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The leadership of innovation in education: findings from an environmental scan

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ABSTRACT

Although innovation is widely promoted as essential to educational transformation, definitional ambiguity and a persistent disconnect between policy rhetoric and implementation realities leave educational leaders without the conceptual clarity or systemic support necessary to enact meaningful change. This article presents findings from a global environmental scan that explores how innovation in education is defined, enacted, and constrained through educational leadership. Guided by systematic screening standards, the scan initially identified 147 grey literature sources, of which 94 met the inclusion criteria. Using comparative and thematic analysis, the study examines how educational leadership mediates innovation across diverse governance, policy, and cultural contexts. Three key themes emerged: (1) the enabling and constraining conditions for innovation; (2) the persistent tensions leaders face between top-down mandates and grassroots responsiveness; and (3) the global variation in leadership strategies shaped by sociopolitical and economic conditions. These findings highlight a significant disconnect between policy rhetoric and leadership realities, as well as a lack of definitional clarity and systemic support for innovation. This study calls for more context-responsive, relational, and adaptive leadership frameworks that align local needs with broader reform goals.

Introduction

Interest in educational innovation is growing in response to the complex challenges facing modern societies (OECD 2022). As education systems undergo rapid transformations, new opportunities are emerging to leverage leadership, innovation, and artificial intelligence (AI) to prepare for the future and promote

sustainability (Fullan et al. 2023). Volatile and uncertain times have spurred calls to reimagine education, emphasising the roles of schools, educational leaders, and the communities they serve in responding to change (Serdyukov 2017; Sum 2022; Zhao 2020).

Innovation is increasingly seen as central to improving the efficiency, productivity, and competitiveness of educational institutions (Manafi and Subramaniam 2015), particularly as technology reshapes traditional practices and aligns with twenty-first-century skills (OECD 2016). In this article, innovation is defined as the intentional introduction and application of new ideas, processes, and tools that enhance educational outcomes, equity, and efficiency (OECD 2018a), while understanding that innovation is context-dependent and shaped by local needs, resources, and sociopolitical conditions. Despite these benefits, the education sector remains inherently conservative, with teachers often resisting change (Fuad, Musa, and Hashim 2022; Tian et al. 2018).

While innovation is often positioned as a key driver of educational transformation, its implementation remains uneven. The proliferation of AI, digital platforms, and data-driven tools offers new possibilities for personalised learning and institutional responsiveness (Arar, Tlili, and Salha 2024), but also raises concerns about equitable access, underinvestment in leadership development, and the erosion of teacher agency (UNESCO 2021b; Halibas, Meletiou-Mavrotheris, Mavrou 2017). These tensions are particularly pronounced in education systems marked by centralised governance, limited resources, and conflicting policy demands.

Educational leadership is pivotal in shaping how innovation is defined and enacted. However, leaders face contradictory demands: they are expected to foster transformation while maintaining accountability; encourage risk-taking within standardised systems; and integrate digital technologies amid infrastructural deficits. Terms such as *transformative change* and *disruptive innovation* are widely used but poorly defined, adding to the interpretive burden placed on leaders. As a result, leadership for innovation becomes an exercise in adaptive sensemaking – balancing competing priorities and negotiating space for experimentation within rigid accountability frameworks. Our results highlight both commonalities and sharp contrasts in how innovation is pursued, shaped by governance models, policy discourses, and local histories. In this environmental scan, we therefore understand educational leadership as mediating innovation through practices of sensemaking, capacity-building, resource allocation, boundary-spanning, and the creation of professional learning and knowledge exchange structures.

AI integration has further expanded opportunities for personalised learning, improved operational efficiency, and data-informed decision-making (Arar, Tlili, and Salha 2024). While AI-based tools can enhance access and learning personalisation, they also raise concerns around digital justice and teacher preparedness (UNESCO 2021b). Evidence suggests that when institutions invest in intensive professional learning, AI implementation becomes more effective, improving overall performance (Vieriu and Petrea 2025).

Despite growing global attention, the concept of educational innovation – and particularly the leadership of innovation – remains underdefined and requires further investigation. This study is part of a broader research initiative within the Educational Leadership Network (ELN) of the International Congress for School Effectiveness and Improvement (ICSEI), which focuses on educational innovation. The broader ELN-ICSEI initiative comprises (a) this environmental scan of grey literature to surface contemporary policy and organisational perspectives and (b) a parallel scoping review of peer-reviewed scholarship. Together, these complementary streams provide a fuller view of how educational leadership is framed as a mediator of innovation across diverse systems and why definitional and implementation gaps persist. The purpose of this environmental scan is to explore how innovation is understood, supported, and enacted in educational leadership practice across diverse systems.

Methods

This environmental scan was conducted using a systematic yet flexible approach, guided by PRISMA reporting guidelines adapted to structure the identification, screening, eligibility, and inclusion of grey literature (Page et al. 2021). Because environmental scans differ from systematic reviews in scope and purpose, PRISMA functions here as a reporting scaffold rather than a strict methodological template. It aimed to identify, assess, and synthesise grey literature relevant to innovation in education, educational leadership, and their intersection, with a focus on documents produced by educational policy bodies, research centres, and organisations. The protocol was designed to accompany a parallel scoping review and to contribute to a broader understanding of policies and practices shaping educational change.

Environmental scans are increasingly recognised as a distinct methodology, suited to exploring complex, evolving topics (Charlton et al. 2021). Unlike systematic reviews, which address narrowly defined questions using peer-reviewed evidence, environmental scans are broader in scope and include diverse data types – particularly grey literature – to map trends, identify gaps, and inform future directions (Charlton et al. 2021; Costa 1995). Their primary purposes are to synthesise diverse insights and extract implications for strategy and decision-making. They are often used to generate timely, policy-relevant knowledge in sectors where change is not well captured by academic literature. As agendas for educational innovation are frequently articulated first through policy strategies, leadership frameworks, and programme reports, grey literature often provides the earliest and most detailed account of how systems are defining and organising for change (Paez 2017; Yoshida et al. 2024). Scholars note the proliferation and influence of grey literature, and for questions about how innovation is framed and enacted at the system level, these documents therefore function as a primary evidentiary base rather than a supplementary source (Lawrence 2017).

Following Choo's (2001) concept of conditioned viewing, the scan involved purposeful searching of digital public domains to identify recent documents that reflect organisational perspectives on innovation and leadership in education. This scanning mode reflects the iterative, forward-looking orientation of environmental scans as a tool of organisational learning and knowledge synthesis. This approach enables the systematic yet adaptive exploration of materials using search engines, such as Google and Bing (Table 1).

Data were extracted into a shared matrix and analyzed using content analysis (Krippendorff 2019). The process involved: (1) unitising text segments relevant to innovation and leadership; 2) developing deductive categories from the research question; (3) allowing inductive categories to emerge from the data; and (4) applying categories to all units. Inter-coder reliability was established through team calibration on 20% of the documents, achieving Krippendorff's alpha ≥ 0.80. Geographic and thematic heat maps (Figures 2–5) were

Table 1. Document selection criteria.

Inclusion Criteria	Exclusion Criteria
Focus on K-12 educational innovation and/or leadership	Peer reviewed articles
Grey literature (e.g. policy briefs, reports, strategic frameworks, white papers, institutional blogs)	Empirical studies without a policy linkage
Publicly accessible and published 2015–2025	Published prior to 2015

Blogs were included only when authored by recognised institutions e.g. (OECD, UNESCO, national ministries of education) to ensure credibility and practitioner relevance. Of the 147 sources initially identified, 94 met the inclusion criteria after title and abstract screening and full-text review (see Figure 1).
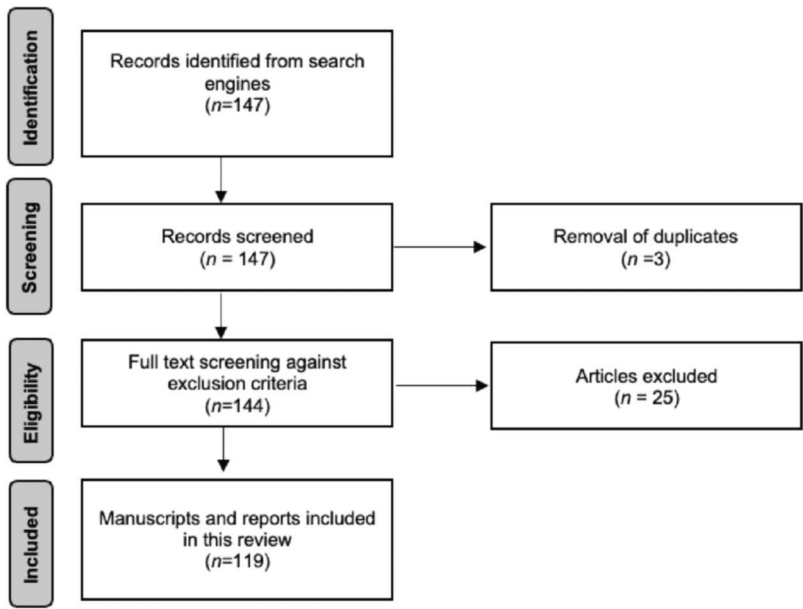
Figure 1. Prisma.
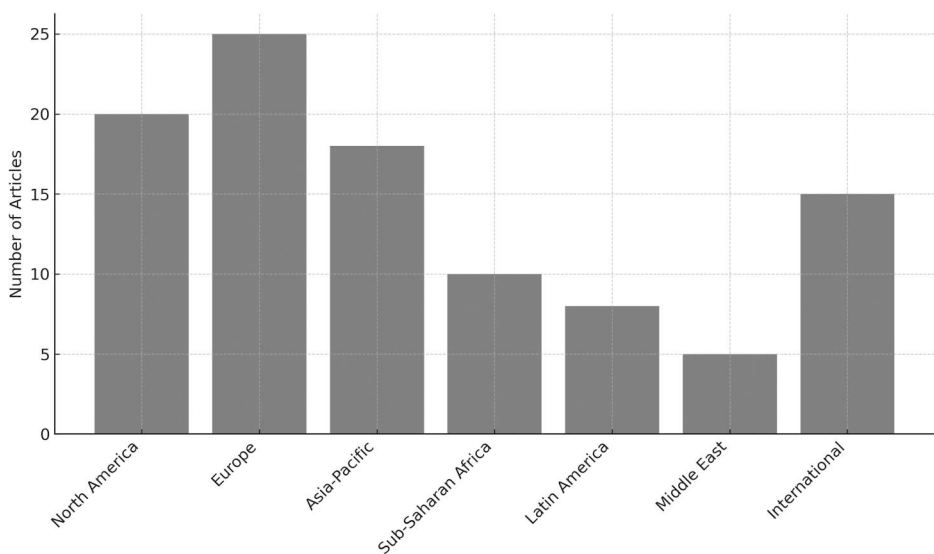
Figure 2. Geographic_Distribution.
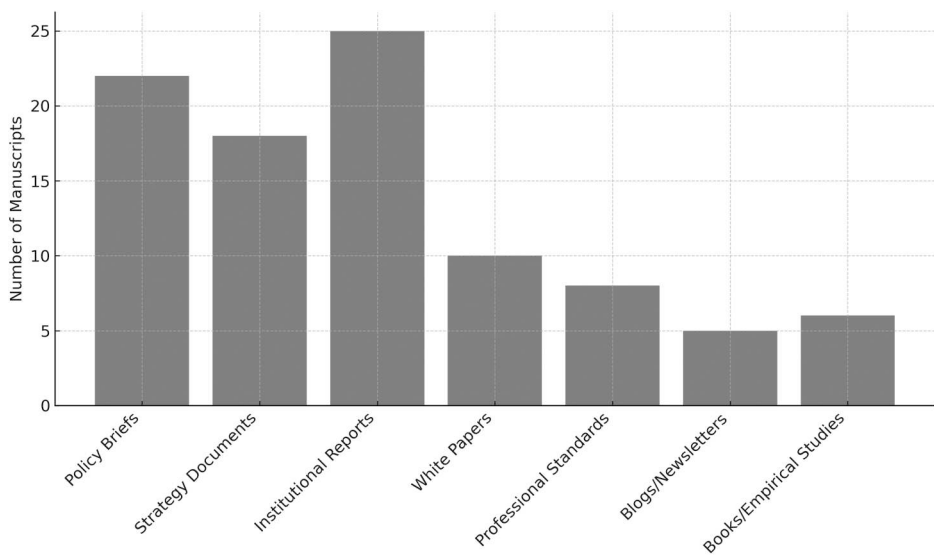
Figure 3. Distribution.

constructed using category frequency counts, with intensity levels (low/moderate/high) assigned based on narrative prominence across sources.

Data sources and searches

Documents included policy briefs, strategy documents, organisational reports, action plans, white papers, blogs, newsletters, professional frameworks, and empirical summaries. Most reviewed documents involved multiple countries

Factors Contributing to Innovation in Educational Leadership by Country
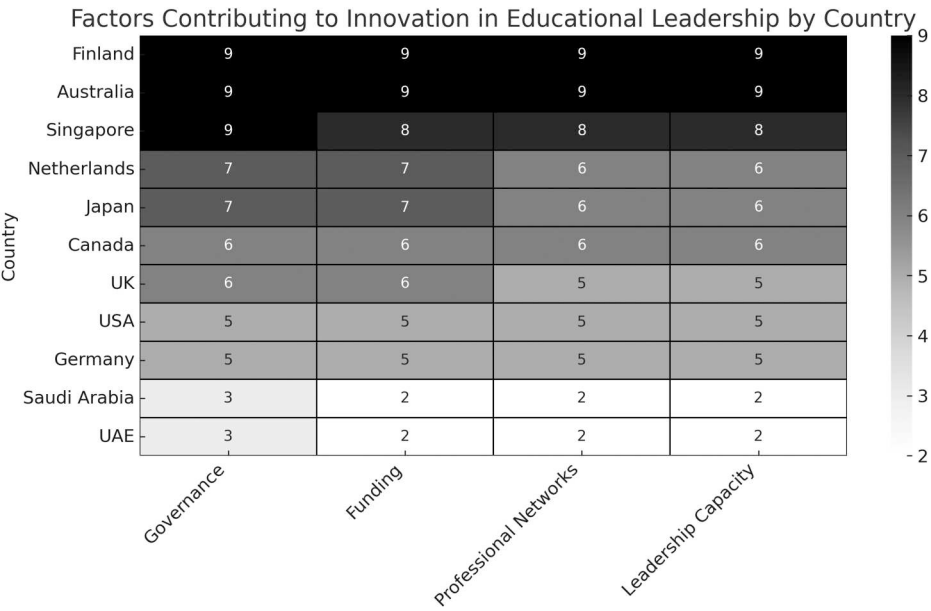
Figure 4. Factors contributing to innovation in Ed Leadership by country.
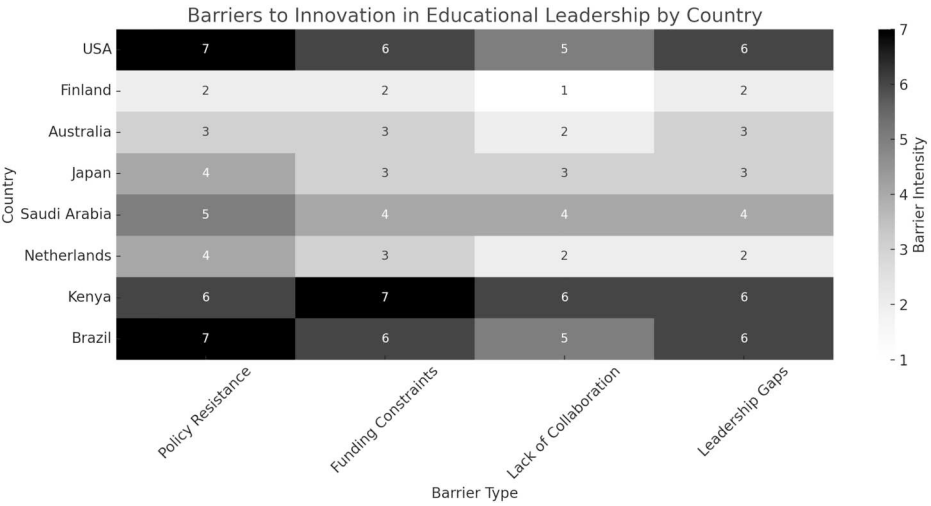
Figure 5. Barriers.

and were categorised as international. Represented regions included Finland, Eastern and Southern Africa, the UK, Australia, New Zealand, Hong Kong, Kazakhstan, Vietnam, Singapore, Qatar, OECD countries, India, Mexico, the U.S., and others. Figure 2 visualises this geographic spread across regions and systems. The preponderance of European, North American, and international organisational sources, alongside more sporadic representation from Sub-

Saharan Africa, Latin America, and parts of Asia, highlights an imbalance in whose perspectives on educational innovation are documented.

A two-stream search strategy was employed:

- Stream 1: General Google or BING search using combinations of keywords including:
  - Innovation, Reform, Change, Transformation, Improvement
  - AND Leadership, Governance, Management, Strategy
  - AND Drivers, Barriers, Practices, Policy
  - Only the first five pages of each search string on a search engine were screened due to declining relevance on subsequent pages.
- Stream 2: Targeted searches of known education organisations and networks (e.g. OECD, UNESCO, Education Endowment Foundation, provincial education authorities). Only the first two pages of each result set were reviewed. Key informants from educational policy and leadership bodies were also consulted to supplement findings.

Across both streams, we retained documents that (a) addressed K–12 (or system-level) educational leadership, (b) framed leadership as related to innovation, improvement, or transformation, and (c) were publicly accessible in full text. Figure 3 summarises the distribution of documents by type and organisational source. Strategy papers, policy reports, and technical briefs produced by national ministries and international agencies account for the majority of included sources, while practitioner-oriented guidance documents and locally generated reports appear less frequently. This distribution reflects both the visibility of large organisations in the grey literature landscape and the relative opacity of more localised innovation efforts.

Document selection

The PRISMA-informed flow diagram summarises the environmental scan's screening and selection process (see Figure 1). The search strategy identified 147 records. After removing three duplicates, 144 records were screened at the title and abstract level using the predetermined inclusion criteria. Of these, 119 documents were retrieved for full-text review and assessed for eligibility. Following this assessment, 25 documents were excluded based on the exclusion criteria. As a result, 94 grey literature sources were included in the final review.

Resources were excluded from the environmental scan if they focused exclusively on postsecondary or non-educational sectors, or if they took the form of empirical studies, theoretical articles, or commentaries rather than grey literature. Additionally, documents that were not publicly accessible, such as those behind paywalls, were omitted. Resources were also excluded if they were limited to classroom-level practices without clear connections to broader systemic implications for educational leadership or innovation.

Data extraction

Each included document was catalogued with key metadata: resource type, source organisation, year, intended audience, purpose, key themes, and relevant keywords (see Table 2). A thematic analysis followed narrative synthesis techniques (Arksey and O'Malley 2005; Levac, Colquhoun, and O'Brien 2010), focusing on how innovation is framed, the role of leadership, and enabling or constraining conditions.

Table 2. Innovation and educational leadership extraction guide.

Innovation and Educational Leadership Data Extraction Guide	
Data Point	Brief Description
1. Identifying Information for Full Text Sources	
Citation	APA 7 in-text style citation without parentheses. Include code from the environmental scan document, saved results tab. This code was used to track articles.
Publication Date	Year of Publication
Source Type	Resource type: Framework, Report, Strategy, Action Plan, Discussion Paper, Empirical Study, Theoretical Paper.
Purpose	Stated purpose or aims of the source.
Country of Focus	Country in which the study/resource was conducted; if multiple, record as 'International.'
Key Innovation Terms	Key terms applied in the source related to innovation, e.g. reform, transformation, and improvement.
Definition of Key Terms	Definitions of key terms related to innovation and leadership, if explicitly provided.
2. Contextual Information	
Target Audience	Audience for the resource, e.g. policymakers, researchers, school leaders, teachers.
Sector	Educational sector of focus, e.g. K-12, community-based, cross-sectoral.
Geographic Scope	Scope of the resource: Local, National, Regional, International.
Funding or Support	Details of funding or organisational support, if applicable.
Relevant Organisations	Organisations associated with the resource, e.g. OECD, provincial education authorities.
3. Methods and Frameworks	
Focus Area	Area of focus: Innovation Practices, Leadership Strategies, Policies, or Systemic Change.
Approach/Framework	Description of the framework, model, or theoretical approach used, if applicable.
Evaluation	Does the resource include evaluation data or outcomes?
Evaluation Approach	If yes, note the reported evaluation approach, e.g. appreciative inquiry or developmental evaluation.
Methods/Methodology	If an empirical study, a description of the methods used, e.g. interviews, case studies, surveys, etc.
Instruments Applied	If applicable, a description of tools or instruments used in the study or resource development.
4. Key Findings and Implications	
Key Findings	A summary of key findings related to innovation and leadership, e.g. practices, barriers, and outcomes.
Main Discussion Points	Summary of main discussion points, e.g. surprising findings, areas for further research.
Recommendation	Any recommendations or conclusions presented in the resource?
Sustainability/Impact	Provide a description of sustainability or long-term impact considerations, if discussed.
5. Practical Applications and Next Steps	
Implementation Examples	Specific examples of innovative practices or leadership strategies are described in the resource.
Barriers/Challenges	A description of barriers or challenges to innovation and leadership, if noted in the resource.
Opportunities	Description of opportunities for growth, development, or application in the field.
Future Directions	Suggested areas for future research or practice based on the resource.

Data analysis and synthesis

To analyze the global landscape of educational leadership and innovation, we undertook a structured environmental scan of 94 grey literature documents, including policy briefs, strategy papers, technical reports, and institutional publications. As detailed previously, these documents were sourced from a range of international organisations, national ministries, research institutes, and non-governmental bodies, and spanned multiple regions and governance contexts. This diversity allowed us to surface both globally shared discourses and regionally specific understandings of leadership and innovation.

Using a collaboratively developed structured coding template, we conducted a multi-phase qualitative analysis. Each document was reviewed to extract information across several key domains: definitions and conceptions of innovation, structural and systemic enablers, leadership strategies, implementation barriers, and recommendations for future action. As part of this process, we attended specifically to leadership functions, such as sensemaking, capacity-building, resource allocations, boundary-spanning, and the establishment of professional learning and knowledge exchange structures, as mechanisms through which leadership mediates innovation. The data were entered into a shared matrix and underwent both inductive and deductive coding.

During synthesis, we identified emergent themes through comparative and pattern analysis, tracking recurrent terms, tensions, and structural conditions across contexts. Visual mapping techniques – including heat maps, bar graphs, radar charts, and tension matrices – were then employed to highlight patterns across countries and regions. For example, heat maps were used to visualise the density and prominence of enabling conditions and barriers in various systems, while radar charts highlighted the strategic leadership emphases in specific countries. One of the visualisation techniques we drew upon was heat maps. Heatmaps visualise the nature of relationships between given criteria as related through the density of interactions. For example, in Figure 3, the numbers on the heat map represent the relative frequency with which each country was mentioned in relation to specific factors that contribute to innovation across the 94 documents in the environmental scan. These are not raw document counts but rather reflect the weighted presence or emphasis of a given factor (e.g. leadership, policy, funding, R&D, collaboration, etc.) within that country's discussion. The values are derived through qualitative coding and thematic analysis of the documents, where each instance of a factor being described as a contributor to innovation was tracked and aggregated by country. This approach helped surface not only explicit references to innovation drivers, but also implicit patterns of prioritisation embedded in the narrative structures of each document.

To weigh the significance of recurring factors, we applied a relative frequency approach, aggregating the coded presence of themes and assigning intensities

(low, moderate, high) based on the prominence and elaboration of these themes in the original documents. This approach enabled us to not only surface what countries reported as important but also how substantively those issues were discussed.

Our synthesis yielded three key themes that form the foundation of the results. These three themes and accompanying findings are presented in the Results section of this article. This approach to data analysis and synthesis balances breadth and depth, ensuring that diverse global voices are represented while still offering comparative insights across geographies and systems.

In sum, this environmental scan employed a systematic, transparent, and collaborative methodology to synthesise a diverse body of grey literature on educational leadership and innovation. By combining structured coding, comparative analysis, and visual representation, the study offers an expansive yet nuanced view of how innovation is defined, enacted, and experienced globally. This synthesis process not only revealed the uneven uptake of innovation discourses across policy contexts but also illuminated the systemic tensions leaders must navigate when implementing change. These methods set the foundation for the key results presented in the following section.

Results

Following the methodology as outlined above, this environmental scan analyzed 94 grey literature documents focused on innovation in educational leadership from global, national, and local perspectives. These documents encompassed policy briefs, strategic frameworks, and institutional reports developed by ministries of education, international organisations, research institutes, and think tanks. Through our structured analysis of extracted data, three key themes emerged from the analysis, illuminating both common patterns and deep contextual variation across the documents: (1) the conditions that enable or constrain innovation, including governance structures, funding, and professional learning networks; (2) the tensions between top-down mandates and grassroots initiatives, highlighting competing pressures for stability and change; and (3) the global variation in leadership strategies, revealing how socio-political and economic contexts shape approaches to educational innovation.

Conditions that enable and constrain innovation

Our analysis showed that innovation in educational leadership is significantly shaped by structural conditions, such as governance models, funding mechanisms, and access to professional learning networks. For example, national leadership standards in Australia and OECD countries emphasise system-aligned development and capacity-building for innovation (AITSL 2014, 2023; OECD 2013, 2015, 2018a). These conditions either create fertile ground for educational

innovation to flourish or, conversely, reinforce constraints that limit adaptive change. Figure 4 provides a synthesised overview of countries with policy environments, inclusive governance systems, and strong investments in research and development. The heat map (Figure 4) indicates that Finland, Singapore, and Australia demonstrated more sustainable and systemic educational leadership innovation practices.

These systems were characterised by decentralised governance, robust leadership development infrastructure, and strong knowledge exchange platforms. For example, there is repeated documentation on Finland's trust-based governance model, Australia's system-wide professional learning networks and Singapore's integrated leadership programme. Each country's approach illustrates how empowering local leaders and fostering professional networks enable sustainable innovation. We also found that professional learning networks and knowledge exchange platforms served as crucial enablers of innovation. In particular, this was visible in references to Singapore's professional pathways and development pipelines and Australia's networks of professional learning communities (AITSL 2014; Kwek, Ho, and Wong 2023); These conditions not only fostered the emergence of innovative practices but also contributed to their sustainability and scalability, particularly in systems that prioritised collaboration and shared leadership. In contrast, countries with rigidly centralised systems and limited professional collaboration opportunities often struggled to embed or sustain innovation efforts. These findings suggest important implications for policy and practice in jurisdictions aiming to strengthen leadership for innovation across diverse contexts.

In contrast, Sub-Saharan Africa and Latin America faced significant barriers to innovation in educational leadership (UNESCO 2021a; Chakera & Tao 2019; UNESCO & Commonwealth of Learning 2022). Rigid bureaucracy, fragmented professional support structures, and minimal investment in leadership capacity-building often characterised these systems. Professional learning networks and knowledge exchange platforms that play a critical role in enabling innovation were either limited or entirely absent. Figure 5 below demonstrates this in the intensity mapped across countries such as Brazil and Kenya. Challenges of cohesion and funding were also documented in the North American context, indicating a correlation with leadership gaps and missed opportunities for networks. Without these collaborative infrastructures, educational leaders in these contexts face significant challenges in adapting or scaling innovative practices. These findings suggest an urgent need for policy frameworks that invest in conditions that create innovation in educational leadership development and prioritise horizontal knowledge-sharing mechanisms to bridge the implementation gap.

Taken together, the analysis of enabling conditions and barriers underscores the complex interplay between system structure, resource allocation, and leadership infrastructure in fostering or hindering educational innovation. As

noted in Figure 5, countries that embraced decentralised governance, invested in leadership development, and cultivated robust professional networks were better positioned to support context-responsive innovation (Bryant et al. 2020). In contrast, systems constrained by centralisation, underfunding, and fragmented supports struggled to sustain innovation efforts. These findings highlight the need for policy approaches that are not only adaptive to local contexts but also designed to strengthen leadership networks and redistribute decision-making authority in meaningful ways. Systems that cultivate distributed governance, invest in leadership capacity, and support collaborative professional networks appear to be far more likely to foster sustainable innovation – whereas centralised, under-resourced, and fragmented systems continue to face persistent barriers to educational transformation. These patterns illustrate both the promise and the precarity of system-level innovation, depending on the specific infrastructural and relational conditions in place.

Crucially, the presence or absence of structures that promote collaboration, such as professional learning communities and knowledge exchange platforms, emerged as a defining factor in whether educational leadership could thrive as an engine for innovation (Bryant et al. 2020; Chakera and Tao 2019). These findings highlight the need for policy approaches that are not only adaptive to local contexts but also designed to strengthen leadership networks and redistribute decision-making authority in meaningful ways. Systems that cultivate distributed governance, invest in leadership capacity, and support collaborative professional networks appear to be far more likely to foster sustainable innovation – whereas centralised, under-resourced, and fragmented systems continue to face persistent barriers to educational transformation.

Tensions between top-down mandates and grassroots initiatives

Sandwiched between the temperamental nature of enabling and constraining factors and the most immediate needs of their schooling communities, educational leadership remains a constant navigation of a state of flux. Our analysis highlights some of these key tensions and contradictions. As shown in Figure 6 below, the consistent and explicit mandate for developing innovation in educational leadership is through leadership practice that drives systemic innovation, scaling this up for sustainable impact, with support from related policy and governance structures. Aspirationally, this would be informed by an equity-driven agenda that utilises technology as a vehicle for transformation.

Figure 7 illustrates the most prevalent tension points identified across the environmental scan. Autonomy versus standardisation and teacher buy-in versus top-down implementation were the most frequently cited tensions, underscoring how educational leaders often find themselves caught between the need to uphold systemic priorities and the equally pressing need to nurture localised, context-specific responses, a pattern echoed in recent
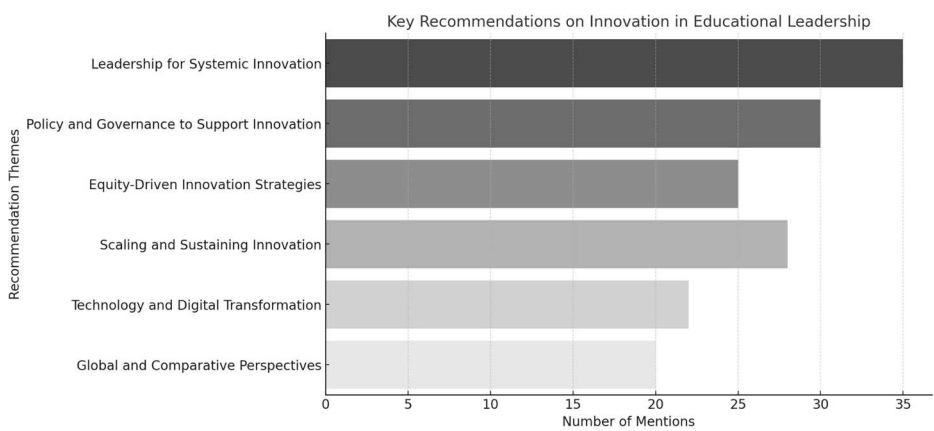
Figure 6. Key recommendations on innovation in ed ldrship.
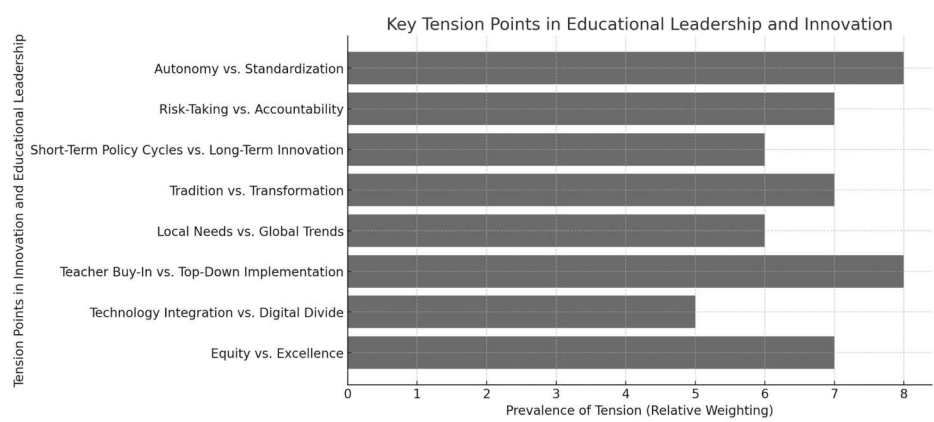
Figure 7. Key tension points.

review of teacher professional development and system reform in England (Ofsted 2024; Sharples et al. 2024). Similarly, the tension between risk-taking and accountability was prominent, revealing how innovation frequently demands conditions of trust, psychological safety, and professional discretion – qualities that are not always supported by performance-based accountability systems. Furthermore, such tensions between risk and accountability serve to undermine potential innovative mindsets of school leaders and their teams, lest they find themselves in conflict with the nature of accountability measures designated by local and national policymakers.

Equity versus excellence, appearing at the lower end of the spectrum, nonetheless reflects an enduring and complex debate: whether systems that prioritise measurable academic achievement can do so while also serving the diverse needs of all learners (Education Council of New Zealand 2018; OECD 2018b; Olsen et al. 2024; UNESCO 2021b; Santos 2019). Taken together, the

chart surfaces the paradoxes that leaders must constantly negotiate in their work: striving for coherence while holding space for experimentation; promoting transformation while preserving continuity; and implementing national policy while attending to local realities. Global agendas themselves need critical consideration, as generic conceptualizations of innovation in education continue to be applied across selected countries studied, reliant on the buy-in of nation states over time. This was most evident in the geographic distribution of papers, which skewed heavily to countries and regions such as the USA, England, Scotland, Canada, Australia, Germany and Finland. By comparison, less than a handful of publications reflected South-East Asia, with only Brazil, India, South Africa and New Zealand contributing to a mosaic of the Global South. It is difficult to see how international agencies can continue to insist on an innovation agenda at a global level while large swathes of local contexts remain unaccounted for. The expectations-mandates for educational leaders is questionable and confusing at best, if said leaders are building schools one classroom wall at a time, or leading schools one teacher appointment at a time. This perhaps, is the junction at which empirical studies come into their own- to address the local embodiments of innovation as concept, as practice, and as needs-driven priorities. Teacher buy-in might show greater potential if local communities are informed of the mandate. These disparities in digital access and infrastructure were starkly revealed during the global pandemic (Bryant et al. 2020; UNESCO 2021b). In response to COVID-19, international narratives promoting technology integration often reflected privileged assumptions that failed to account for the uneven realities of access, connectivity, and professional development at the local level. This disconnect underscores a troubling contradiction: while equity is frequently invoked as a policy goal, many systems are simultaneously expected to uphold standards of educational excellence without the necessary resources or contextual support to do so.

While the aspirations are admirable, Figure 8 demonstrates that there remain far higher-ranking challenges yet to be addressed at the local level. Central to these are the lack of professional development, which would be a critical mechanism to develop leadership practice for systemic innovation, and funding constraints which were made most visible across the globe during the Covid19 pandemic, when educators and school leaders were left to assemble the pieces of haves and have-nots within their already vulnerable communities. The reality of fundamental gaps at such critical junctures in schooling practice is made explicit in the manner in which challenges appear to be prioritised. Change, resistance to it, or the capacity to implement it, as well as a lack of collaboration and inconsistent policies, continue to be greater challenges now. Innovation in educational leadership appears to be at a more grassroots level than the top-down mandate would imply, highlighting a stark contrast between global aspirations and local realities.
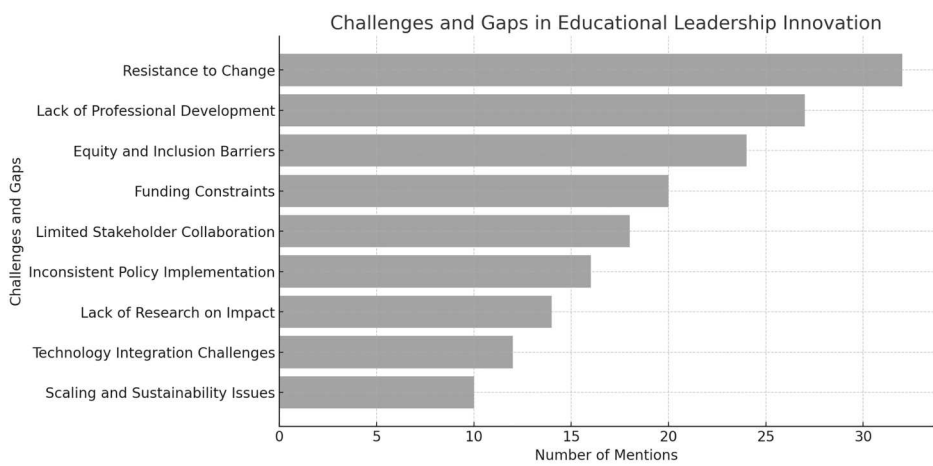
Challenges and Gaps in Educational Leadership Innovation

Figure 8. Challenges and gaps.

A further complexity in the discourse of innovation in educational leadership lies in the gap between the terminology frequently invoked and the clarity with which it is defined. As shown in Figure 9, terms such as 'disruptive innovation,' 'transformative change,' and 'digital transformation' appear frequently across the documents in the scan, yet are rarely accompanied by robust definitions. This rhetorical reliance on innovation-oriented language without clear articulation risks diluting the conceptual rigour necessary for meaningful implementation. Further to our earlier recognition of generic conceptualizations, the use of assumed understandings aggravates and further fractures coherent practice. Figure 7 also illustrates that while some terms – such as 'adaptive leadership,' 'professional learning,' and 'incremental change' – are more consistently defined, many of the most future-oriented or system-level terms remain conceptually underdeveloped. This reveals a need for greater definitional clarity
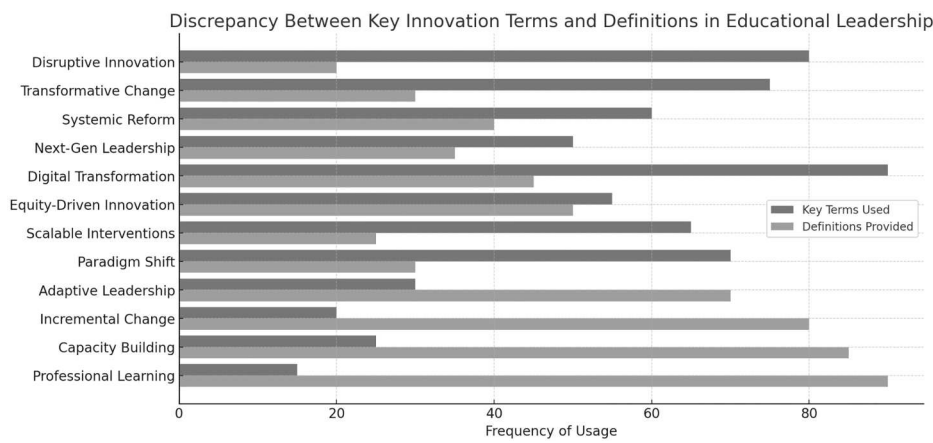
Discrepancy Between Key Innovation Terms and Definitions in Educational Leadership

**Figure 9.** Discrepancy between key innovation terms.

and coherence, especially when these terms are used to shape policy directives or guide professional learning. Without shared understandings, leaders may find themselves navigating ambitious reform agendas with little guidance on the meaning or mechanisms of the innovation being pursued.

What emerges from this section is a picture of innovation in educational leadership that is more fragmented and contested than uniformly enacted. While global discourses emphasise systemic innovation supported by policy and technology, the realities on the ground reveal persistent tensions, practical gaps, and rhetorical inconsistencies (Fullan 2021; Vincent-Lancrin 2023). As shown across Figures 4–7, educational leaders are tasked with interpreting and implementing innovation within systems that often lack the clarity, coherence, or support to do so effectively. The prevalence of contradictions – between autonomy and standardisation, risk-taking and accountability, and global aspirations and local capacity – reflects the lived experience of leading in conditions that are not always conducive to innovation. Moreover, the unevenness of professional learning opportunities and chronic underfunding expose how the conditions for innovation are often assumed rather than ensured. The inconsistent use of innovation terminology further compounds this complexity, suggesting a need for greater conceptual alignment across levels of governance. Altogether, this analysis reveals that while top-down mandates may set the tone for innovation, it is the grassroots realities – messy, nuanced, and deeply contextual – that ultimately determine whether innovation in educational leadership can take root and thrive.

These contradictions also point to broader systemic dynamics that vary significantly across national and regional contexts. To better understand how sociopolitical and economic conditions shape these dynamics, the next section turns to a comparative analysis of global variation in leadership strategies for educational innovation.

Global variation in leadership strategies

Educational leadership strategies vary considerably across national and regional contexts, shaped by sociopolitical conditions, economic development, and historical trajectories of education reform. This environmental scan revealed that while innovation is a global priority, the pathways and practices through which educational leaders support innovation differ markedly across systems. Some countries emphasise distributed leadership, capacity building, and collaborative governance, while others rely on more hierarchical, compliance-based models (AITSL 2014; Fullan 2021; Bryant et al. 2024; OECD 2022). These leadership approaches are deeply influenced by how trust, professionalism, risk-taking, and accountability are understood and operationalised within different systems. Understanding these differences is critical not only for contextualising innovation but also for informing more adaptive, locally resonant
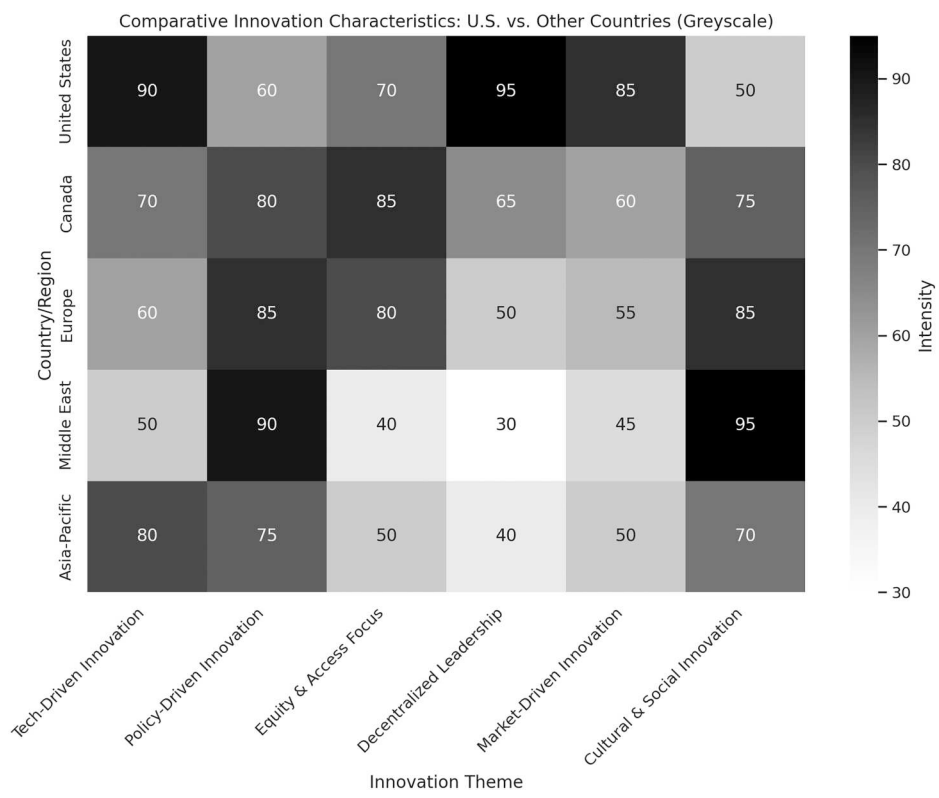
Figure 10. Comparative us vs other countries.

leadership strategies. This section explores how national and regional dynamics shape leadership strategies for innovation, with attention to how systemic support – or the lack thereof – affects leaders' capacity to initiate, sustain, and scale innovative practices.

As illustrated in Figure 10, the emphasis placed on different innovation themes varies considerably across regions, reflecting the diversity of leadership strategies shaping educational innovation worldwide. In countries such as Finland and Canada, innovation was closely tied to leadership development, professional learning networks, and an explicit equity and access agenda – evidenced by Canada's high intensity scores across policy-driven innovation (80), equity and access focus (85), and decentralised leadership (65). In contrast, the United States exhibited a strong emphasis on market-driven and tech-driven innovation (scores of 95 and 90, respectively), where educational leadership was more commonly linked to entrepreneurship, competition, and school choice mechanisms. Meanwhile, the Middle East demonstrated a particularly high focus on cultural and social innovation (95) and policy alignment (90), though leadership strategies tended to remain centralised and compliance-focused. Europe reflected a balanced emphasis on systemic reform and cultural responsiveness, whereas the Asia-Pacific region showed moderate levels across most categories but a

comparatively lower emphasis on leadership decentralisation. Such cross-national comparisons surface not only stylistic differences in leadership but also point to fundamental distinctions in governance logic, policy orientations, and educational values. These differences underscore the importance of situating innovation strategies within the socio-political and cultural realities of each system, rather than assuming a uniform model of educational leadership for innovation. Furthermore, the picture remains incomplete as there is insufficient reporting on contexts such as Sub-Saharan Africa, Central and South Asia. How themes of innovation may differ across these environments may also inform our understanding of the assumed relationships between educational innovation and aspects such as equity for learning.

To further illustrate these national leadership profiles, Figure 11 presents a radar chart – a type of data visualisation used to compare multiple variables across several categories. Each axis represents one dimension of innovation strategy, and the resulting shape shows the relative strength or emphasis placed on that dimension within each country's leadership approach.

Figure 11 presents a closer comparative analysis of five countries – Finland, Australia, Singapore, Canada, and the United States – emphasising their differences across five key dimensions of innovation leadership strategy: distributed
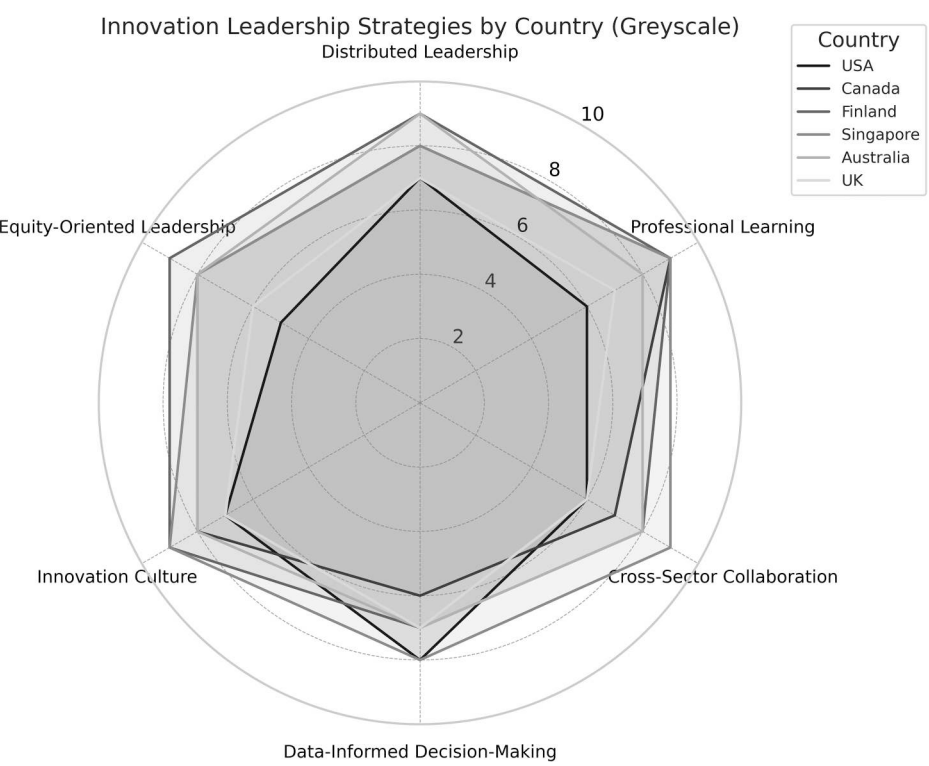

Figure 11. Innovation_Leadership_,Leadership Strategies by Country.

leadership, professional learning, entrepreneurial orientation, system align-ment, and equity and inclusion. The chart makes visible the distinct leadership 'profiles' that underpin each country's innovation pathway.

Finland and Canada both exhibit a balanced approach, with strong emphasis on distributed leadership, equity, and sustained professional learning. This is consistent with their national policies promoting collaboration, trust in the pro-fession, and systemic support for inclusive education. Australia and Singapore also demonstrate integrated leadership strategies but lean more heavily on system alignment and structured professional learning, reflecting national investment in policy coherence and leader preparation. By contrast, the U.S. pre-sents a more fragmented profile, with a sharp emphasis on entrepreneurialism and innovation through competition and school choice, but a lower emphasis on systemic cohesion and shared leadership.

These patterns reinforce a core finding of our environmental scan: there is no one-size-fits-all leadership model for educational innovation. Instead, countries draw on different capacities, governance traditions, and cultural nar-ratives to construct leadership strategies that both reflect and reinforce broader systemic norms. The radar chart thus complements the heat maps and cluster analyses in this section by offering a more granular understanding of the strategic levers educational leaders are positioned to pull within their unique contexts. Across these cases, educational leadership mediates inno-vation by leading sensemaking around shifting priorities, building capacity in staff, reallocating time and resources, spanning boundaries between policy, schools and communities, and sustaining professional learning and knowledge exchange structures that allow local leaders to adapt global agendas to local realities.

Taken together, the comparative analyses across Figures 10 and 11 under-score the highly contextual nature of educational leadership for innovation. While some systems prioritise distributed leadership and equity-driven reform, others rely on entrepreneurialism or centralised coordination to drive change. These strategic differences are not merely stylistic – they reflect deep-rooted policy orientations, levels of systemic trust, and varying interpret-ations of innovation's goals. The visualisations reinforce that innovation is not monolithic; it is enacted through diverse leadership profiles shaped by political will, institutional infrastructure, and historical legacies. Notably, the coexistence of high-performing yet ideologically distinct models – such as Finland's empha-sis on trust and collaboration versus the U.S.'s focus on competition and entre-preneurship – suggests that multiple viable paths to innovation exist. The effectiveness of any approach depends on its alignment with the needs of local systems and the lived realities of those tasked with implementation. Rather than prescribing a singular model, these results highlight the value of flexible, context-sensitive approaches that account for the interplay of leader-ship practices, governance structures, and cultural priorities. This scan affirms

the importance of adaptable, culturally responsive strategies that leverage local strengths while embracing cross-national learning.

Discussion

This environmental scan examined how innovation is described and understood in relation to educational leadership and the conditions that enable or hinder its implementation. The findings reveal a dynamic yet contested landscape, where policy rhetoric often exceeds practical reality. Despite international frameworks promoting systemic innovation, a persistent gap remains between aspirational discourse and implementation on the ground – a concern echoed by McDiarmid and Zhao (2022), who criticises the failure to seize current opportunities to rethink education.

Across various contexts, the term '*innovation'* is frequently used, but with limited definitional clarity, resulting in a fragmented and ambiguous conceptual field. This lack of coherence complicates policy enactment and places a heavy interpretive burden on school leaders tasked with implementing innovation within diverse systems. While research affirms the importance of innovation, progress remains uneven due to inadequate systemic support and insufficient investment in both teachers and educational leaders (Fuad, Musa, and Hashim 2022; Harris and Jones 2020; Serdyukov 2017).

The frequent use of buzzwords such as '*disruptive innovation*' and '*transformative change*' – often unaccompanied by clear frameworks or actionable strategies – risks perpetuating confusion and undermining the potential for sustained reform. As Serdyukov (2017) noted, a stark gap remains between the enthusiasm for innovation and the day-to-day realities of educational systems.

Ambiguity is particularly pronounced in policy documents that adopt innovation discourse without offering explicit theories or evidence-based models of change. Our findings align with Ball's (1993) notion of policy as text – open to interpretation – and support Hargreaves and Shirley's (2021) argument that innovation should be ethically grounded and collectively owned, not technocratically imposed. Many documents relied heavily on buzzwords without substantive elaboration, echoing Fullan's (2021) concern that innovation risks becoming performative rather than transformative when disconnected from meaningful pedagogy and professional learning.

Structural and cultural conditions have an influence on educational leadership practices. Systems with decentralised governance, strong leadership development, and professional learning networks – such as those found in Finland, Canada, and Singapore – were better positioned to sustain innovation. In these contexts, innovation is not a one-off initiative or a technological fix, but rather it emerges through relational trust, distributed leadership, and context-responsive design. This aligns with research on distributed and transformative leadership (Hojeij 2024; Rikkerink et al. 2015), as well as Timperley's (2011) work on adaptive

expertise, which emphasises integrating new knowledge into existing practice through reflection and collaboration. Innovation, in these systems, is embedded in leadership learning cycles rather than imposed from above.

In contrast, centralised systems with weak collaboration and limited professional autonomy struggled to embed innovation. Notably, professional learning – often cited as an enabling condition – remains underdeveloped in many contexts, thereby reinforcing inequities and hindering grassroots innovation.

Educational innovation is best understood as a dynamic, context-dependent process rather than a fixed model. This scan draws on complexity thinking, which views education systems as complex adaptive systems shaped by interdependent actors and nonlinear change (Davis and Sumara 2006; Mason 2008). From this perspective, leadership is not about executing top-down initiatives but about enabling learning and navigating change. Our findings reflect this view, highlighting how uneven implementation and relational leadership shape innovation efforts. Understanding innovation as emergent fosters sensitivity to local conditions and leadership practices that enable or inhibit transformation.

A central tension is the disconnect between top-down mandates and grassroots adaptability. Leaders are often expected to demonstrate entrepreneurial and equity-driven mindsets while conforming to hierarchical accountability structures. This double bind – balancing autonomy and standardisation, risk-taking and compliance – reveals the constraints within which leaders operate. These tensions are especially acute in jurisdictions with high-stakes accountability or technocratic policy environments, where innovation is promoted rhetorically but undermined by institutional design.

The COVID-19 pandemic exposed these fragilities. Many reform agendas leaned heavily on digital optimism without ensuring infrastructure or professional readiness, as highlighted in cross-national reviews of system responses to COVID-19 and innovation (Reimers & Opertti 2021; UNESCO 2021b, 2024). Williamson and Hogan (2020) critique this 'edtech solutionism,' noting that digital tools were promoted as universal fixes despite disparities in access and contextual fit. Our scan confirms that innovation policies often assume ideal conditions that do not exist or underestimate the adaptations needed for localised implementation.

Countries with limited resources – particularly in Sub-Saharan Africa and parts of Latin America – are frequently excluded from dominant innovation discourses, underscoring that innovation agendas must attend to purpose and values, not just efficiency or novelty (UNESCO 2021a, 2024). Yet, we identified promising practices in these regions, including community learning hubs, cross-sector collaboration, and hybrid leadership models. These examples suggest that innovation does not require capital-intensive solutions; culturally grounded and resourceful adaptations warrant greater recognition. As Biesta (2015) reminds us, educational change must attend to purpose and values, not just efficiency or novelty.

Ultimately, educational innovation is not a universal blueprint, but a process shaped by local context, leadership dispositions, and institutional history. While diverse models exist – from Finland's relational approach to the U.S.'s market-oriented strategies – effectiveness depends on alignment with local needs and values. What is urgently needed is a recalibration of leadership frameworks that support adaptive expertise and enable educator agency. Rather than importing solutions, policymakers should create conditions for experimentation, reflection, and co-construction with educators.

This shift would reposition leadership from compliance to contextually grounded praxis, bringing policy closer to the principles of equity, inclusion, and shared responsibility. Innovation thrives not through mandates but through shared leadership, strong infrastructure, and sustained investment in professional growth.

Limitations

This environmental scan offers a broad synthesis of global perspectives on educational leadership and innovation; however, several limitations should be acknowledged. First, the scan focused exclusively on grey literature – such as policy briefs, strategic frameworks, and institutional reports – which, while valuable for understanding real-time developments in practice and policy, may lack the methodological transparency and peer review rigour typically associated with academic scholarship. Variability in quality, intent, and rigour of grey literature is an inherent limitation in an environmental scan. We acknowledge these constraints and contrast them with the method's strengths in capturing real-time policy perspectives. Second, despite efforts to ensure a diverse geographic scope, the availability and accessibility of grey literature varied considerably across regions. This resulted in an overre-presentation of sources from high-income and Anglophone countries, with limited representation from the Global South and non-English-speaking contexts.

Third, the scan was limited to documents that were publicly accessible, primarily written in English, and published between 2015 and 2025, which may have excluded key resources from jurisdictions where grey literature is not readily disseminated or where more recent documents are unavailable. As a result, the currency of the evidence base is uneven across themes, and some findings should be interpreted as indicative rather than exhaustive of current practice.

These limitations point to the need for future research that complements grey literature with empirical studies and peer-reviewed scholarship, particularly in underrepresented contexts. Expanding the linguistic, geographic, and methodological breadth of future scans would further strengthen the global applicability and equity of insights into educational leadership and innovation.

Conclusion

This environmental scan offers a novel contribution through a global synthesis of grey literature on educational leadership and innovation. While innovation is widely promoted in education policy and discourse, its enactment is shaped by governance structures, socio-political contexts, and leadership capacity. The findings expose a persistent disconnect between global aspirations and the practical realities faced by school leaders operating in complex, under-resourced systems.

Three key themes emerged: the structural conditions that enable or constrain innovation; tensions between top-down mandates and grassroots practices; and wide variation in leadership strategies across national contexts. Effective innovation is more likely where decentralised governance, leadership invest-ment, and strong professional learning networks are present. In contrast, centra-lised control, insufficient funding, and weak collaboration hinder sustained reform.

The analysis also highlights a lack of conceptual clarity surrounding terms such as 'transformative change' and 'disruptive innovation.' These are often used without definition or actionable frameworks, placing the burden on leaders to interpret and implement vague goals. Addressing this gap requires aligning discourse with strategic, context-sensitive guidance.

To support meaningful innovation, leadership development must move beyond prescriptive models. Policymakers and system leaders should co-con-struct reforms with educators and communities, invest in flexible funding, and enable local autonomy. Rather than importing universal templates, leader-ship strategies should reflect local histories, institutional ecologies, and cultural narratives.

Ultimately, innovation in education is not a fixed model but a dynamic, context-dependent process. This scan highlights the importance of adaptive, relational, and inclusive leadership practices that are grounded in local realities. Future research should examine how leaders interpret and enact innovation – particularly in underrepresented regions – to inform globally relevant, yet locally responsive, approaches to educational change.

Disclosure statement

Notes on contributors

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Appendix

This appendix alphabetises the monographs we included in our grey literature environmental scan of Innovation and Educational Leadership.

Abdallah, A.K., Alkaabi, A.M., & Al-Riyami, R. (Eds). *Cutting-Edge Innovations in teaching, leadership, technology, and assessment*. IGI Global, Hershey PA.

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