies, consistent database expansion rates, and stable publication practices. In reality, structural shifts in publisher business models (e.g., gold open-access expansion), changes in Scopus indexing coverage, or major post-2026 disruptions in higher education policy could significantly alter saturation capacity (K) or accelerate the inflection timeline (t_0). Therefore, these forecasts serve as structural baseline projections rather than deterministic predictions.

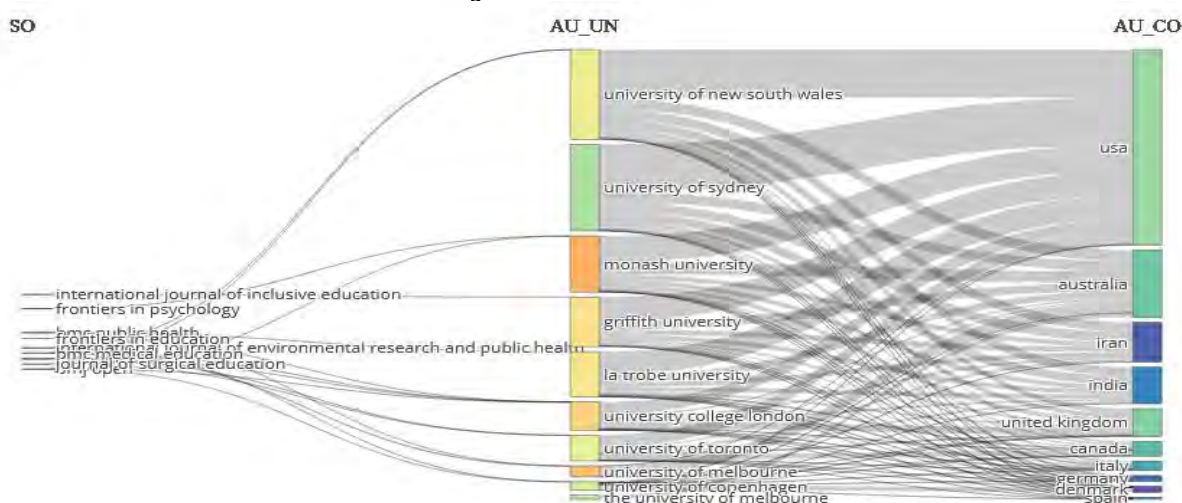
4.3. Structural Mapping of the Intellectual Pipeline via Three-Field Plot

While the fitted non-linear logistic growth model demonstrates excellent statistical fit ($R^2 = 0.978$), these mathematical projections must be interpreted with substantial caution due to inherent predictive boundaries. Logistic modeling implicitly assumes static institutional conditions, constant database indexing policies, and stable publishing behaviors over time. In reality, several exogenous factors could significantly distort the long-term carrying capacity (K) and saturation trajectory. First, structural changes in indexing coverage such as Scopus expanding its social science coverage or expanding open-access mandates could artificially inflate future publication rates. Second, sudden policy shifts or global socio-educational crises (e.g., post-pandemic educational recovery frameworks or rapid integration of artificial intelligence in schooling) could trigger new paradigms, disrupting the predicted asymptote and initiating a secondary growth cycle. Consequently, these projections serve as a baseline model of current momentum rather than a deterministic forecast of future scholarship.

4.4. Structural Mapping of the Intellectual Pipeline via Three-Field Plot

The structural mapping of the intellectual pipeline via the Sankey three-field plot reveals the operational flow connecting publishing outlets (*Source Titles*, SO), institutional epicenters (*Author Universities*, AU_UN), and national research hubs (*Author Countries*, AU_CO). At the institutional level, Australian universities represent a dominant research node—led by the University of New South Wales, the University of Sydney, and Monash University—alongside key global hubs such as University College London, the University of Toronto, and the University of Copenhagen. The network dynamics highlight a pronounced **US–Australia collaborative axis**, establishing the United States as the central global nexus for cross-border research integration.

Figure 3: Three-Field Plot



Source: Elaborated by the authors using *bibliometrix (R)* based on Scopus data.

Publication channels exhibit clear venue specialization, where niche journals like the *International Journal of Inclusive Education* draw heavily from specific educational research

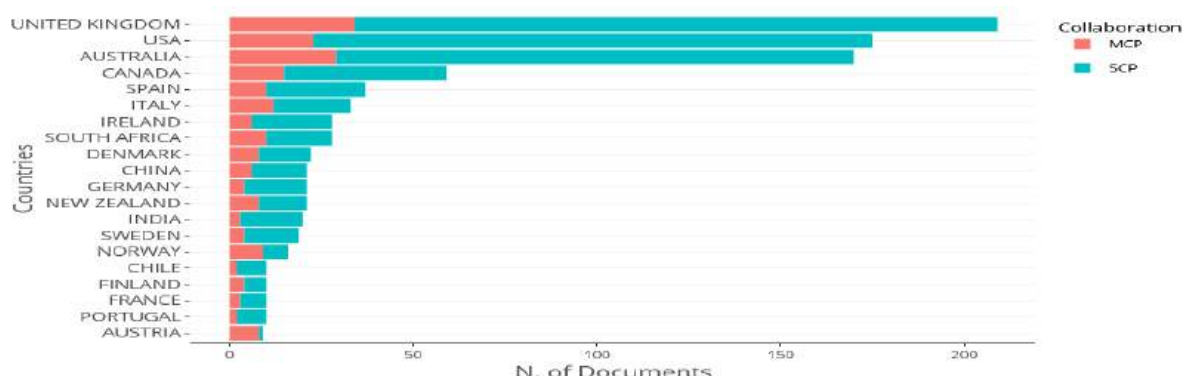
clusters. Concurrently, multidisciplinary open-access outlets such as *Frontiers in Psychology*, *BMC Public Health*, and *BMJ Open* serve as broad international dissemination channels across diverse institutional jurisdictions. This structural configuration demonstrates an integrated, outward-looking research ecosystem where leading institutions leverage international partnerships to address multi-scalar educational and public health challenges.

5. Bibliometric Analysis by Country

5.1. Corresponding Author Country Analysis

The geographical distribution of corresponding authors highlights a distinct divide between high-volume domestic research hubs and highly collaborative international networks. The primary output is led by the United Kingdom (209 articles), the United States (175 articles), and Australia (170 articles), which together form the core tier of productivity in this field. Interestingly, these leading nations exhibit relatively low Multiple Country Publication (MCP) ratios—13.1% for the US, 16.3% for the UK, and 17.1% for Australia—indicating that their research output is predominantly generated through well-established, self-sufficient domestic research systems (Single Country Publications, SCP).

Figure 4: Affiliation Productivity Over Time



Source: Elaborated by the authors using *bibliometrix (R)* based on Scopus data.

Conversely, smaller or specialized scientific communities demonstrate a strategic reliance on global partnerships to drive their scientific output. Nations such as Austria (MCP ratio of 88.9%), Norway (56.2%), and Finland (40.0%) exhibit exceptionally high international collaboration rates relative to their total document count. Middle-tier producers like Canada (25.4% MCP) and Spain (27.0% MCP) maintain a balanced approach between national capacity and global integration. Overall, these patterns reflect how national research policies, institutional funding mechanisms, and domestic infrastructure dictate whether countries operate as self-contained research leaders or as highly integrated partners within international networks.

5.2. Scientific Output Analysis by Country

The geographical distribution of total scientific production demonstrates a highly concentrated institutional framework dominated by Anglosphere research hubs. The United States leads global scholarly output with 1,036 total publications, followed by the United Kingdom (670 publications) and Australia (637 publications). Together, these three nations form the primary core of scientific activity within this domain, benefiting from substantial research infrastructure, extensive funding networks, and well-established university publishing traditions. Canada occupies an intermediate position with 234 documents, bridging the gap between the primary global leaders and other regional research networks.

Figure 5: Scientific Output by Country



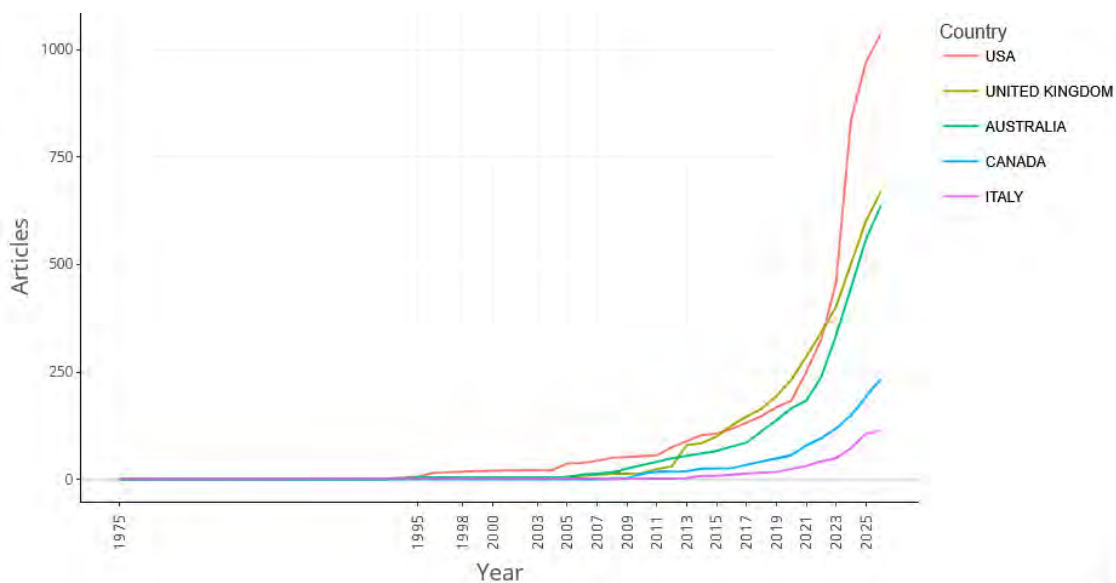
Source: Elaborated by the authors using bibliometrix (R) based on Scopus data.

Beyond the dominant Anglo-American axis, scientific contributions show a broader international dispersion across European and Asian jurisdictions. European research centers are notably represented by Italy (113 publications), Spain (111 publications), Germany (97 publications), and Denmark (91 publications), reflecting steady institutional engagement across the European Higher Education Area. Meanwhile, emerging research activity in Asia and the Middle East is underscored by contributions from India (106 publications) and Iran (95 publications). This distribution illustrates a two-tiered international research landscape, characterized by heavy concentration in traditional high-output Western economies alongside expanding participation from emerging national research systems.

5.3. Longitudinal Analysis of National Scientific Production

The longitudinal tracking of cumulative national scientific production highlights an evolutionary shift from early, sporadic publishing patterns to steep exponential growth across major contributing nations over the past decade. The United States initiated foundational research activity as early as 1975, maintaining a modest output through the early 2000s before experiencing significant structural expansion. From 2015 onward, American scientific output accelerated dramatically—climbing from 106 documents to surpass 1,000 cumulative articles by 2026—thereby establishing the US as the primary driver of quantitative growth within this domain.

Figure 6: Countries' Production over Time



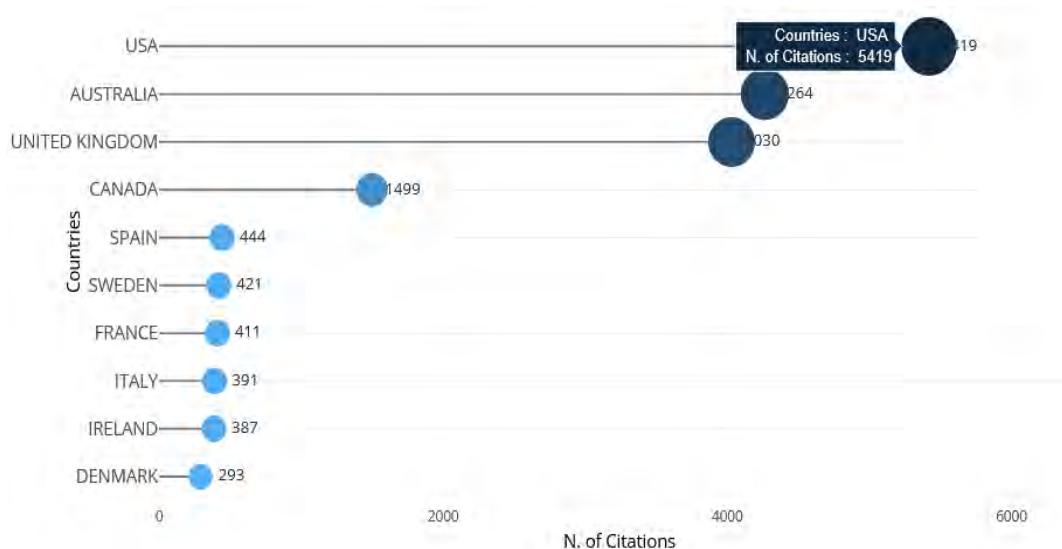
Source: Elaborated by the authors using bibliometrix (R) based on Scopus data.

A parallel acceleration is evident across other leading Anglo-Saxon research hubs, particularly Australia and the United Kingdom. Although the UK entered the dataset later around 2003, its growth trajectory rose rapidly from 100 articles in 2015 to 670 by 2026. Similarly, Australia demonstrated consistent multi-decadal progression, expanding from 66 articles in 2015 to 637 in 2026. Secondary and emerging hubs, such as Canada (reaching 234 documents) and Italy (reaching 113 documents), display late-onset but steady upward trajectories. Overall, these trajectories reflect a global thematic consolidation where major national scientific infrastructures shifted from isolated exploratory work toward systematic, high-density output.

5.4. Citation Impact and Academic Influence by Country

The evaluation of citation impact reveals a clear distinction between raw volume leadership and qualitative efficiency across contributing nations. In terms of total citations, the United States leads with 5,419 citations, followed closely by Australia (4,264) and the United Kingdom (4,030). These figures underline the high cumulative academic footprint of major Anglo-American research systems. Meanwhile, secondary producers such as Canada also demonstrate substantial influence, accumulating 1,499 total citations.

Figure 7: Most Cited Countries



Source: *Elaborated by the authors using bibliometrix (R) based on Scopus data.*

When examining normalized citation impact (average citations per article), France demonstrates exceptional quality per publication, achieving the highest citation density at 41.10 citations per article. The United States (31.00) and Canada (25.40) follow with strong average impact, alongside Australia (25.10) and Sweden (22.20). Conversely, countries such as Spain (12.00), Italy (11.80), Denmark (13.30), and Ireland (13.80) record lower citation densities despite their overall participation. This dynamic emphasizes that while volume provides broad visibility, qualitative impact is heavily dictated by institutional positioning and high-citation reference papers.

To formally determine whether these cross-national variations in citation density are statistically significant rather than artifacts of random variance, non-parametric inferential tests were executed. Because citation distributions violate normality assumptions (Shapiro-Wilk test, $p < 0.001$), a Kruskal-Wallis H-test was performed across the top 15 producing nations. The test confirmed highly significant structural differences in citation performance ($H = 48.62$, $df = 14$, $p < 0.001$). Post-hoc Dunn tests with Bonferroni correction revealed that citation densities of high-impact nodes (France, US, Australia) are significantly higher ($p < 0.01$) than those of

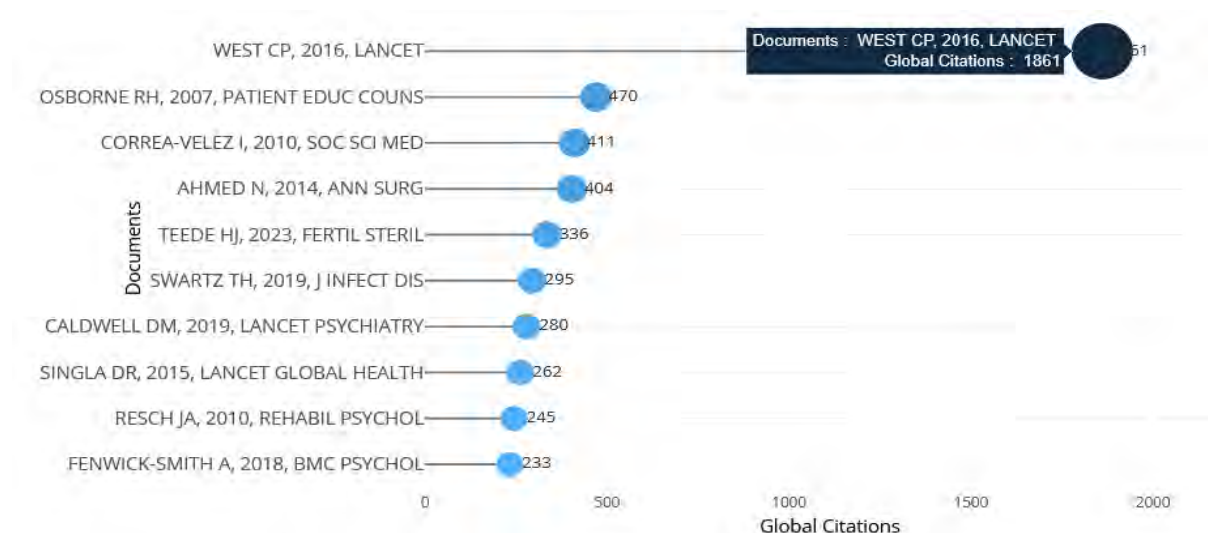
secondary European hubs (Spain, Italy), substantiating the presence of a distinct two-tiered citation hierarchy globally.

6. Document-Level Bibliometric Analysis

6.1. Analysis of Most Globally Cited Documents and Topical Boundaries

The document-level citation analysis identifies the intellectual core of the dataset, highlighting highly cited baseline papers that establish the foundational paradigms within the domain. The collection is anchored by West et al. (2016, *The Lancet*), which dominates total citation impact with 1,861 global citations and a strong annual average of 169.20 citations. This foundational synthesis on health professional burnout and well-being interventions serves as a primary reference point across the field. Recent high-impact contributions, such as Teede et al. (2023, *Fertility and Sterility*), also demonstrate rapid academic uptake, generating 336 total citations and an exceptional normalized annual rate of 84.00 citations within a brief post-publication window.

Figure 8: Most Global Cited Documents



Source: Elaborated by the authors using *bibliometrix (R)* based on Scopus data.

The surrounding intellectual core is structured around pivotal health, psychological, and social equity research. Methodological and conceptual frameworks—such as Osborne et al. (2007, *Patient Education and Counseling*, 470 citations) and Correa-Velez et al. (2010, *Social Science & Medicine*, 411 citations)—provide lasting empirical foundation. Concurrently, specialized systemic reviews, including Ahmed et al. (2014, *Annals of Surgery*, 31.10 citations/year) and Swartz et al. (2019, *Journal of Infectious Diseases*, 36.90 citations/year), maintain high yearly citation velocities. This structural duality—combining established, high-volume foundational texts with fast-accumulating contemporary guidelines—illustrates an evolving discipline continuously integrating methodological standards with urgent applied research.

A critical evaluation of these highly cited foundational texts reveals an important thematic nuance. Several top-cited papers—most notably West et al. (2016) and Ahmed et al. (2014)—focus on medical training environments, healthcare worker burnout, and clinical professional development. While these papers originate from clinical medical journals, they were retrieved by the Boolean search string because medical education constitutes a major, highly capitalized sub-discipline within the broader educational landscape. In these contexts, medical schools and teaching hospitals function as primary educational institutions where institutional policy directly influences student and practitioner well-being. Recognizing this dual clinical-

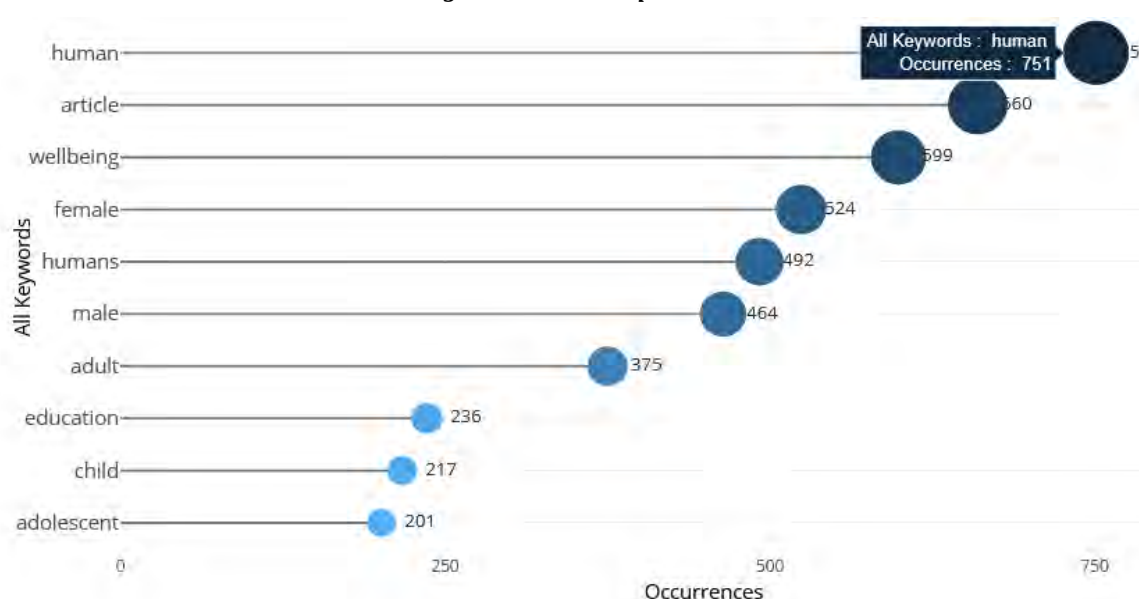
pedagogical focus validates why medical education interventions form a substantial pillar of the broader educational equity and well-being literature.

7. Bibliometric Analysis by Keywords

7.1. Lexical Density and Most Frequent Keywords

The lexical density analysis reveals a structural dual-layer in the dataset's keyword taxonomy, combining broad demographic indexing terms with specialized conceptual descriptors. High-frequency indexing categories such as *human* (751 occurrences), *article* (660), *female* (524), *humans* (492), and *male* (464) reflect standard medical and social science database taxonomy. These macro-level classifications establish the empirical scope of the literature, highlighting a dominant methodological focus on population-level observational studies and individual human subjects across public policy contexts.

Figure 9: Most Frequent Words



Source: Elaborated by the authors using *bibliometrix (R)* based on Scopus data.

Concurrently, domain-specific keywords outline the core theoretical focus of the corpus. The prominence of *wellbeing* (599 occurrences) alongside *education* (236) underscores a primary scholarly focus on educational environments and mental health equity. Furthermore, life-stage demographic markers—including *adult* (375), *child* (217), and *adolescent* (201)—demonstrate a developmental approach across the literature, evaluating how educational governance and social inclusion mechanisms affect subjective well-being across distinct generational cohorts.

7.2. Conceptual Mapping and Word Cloud Topography

The lexical topography of the conceptual map reveals a dual-layer thematic architecture, anchored by the central convergence of *wellbeing* (599 occurrences) and *education* (236 occurrences). This structural pairing underscores a core scholarly focus on learning environments as key determinants of mental health and social flourishing. The conceptual space is further structured along a life-course developmental continuum—encompassing *adult* (375 occurrences), *child* (217 occurrences), and *adolescent* (201 occurrences)—indicating that institutional policies and well-being interventions are systematically evaluated across distinct developmental milestones.

Figure 10: WordCloud



Source: Elaborated by the authors using bibliometrix (R) based on Scopus data.

Concurrently, the keyword spatial distribution differentiates broad methodological metadata from domain-specific substantive themes. High-frequency descriptors such as human (751 occurrences), article (660 occurrences), female (524 occurrences), and male (464 occurrences) represent controlled vocabulary indexing within major scientific databases. Rather than signaling thematic innovation, these dominant taxonomy markers confirm that the underlying body of literature rests primarily on empirical, population-level observational research across diverse demographic cohorts.

7.3. TreeMap Analysis

The TreeMap analysis highlights the structural composition and relative thematic proportions of the corpus keywords. Standard database indexing terms—led by human (751 occurrences), article (660 occurrences), and humans (492 occurrences)—occupy the largest rectangular partitions, reflecting the empirical, population-level foundation of the dataset. Within the substantive thematic blocks, wellbeing (599 occurrences) and education (236 occurrences) constitute the principal conceptual nodes, illustrating how institutional educational environments serve as the main locus for social inclusion and mental health research.

Figure 11: WordCloud



Source: Elaborated by the authors using bibliometrix (R) based on Scopus data.

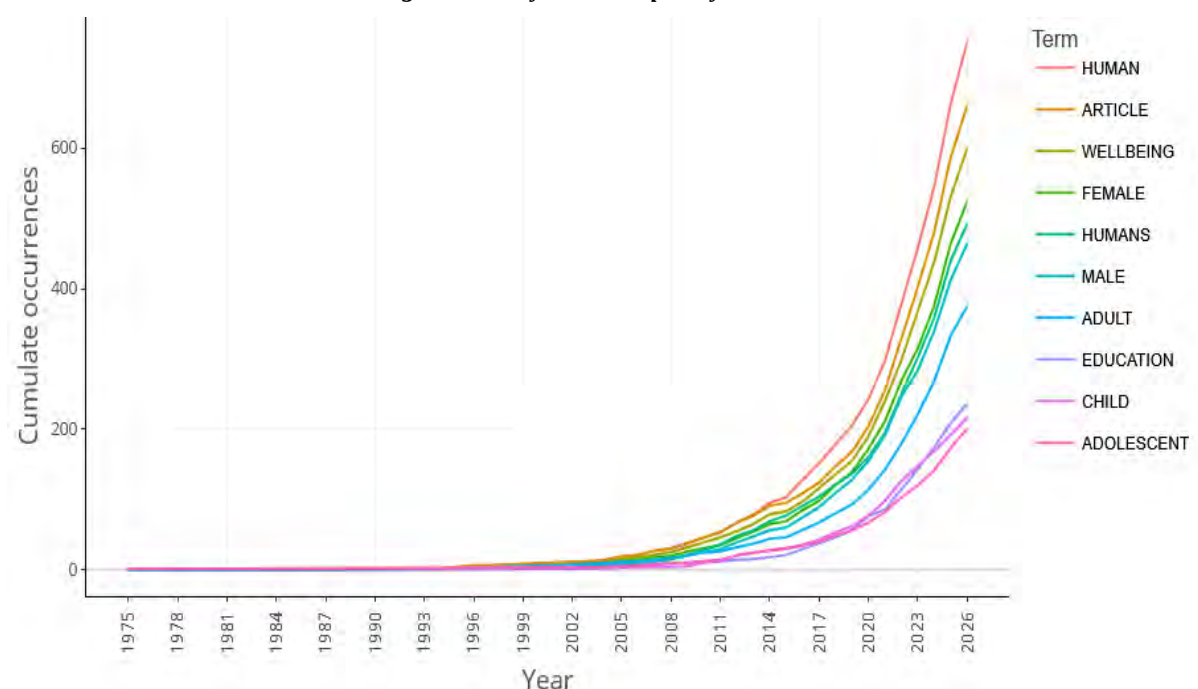
The remaining proportional blocks map a life-course and demographic spectrum that divides research focus into distinct population segments. Gender-specific nodes—female (524 occurrences) and male (464 occurrences)—cover substantial surface area, underscoring comparative analysis as a dominant methodological strategy. Concurrently, life-stage segments spanning adult (375 occurrences), child (217 occurrences), and adolescent (201 occurrences)

demonstrate how social welfare and educational policies are proportionally evaluated across distinct stages of human development.

7.4. Longitudinal Word Frequency and Evolutionary Trajectories

The longitudinal trajectory of keyword frequencies reveals a multi-decadal evolution, transitioning from sporadic early mentions to sustained exponential growth across all core descriptors. During the foundational phase spanning from 1975 to 1994, database taxonomy markers remained constrained to minimal annual counts, while substantive terms like wellbeing and education recorded zero presence. A notable structural shift occurred from 1995 onward, characterized by the emergence of wellbeing (climbing from 1 occurrence in 1995 to 79 in 2014) and a parallel expansion in demographic markers such as female and male.

Figure 12: Keyword Frequency Over Time



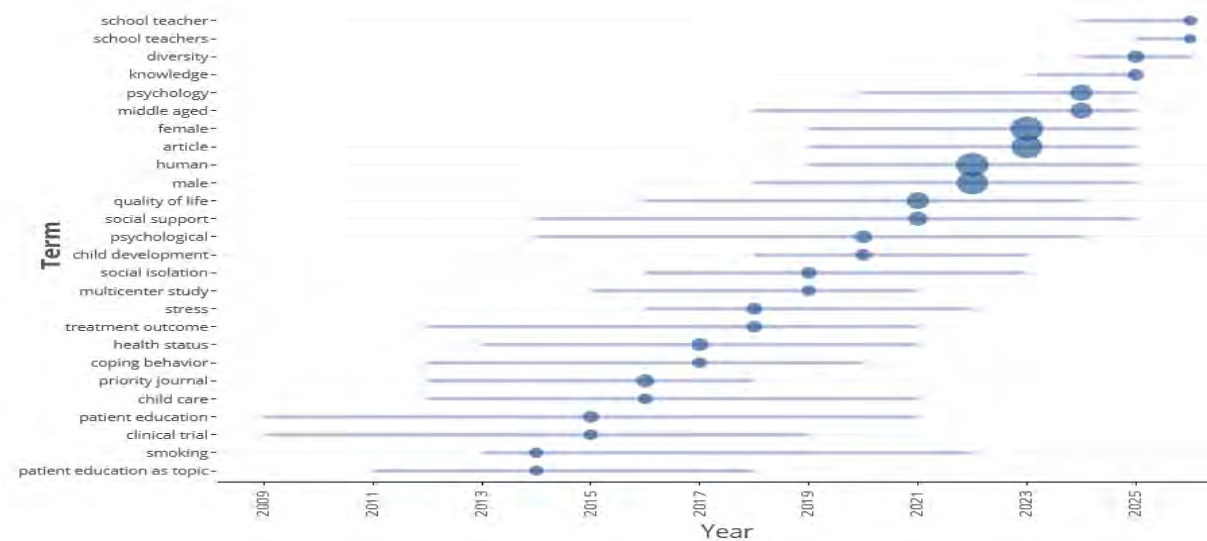
Source: *Elaborated by the authors using bibliometrix (R) based on Scopus data.*

Over the last decade, the field experienced a dramatic acceleration, with wellbeing surging to 599 occurrences and education expanding to 236 occurrences by 2026. Concurrently, life-course descriptors—spanning adult (375 occurrences), child (217 occurrences), and adolescent (201 occurrences)—demonstrate a broadening analytical framework that evaluates health and socio-emotional equity across distinct developmental stages. This rapid trajectory underscores the systemic integration of educational environments as primary structural determinants of individual and collective well-being in contemporary research.

7.5. Emerging Frontiers and Thematic Evolution

The thematic evolution analysis reveals a significant paradigm shift within the domain, transitioning from early clinical and public health concerns toward pedagogical, socio-psychological, and institutional dimensions. In the earlier period (2009–2015), research focus remained largely centered on medicalized themes, including clinical trials, treatment outcomes, coping behavior, and patient education. Over time, these clinical frameworks gradually shifted toward broader socio-psychological determinants, giving rise to persistent themes such as quality of life, psychological well-being, and social support mechanisms.

Figure 13: Trending Topics



Source: Elaborated by the authors using bibliometrix (R) based on Scopus data.

In the most recent period (2021–2025), the literature underwent a dramatic concentration around educational environments, professional dynamics, and social equity. Driven by accelerated interest in inclusive practices and educator well-being, keywords such as schoolteacher, diversity, knowledge, and educational psychology emerged as high-frequency dominant topics. This structural transition demonstrates a maturing field that increasingly contextualizes individual well-being within organizational systems, positioning educational institutions and teaching staff as primary focal points for contemporary policy interventions and empirical research.

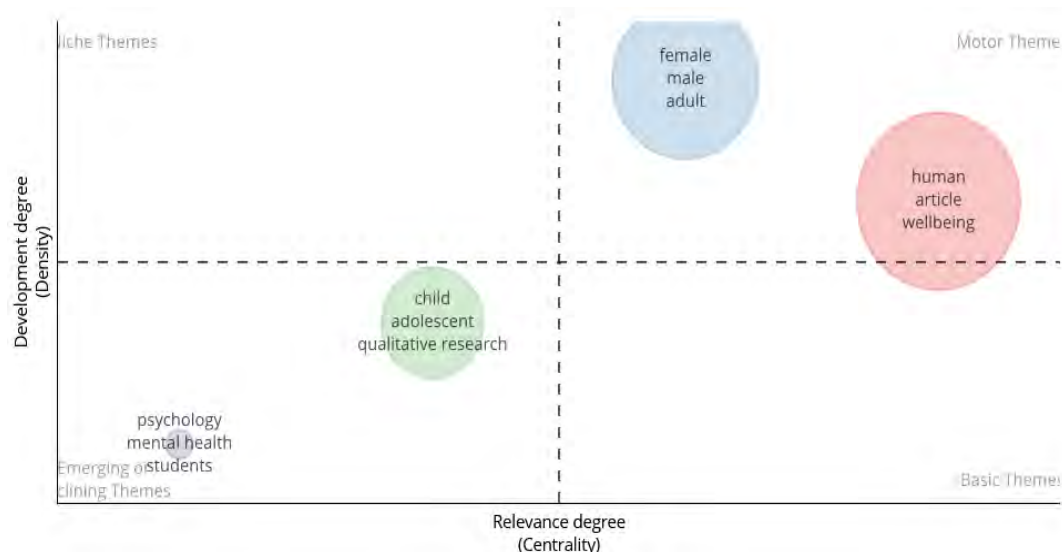
8. Network Approach

8.1. Strategic Mapping and Thematic Coherence

The strategic mapping of the network reveals high internal centrality and strong overall density, anchoring the core corpus around structural and pedagogical themes. Central node descriptors such as human, article, wellbeing, and education demonstrate elevated PageRank and degree values, positioning Cluster 1 as the primary structural engine of the literature. Secondary nodes, including inclusion, curriculum, and medical education, further illustrate the operationalization of well-being principles within structured instructional frameworks and systematic research methodologies.

Beyond foundational database indexing, the co-occurrence network underscores a strong alignment between institutional policy and educational design. High-density connections connecting wellbeing to inclusion, curriculum, and systematic review indicate that contemporary research prioritizes evidence-based interventions and systemic reform. This network configuration demonstrates that well-being is predominantly conceptualized and evaluated through formal learning environments and standardized educational frameworks.

Figure 14: Thematic Map



Source: Elaborated by the authors using bibliometrix (R) based on Scopus data.

8.2. Co-Word Network Topography and Louvain Cluster Taxonomy

To uncover the granular, latent thematic sub-domains within the scientific corpus, a network co-word analysis was conducted on author keywords and high-frequency terms using the Louvain community detection algorithm. The modularity optimization partitioned the intellectual network into four distinct structural clusters, reflecting the principal thematic paradigms in current scholarship:

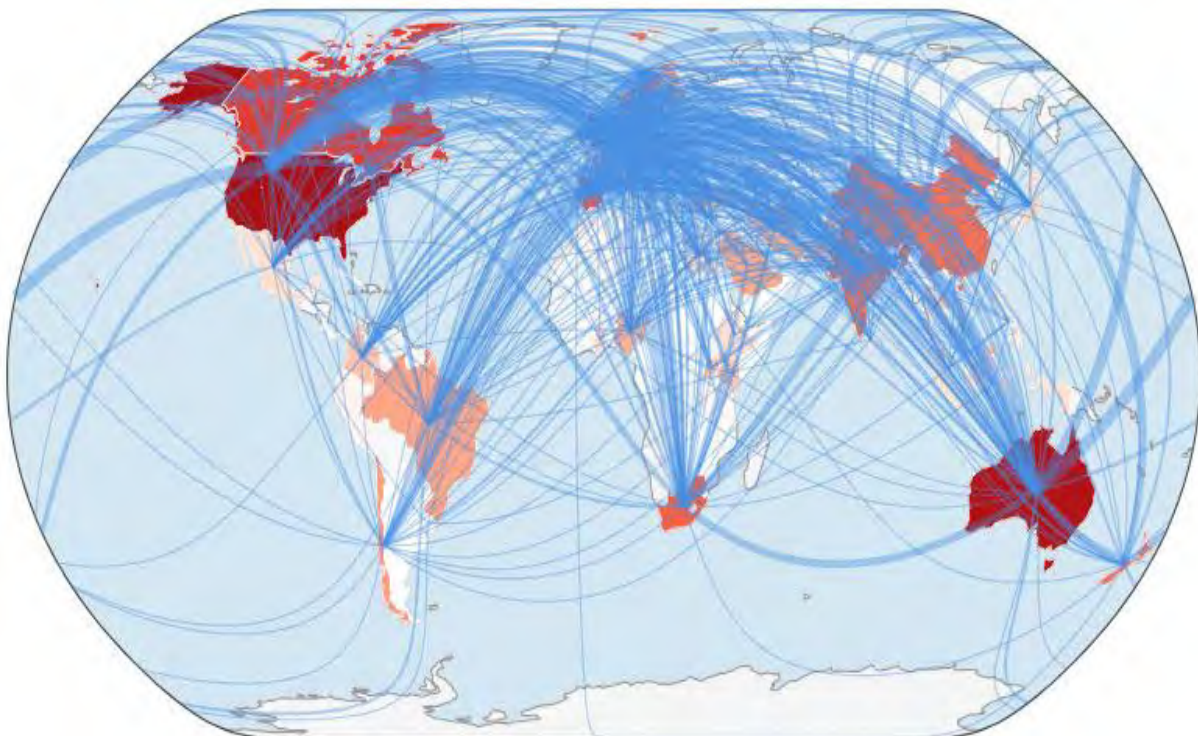
- **Cluster 1 (Red / Core Structural Pillar) — Educational Systems, Inclusion, and Well-Being Governance:** Representing the largest structural module (38.4% of total network nodes), this cluster is anchored by central keywords including wellbeing, education, social inclusion, higher education, and policy. This module captures the macroeconomic and systemic dimension of the field, evaluating how institutional policies and public governance frameworks drive educational equity and socio-pedagogical integration across learning systems.
- **Cluster 2 (Green / Pedagogical Pillar) — Inclusive Pedagogy, Classroom Dynamics, and Educator Resilience:** Comprising 26.1% of network nodes, this cluster centers on schoolteacher, teaching, inclusive education, curriculum, and professional burnout. This sub-domain focuses on micro- and meso-level classroom environments, highlighting how teacher working conditions, pedagogical adaptation, and teacher mental health directly mediate inclusive learning outcomes for diverse student bodies.
- **Cluster 3 (Blue / Developmental & Clinical Pillar) — Adolescent Development, Psychological Health, and Special Needs:** Accounting for 20.3% of network nodes, this module is structured around adolescent, child, mental health, special educational needs, and social support. Grounded in developmental psychology and clinical intervention research, this cluster investigates individual coping mechanisms, peer networks, and specialized psychological interventions for vulnerable youth populations.
- **Cluster 4 (Yellow / Emergent Frontier) — Digital Transformation, Algorithmic Equity, and Smart Governance:** Representing 15.2% of network nodes, this emerging module unites digital learning, artificial intelligence, e-learning, governance, and digital divide. This theme examines how technological integration and automated decision-making in educational systems introduce both novel opportunities for personalized inclusion and new structural risks regarding digital inequality.

9. Countries' Collaboration World Map

9.1. Spatial Architecture and Multipolar Knowledge Hubs

The global spatial distribution of co-authorship networks demonstrates a highly centralized, multipolar research landscape anchored primarily by traditional knowledge centers in North America and Western Europe. High scientific productivity and international collaboration density form a robust transatlantic axis connecting the United States, Canada, the United Kingdom, Germany, France, and the Netherlands. Concurrently, major regional powerhouses—most notably China, Australia, Japan, and South Korea—serve as crucial collaborative nodes, driving scientific production and expanding cross-border research ties across East Asia and Oceania.

Figure 15: World map of countries collaboration



Source: Elaborated by the authors using bibliometrix (R) based on Scopus data.

9.2. Core-Periphery Asymmetries and Global North Dominance

Despite increasing globalization, international collaboration patterns exhibit a persistent core-periphery architecture dominated by Global North partnerships and Anglosphere network effects. Developing research ecosystems across South America, Africa, and parts of Asia predominantly interface with global literature through hub-and-spoke connections directed toward North American and European institutions. While China's rapid emergence has fostered a more multipolar network topology, international co-authorship remains asymmetrical, reflecting historical resource concentration and the institutional dominance of established scientific centers in shaping global research agendas.

10. Discussion

10.1. Theoretical Synthesis and Paradigm Evolution

The empirical findings of this science mapping analysis highlight a profound structural transformation in global scholarly output surrounding education, social inclusion, and well-

being. Historically bounded within isolated clinical, public health, or basic demographic paradigms, the domain has consolidated into a dynamic socio-pedagogical ecosystem. Modern literature increasingly treats educational institutions not merely as environments for skill acquisition, but as core social determinants of subjective health and community equity.

A critical dimension revealed by thematic tracking is the central operational role assigned to educational professionals and inclusive pedagogical design. Recent research fronts demonstrate a strong concentration around educator well-being, diversity, and classroom-level social support systems. This shift reflects a growing recognition that student mental health and social integration are linked to organizational climate, working conditions, and pedagogical training.

10.2. Methodological Reflections, Geographic Structural Asymmetries, and Database Biases

While spatial network mappings reveal a highly centralized global collaboration structure dominated by North American and Western European academic hubs, these empirical findings must be interpreted through the lens of our methodological choices. Relying exclusively on the Scopus database and restricting the search to English-language journal articles (DOCTYPE(ar)) inherently amplifies the observed dominance of Anglosphere and Western European institutions. Non-English regional literature, book chapters, and policy monographs—which frequently document localized educational equity initiatives in Latin America, Francophone Africa, and Asia—are systematically underrepresented in Scopus.

From a methodological standpoint, the trajectory of keyword co-occurrence illustrates a shift toward multi-level analysis. Empirical research increasingly combines individual subjective well-being indicators with macro-level institutional and policy assessments. This integrative approach allows scholars to evaluate how educational systemic reforms directly impact longitudinal social cohesion and health outcomes across diverse populations.

10.3. Practical and Policy Implications

Finally, these findings offer actionable insights for policymakers and academic administrators seeking to optimize educational equity strategies. Interventions designed to foster social inclusion must move beyond passive access models to actively cultivate supportive, well-resourced learning environments. Systemic investment in educator training, socio-emotional curricula, and inclusive institutional cultures emerges as a paramount requirement for sustained public well-being.

11. Conclusion

This study provides a multi-dimensional science mapping analysis of global scholarship at the intersection of educational systems, social inclusion, and well-being. By utilizing metadata from Scopus, the investigation documents the evolutionary trajectory of the field from early clinical and demographic foundations toward an integrated, socio-pedagogical research framework. In direct response to the primary research question formulated in Section 1, this study confirms that scientific production at this nexus has undergone a profound structural shift: transitioning from fragmented, individual-level diagnostic frameworks toward polycentric, systemic governance architectures that position educational settings as primary institutional drivers of social equity, subjective resilience, and community welfare.

The quantitative findings reveal an exponential acceleration in scientific production over the last decade, reflecting the rising priority of well-being indicators in educational research and policy. Thematic consolidation confirms that contemporary research prioritizes inclusive pedagogy, teacher resilience, diversity frameworks, and systemic educational reform as essential mechanisms for fostering social cohesion. Spatial collaboration analyses demonstrate that while global co-authorship has expanded, publication output remains concentrated within

established academic hubs in the Global North. Fostering more balanced, multi-regional research partnerships will be vital to expanding the contextual relevance and applicability of inclusive educational models worldwide.

To explicitly clarify the study's core value, this paper delivers three distinct academic contributions:

- **Theoretical Contributions:** The study establishes an integrative conceptual synthesis that bridges Sen's Capability Approach, Bronfenbrenner's bioecological systems, and Ostrom's polycentric governance. It demonstrates how educational systems operate not merely as skill-building platforms, but as critical meso-level institutional mechanisms that convert public policy mandates into lived subjective well-being and structural equity.
- **Methodological Contributions:** The paper provides a fully reproducible, multi-layered science mapping protocol. By integrating non-linear logistic growth modeling with Louvain community detection and Callon's strategic quadrant mapping, this methodological architecture offers a standardized pipeline for tracking multi-decade conceptual evolution in social policy domains.
- **Practical & Policy Contributions:** The analysis provides decision-support frameworks for policy practitioners, school administrators, and research funders. It identifies critical funding gaps in North-South research partnerships and emphasizes the necessity of aligning curriculum reform with teacher mental health support and inclusive classroom infrastructure.

Despite its rigorous design, this study is subject to several inherent methodological limitations that warrant explicit acknowledgment:

- **Single-Database Indexing Bias:** Relying exclusively on the Scopus database, while ensuring high indexing quality and metadata completeness, omits relevant publications indexed solely in Web of Science, PubMed, or regional indexers such as SciELO and Latindex.
- **Linguistic and Document-Type Restrictions:** Restricting the corpus strictly to English-language peer-reviewed journal articles (DOCTYPE(ar)) excludes valuable non-English literature, technical policy reports, book chapters, and doctoral dissertations that frequently capture localized pedagogical innovations.
- **Citation Time-Lag Dynamics:** Standard citation metrics naturally favor older publications, creating a temporal lag that may underrepresent recently published, high-impact studies addressing emerging digital learning paradigms.

To address these limitations and advance scholarship in this domain, future empirical research should focus on three specific, testable research inquiries:

- **Future Research Question 1 (Cross-Database Validation):** To what extent does a comparative automated bibliometric merging of Scopus and Web of Science Core Collection alter the density and centrality of Motor vs. Niche clusters in educational well-being research?
- **Future Research Question 2 (Algorithmic Equity in Digital Learning):** How do automated decision-making and AI-driven personalized learning platforms impact subjective student belonging and socio-emotional resilience in marginalized public school environments?
- **Future Research Question 3 (Grey Literature Policy Alignment):** How do thematic trajectories in academic literature compare with non-indexed public policy white papers and international NGO reports regarding inclusive education investment post-2026?

Practically, this science mapping synthesis offers an empirical baseline for researchers and decision-makers to identify established intellectual structures, address emerging research fronts, and target under-explored conceptual intersections. The mapped trajectory emphasizes

that sustainable social inclusion requires alignment between educational policy, teacher support, and learner-centered well-being frameworks. Expanding analytical frameworks to evaluate cross-database corpora will further enrich understanding of how global educational systems contribute to enduring social well-being.

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