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# Mapping the landscape of mindfulness research in educational workplaces: a bibliometric and conceptual analysis (2020–2024)

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This study provides a systematic mapping of the intellectual structure of mindfulness research within educational workplaces from 2020 to 2024. Despite growing interest, a critical gap exists in understanding how this scholarship addresses systemic, organizational factors alongside individual well-being. A bibliometric and conceptual analysis was conducted on 242 peer-reviewed publications sourced from Scopus and ERIC. Using VOSviewer, we performed keyword co-occurrence analysis to visualize thematic clusters and temporal trends, complemented by a narrative synthesis to interpret findings. The analysis identified four dominant thematic clusters: Teacher Well-being and Mental Health, Mindfulness Interventions and Training, Student Development and Educational Psychology, and Socio-Cultural and Methodological Context. Findings reveal a pronounced focus on individual-level constructs like stress and burnout, while systemic factors such as school leadership and collective efficacy are significantly underrepresented and fragmented within the literature. The keyword structures are consistent with patterns described in the “McMindfulness” critique, suggesting an empirical tendency toward individualized conceptualizations; however, this does not constitute a direct empirical test of the critique. The study concludes by proposing a multi-level conceptual framework and a structured research agenda to advance the field toward integrated, organizational applications that enhance both educator well-being and overall school climate.

## KEYWORDS

bibliometric analysis, educational workplaces, mindfulness, mindfulness interventions, school leadership, student development, teacher well-being

## 1 Introduction

Mindfulness has increasingly attracted scholarly attention in professional contexts, particularly within educational workplaces such as schools and universities. These settings face growing complexity, emotional demands, and structural pressures that challenge teachers, administrators, and staff alike. Mindfulness, originating from clinical and contemplative

traditions, is widely recognized for enhancing emotional regulation, attentional stability, classroom management, and decision-making under uncertainty (Kabat-Zinn, 2013; Good et al., 2016). In educational workplaces, mindfulness has been linked to improved teacher well-being, reduced stress and burnout, enhanced resilience, and stronger relational functioning with students and colleagues (Wang et al., 2023; Lomas et al., 2017). Constructs such as self-compassion—extending kindness toward oneself during challenging situations (Neff, 2011)—serve as important buffers against occupational stress in high-demand teaching environments (Finlay-Jones et al., 2017). Furthermore, mindfulness supports psychological capital, professional motivation, job satisfaction, and engagement in teaching and administrative roles (Roche et al., 2014). Collectively, these findings position mindfulness as both a personal well-being strategy and a resource that contributes to sustainable teaching performance, adaptive school cultures, and overall educational quality (Bartlett et al., 2019; Hülshager et al., 2013).

## 1.1 Research gap, problem statement, and theoretical imperative

Despite the growing interest in mindfulness, prior reviews have primarily focused on general organizational contexts or narrowly defined educational interventions, such as teacher well-being programs or classroom-based practices. Existing bibliometric and conceptual studies often aggregate multiple professional contexts but rarely provide a perspective exclusive to educational workplaces. A key limitation is that, although educational studies appear in broader workplace mindfulness datasets, their thematic patterns, conceptual trajectories, and systemic relevance are not systematically mapped. In particular, there is limited understanding of how mindfulness research in educational workplaces addresses organizational structures, school leadership, collaborative teacher practices, and systemic outcomes, as opposed to individual coping strategies.

Adding to this concern, critical scholarship has raised the “McMindfulness” critique, highlighting the depoliticized, individualistic, and often decontextualized application of mindfulness (Purser, 2019). In educational workplaces, interventions frequently prioritize teacher stress reduction while overlooking school culture, leadership, collaboration, and whole-school implementation (Raza et al., 2018). Therefore, there is a pressing need to examine whether mindfulness research in educational workplaces continues to emphasize individual-level constructs or increasingly incorporates relational, systemic, and organizational dimensions. This dual focus—on both the research gap and theoretical critique—frames the current study’s rationale and underscores the importance of a dedicated, education-focused analysis.

## 1.2 Study rationale, novelty, and methodological approach

To address existing gaps, the present study constructs and analyzes a dedicated dataset of publications focused exclusively on mindfulness in educational workplaces between 2020 and 2024. This date range is deliberately chosen to capture the most recent post-pandemic literature, reflecting how mindfulness practices in education have

evolved in response to emerging challenges and organizational changes in the wake of COVID-19. The education-focused bibliometric approach enables precise mapping of themes, trends, and gaps specific to schools, universities, and educational systems. Using VOSviewer, the study applies keyword co-occurrence mapping, thematic clustering, density visualization, and temporal trend analysis to illuminate the intellectual structure of mindfulness scholarship within educational workplaces.

The bibliometric analysis is complemented by a narrative-conceptual synthesis, which entails critically interpreting the bibliometric clusters and linking them to theoretical constructs and practical implications in education. This synthesis allows the study to move beyond descriptive mapping, building a coherent conceptual framework that integrates both empirical patterns and educational theory. The novelty of this study lies in its systematic, education-exclusive focus, combining rigorous bibliometric methods with conceptual interpretation to generate insights directly relevant to teachers, school leaders, and policymakers. By integrating structural mapping and conceptual synthesis, the study offers a comprehensive perspective on both individual-level and system-level dimensions of mindfulness research.

Recent bibliometric analyses have examined workplace mindfulness broadly across organizational settings (Singh et al., 2024a; Mishra and Kumar, 2023). However, none provide an education-specific structural mapping of mindfulness research in schools or universities, which reinforces the novelty and contextual relevance of the present study.

## 1.3 Research objectives and questions

Building on this rationale, the study pursues four primary objectives. First, it maps publication trends and identifies the thematic structures of mindfulness research in educational workplaces between 2020 and 2024. Second, it reveals major thematic clusters, conceptual patterns, and intellectual connections emerging from bibliometric analyses. Third, it highlights underexplored areas and conceptual gaps, particularly regarding systemic, relational, and organizational dimensions relevant to educational settings. Fourth, it develops an evidence-informed research agenda to guide future investigations of mindfulness among teachers, administrators, and educational institutions.

Aligned with these objectives, the study addresses the following research questions:

RQ1: What publication trends and thematic structures characterize mindfulness research in educational workplaces between 2020 and 2024?

RQ2: What are the predominant thematic clusters and conceptual patterns in mindfulness research within educational workplaces, and how do they relate to individual, relational, and systemic factors?

RQ3: To what extent does the existing literature address systemic and organizational dimensions of mindfulness in educational contexts, as opposed to focusing solely on individual coping strategies?

RQ4: How can bibliometric insights inform a context-sensitive research agenda for advancing mindfulness scholarship in educational workplaces, including teachers, administrators, and institutional systems?

By focusing on these objectives and research questions, the study provides a rigorous, education-focused bibliometric analysis that captures the intellectual landscape of mindfulness research in schools and universities. This approach emphasizes context-specific relevance, bridging theoretical rigor with practical applicability for scholars, educators, and policymakers.

## 2 Literature review

Mindfulness research in educational workplaces has increasingly emphasized both individual well-being and professional functioning, reflecting the high emotional and structural demands of schools and universities. Teachers and educational staff face complex challenges, including heavy workloads, student behavioral management, and performance accountability pressures. Consequently, constructs such as mindfulness, self-compassion, happiness, and stress reduction have emerged as central to understanding and improving educator well-being and instructional effectiveness (Wang et al., 2023; Roeser et al., 2013). This review synthesizes existing scholarship to highlight core constructs, systemic considerations, critical debates, and methodological gaps, providing a foundation for the present education-focused bibliometric analysis.

### 2.1 Core constructs: mindfulness, self-compassion, and stress reduction in educational workplaces

Mindfulness, self-compassion, happiness, and stress reduction have emerged as central constructs in professional research, particularly in environments characterized by high emotional demands and structural complexity (Adamu et al., 2023). Within educational workplaces such as schools and universities, these constructs are closely tied to teacher well-being, classroom management, instructional effectiveness, and the broader quality of student-teacher interactions (Wang et al., 2023; Roeser et al., 2013). Research indicates that mindfulness supports emotional regulation, attentional control, relational capacities, and professional resilience, enabling educators to navigate daily challenges such as high workloads, student behavioral management, and policy-driven performance pressures (Glomb et al., 2011; Hülshager et al., 2013).

Mindfulness, defined as present-moment awareness with non-judgmental attention (Kabat-Zinn, 2023; Kabat-Zinn, 2015), has been associated with enhanced teacher self-regulation, classroom presence, relational capacities with students, and responsiveness to school culture (Jennings et al., 2017). Mindfulness-based interventions in educational settings, including Mindfulness-Based Stress Reduction (MBSR) and teacher-focused programs, have demonstrated benefits in reducing burnout, enhancing self-efficacy, and improving instructional quality (Roeser et al., 2013; Flook et al., 2013). These interventions show particular promise in supporting teachers' ability to manage stress while maintaining engagement and attentional focus in classrooms.

Self-compassion, defined as self-kindness, mindful acceptance, and recognition of shared human experience (Neff, 2003), acts as a protective factor for educators, buffering against emotional exhaustion, fostering adaptive coping, and promoting professional resilience in high-stakes teaching environments (Berry and Dasen, 2019). Similarly, positive affect and happiness, conceptualized through Seligman's

(2011) PERMA model, contribute to teachers' engagement, creativity, and classroom presence (Lyubomirsky, 2014). However, critiques such as the "tyranny of positivity" caution against focusing solely on individual well-being, which may inadvertently obscure systemic challenges in educational workplaces, including policy pressures, underfunding, high-stakes accountability, and inequitable resource allocation (Cederström and Spicer, 2015; Bishop et al., 2021).

Stress continues to be a prominent challenge for educators, with teachers frequently experiencing chronic workload pressures, emotional labor, and institutional demands that surpass available coping resources (Maslach and Leiter, 2016). Mindfulness and self-compassion interventions have been shown to reduce stress-related outcomes and enhance psychological flexibility (Khoury et al., 2015; Lomas et al., 2019). Yet, their effectiveness often depends on supportive school leadership, collaborative teaching cultures, and systemic resources, highlighting the need for research that situates individual-focused practices within broader educational structures (see Table 1).

### 2.2 From individual coping to systemic considerations in education

Early scholarship on workplace mindfulness primarily emphasized individual coping strategies, conceptualizing mindfulness and self-compassion as tools for managing stress, negative affect, and performance pressures. Within educational contexts, this translated to interventions aimed at reducing teacher burnout, supporting classroom management, and enhancing social-emotional competencies (Jennings et al., 2017; Flook et al., 2013). While beneficial, these individual-level strategies often fail to address the complex structural and cultural conditions that influence teacher well-being and classroom outcomes, such as school leadership, professional collaboration, and resource allocation.

Recent research underscores the importance of systemic factors in educational settings, including school leadership, collaborative teaching cultures, supportive administration, and institutional policies, in shaping the effectiveness of mindfulness interventions (Roeser et al., 2013; Weinstein et al., 2014). This raises a critical theoretical question: does mindfulness primarily serve as an individual coping mechanism for educators, or can it function as a catalyst for systemic improvements in school culture, collective teacher efficacy, and student-teacher relationships? Addressing this question requires a comprehensive mapping of how mindfulness research integrates individual, relational, and organizational dimensions within educational workplaces. A bibliometric approach is particularly suited to this objective because it enables empirical observation of dominant thematic clusters and underexplored areas in the literature, revealing patterns that may not be evident through narrative reviews alone.

### 2.3 The critical lens: "McMindfulness" and the tyranny of positivity in schools

Critical perspectives on workplace mindfulness caution against the depoliticization and commercialization of mindfulness practices, often referred to as "McMindfulness" (Purser and Loy, 2013; Hyland, 2017). In educational settings, these critiques emphasize the risk that schools may implement mindfulness programs primarily to make teachers more resilient to systemic underfunding, high-stakes

TABLE 1 Summary of key constructs, implications for educational systems, and critical debates.

Core concept	Theory/source	Key components	Implications for educational systems	Critical tensions
Mindfulness	Kabat-Zinn (2023); Kabat-Zinn (2015); Hülsheger et al. (2013)	Present-moment awareness; non-judgmental attention	Enhances teacher emotional regulation, classroom presence, and instructional effectiveness	Authentic well-being vs. instrumentalization; individual vs. systemic focus
Self-compassion	Neff (2003); Gilbert (2020)	Self-kindness; common humanity; mindful acceptance	Buffers teacher burnout; supports adaptive coping and resilience in high-demand classrooms	Individual capacity vs. integration into school culture
Happiness	Seligman (2011); Lyubomirsky (2014)	PERMA: positive emotion, engagement, meaning, relationships, accomplishment	Supports teacher motivation, engagement, and positive school climate	“Tyranny of positivity”; risk of masking systemic resource and policy issues
Stress reduction	Lazarus and Folkman (1984); Maslach and Leiter (2016)	Appraisal processes; coping; burnout prevention	Improves teacher emotional balance, reduces strain, supports social-emotional learning (SEL)	Adaptive coping vs. avoiding systemic change
Bibliometric trends	Wang et al. (2023); Zhang et al. (2023)	Keyword clusters: leadership, emotional intelligence, performance	Provides insights for school leadership, collaborative teaching practices, and professional development initiatives	Need for structural mapping specific to educational contexts

accountability, and excessive workloads, rather than addressing the root institutional causes of stress. Similarly, the concept of the “tyranny of positivity” argues that initiatives emphasizing happiness and resilience may shift responsibility for managing structural stress onto teachers, potentially masking systemic inequities and resource limitations (Cederström and Spicer, 2015; Bishop et al., 2021).

These critiques underscore the importance of examining whether educational mindfulness research is dominated by individual-level coping constructs or whether systemic, relational, and organizational dimensions—such as school culture, leadership practices, and collaborative professional development—are being integrated. By mapping the intellectual structure of the field, researchers can identify where interventions primarily target personal coping and where emerging research addresses school-wide and institutional considerations, informing more balanced and context-sensitive approaches to well-being in education.

## 2.4 Bibliometric insights and research gaps in educational workplaces

Bibliometric methods have proven useful for identifying structural patterns, conceptual clusters, and thematic evolution in rapidly expanding fields. Existing bibliometric studies on mindfulness have largely focused on clinical populations, general organizational contexts, or intervention outcomes (Gu et al., 2023; Tang et al., 2023). There remains, however, a notable gap in the systematic mapping of mindfulness research specifically within educational workplaces, limiting understanding of how the literature addresses both individual coping and organizational factors, as well as relational dynamics such as teacher collaboration and student-teacher interactions.

A single-dataset bibliometric approach allows researchers to empirically examine how themes such as teacher stress and burnout, emotional regulation, instructional leadership, collaborative teaching practices, classroom climate, and student-teacher relationships interconnect within the broader educational workplace mindfulness

literature. By treating educational contexts as an integral component of workplace mindfulness research, this approach focuses on the unified intellectual structure of the field while highlighting education-specific nuances, thereby avoiding an overemphasis on generic organizational settings.

## 2.5 Synthesizing the need for a single-dataset, education-focused analysis

The literature review reveals two interrelated needs for advancing mindfulness research in educational workplaces. First, there is a need for conceptual clarity to situate mindfulness, self-compassion, and stress reduction within a multilevel framework that accounts for individual teacher experiences, relational dynamics among staff, and institutional factors. Second, there is a need for structural empirical mapping to uncover dominant themes, intellectual clusters, and underexplored areas specific to educational contexts.

Addressing these needs, the present study employs a single-dataset, education-focused bibliometric analysis of publications from 2020 to 2024. Using keyword co-occurrence networks, thematic clustering, and density visualizations, the study maps the intellectual architecture of mindfulness research while highlighting applications and implications for educational systems, teachers, and school leaders. This approach provides a methodologically coherent and contextually sensitive foundation for future research that integrates individual, relational, and systemic perspectives in educational settings.

## 3 Methodology

### 3.1 Research design: bibliometric analysis with narrative–conceptual integration

This study employed a bibliometric research design complemented by a narrative–conceptual review to map the

intellectual structure of mindfulness research specifically within educational workplaces. The focus on educational contexts—including teachers, administrators, and institutional systems—aligns the study with the aims of a dedicated education journal. Although initial searches retrieved studies from broader workplace contexts, including corporate and healthcare settings, only publications explicitly relevant to educational workplaces were retained for analysis. The final analytic dataset consisted of 242 peer-reviewed articles focusing exclusively on K–12 schools, higher education institutions, and educational leadership.

The study proceeded in two phases. The first phase involved bibliometric mapping to systematically identify publication trends, thematic clusters, and structural patterns within the field. The second phase incorporated a narrative–conceptual review, interpreting bibliometric patterns and integrating them into a theoretically grounded framework. This integration used [Jaworski and Kohli's \(1993\)](#) antecedents–processes–outcomes logic and [Baron and Kenny's \(1986\)](#) mediation principles to construct a multi-level conceptual model, ensuring that empirical mapping was complemented by theoretical depth and contextual relevance to educational settings.

### 3.2 Data retrieval strategy and search strings

Data were retrieved on June 15, 2024, from Scopus and ERIC, capturing a comprehensive range of educational mindfulness research. Scopus provided coverage across psychology, organizational behavior, and professional contexts, while ERIC ensured representation of studies specifically examining K–12 and higher education settings.

The search was conducted in Scopus and ERIC using title–abstract–keyword fields. The Boolean string applied in Scopus was [TITLE-ABS-KEY (“mindfulness”) AND TITLE-ABS-KEY (teacher OR educator OR “school” OR “university” OR “educational leadership” OR classroom OR faculty)] ERIC search used (mindfulness) AND (teachers OR “school personnel” OR educators OR “higher education”) “Educational workplaces” were operationalized as K–12 schools, higher education institutions, and school leadership environments.

The search strategy targeted peer-reviewed journal articles published in English between January 1, 2020, and December 31, 2024. Keywords included “mindfulness,” “teacher,” “school,” “educator,” “faculty,” “university,” “educational leadership,” “classroom management,” “teacher well-being,” and “professional development.” A PRISMA-informed screening procedure guided record identification, title and abstract screening, full-text review, and final inclusion ([Moher et al., 2009](#)), ensuring transparency, replicability, and methodological rigor.

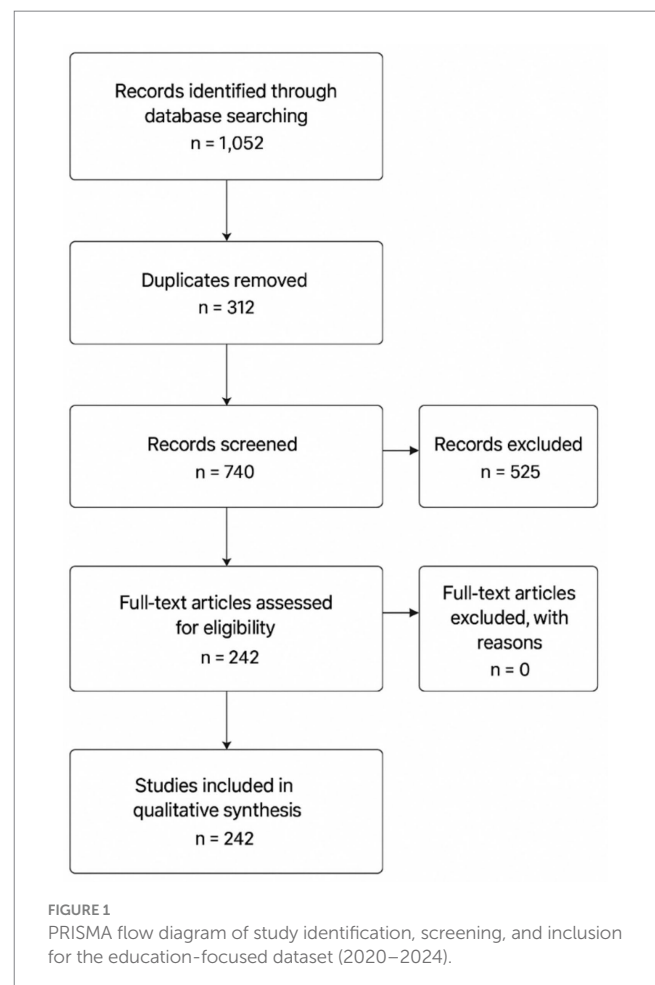
### 3.3 PRISMA flow diagram: transparent documentation of screening and eligibility

A PRISMA flow diagram (see [Figure 1](#)) was employed to document the process of identifying, screening, and including studies. The initial search yielded 1,052 records; after removing 312

duplicates and excluding non-educational studies, 242 publications remained for final analysis. This filtering ensured that only studies explicitly focused on educational workplaces—including primary and secondary schools, universities, and educational leadership—were analyzed. No full-text articles were excluded because all borderline cases had been screened out during the abstract-level review. At the full-text stage, only articles that clearly met our predefined criteria—explicit examination of mindfulness within educational workplaces—were retained, resulting in no further exclusions.

### 3.4 Dataset characteristics and scope

The final dataset consists exclusively of peer-reviewed studies focused on educational workplaces, ensuring alignment with the journal's audience and scope. Studies encompass K–12 schools, higher education institutions, and educational leadership contexts. The dataset was analyzed as a single, unified corpus to map thematic structures, keyword co-occurrences, and intellectual patterns in educational mindfulness research, acknowledging the diversity of educational settings while maintaining focus on the unique pressures, relational dynamics, and systemic factors inherent to education.



### 3.5 Bibliometric analysis procedures and VOSviewer justification

Bibliometric mapping was conducted using VOSviewer (version 1.6.20) to explore the intellectual structure of mindfulness research in educational workplaces. Author keywords were extracted, standardized, and analyzed to construct co-occurrence networks, temporal overlay maps, and density visualizations. Only terms appearing in at least five publications were included, and association-strength normalization was applied to ensure meaningful representation of conceptual relationships.

Keyword co-occurrence analysis was prioritized over citation-based techniques (such as co-citation and bibliographic coupling) because it offers a more direct and reliable way to map the conceptual structure and thematic focus of this emerging, interdisciplinary field. Citation-based methods were excluded due to substantial inconsistencies in citation practices across Scopus and ERIC, the inclusion of policy and practitioner-oriented literature, and uneven metadata quality—all of which would have introduced significant methodological noise. Nonetheless, reliance on author-provided keywords may limit the visibility of emerging or less standardized constructs. Future studies should therefore consider complementing keyword analysis with controlled vocabularies or text-mining approaches to capture a broader and more nuanced range of concepts.

VOSviewer parameters were optimized for educational research. A resolution parameter of 1.0 facilitated identification of coherent thematic clusters, while a minimum link strength threshold ensured that only substantive conceptual connections were visualized. Temporal overlays enabled examination of evolving trends in mindfulness scholarship, highlighting emerging topics such as teacher well-being, instructional mindfulness, classroom management strategies, and educational leadership. These procedures collectively provide a rigorous, replicable, and context-sensitive method for mapping the intellectual landscape of mindfulness research in educational workplaces.

### 3.6 Narrative–conceptual synthesis: thematic integration and framework development

Following the bibliometric mapping, a narrative and conceptual synthesis was conducted to interpret the emerging patterns through the lens of educational workplace theory and practice. The reviewed studies were organized around the antecedents, mechanisms, and outcomes of mindfulness in educational settings, which included teacher well-being, student teacher relationships, classroom management, leadership, and institutional culture (Mohamad et al., 2022). This synthesis supported the development of a multi-level conceptual framework that connects individual psychological processes, relational dynamics, and organizational conditions in educational workplaces. The framework provides a structured direction for future research. It is conceptual rather than causal, and no causal mechanisms were tested.

### 3.7 Theoretical rationale

Jaworski and Kohli's (1993) antecedents–processes–outcomes framework guided identification of contextual and systemic drivers of

mindfulness in educational workplaces, while Baron and Kenny's (1986) mediation logic helped conceptualize mechanisms through which mindfulness influences individual, relational, and organizational outcomes. Together, these models enabled coherent interpretation of bibliometric findings and facilitated the development of a theoretically grounded, education-focused research agenda.

### 3.8 Justification for methodological choices

The study focuses exclusively on educational workplaces to maintain methodological rigor and to align with the journal's scope. Including studies from other sectors would dilute the educational focus and reduce the interpretive value of the findings. Citation-based analyses were also excluded because the interdisciplinary nature of the dataset, which spans education, psychology, and health sciences, produces highly varied citation practices and inconsistent metadata. Using these methods would therefore compromise the validity and clarity of the resulting network. For this reason, the study relies on keyword co-occurrence analysis, thematic clustering, density visualization, and temporal mapping, which together offer a coherent and robust overview of the conceptual landscape of mindfulness research in educational settings.

### 3.9 Data cleaning and preprocessing

Data cleaning involved removing duplicates, standardizing keywords, and verifying article relevance through independent screening by two researchers. Discrepancies were resolved through discussion, and a detailed log of decisions was maintained to enhance transparency and replicability. The cleaned dataset was then imported into VOSviewer for bibliometric mapping and used as the foundation for narrative–conceptual analysis focused exclusively on educational workplaces.

## 4 Results

### 4.1 Publication trends and trajectories (2020–2024)

Figure 2 presents the annual publication trends for mindfulness research in educational workplaces between 2020 and 2024. The dataset indicates relatively stable output in the early years, with 46 publications recorded in both 2020 and 2021. Research activity increased modestly in 2022, reaching 48 publications, before dipping slightly to 42 in 2023. A substantial rise occurred in 2024, with publications surging to 60—the highest volume across the five-year period. This notable increase suggests renewed and growing scholarly interest in mindfulness as it relates to teacher well-being, student development, and school-level practices in the post-pandemic educational landscape (Chen, 2017; Aria and Cuccurullo, 2017).

While annual frequencies provide a useful overview of publication activity, a more comprehensive understanding emerges when these trends are examined alongside the field's structural patterns, including keyword co-occurrence networks, thematic clusters, and density

visualizations. Together, these indicators reveal how the intellectual structure of mindfulness research in educational workplaces has evolved and consolidated over time.

## 4.2 Keyword co-occurrence network analysis

A keyword co-occurrence network was generated in VOSviewer using the education focused dataset, producing a refined and conceptually coherent visualization of the thematic contours of mindfulness research in educational workplaces. A total of 90 keywords met the minimum occurrence requirement of five, and these formed four distinct clusters that represent the major strands of research in this area. The clusters, which include Teacher Well-being and Mental Health, Mindfulness Interventions and Training, Student Development and Educational Psychology, and Socio Cultural and Methodological Context, collectively illustrate the structural and thematic relationships that shape the field (see Figure 3).

### 4.2.1 Cluster 1 (red): teacher well-being and mental health

The first and most prominent cluster centers on the psychological challenges faced by educators and the role of mindfulness in mitigating these pressures. Frequently occurring keywords such as *stress*, *burnout*, *professional burnout*, *mental health*, *well-being*, *anxiety*, *depression*, *emotion regulation*, and *resilience* underscore a substantial body of research concerned with addressing the high-stress nature of the teaching profession. Studies represented within this cluster typically examine how mindfulness buffers work-related demands, reduces burnout, and enhances teachers' emotional resilience and quality of life. The presence of clinical terms (e.g., *depression*, *anxiety*) suggests that much of this scholarship adopts a psychological or health-oriented perspective, positioning teacher well-being as a critical focal point of educational mindfulness research.

### 4.2.2 Cluster 2 (green): mindfulness interventions and training in school settings

The second cluster highlights the applied dimension of mindfulness within educational contexts, emphasizing how

mindfulness is operationalized in daily school practice. Key terms such as *mindfulness*, *training*, *school*, *education*, *curriculum*, *teaching*, *professional development*, *compassion*, and *empathy* indicate strong attention to the design, delivery, and evaluation of mindfulness-based interventions. This cluster captures studies that explore mindfulness training for teachers, student-focused mindfulness programs, and the integration of mindfulness principles into curricular and pedagogical frameworks. By connecting conceptual foundations with practical implementation, this cluster serves as the practical bridge between theory and application.

### 4.2.3 Cluster 3 (blue): student development and educational psychology

This cluster shifts focus to learners, examining how mindfulness influences students' cognitive, emotional, and behavioral outcomes. Keywords including *adolescent*, *young adult*, *self concept*, *attention*, *learning*, *prosocial behavior*, and *behavior* reflect research exploring mindfulness as a tool to support student development across age groups, from elementary students to adolescents. Scholarship within this cluster investigates how mindfulness improves attention and learning processes, reduces anxiety, fosters positive self-concept, and promotes prosocial or adaptive classroom behaviors. This stream underscores the growing recognition of mindfulness as an educational psychology tool with demonstrated benefits for student well-being and development.

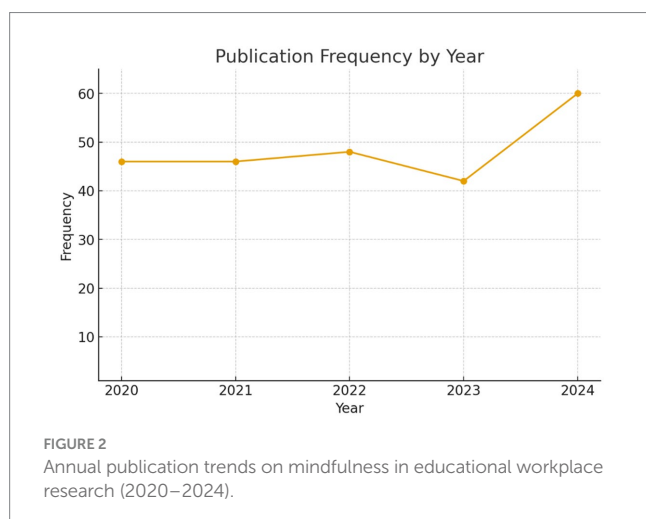
### 4.2.4 Cluster 4 (yellow): socio-cultural and methodological context

The fourth cluster captures the broader socio-demographic and methodological considerations shaping mindfulness research in educational settings. Keywords such as *human*, *female*, *adult*, *ethnicity*, *ethnic*, *social*, alongside methodological terms such as *thematic analysis*, *controlled study*, and *major clinical study*, indicate that research is situated within diverse social contexts and employs a variety of methodological approaches. While one might expect related concepts such as *school leadership*, *collective efficacy*, and *organizational culture* to form a coherent thematic cluster, they appear instead fragmented and dispersed across the network. This dispersion suggests that the socio-cultural and organizational dimensions of educational mindfulness are underdeveloped or inconsistently integrated in the current literature.

The four clusters also varied in size and internal connectivity. Cluster 1 was the largest, with thirty-five keywords and the highest total link strength, indicating strong internal cohesion around teacher mental health. Cluster 2 contained twenty-two keywords with high connectivity related to intervention-based studies. Cluster 3 consisted of eighteen keywords centred on student development and educational psychology. Cluster 4 was the smallest with fifteen keywords and reflected socio cultural and methodological themes. The top keywords in each cluster and their link strengths are presented in Table 2.

### 4.2.5 Inter-cluster relationships and network coherence

The coherence of the network becomes particularly evident when examining inter-cluster relationships. The Green cluster, which focuses on intervention design and implementation, functions as a central bridge that links mindfulness theory to its practical impact on both educators (Red cluster) and students (Blue cluster). For example,



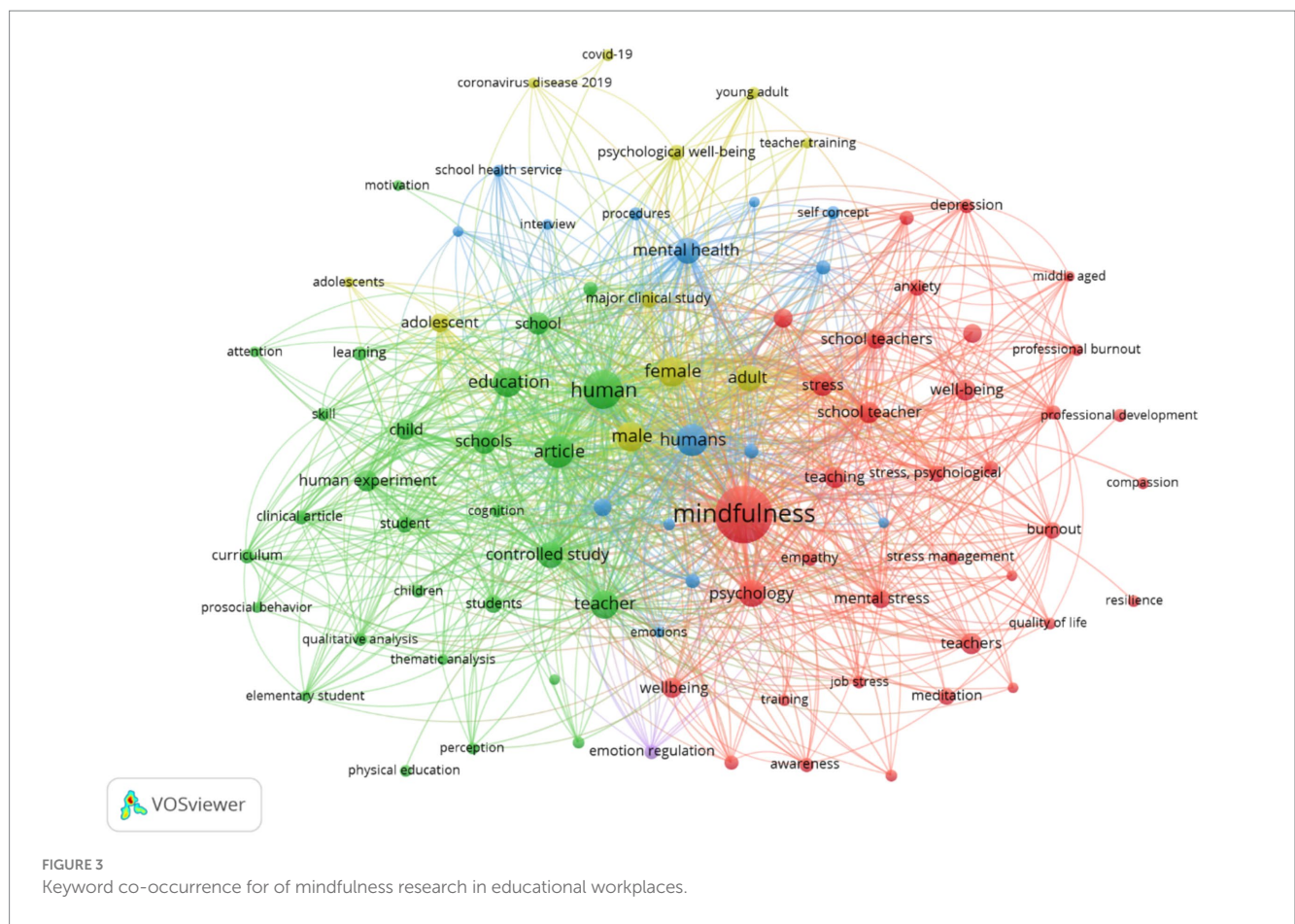


FIGURE 3  
Keyword co-occurrence for of mindfulness research in educational workplaces.

TABLE 2 Quantitative summary of keyword co-occurrence clusters.

Cluster	Size (number of keywords)	Top keywords (frequency)	Total link strength	Thematic focus
Cluster 1	35	Teacher well-being (22), stress (18), mindfulness (16), anxiety (14), depression (12)	245	Teacher well-being and mental health
Cluster 2	22	Mindfulness training (17), intervention (15), meditation (14), attention (13), emotion regulation (11)	180	Mindfulness Interventions and Training
Cluster 3	18	Student development (16), learning (14), self-regulation (13), performance (12), motivation (11)	160	Student development and educational psychology
Cluster 4	15	Culture (14), qualitative research (11), workplace (9), ethics (8), conceptual model (7)	130	Socio cultural and methodological context

teacher mindfulness training connects the intervention and well-being clusters, while school-based mindfulness programs for students typically link intervention and student development themes. The Red and Blue clusters are also indirectly interconnected, as research increasingly acknowledges the reciprocal relationship between teacher well-being and student outcomes. The Yellow cluster underpins all others, providing the demographic and methodological scaffolding necessary for robust and contextually grounded research.

The keyword co-occurrence network reveals a mature, multidimensional research landscape in which mindfulness in education is conceptualized not as a singular topic but as four

interconnected conversations: protecting teacher well-being, implementing mindfulness programs, fostering healthy student development, and situating these efforts within broader socio-cultural and methodological contexts. The structure and interconnections of the network demonstrate how contemporary research integrates individual psychological processes (such as stress and attention) with systemic educational practices (such as professional development and curriculum design). Overall, the network reflects a cohesive and developing field that places equal emphasis on the well-being of educators, students, and the wider school community.

Figure 3 presents the keyword co-occurrence network (minimum threshold = 5; layout = VOSviewer; normalization = association strength). In the network, node size represents the frequency of each keyword, while the thickness of the links reflects the strength of co-occurrence between keywords.

### 4.3 Social structure of the field: leading authors, journals, and countries

The analysis of publication venues indicates that the most influential journals in educational mindfulness research include *Mindfulness*, the *International Journal of Environmental Research and Public Health*, *Teaching and Teacher Education*, *Frontiers in Psychology*, and the *Journal of School Psychology*. The prominence of these outlets reflects the field's strong alignment with education-focused and school-centered scholarly audiences.

Authorship patterns reveal recurring contributions from scholars specializing in teacher well-being, classroom management, and educational interventions. Key figures in this network include researchers such as Schonert-Reichl, Greenberg and Fjorback, whose sustained work has been instrumental in shaping the field. This concentration of influential authors underscores the foundational role of specific research groups while also highlighting the opportunity for emerging voices to broaden the scholarly discourse.

An analysis of the field's geographical output reveals a significant dominance by the United States, the United Kingdom, Australia, and Canada, underscoring the influence of well-resourced educational research infrastructures in these nations. Although there is evidence of a broadening scope, with notable contributions from Taiwan, the Netherlands, Chile, and China, the overall body of research lacks true global diversity. To advance, the field must actively encourage and incorporate scholarship from a wider range of cultural and educational contexts, thereby enriching and globalizing its understanding of mindfulness applications.

## 5 Discussion

This study offers an integrated interpretation of the intellectual structure of mindfulness research in educational workplaces by combining bibliometric mapping with narrative-conceptual synthesis. The analysis is based on an education-specific dataset, including studies focused on K–12 schools, higher education, and educational leadership contexts. By examining publication trends, thematic clusters, and keyword networks, the study demonstrates how educational mindfulness research has evolved from 2020 to 2024 and identifies the dominant conceptual patterns shaping current scholarship. The findings reveal a field organized around four distinct but interconnected conversations, with a strong emphasis on teacher mental health and intervention delivery, while broader systemic and organizational dimensions remain fragmented within the intellectual structure. These insights contribute to a more coherent understanding of how mindfulness functions as both an individual coping strategy and a potential systemic resource within educational settings.

### 5.1 Interpretation of the intellectual structure in educational contexts

The bibliometric results show a steady increase in research on mindfulness in educational workplaces from 2020 to 2024, reflecting growing scholarly attention to educator and student well-being. Keyword co-occurrence analysis reveals four major thematic clusters: (1) Teacher Well-being and Mental Health, (2) Mindfulness Interventions and Training, (3) Student Development and Educational Psychology, and (4) Socio-Cultural and Methodological Context. The prominence of Cluster 1—with its focus on stress, burnout, mental health, and emotion regulation—indicates that the field prioritizes individual psychological support for educators, often through a clinical or health-oriented lens (Jennings et al., 2017; Roeser et al., 2013). Consistent with Singh et al. (2024b), our keyword network also revealed a strong individual-level orientation in mindfulness scholarship. However, unlike broader workplace studies, our education-focused clusters exhibit even weaker representation of leadership and organizational constructs.

The structural arrangement of the network demonstrates that teacher stress and coping strategies constitute the conceptual nucleus of the field. Cluster 2 (Mindfulness Interventions and Training) serves as a crucial bridge, connecting theoretical foundations with practical applications across educational settings (Flook et al., 2013; Weare, 2019). However, the distribution of keywords reveals a significant structural gap: concepts related to school leadership, collective efficacy, and organizational culture do not form a coherent cluster of their own but instead appear fragmented within the broader Socio-Cultural and Methodological Context cluster (Cluster 4).

This structural omission is notable because educational leadership scholarship consistently demonstrates that leadership significantly influences teacher motivation, instructional quality, and school climate (Leithwood et al., 2020; Hallinger, 2011; Day et al., 2016; Halim et al., 2021). The absence of leadership as a central thematic cluster suggests that mindfulness research has not yet systematically engaged with how administrative practices and school systems shape the implementation and effectiveness of mindfulness initiatives.

### 5.2 The dominance of individual-level constructs and the systemic gap

The prominence of teacher mental health-related keywords reinforces patterns commonly associated with the “McMindfulness” critique in educational settings (Purser, 2019; Hyland, 2017). While our findings do not directly test this critique, the keyword structures suggest a clear tendency toward individualized conceptualizations of mindfulness. Much of the literature positions mindfulness primarily as a personal coping tool that enables teachers to manage heavy workloads, accountability pressures, and resource constraints. This orientation reflects an emphasis on psychological adjustment rather than on addressing broader structural or organizational conditions within schools. The individualized focus is especially visible in Cluster 1, where the frequent appearance of clinical terms such as *depression* and *anxiety* indicates a strong psychological framing of challenges in educational workplaces.

The fragmentation of leadership and organizational constructs within Cluster 4 underscores a substantive research gap. While the field acknowledges demographic and methodological diversity, it has not developed a coherent conversation around how mindfulness intersects with educational leadership, school culture, or systemic reform (Leithwood and Jantzi, 2006; Hallinger and Heck, 2010). This limits the potential for mindfulness to influence whole-school change, as organizational factors that shape implementation context remain underexamined.

The bridging function of Cluster 2 (Interventions and Training) is particularly revealing. While it connects teacher well-being with student development, it primarily emphasizes program delivery rather than organizational integration (Emerson et al., 2017). This suggests that most interventions are designed as supplementary programs rather than as embedded components of school culture and leadership practice.

### 5.3 Integrating educational theory

The cluster structure aligns with the Job Demands–Resources (JD–R) framework applied to teaching (Bakker and Demerouti, 2017). Cluster 1 focuses overwhelmingly on reducing the negative impact of job demands (stress, burnout), while Clusters 2 and 3 represent attempts to build resources through interventions and student development. However, the fragmented nature of Cluster 4 suggests that organizational resources—such as supportive leadership, collaborative cultures, and equitable systems—receive insufficient attention.

This theoretical interpretation reveals a critical limitation: current mindfulness research primarily enhances personal resources while neglecting the organizational resources that educational research shows are crucial for sustainable improvement (Bakker and De Vries, 2021; Bakker et al., 2023). The JD–R framework suggests that both personal and organizational resources are needed to buffer job demands and promote engagement, yet the bibliometric evidence indicates that the field emphasizes the former almost exclusively.

A further implication—one that strengthens the conceptual direction of this study—is that mindfulness should be examined not merely as a personal resource but as a potential mediator between organizational resources (such as leadership quality, collegial climate, and professional autonomy) and positive educator or student outcomes. Positioning mindfulness in this mediating role acknowledges how organizational conditions shape educators' capacity to enact mindful awareness in their work, while also explaining how mindfulness translates these supportive environments into improved well-being, instructional quality, and relational dynamics.

Similarly, the absence of leadership as a coherent cluster contrasts with educational theories of distributed leadership and organizational climate, which emphasize how leadership structures and shared norms shape professional practice (Leithwood et al., 2020; Harris, 2013). The current research pattern suggests mindfulness is conceptualized as an individual practice rather than a collective capacity or leadership-enabled resource—a gap that future research could address by integrating organizational conditions more explicitly into mindfulness models.

## 5.4 Practical implications for educational settings

The cluster structure suggests several important implications for educational practice:

1. *Teacher well-being*: the strong focus on mental health indicators suggests mindfulness programs effectively address individual teacher stress (Roeser et al., 2013). Programs should continue emphasizing evidence-based strategies for reducing burnout and enhancing emotional regulation.
2. *Intervention design*: the central bridging role of Cluster 2 indicates that intervention research successfully connects theory with practice (Weare, 2019). Program developers should build on this strength while addressing the gap in organizational integration.
3. *Student development*: Cluster 3 demonstrates growing recognition of mindfulness as an educational psychology tool (Zenner et al., 2014). Educators should consider integrating mindfulness into comprehensive student support systems rather than isolated interventions.
4. *Systemic integration*: the fragmented nature of leadership and organizational topics in Cluster 4 suggests an urgent need for whole-school approaches (Jennings, 2015). School leaders should consider how mindfulness principles can inform leadership practices, professional collaboration, and school culture rather than being relegated to individual coping strategies.

## 5.5 Limitations and directions for future research

The cluster analysis reveals specific pathways for future research. First, studies should explore how mindfulness principles can inform educational leadership practices and school organizational structures. Second, research should examine the organizational conditions that support sustainable implementation of mindfulness initiatives. Third, investigators should develop multi-level models that connect individual mindfulness practices with collective outcomes like school climate and professional community. Fourth, restricting the search to English-language articles may have excluded culturally grounded mindfulness research.

Methodologically, the concentration of clinical terminology in Cluster 1 suggests opportunities for more educational—rather than clinical—conceptualizations of teacher well-being. Future research should also address the geographical limitations evident in the dataset by exploring mindfulness in diverse cultural and educational contexts.

## 5.6 Toward a unified educational mindfulness trajectory

The cluster structure suggests a developmental trajectory for educational mindfulness research. The field has established strong foundations in teacher mental health and intervention research (Clusters 1 and 2), developed substantial knowledge about student applications (Cluster 3), and begun acknowledging contextual diversity (Cluster 4). The next developmental phase requires integrating these clusters into a coherent whole that addresses the organizational and

leadership dimensions currently fragmented across the intellectual landscape.

Advancing the field requires moving beyond the individual-level focus that dominates the current research landscape toward multi-level approaches that connect individual well-being with organizational health (Purser, 2019; Jennings, 2015). This evolution would position mindfulness not just as a coping resource for stressed educators but as a capacity-building resource for healthier educational systems.

## 6 A conceptual framework for mindfulness in educational workplaces

The conceptual framework presented in this study offers an education-specific, empirically grounded model of how mindfulness functions within schools and other learning environments. The bibliometric analysis demonstrated that research in this domain remains heavily oriented toward teacher well-being, with strong thematic clustering around stress reduction, emotional regulation, and self-compassion. In contrast, constructs such as school leadership, collective efficacy, school climate, and classroom relational processes remain comparatively underdeveloped. Building on these insights, the framework conceptualizes mindfulness as a multi-level educational phenomenon shaped by contextual antecedents, enacted through core educational mechanisms, and producing outcomes at individual, interpersonal, and school-wide levels. Integrating the antecedents → mechanisms → outcomes logic of Jaworski and Kohli (1993) with the mediation principles articulated by Baron and Kenny (1986), the framework establishes a coherent causal structure that situates teacher mindfulness in relation to broader systemic and pedagogical conditions. This approach extends existing research by highlighting how mindfulness contributes not only to individual educator well-being but also to relational dynamics and instructional improvement within schools (Table 3).

### 6.1 Theoretical foundations: integrating antecedents, mechanisms, and outcomes

The framework synthesizes two core theoretical traditions. The first is the antecedents–mechanisms–outcomes model, which provides

a structured lens for understanding how school contexts shape the development and enactment of mindfulness among educators. The second tradition is mediation theory, which identifies the processes that transmit the effects of antecedents to outcomes. Within educational settings, these mediating processes include teacher–student relational awareness and pedagogical presence, which operate alongside attentional and emotional regulation. These mechanisms help explain how school leadership, school climate, departmental support, and collegial relationships influence both teaching practices and student experiences. By integrating these traditions, the framework offers a coherent multi-level structure that aligns with the patterns identified in the education-focused bibliometric mapping and strengthens theoretical linkages between contextual conditions, classroom processes, and learning outcomes.

### 6.2 Multi-level antecedents in educational workplaces

Mindfulness in educational settings is shaped by antecedents operating at organizational, social-relational, and individual levels. At the organizational level, key antecedents include school leadership style, school climate, departmental support, policy pressures, and student demographics, all of which create the structural and cultural conditions in which mindfulness is cultivated (Bakar et al., 2016). Social-relational antecedents involve collegial support, team climate, professional learning communities, and mentoring relationships, which shape opportunities for reflective dialogue and shared professional growth. Individual-level antecedents include teacher dispositional mindfulness, emotional intelligence, self-compassion, baseline well-being, and motivation for reflective practice. Identifying these multi-level antecedents helps address the documented imbalance in existing research by situating teacher mindfulness within the broader educational environment rather than solely within individual psychological factors.

### 6.3 Core mindfulness mechanisms as mediators in education

At the center of the framework are the mechanisms that explain how mindfulness exerts its influence within educational contexts.

TABLE 3 Conceptual framework for mindfulness in educational workplaces.

Framework component	Education-specific variables/examples	Level of analysis
A. Antecedents	School leadership style, school climate, departmental support, policy pressures, student demographics	Organizational
	Collegial support, team climate, professional learning communities, mentoring relationships	Interpersonal/school
	Dispositional mindfulness, emotional intelligence, teacher well-being baseline, reflective motivation	Individual
B. Core mindfulness mechanisms	Teacher–student relational awareness, pedagogical presence, classroom attunement, attentional and emotional regulation, compassion	Individual/relational
C. Outcomes	Teacher well-being, reduced burnout, teacher retention	Individual
	Teacher–student relationships, prosocial behavior, classroom management	Interpersonal
	Instructional quality, student engagement, school belonging, collective efficacy	School/organizational
D. Moderators	Workload intensity, policy pressures, student demographics, school resources	Multi-level

These mechanisms include teacher–student relational awareness, pedagogical presence, attentional regulation, emotional regulation, cognitive flexibility, non-reactivity, present-moment awareness, and compassion. As mediators, they translate the influence of contextual and relational antecedents into meaningful outcomes for teachers, students, and the school community. These mechanisms are consistent with the core clusters identified in the bibliometric network and reflect processes that are central to effective teaching, including relational attunement, instructional responsiveness, and the capacity to navigate complex classroom environments.

## 6.4 Multi-level outcomes in educational workplaces

The framework delineates outcomes at individual, interpersonal, and organizational levels. Individual outcomes include teacher well-being, reduced burnout, and teacher retention, reflecting the personal benefits of mindfulness for educators. Interpersonal outcomes include enhanced teacher–student relationships, improved classroom management, and increased prosocial behavior, highlighting the relational impact of mindful presence and awareness (Raza et al., 2020). At the school level, outcomes include instructional quality, student engagement, school belonging, and collective efficacy, demonstrating how mindfulness may contribute to broader educational improvement. This multi-level delineation addresses the limited attention historically given to school-wide and relational effects in the existing literature.

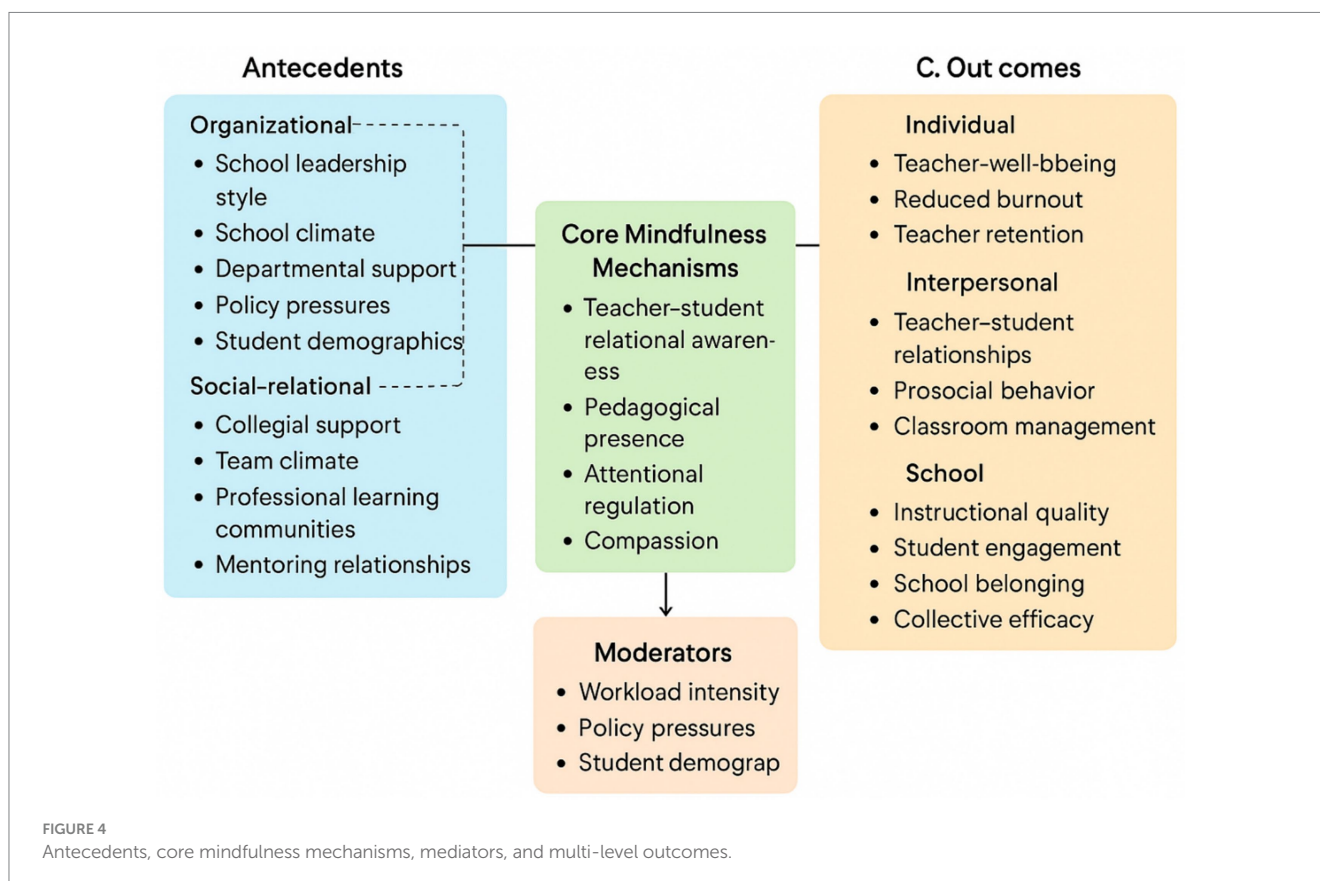
## 6.5 Moderating conditions and boundary factors

The effectiveness of mindfulness processes may vary depending on contextual moderators. Factors such as workload intensity, policy pressures, student demographics, and the availability of school resources may strengthen or weaken the influence of mindfulness mechanisms. Incorporating these moderators enables a more nuanced understanding of the conditions under which mindfulness interventions are likely to be most effective, and highlights the importance of structural and contextual alignment in educational implementation.

## 6.6 Visual representation of the integrated framework

The visual model (Figure 4) presents the integrated relationships among education-specific antecedents, core mindfulness mechanisms, multi-level educational outcomes, and the moderators that influence the strength of these pathways. Designed to reflect the empirical patterns observed in the bibliometric analysis, the model provides a platform for developing testable hypotheses and advancing education-specific theories of mindfulness.

This integrated framework provides a structured and theoretically grounded roadmap for future mindfulness research in professional contexts. By addressing the structural imbalances identified in the



bibliometric analysis and offering a unified multi-level model, it supports the development of more comprehensive, causally coherent, and contextually attuned investigations of mindfulness in the modern workplace.

## 7 A structured research agenda for mindfulness in educational workplaces

Building on the conceptual framework and the education-focused bibliometric analysis, the research agenda prioritizes investigations that address gaps in systemic, relational, and multi-level outcomes in schools. First, research should explore the role of school-level antecedents, including leadership style, school climate, departmental support, policy pressures, and student demographics, in shaping teacher mindfulness and classroom outcomes. Longitudinal and multi-level studies are particularly needed to clarify causal pathways from organizational and social-relational factors to teacher and student outcomes. Such studies should examine how variations in contextual resources influence not only teachers' psychological states but also their classroom behaviours and relational practices.

Second, future studies should examine core mindfulness mechanisms, especially teacher–student relational awareness and pedagogical presence, using rigorous designs such as classroom observation, experience sampling, and mixed-method approaches. These mechanisms provide insight into how mindfulness translates contextual and individual factors into effective instructional practice and supportive learning environments. A sharper focus on these mechanisms will allow researchers to articulate how moment-to-moment mindful awareness shapes instructional adaptation, conflict de-escalation, and emotionally responsive teaching.

Third, outcomes research should move beyond teacher stress reduction to include instructional quality, student engagement, classroom climate, teacher retention, and school belonging. Mixed-method designs can capture both quantitative effects and qualitative experiences, providing a more comprehensive understanding of the impact of mindfulness interventions in educational workplaces. Expanding the scope of outcomes will help illuminate whether mindfulness contributes to broader indicators of school effectiveness and long-term educator sustainability.

Fourth, the research agenda identifies key questions that can guide future scholarship, including: How does a principal's mindful leadership practice influence teachers' collective efficacy and burnout trajectories? How do variations in school climate moderate the relationship between teacher mindfulness and student engagement? How do mindful communication practices among teachers shape collaborative planning, conflict management, and departmental functioning? How does teacher mindfulness indirectly affect classroom management quality through changes in emotional regulation, relational attunement, or pedagogical flexibility? These specific and actionable research questions ensure that future empirical work directly addresses critical gaps in educational practice and theory.

Fifth, contextual factors and moderating conditions must be considered. Student demographics, school resources, and policy pressures may determine when and for whom mindfulness interventions are most effective. Research that accounts for these boundary conditions will generate more nuanced and actionable insights. In particular,

studies should examine how resource-constrained school environments, high-stakes accountability systems, or socioeconomically diverse classrooms influence the uptake, enactment, and outcomes of mindfulness practices among teachers and leaders.

Finally, methodological rigor remains essential. Future studies should adopt longitudinal, experimental, and multi-level designs, combining observational, survey-based, and physiological measures. Cross-cultural research can further enrich understanding of how mindfulness is enacted in diverse educational contexts, ensuring that findings are broadly applicable and relevant to global schooling challenges. Integrating multi-source data—such as student evaluations, peer observations, and school-level indicators—will further strengthen causal inferences and reduce common method bias.

In summary, this education-focused conceptual framework and research agenda provide an empirically grounded roadmap for advancing mindfulness scholarship in schools. By integrating multi-level antecedents, mediating mechanisms, and educationally relevant outcomes, the framework supports research that is theoretically coherent, methodologically rigorous, and practically meaningful. It addresses both the dominance of individual-level constructs and the underrepresentation of systemic factors, enabling a comprehensive understanding of how mindfulness can enhance teacher well-being, classroom practice, and school-wide functioning. Future studies that systematically examine contextual moderators, leadership dynamics, and relational mechanisms will be especially critical for developing interventions that are scalable, sustainable, and aligned with the complexities of educational work.

## 8 Conclusion

This study employed bibliometric mapping to examine the intellectual structure of mindfulness research in educational workplaces between 2020 and 2024. The analysis identified four major thematic clusters, illustrating that scholarship has predominantly focused on individual-level constructs such as stress reduction, emotional regulation, and self-compassion, whereas organizational and systemic applications in educational contexts remain underdeveloped. Temporal and network analyses further revealed structural gaps, reflecting an ongoing tension between individual-centered approaches and broader school- and district-level perspectives. Collectively, these findings provide a nuanced overview of the evolving landscape of mindfulness research in education, highlighting areas of conceptual consolidation as well as emergent frontiers, including physiological mechanisms and qualitative inquiry (Chen, 2017; Aria and Cuccurullo, 2017).

### 8.1 Key findings

Focusing specifically on educational settings, the study demonstrates that mindfulness research in schools and other educational workplaces has grown steadily from 2020 to 2024. Bibliometric results indicate that central concepts such as teacher and student stress reduction, attentional regulation, empathy, and self-compassion dominate the literature, forming the conceptual core of education-focused research. Peripheral clusters, including collaborative leadership, collective well-being, and classroom-level interventions, are beginning to gain attention but remain less integrated within the intellectual structure. Co-occurrence networks and density mapping reveal highly concentrated research areas

on individual psychological processes while highlighting underexplored themes such as systemic school-level practices, professional development programs, district-wide implementation strategies, and multi-level applications in educational institutions. These patterns collectively point to a maturing field that increasingly recognizes relational, contextual, and institutional dimensions in school-based mindfulness initiatives (Dane, 2011; Hülshager et al., 2013).

## 8.2 Principal contributions to theory and methodology

This study contributes to educational theory by providing a structural and evidence-informed map of mindfulness research within schools and other educational workplaces. It highlights the dominance of individual-level constructs among teachers and students and the relative fragmentation of school- and district-level thematic foci. By integrating bibliometric mapping with conceptual synthesis, the study identifies critical gaps in multi-level theorization, laying the groundwork for exploring mediating mechanisms such as attentional regulation, emotional well-being, and professional resilience in educational settings (Baron and Kenny, 1986; Reb and Atkins, 2015). Methodologically, the research demonstrates the value of overlay visualizations, density mapping, and co-occurrence networks for quantifying intellectual structures and guiding evidence-based intervention design. The resulting conceptual framework and structured research agenda provide actionable and context-specific guidance for educational researchers, school leaders, and policymakers seeking to extend mindfulness initiatives beyond individual outcomes toward relational, organizational, and system-level applications.

## 8.3 Limitations and delimitations of the study

Despite these contributions, several limitations warrant acknowledgment. The dataset included publications from both organizational and educational domains, and while filtered for educational relevance, some residual noise from non-educational studies may have influenced interpretive outcomes. The keyword-based search strategy, though systematic, may have biased results toward frequently indexed constructs, potentially underrepresenting emerging or context-specific school-based themes. Additionally, bibliometric mapping captures structural patterns and intellectual relationships but cannot fully account for the nuanced, qualitative, or culturally embedded aspects of mindfulness practice in classrooms and school communities. Consequently, findings should be interpreted as a plausible representation of the field rather than a definitive account, recognizing methodological, database, and cultural constraints.

## 8.4 Final implications

In conclusion, this study provides an empirically grounded, methodologically cautious map of mindfulness research in educational workplaces. Its primary contribution lies in clarifying the current conceptual landscape of education-focused mindfulness scholarship through the identification of four distinct thematic clusters: Teacher

Well-being and Mental Health, Mindfulness Interventions and Training, Student Development and Educational Psychology, and Socio-Cultural and Methodological Context. The structural arrangement of these clusters reveals both the field's strengths and its significant gaps. While research has robustly established mindfulness as a valuable resource for addressing teacher stress (Cluster 1) and developing student competencies (Cluster 3), and has created effective bridges between theory and practice through intervention research (Cluster 2), the fragmentation of leadership and organizational constructs within the Socio-Cultural and Methodological Context cluster (Cluster 4) highlights a critical limitation in current scholarship.

For educational stakeholders, these cluster-based findings suggest specific, strategic opportunities. Teachers can utilize the well-established practices from Clusters 1 and 2 to support their own well-being and their students' attentional engagement. School principals and administrators can draw upon Cluster 2's intervention expertise while addressing the gap in Cluster 4 by designing professional development programs that embed mindfulness principles into leadership practices and school-wide cultural initiatives. District administrators can evaluate and implement systemic approaches that promote collaborative, resilient school cultures by focusing on the organizational integration missing from the current research landscape. Educational researchers should target the underexplored intersections between clusters, particularly investigating how mindfulness principles can inform educational leadership, organizational structures, and policy implementation—the very areas that currently appear as structural gaps in the bibliometric network.

By addressing these cluster-specific gaps, the study advances mindfulness research in education toward a more integrated, multi-level, and contextually sensitive body of knowledge. The findings provide both theoretical and practical guidance for educational stakeholders aiming to leverage mindfulness as a strategic tool that enhances not only individual teacher effectiveness and student outcomes but also overall organizational health and school climate. This evolution from fragmented clusters toward coherent integration will better support the translation of research evidence into effective district-wide policy and practice implementation (Purser and Loy, 2013; Good et al., 2016; Jennings, 2015).

## Author contributions

JC: Conceptualization, Resources, Investigation, Writing – review & editing, Project administration, Funding acquisition, Data curation, Writing – original draft, Visualization, Validation, Formal analysis, Methodology, Supervision, Software. BM: Investigation, Validation, Software, Conceptualization, Funding acquisition, Writing – original draft, Resources, Writing – review & editing, Project administration, Data curation, Methodology, Supervision, Formal analysis, Visualization. SN: Methodology, Investigation, Conceptualization, Validation, Writing – review & editing, Resources, Writing – original draft, Formal analysis. PY: Data curation, Project administration, Methodology, Writing – review & editing, Investigation, Writing – original draft. AN: Visualization, Resources, Project administration, Writing – review & editing, Writing – original draft, Investigation. HT: Methodology, Writing – review & editing, Investigation, Data curation, Writing – original draft, Conceptualization, Supervision. MT: Methodology, Formal

analysis, Supervision, Writing – review & editing, Funding acquisition, Conceptualization, Writing – original draft. NL: Supervision, Writing – original draft, Investigation, Software, Formal analysis, Writing – review & editing. CC: Writing – review & editing, Writing – original draft, Methodology, Funding acquisition, Validation, Formal analysis. SS: Writing – original draft, Funding acquisition, Writing – review & editing, Investigation, Data curation, Validation. CW: Project administration, Writing – review & editing, Visualization, Formal analysis, Writing – original draft.

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