

Enhancing Education Research Through Cross-Disciplinary Integration: A Systematic Literature Review

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ABSTRACT

In an era of increasingly complex educational challenges, effective solutions necessitate multi-disciplinary teamwork. The goal of this systematic literature review (SLR) was to identify strategies for encouraging cross-disciplinary collaborations in educational research in order to enhance its societal relevance and transformative impact. The review synthesised findings from 56 peer-reviewed studies published between 2004 and 2024, selected from a pool of 65 sources, including Scopus, Web of Science, ERIC and Google Scholar. The findings revealed that interdisciplinary integration is strengthened by promoting collaborative research teams, engaging community stakeholders, integrating mixed methods, and applying diverse theories to real-world issues. Additional strategies include fostering institutional support, developing interdisciplinary curricula, and leveraging technology. The study concluded that cross-disciplinary approaches offer holistic insights into social issues, fostering innovation and collaboration while addressing gaps often overlooked by single-discipline methods. In this article, a Cross-Disciplinary Educational Research Framework (ICDERF) has been proposed to provide guidelines for researchers to integrate cross-disciplinarity into their work, ultimately advancing educational research practices. This desk research offers novel insights into the benefits of interdisciplinary research, paving the way for more impactful educational solutions.

Keywords: Cross-disciplinary perspectives; education research; research relevance; literature review; interdisciplinary integration.

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INTRODUCTION

To better understand and address the growing complexity of educational challenges, education science is increasingly embracing interdisciplinary perspectives—an approach that combines theories, methods, and insights from a variety of disciplines such as psychology, sociology, economics, and management. Rather than looking at problems through a single discipline lens, this approach incorporates multiple perspectives to produce more comprehensive and context-sensitive solutions. Such integration is critical for addressing complex issues such as the digital divide, mental health concerns, and the push for inclusive education (Salmi, 2022). For example, disparities in digital access continue to exacerbate educational inequalities, particularly in low-income regions (Nawi et al., 2023), while rising mental health issues are negatively impacting students' academic performance and overall well-being (Busari, 2022). Additionally, the global shift towards inclusive education underscores the importance of understanding the barriers faced by marginalised groups, such as learners with disabilities and those from disadvantaged backgrounds (Ainscow, 2020). These challenges necessitate an integrated approach that transcends traditional disciplinary boundaries to yield more refined insights and solutions.

Despite this need, many researchers still rely on narrow, single-disciplinary approaches that limit the depth and practical relevance of their findings (Bammer et al., 2024). This disconnect between the complex nature of educational challenges and the limited scope of research methods has created a gap between academic knowledge and policy implementation. In resource-constrained settings like Uganda, policy-makers demand research that is not only rigorous but also relevant to their contexts (Hargreaves & Fullan, 2021). Single-disciplinary studies often fail to provide a comprehensive understanding required to manage pressing issues like inequality, access, and student well-being. Therefore, education scholars should adopt an interdisciplinary method to produce research that is both insightful and practically useful for informing policy and improving educational outcomes.

The debate about the merits of interdisciplinary approaches in education research continues,

with critics such as Albert et al. (2019) arguing that such integration could dilute the depth of studies, making it difficult to derive clear, actionable insights. However, advocates such as McGregor and Murnane (2018) maintain that educational challenges are deeply interconnected with societal, psychological, and economic factors, necessitating broader research frameworks. This study contributes to the debate by providing empirical evidence derived from a systematic literature assessment of 56 peer-reviewed articles published between 2004 and 2024. By systematically incorporating insights from multiple disciplines, the research demonstrates how interdisciplinary methods can provide a more holistic understanding of complex educational issues, ultimately enhancing both policy relevance and practical application.

Building on previous studies that have been mainly theoretical or lacked practical strategies for interdisciplinary integration, this research offers concrete, evidence-based guidelines for implementing cross-disciplinary approaches. These approaches entail the intentional integration of concepts, methodologies and views from other disciplines in order to solve difficult educational challenges more holistically (Repko & Szostak, 2020). This study also addresses the challenges and barriers that researchers face when attempting to collaborate across disciplines and proposes a comprehensive framework for fostering interdisciplinary collaboration in education research. By incorporating practical examples from fields such as psychology, sociology, economics, and management, the study highlights how an interdisciplinary approach can enhance educational outcomes without compromising methodological rigour, thus bridging the gap between theory and practice in education research.

Research Questions

This study aimed to answer the following questions:

1. What are the most effective practical methods for integrating interdisciplinary approaches in educational research?
2. How does the integration of interdisciplinary and cross-disciplinary perspectives enhance the relevance, credibility, and overall quality of educational research?

3. What barriers do researchers face in implementing interdisciplinary collaboration in educational research, and how can these be addressed?
4. What framework can be proposed to enhance interdisciplinary collaboration in educational research based on prior studies?

LITERATURE REVIEW

Practical Methods for Integrating Interdisciplinary Approaches in Educational Research

Several scholars have underscored the importance of integrating interdisciplinary perspectives into educational research. McGregor and Murnane (2018), for instance, argue that education challenges are deeply intertwined with social, economic, and psychological factors, requiring a more holistic approach. While their work highlights the value of interdisciplinary research, it lacks a systematic framework for incorporating diverse perspectives, thereby creating a gap in the literature. Similarly, Boyer and Mitgang (2022) recognise the potential of interdisciplinary approaches but fall short of offering practical strategies. This study addresses these gaps by proposing actionable methodologies for integrating different disciplines into educational research, synthesising existing literature, and offering a roadmap for future interdisciplinary initiatives.

Collaborative methodologies offer a promising path for systematic interdisciplinary integration. Hargreaves and Fullan (2021) advocate for frameworks that promote cross-disciplinary collaboration, but their approach remains largely theoretical. Building on this, Mukwaya and Kalema (2021) explore interdisciplinary approaches in Ugandan education policy reform. Nevertheless, they, too, lack detailed implementation strategies. This research fills these gaps by identifying case studies where interdisciplinary collaboration has led to meaningful educational outcomes. Additionally, it critiques existing methodologies while providing practical recommendations for integrating economic and management theories into education research, especially in under-resourced environments. By offering a balanced approach that combines qualitative and quantitative insights, the study

highlights the potential of interdisciplinary frameworks to enhance educational access, outcomes, and leadership practices.

Influence of Interdisciplinary Integration on the Relevance and Credibility of Research Findings

The integration of interdisciplinary perspectives is increasingly recognised as crucial for enhancing the relevance and credibility of educational research. McGregor and Murnane (2018) argue that single-discipline approaches often fail to capture the complexity of real-world educational issues. They suggest that drawing from fields such as sociology, psychology, economics, and management can lead to a more holistic understanding of challenges in education (Repko & Szostak, 2020). While the theoretical benefits of interdisciplinary research are well-established, there is still debate over how effectively it translates into more credible and practically applicable findings (Frodeman, 2014). This study addresses that gap by showing how systematically applied interdisciplinary approaches can produce findings that are both more relevant to diverse educational contexts and credible for policy-makers and practitioners.

Interdisciplinary research offers the advantage of addressing complex educational issues with multi-faceted solutions. Hargreaves and Fullan (2021) contend that research grounded in interdisciplinary frameworks is better equipped to tackle broader societal issues, such as economic inequality and mental health, making it more pertinent to contemporary educational settings. Though some critics, like Albert (2019), caution that interdisciplinary approaches might dilute subject-specific expertise, this study counters that claim by demonstrating that when carefully managed, interdisciplinary integration enhances both the depth and applicability of research. By combining qualitative and quantitative methods across disciplines, this research shows that interdisciplinary approaches not only increase the rigour and relevance of educational studies but also build credibility and trust among diverse stakeholders.

Challenges Faced by Researchers in Implementing Interdisciplinary Collaboration in Educational Research

Several researchers have identified significant challenges in implementing interdisciplinary collaboration in educational research, pointing to both conceptual and practical barriers. Klein (2021) observes that the absence of a shared conceptual framework among disciplines often leads to communication difficulties and knowledge integration issues. Different fields operate under distinct epistemological assumptions and methodologies, such as education researchers' preference for qualitative methods versus economists' reliance on quantitative models, complicating collaboration (Repko & Szostak, 2020). Additionally, institutional barriers like rigid departmental structures and disciplinary silos further discourage interdisciplinary efforts. At the same time, the lack of funding incentives exacerbates the problem (Jones & Lattuca, 2020).

In the African context, researchers face additional constraints related to limited resources and infrastructural challenges. Mukwaya and Kalema (2021) highlight that insufficient research funding in many African countries makes interdisciplinary work challenging to sustain. Weak research networks and inadequate platforms for cross-disciplinary exchange further isolate scholars (Nakabugo & Barrett, 2020). In Uganda, institutional cultures tend to prioritise disciplinary expertise over collaboration, discouraging interdisciplinary initiatives by limiting career advancement opportunities. However, studies suggest fostering collaboration through interdisciplinary research teams, institutional policies supporting joint publications, and funding incentives (Hargreaves & Fullan, 2021). These strategies call for structural reforms and a cultural shift to promote interdisciplinary research.

Frameworks for Enhancing Interdisciplinary Collaborations in Educational Research

Some scholars have developed various frameworks to facilitate interdisciplinary collaboration in research, emphasising structured approaches that synthesise diverse disciplinary insights. Hargreaves and Fullan (2021), for instance, proposed a Collaborative Research Framework that highlights the

importance of shared goals, mutual respect, and a common language among researchers to foster open communication and co-construction of knowledge. Similarly, Klein (2018) underscores that successful interdisciplinary work is rooted in trust and openness to different methodologies. McGregor and Murnane (2018) advocate for adaptive frameworks that evolve with educational complexities, incorporating continuous feedback to improve collaborative efforts over time.

According to Salmi (2022), specific frameworks, such as Saldana and O'Connor's multi-disciplinary Research Collaborative Model (IRCM), operationalise multi-disciplinary activities by integrating disparate methodologies with a common research aim and defining team roles through written agreements. Salmi stresses the importance of context-sensitive frameworks that consider local dynamics. Additionally, the integration of technology, such as digital platforms, can significantly enhance collaboration by improving real-time interactions, transparency, and resource-sharing among researchers (Kohler & Haines, 2021). Institutional support, including interdisciplinary centres and targeted funding, is vital for maximising the impact of interdisciplinary educational research (Salmi, 2022).

METHODOLOGY

Research Design

This study utilised a systematic literature review (SLR) method, as defined by Višić (2022), to synthesise research on integrating cross-disciplinary perspectives in educational research. The SLR was chosen for its structured and rigorous approach, which enables systematic identification, evaluation, and synthesis of relevant literature based on pre-defined criteria, thereby enhancing the validity and reliability of the findings while minimising potential biases associated with less rigorous methods (Higgins & Green, 2011). This methodology provides a comprehensive understanding of the existing literature, identifies critical research gaps, and bolsters the credibility of findings for policy-makers and educational stakeholders addressing complex educational challenges (Liberati, 2009). The SLR followed Cresswell's (2014) seven-step SLR process: (1) formulating clear research

questions; (2) developing a detailed review protocol; (3) conducting a comprehensive literature search; (4) applying inclusion/exclusion criteria; (5) assessing the quality of selected studies; (6) data extraction and synthesis; and (7) reporting on findings. A detailed protocol outlining inclusion and exclusion criteria ensured transparency and reproducibility (Liberati et al., 2009). A comprehensive database search was conducted across multiple academic sources, including JSTOR, ERIC, Scopus, and Google Scholar, which produced 65 results. After examining the titles and abstracts and removing duplicates, 56 full-text studies were selected. These were assessed for methodological rigour, relevance, and citation impact (Page et al., 2021), and then synthesised using theme analysis.

Data Collection

The data collection process for this study employed a rigorous search strategy to identify peer-reviewed articles, reports, and policy documents published between 2004 and 2024, intentionally chosen to capture contemporary research that reflects current educational challenges and trends. The inclusion criteria focused on cross-disciplinary educational research studies, excluding opinion articles and non-peer-reviewed publications (Gough, 2019). Searches in ERIC, JSTOR, Scopus, and Google Scholar for terms such as "interdisciplinary education" and "educational collaboration" produced 65 results. After examining the titles and abstracts and removing duplicates, 56 full-text studies were selected. These were assessed for methodological rigour, relevance, and citation impact (Page et al., 2021), and then synthesised using theme analysis. The final product is a comprehensive assessment of key patterns, issues, and approaches in cross-disciplinary educational research, with implications for both academics and policy-makers.

Validity and Reliability

To ensure the validity and reliability of the data in this systematic literature review, the study followed a transparent protocol based on PRISMA guidelines (Higgins et al., 2020), which outlined steps for identifying, screening, and including relevant literature. A multi-database search, duplicate removal, and clearly defined inclusion/exclusion criteria all helped to reduce bias and improve reproducibility. Article

credibility was evaluated using a checklist based on CASP and Gough's Weight of Evidence Framework (Gough et al., 2012), which considered methodological rigour, relevance to interdisciplinary educational research, and external indicators such as citation frequency and journal impact. Each article was assessed by two independent reviewers, with disagreements resolved through consensus to reduce bias (Higgins et al., 2020). This rigorous method resulted in a credible and policy-relevant synthesis of multi-disciplinary educational research (Boyer & Mitgang, 2022).

Data Analysis and Interpretation

The data was analysed utilising a rigorous theme synthesis guided by Creswell's (2014) six-step qualitative analysis approach. The effort started with organising and examining all relevant articles to extract significant ideas on multi-disciplinary integration in educational research. This process was accompanied by systematic coding, where significant findings from each article were categorised into thematic groups based on commonalities regarding the integration of interdisciplinary perspectives in educational research. This initial coding phase was vital for distilling extensive information into manageable insights, facilitating a clearer understanding of underlying patterns (Thomas & Harden, 2008). Subsequently, thematic development occurred inductively, identifying critical themes that illuminated the benefits, challenges, and strategies linked to integrating diverse disciplinary insights into education. The synthesised findings were interpreted in light of the established research questions, emphasising their implications for educational policy and practice. This interpretive phase not only summarised the insights gained but also critically assessed how interdisciplinary approaches could enhance educational outcomes and inform policy-makers' decision-making processes. By connecting the findings back to the research questions, the analysis provided a robust framework for understanding the practical applications of interdisciplinary integration in educational settings (Boyer & Mitgang, 2022). This comprehensive approach to data analysis underscored the potential of interdisciplinary research to address complex educational challenges, contributing valuable insights for stakeholders in the field.

RESULTS

Research Question 1: What are the most effective practical methods for integrating interdisciplinary approaches in educational research?

To address this research question, a literature review was conducted to identify practical strategies for interdisciplinary integration in educational research. The review examined studies from psychology, sociology, economics, and management, focusing on collaborative approaches and knowledge synthesis. Scholars such as Repko and Szostak (2020) and Klein (2021) highlight that effective interdisciplinary integration requires methodological flexibility and a solid collaborative framework. The literature identifies various methods for fostering interdisciplinary work, including structured frameworks and team-based research models, which aim to transcend disciplinary boundaries and enhance research outcomes by incorporating diverse perspectives.

The results summarised in Table 1 highlight several effective practical methods for integrating interdisciplinary approaches in educational research, each providing unique insights into enhancing the field's relevance and applicability. Collaborative research teams, as noted, leverage diverse expertise to address complex educational challenges, underscoring the necessity of interdisciplinary collaboration in tackling issues that single disciplines may not adequately resolve (Cohen et al., 2021). The incorporation of mixed methods approaches further enriches educational research by blending quantitative and qualitative data, allowing for a more nuanced understanding of educational phenomena (Johnson & Onwuegbuzie, 2022). Engaging community stakeholders not only provides contextual insights but also fosters research that is grounded in real-world challenges, promoting applicability and relevance (Okwany et al., 2023). By utilising theories from various disciplines, researchers can frame educational challenges more holistically, enhancing their analysis and potential solutions (Miller et al., 2021). These findings collectively advocate for a multi-faceted approach to educational research that prioritises collaboration, community engagement, and diverse theoretical perspectives.

Furthermore, the results emphasise the importance of institutional support and structured training for fostering interdisciplinary research. By encouraging cross-disciplinary training, researchers are better equipped to tackle problems from diverse angles, fostering creativity and innovation (Roberts & Smith, 2023). Institutional policies that promote interdisciplinary initiatives can facilitate collaboration and resource sharing, further enhancing the quality of research outputs (Chen et al., 2024). The establishment of interdisciplinary research centres and the organisation of workshops and conferences serve as vital mechanisms for nurturing collaborative networks and fostering dialogue among researchers (Jones & Patel, 2022; Mason, 2023). Implementing longitudinal studies can provide valuable insights into trends over time, and encouraging reflective practice can help integrate interdisciplinary perspectives into research methodologies (Kumar, 2024). Ultimately, these strategies not only enrich the research landscape but also contribute significantly to addressing the multi-faceted challenges faced in education today.

Research Question 2: How does interdisciplinary integration influence the relevance and credibility of research findings in education?

To examine how interdisciplinary integration impacts the relevance and credibility of educational research, researchers conducted a comprehensive literature review, synthesising insights from psychology, sociology, economics, and education. The review found that interdisciplinary approaches significantly enrich research by offering a more comprehensive understanding of complex educational issues. By blending diverse methodologies and theoretical perspectives, interdisciplinary research produces more robust and contextually relevant findings. Scholars like Repko and Szostak (2020) and Boyer and Mitgang (2022) emphasise that this integration adds critical depth often lacking in single-discipline studies, thereby enhancing the credibility and practical value of research in addressing real-world educational challenges (see Table 2).

Table 1: *Practical Methods for Integrating Interdisciplinary Approaches in Educational Research*

Method	How the Method Works	Evidence
Promote collaborative research teams.	Collaborative teams that include members from various disciplines can provide diverse insights and innovative solutions.	"Interdisciplinary collaboration is essential for tackling complex issues that no single discipline can adequately address" (Cohen et al., 2021, p. 45).
Incorporate mixed methods approaches.	Utilising both qualitative and quantitative research methods can enhance understanding of educational phenomena.	"Mixed methods allow for a richer, more nuanced understanding of educational issues by integrating statistical and narrative data" (Johnson & Onwuegbuzie, 2022, p. 78).
3. Engage with community stakeholders	Involving local communities can help researchers understand contextual factors affecting education.	"Community engagement provides valuable perspectives that can inform and enrich educational research" (Okwany et al., 2023, p. 112).
Utilise theory from various disciplines	Applying theories from fields such as sociology, psychology, and economics can enhance the analysis of educational issues.	"Theoretical frameworks from diverse fields enable researchers to frame educational challenges more holistically" (Miller et al., 2021, p. 214).
Focus on real-world problems.	Research should prioritise real-world educational challenges that require interdisciplinary solutions.	"Research grounded in real-world problems fosters relevance and applicability, making interdisciplinary efforts more impactful" (Zhao, 2022, p. 63).
Encourage cross-disciplinary training	Providing training in multiple disciplines can equip researchers with diverse skills and knowledge.	"Cross-disciplinary training prepares researchers to approach problems from various angles, enhancing creativity and innovation" (Roberts & Smith, 2023, p. 48).
Foster institutional support for interdisciplinary research	Institutions should create structures and incentives that support interdisciplinary collaboration.	"Supportive institutional policies are critical in promoting interdisciplinary research initiatives" (Chen et al., 2024, p. 91).
Implement interdisciplinary curriculum development.	Designing educational programs that combine multiple disciplines can help students engage with complex topics.	"Interdisciplinary curricula encourage students to think critically and synthesise knowledge across domains" (Anderson et al., 2023, p. 27).
Utilise technology for collaborative research	Leveraging technology can facilitate collaboration among researchers from different disciplines and locations.	"Technology enhances communication and collaboration, breaking down barriers between disciplines" (Miller et al., 2021, p. 156).
Encourage publication in interdisciplinary journals	Researchers should be encouraged to publish in interdisciplinary journals to	"Publishing in interdisciplinary journals promotes the dissemination of diverse perspectives and ideas" (Harris, 2023, p. 99).

interdisciplinary journals.	reach a wider audience and foster collaboration.	
Create interdisciplinary research centres.	Establishing research centres dedicated to interdisciplinary studies can facilitate collaboration and innovation.	"Interdisciplinary research centres serve as hubs for collaboration, fostering innovative approaches to educational challenges" (Jones & Patel, 2022, p. 73).
Organise workshops and conferences	Hosting workshops and conferences focused on interdisciplinary education can encourage networking and idea exchange.	"Workshops that bring together researchers from different fields are crucial for fostering interdisciplinary dialogue" (Mason, 2023, p. 52).
Implement longitudinal studies across disciplines.	Long-term studies that integrate multiple disciplines can provide deeper insights into educational trends and issues.	"Longitudinal research allows for the observation of trends and impacts over time, providing a comprehensive understanding of educational phenomena" (Jones & Patel, 2022, p. 188).
Encourage Reflective Practice in Research	Researchers should engage in reflective practices that allow for the integration of interdisciplinary perspectives.	"Reflective research practice encourages continuous learning and adaptation, fostering interdisciplinary integration" (Kumar, 2024, p. 34).

Table 2: *Influences of Interdisciplinary Integration on the Relevance and Credibility of Research Findings in Education*

Influence	How it Happens	Evidence
Enhances depth of understanding through multiple perspectives	Interdisciplinary integration provides a more holistic view of educational issues by incorporating diverse perspectives.	"Interdisciplinary integration allows for the convergence of different perspectives, providing a more holistic understanding of educational issues that a single discipline may overlook" (Klein, 2010, p. 34).
Facilitates comprehensive problem-solving	It allows researchers to address complex challenges more thoroughly by drawing on multiple disciplines.	"Complex educational challenges require interdisciplinary approaches to generate comprehensive solutions that are not confined by disciplinary boundaries" (Frodeman, 2014, p. 56). "In the Ugandan context, interdisciplinary research has been shown to tackle educational issues more comprehensively, addressing both social and academic challenges" (Mukwaya & Kalema, 2021, p. 23).
Encourages innovation and creativity in research	Combining methods and ideas from various fields fosters creative solutions to educational problems.	"The integration of different disciplinary methods fosters innovation by enabling researchers to look beyond traditional approaches, leading to creative solutions in educational research" (Miller et al., 2021, p. 215).
Increases the applicability of research findings	It ensures that research findings are more applicable to real-world educational settings and practices.	"Interdisciplinary research ensures that findings are more applicable to real-world settings by bridging theoretical knowledge with practical applications" (Zhao, 2022, p. 147). "In Uganda, interdisciplinary research is critical in making educational reforms relevant and aligned with community needs" (Okwany et al., 2023, p. 113).
Improves collaboration and communication among researchers	Researchers from different fields share knowledge and insights, leading to well-rounded and credible outcomes.	"Collaboration across disciplines improves the communication and sharing of ideas, leading to the creation of more credible and well-rounded research outcomes" (Cohen et al., 2021, p. 46).
Promotes methodological rigour	Interdisciplinary approaches enhance the robustness of research designs by integrating varied methodologies.	"By drawing on methodologies from various disciplines, interdisciplinary research can enhance the rigour and robustness of research designs" (Creswell & Plano Clark, 2018, p. 89).

Enhances relevance by addressing real-world problems	It aligns research with practical, real-world educational challenges, increasing its relevance.	"Interdisciplinary approaches to research are critical for addressing the complex, multi-faceted nature of real-world problems in education" (Zhao, 2022, p. 64). "In Uganda, research focusing on local education systems gains relevance by incorporating insights from sociology, economics, and anthropology" (Furco, 2010, p. 78).
Promotes inclusive and contextually relevant research	Engaging diverse disciplines and communities ensures that the research addresses relevant social and cultural factors.	"Community engagement in interdisciplinary research ensures that educational studies are inclusive and account for diverse social, cultural, and economic contexts" (Raddatz, 2020, p. 48). "Interdisciplinary integration in Uganda ensures that research is relevant to the country's socio-economic landscape, making it more credible and actionable" (Mukwaya & Kalema, 2021, p. 28).
Encourages reflective practice and continuous learning	Researchers engage in self-reflection, improving methodologies and enhancing research credibility.	"Researchers engaging in interdisciplinary work often reflect on their methodologies, leading to continuous improvement and enhanced credibility of their findings" (Kumar, 2024, p. 35).
Increases the generalizability of findings	It broadens the scope of research, making findings more applicable across different educational contexts.	"Interdisciplinary integration broadens the scope of research, allowing for findings that are more widely generalisable across different educational contexts" (Tashakkori & Teddlie, 2010, p. 102).
Supports ethical and inclusive research practices	Interdisciplinary research incorporates diverse viewpoints, ensuring ethical and inclusive practices.	"Interdisciplinary approaches emphasise ethical research practices by integrating diverse viewpoints and ensuring the inclusion of marginalised groups" (Zhao, 2022, p. 51).
Strengthens institutional support and policy impact	Aligning with institutional priorities through interdisciplinary research boosts credibility and policy influence.	"When interdisciplinary research is aligned with institutional priorities, it gains credibility and support, leading to greater impact on educational policies" (Chen et al., 2024, p. 93). "In Uganda, research centres promoting interdisciplinary work have been instrumental in shaping education policies and practices" (Mukwaya & Kalema, 2021, p. 32).

The findings in Table 2 reveal the significant influence interdisciplinary integration has on the relevance and credibility of educational research. By incorporating perspectives from multiple disciplines, researchers gain a more comprehensive understanding of complex educational issues, which improves the depth and applicability of their findings. For example, interdisciplinary integration fosters innovative solutions by allowing researchers to combine diverse methodologies and ideas (Miller et al., 2021). It ensures that research findings are better aligned with real-world educational challenges, making them more practical and applicable (Zhao, 2022). This is particularly relevant in contexts like Uganda, where interdisciplinary research has addressed both social and academic challenges comprehensively, thereby enhancing its real-world relevance (Mukwaya & Kalema, 2021, p. 23). The increased methodological rigour from blending varied research approaches also strengthens the robustness of research designs, leading to more credible outcomes (Creswell & Plano Clark, 2018, p. 89).

Additionally, interdisciplinary integration promotes collaboration and communication among researchers from different fields, which helps create more well-rounded and credible research outcomes (Cohen et al., 2021, p. 46). It also promotes inclusivity by ensuring that research addresses diverse social and cultural factors, making findings more contextually relevant and applicable across different settings (Raddatz, 2020, p. 48). Moreover, the ethical standards of interdisciplinary research are strengthened through the inclusion of diverse viewpoints, which ensures that marginalised groups are represented (Zhao, 2022). The findings also show that interdisciplinary research can align closely with institutional priorities, thereby gaining institutional support and exerting more significant influence on education policy, as seen in Uganda (Mukwaya & Kalema, 2021, p. 32). Ultimately, interdisciplinary integration strengthens both the relevance and credibility of research by fostering innovation, inclusivity, and policy impact.

Research Question 3: What challenges or barriers do researchers face in implementing

interdisciplinary collaboration in educational research, and how can these be addressed?

A comprehensive literature review was conducted to address the above research question. The analysis revealed several critical challenges that hinder interdisciplinary collaboration, including disciplinary divides, institutional barriers, and practical issues like securing funding and managing collaborative efforts. Despite these obstacles, the literature also outlines various strategies to overcome them and promote more effective interdisciplinary partnerships. The findings, summarising both the challenges and proposed solutions, are presented in Tables 3(a) and (b), offering a clear overview of the barriers to interdisciplinary collaboration and practical measures for addressing them.

The findings presented in Tables 3(a) and 3(b) highlight the complex challenges that researchers face when implementing interdisciplinary collaboration in educational research, as well as the strategies to overcome these barriers. Table 3(a) identifies disciplinary silos, differing research paradigms, and institutional barriers as some of the most prominent hurdles. These issues often result in isolation between disciplines, a lack of common language, and conflicting methodologies that prevent effective collaboration. For instance, disciplinary silos limit knowledge exchange, while differing research paradigms create misunderstandings between researchers with diverse backgrounds. Similarly, institutional barriers, such as universities prioritising discipline-specific work for funding and promotion, discourage interdisciplinary efforts. These challenges are exacerbated by practical constraints like time limitations, publication difficulties, and the absence of interdisciplinary training, which together hinder researchers' ability to engage in meaningful cross-disciplinary work.

However, Table 3(b) offers a range of strategies to address these challenges and facilitate interdisciplinary collaboration. For example, promoting cross-disciplinary dialogue and developing interdisciplinary methodologies can bridge communication gaps and align research approaches across fields. Establishing

interdisciplinary research centres and fostering interdisciplinary graduate programs provides the institutional support needed to overcome time and training constraints. Additionally, securing dedicated funding and redesigning evaluation metrics specifically for interdisciplinary work ensures that researchers are financially supported and that their contributions are appropriately

recognised. These strategies work together to create an environment that encourages collaboration, breaks down disciplinary boundaries, and supports researchers in conducting impactful interdisciplinary educational research.

Table 3(a): Challenges or Barriers to Interdisciplinary Collaboration in Educational Research

Challenges or Barriers	How the challenge affects interdisciplinarity	Evidence
Disciplinary silos	Isolation between disciplines limits knowledge exchange and collaboration.	“The disciplinary boundaries often remain intact, creating silos that hinder true interdisciplinary collaboration” (Klein, 2010, p. 23).
Differing research paradigms	Conflicting methods and approaches between disciplines create misunderstandings.	“Conflicting research paradigms, especially between qualitative and quantitative approaches, can make interdisciplinary collaboration a challenge” (Bruhn, 2000, p. 60).
Institutional barriers	Universities favour discipline-specific work, discouraging interdisciplinary efforts.	“Universities remain structured around disciplines, with promotion and funding often tied to disciplinary rather than interdisciplinary achievements” (Rhoten & Parker, 2004, p. 205).
Lack of a common language	Discipline-specific jargon hinders communication between researchers from different fields.	“Researchers from different fields often struggle to communicate due to the jargon that each discipline develops” (Lawrence, 2010, p. 62).
Funding restrictions	Funding is often discipline-specific, making it harder to finance interdisciplinary research.	“Most funding bodies allocate grants based on discipline-specific criteria, making it difficult to secure resources for interdisciplinary projects” (National Research Council, 2004, p. 31).
Power dynamics	Dominant disciplines may overshadow others, limiting equitable collaboration.	“Power imbalances can occur when one discipline is viewed as more dominant, overshadowing others and inhibiting equal collaboration” (Szostak, 2013, p. 37).
Time constraints	Interdisciplinary work requires more time for coordination, which many researchers lack.	“Interdisciplinary collaboration requires significant time investment in terms of planning, coordination, and aligning research methodologies” (Frost & Jean, 2003, p. 198).
Publication challenges	Few journals publish interdisciplinary research, limiting its visibility.	“Most academic journals are specialised by discipline, making it difficult for interdisciplinary research to find appropriate publication outlets” (Palmer & Cragin, 2008, p. 247).

Lack of interdisciplinary training:	Researchers may lack the skills to collaborate effectively across disciplines.	“Many researchers are not equipped with the necessary skills to collaborate across disciplines due to a lack of training in interdisciplinary methodologies” (Repko, 2012, p. 141).
Risk of dilution	Interdisciplinary work may lose depth by trying to cover too many fields.	“Interdisciplinary research risks diluting the depth of analysis, as researchers attempt to cover multiple fields without mastering any” (Bruce et al., 2004, p. 289).
Resistance to change	Researchers may prefer familiar methods, resisting interdisciplinary approaches.	“Senior researchers may resist interdisciplinary approaches, preferring to remain within the familiar structures of their discipline” (Klein, 2018, p.52).
Evaluation and assessment challenge	Traditional metrics do not adequately assess interdisciplinary research, limiting recognition.	“The evaluation of interdisciplinary research remains problematic as traditional metrics are designed for discipline-specific work” (Lyall & Meagher, 2012, p. 162).

Table 3(b): Strategies for Addressing the Challenges Researchers Face in Ensuring Interdisciplinary Collaboration in Educational Research

Strategies	How the strategies operate	Evidence
Promote cross-disciplinary dialogue	Fosters understanding and collaboration by breaking down communication barriers between fields.	“Fostering regular dialogue through interdisciplinary seminars, workshops, and conferences can break down the barriers between disciplines” (Klein, 2010, p. 54).
Develop interdisciplinary methodologies	Aligns research methods across disciplines, easing collaboration and reducing paradigm conflicts.	“The development of new methodologies that can apply across disciplines is critical for the success of interdisciplinary research” (Repko, 2012, p. 187).
Create incentives for collaboration.	Encourages interdisciplinary work by offering rewards and addressing institutional barriers.	“Funding agencies and universities should create specific incentives for interdisciplinary projects, such as grants and awards” (Rhoten & Parker, 2004, p. 210).
Foster interdisciplinary graduate programmes	Prepares future researchers with the skills needed for cross-disciplinary collaboration.	“Graduate programs that integrate multiple disciplines can train future researchers to approach problems from different perspectives” (Bruce et al., 2004, p. 293).
Use team science approaches.	Balances power dynamics, ensuring equal contributions from all fields.	“Team science, where researchers from different fields work together on complex problems, is an effective model for interdisciplinary collaboration” (National Research Council, 2004, p. 41).

Establish interdisciplinary research centres.	Provides support and infrastructure, reducing time constraints and institutional barriers.	“Universities should establish research centres that specifically support interdisciplinary work, providing administrative and financial backing” (Lyll & Meagher, 2012, p. 168).
Encourage co-authorship across disciplines.	Promotes knowledge sharing and addresses communication barriers through collaboration.	“Encouraging researchers to co-author papers with colleagues from other fields can promote interdisciplinary knowledge sharing” (Palmer & Cragin, 2008, p. 249).
Provide professional development for faculty:	Equips researchers with interdisciplinary skills, overcoming training gaps.	“Workshops and training sessions that focus on interdisciplinary skills can prepare faculty to engage in collaborative research” (Frost & Jean, 2003, p. 202).
Redesign evaluation metrics	Ensures interdisciplinary work is recognised and rewarded, solving assessment issues.	“New evaluation standards are needed to assess the unique contributions of interdisciplinary research beyond traditional metrics” (Lyll & Meagher, 2012, p. 10).
Secure dedicated funding	Provides financial support specifically for interdisciplinary projects, addressing funding gaps.	“Funding bodies should provide grants specifically aimed at interdisciplinary research to ensure its growth and sustainability” (Lawrence, 2010, p. 65).
Institutional support for collaboration:	Facilitates and sustains collaboration by offering administrative backing.	“Administrative support for interdisciplinary projects can facilitate smoother collaboration and enhance research outcomes” (Bruhn, 2000, p. 62).
Encourage Open-Access Publishing:	Increases visibility of interdisciplinary research by providing accessible publication platforms.	“Open-access journals that welcome interdisciplinary research are essential for increasing the visibility and impact of such work” (Szostak, 2013, p. 40).

Research Question 4: What framework can be proposed to enhance interdisciplinary collaboration in educational research based on prior studies?

Based on the findings of this study and insights from previous research, a comprehensive framework for enhancing interdisciplinary collaboration in educational research has been developed. This framework integrates vital principles from both the current study and earlier scholarly work. The proposed framework, structured around essential components, is outlined in Table 4.

The proposed interdisciplinary collaboration framework for educational research, as detailed in Table 4, emphasises the necessity of a shared vision and collective objectives to unify diverse academic disciplines. This foundational principle ensures that all collaborators possess a clear understanding of the research's purpose and intended outcomes. By fostering inclusivity in the goal-setting process, the framework ensures that varied perspectives and expertise are acknowledged and integrated, which is vital for addressing complex educational challenges. Furthermore, the establishment of cross-disciplinary teams promotes diverse

representation. It clarifies roles and responsibilities, thereby enhancing accountability and efficiency in research endeavours. This structure not only facilitates the pooling of knowledge across fields—such as education, psychology, sociology, and technology—but also cultivates an environment conducive to collaborative problem-solving.

In addition to establishing a solid foundation for collaboration, the framework prioritises effective communication and resource sharing among interdisciplinary teams. Regular meetings and the use of shared platforms facilitate ongoing dialogue, allowing team members to share progress, tackle challenges, and maintain alignment toward common objectives. The integration of mixed-methods approaches, coupled with cross-disciplinary training, empowers researchers to adopt a more

comprehensive view of educational issues, thereby enriching the research quality. Furthermore, securing institutional support and establishing an infrastructure that encourages collaboration, including access to shared resources and funding opportunities, are critical for sustaining interdisciplinary efforts. Finally, the framework underscores the importance of evaluation and feedback mechanisms, such as formative assessments and peer review, to uphold high research standards and promote continuous improvement. By incorporating these principles, the framework not only enhances interdisciplinary collaboration but also ensures that educational research remains relevant and impactful in addressing the complexities of contemporary educational landscapes.

Table 4: *Proposed Interdisciplinary Collaboration Framework for Educational Research*

Principles	Elements	How it works
Shared vision and goals	Define common objectives	Establish clear, shared goals among disciplines. This ensures that all collaborators understand the purpose and desired outcomes of the research.
	Foster inclusivity	Ensure that the interests and expertise of all disciplines are represented in the goal-setting process.
Cross-Disciplinary teams	Diverse representation	Form research teams that include members from various disciplines (e.g., education, psychology, sociology, technology).
	Role clarity	Clearly define the roles and responsibilities of each team member to promote accountability and efficiency.
Communication and dialogue	Regular meetings	Schedule regular meetings to facilitate open dialogue, share progress, and address challenges.
	Shared platforms	Use collaborative tools and platforms (e.g., online forums and project management software) to enhance communication and document sharing.

Integrated methodologies	Adopt mixed-methods approaches	Encourage the use of both qualitative and quantitative research methods to address complex educational issues comprehensively.
	Cross-disciplinary training	Provide training sessions to equip researchers with diverse methodologies from different disciplines.
Resource sharing	Shared funding	Seek joint funding opportunities to support interdisciplinary research initiatives, ensuring that resources are allocated fairly.
	Access to facilities	Facilitate access to laboratories, libraries, and other resources across disciplines to enhance research capacity.
Institutional support	Administrative endorsement	Secure support from institutional leadership to encourage interdisciplinary collaboration through policies and incentives.
	Supportive infrastructure	Establish an institutional framework that promotes interdisciplinary research (e.g., dedicated research centres, funding for collaborative projects).
Evaluation and feedback	Formative assessments	Implement regular assessments of collaboration processes and outcomes to identify strengths and areas for improvement.
	Peer review mechanisms	Foster a culture of constructive feedback and peer review among disciplines to ensure high research standards.
Impact and dissemination	Joint publications	Encourage collaborative authorship in publications to reflect interdisciplinary efforts and broaden the impact of research findings.
	Engagement with stakeholders	Involve educational stakeholders (e.g., policy-makers, practitioners) in the dissemination of research findings to ensure practical application.

DISCUSSION

The findings from this study closely align with previous research that highlights significant challenges in promoting interdisciplinary collaboration in educational research. Scholars such as Klein (2018) and Bruhn (2000) have pointed out that disciplinary silos and divergent research paradigms are critical barriers to effective collaboration, a view corroborated by this study. These barriers lead to knowledge exchange being constrained as different fields operate in isolation, which impedes the development of comprehensive solutions to complex educational problems. Additionally, institutional structures that prioritise discipline-specific achievements, as emphasised by Rhoten and Parker (2004), further exacerbate these challenges, making it difficult for interdisciplinary work to gain the necessary resources and recognition. Practical issues, such as time constraints, lack of interdisciplinary training, and fears of research dilution, also echo earlier studies by Bruce et al. (2004) and Hargreaves and Fullan (2021), all of which underscore how these factors limit both the depth and the scope of interdisciplinary efforts.

However, some researchers offer alternative views on the prominence of these barriers. Szostak (2013) argues that while power imbalances between disciplines do exist, they may not pose as significant a challenge as previously thought. According to Szostak, successful interdisciplinary teams tend to self-regulate through equitable task distribution, reducing the negative impact of power dynamics. Additionally, the limitations related to publication, though acknowledged by Palmer and Cragin (2008), are being mitigated by the rise of open-access journals that cater to interdisciplinary work. This development is creating more avenues for publishing such research, challenging the earlier view that discipline-specific journals pose a significant obstacle to the dissemination of interdisciplinary work.

Despite these contrasting perspectives, there is broad agreement in the literature regarding strategies for overcoming the barriers to interdisciplinary collaboration. Cross-disciplinary dialogue, as highlighted by Klein (2010), consistently bridges communication gaps, fostering mutual understanding among

researchers from different fields. The establishment of interdisciplinary research centres and graduate programs, as suggested by Bruce et al. (2004) and Lyall and Meagher (2012), also provides crucial institutional support, addressing the time and training constraints that often hinder collaboration. These strategies align with the findings of this study, which emphasise the importance of securing dedicated funding and revising evaluation metrics to ensure interdisciplinary efforts are adequately recognised and resourced.

The study also highlights the benefits of integrating interdisciplinary approaches into educational research, as reflected in Tables 1 and 2. Collaborative research teams emerge as an effective method for bridging the gaps between disciplines and fostering innovative solutions to complex educational challenges. This finding is consistent with Cohen et al. (2021), who argue that interdisciplinary collaboration is essential for addressing multifaceted issues that cannot be solved within the confines of a single discipline. Nevertheless, some researchers, like Hargreaves and Fullan (2021), warn that interdisciplinary collaboration can lead to conflicts and misunderstandings due to differing disciplinary norms, raising questions about whether collaborative teams are a practical solution for all educational research challenges.

Another critical method for enhancing interdisciplinary research is the incorporation of mixed methods approaches, which combine qualitative and quantitative data. Johnson and Onwuegbuzie (2022) have demonstrated that mixed methods can provide a richer understanding of educational phenomena by capturing the complexity of educational settings. However, critics like Creswell (2015) caution that mixing methodologies can sometimes create confusion, leading to less clear interpretations of research findings. This suggests that while mixed methods offer depth, they may also introduce complexities that undermine the clarity and coherence of research outputs.

Finally, the role of institutional support in facilitating interdisciplinary research cannot be overstated. Chen et al. (2024) emphasise that supportive institutional policies are vital for promoting collaboration and resource sharing among researchers. Nevertheless, not all

institutions prioritise interdisciplinary research, as noted by Bruce et al. (2004), leading to a lack of resources and incentives for researchers engaged in interdisciplinary work. This disparity raises essential questions about the sustainability of interdisciplinary initiatives in academic environments that do not actively foster such collaboration. While interdisciplinary approaches offer promising strategies for enhancing educational research, ongoing dialogue, adaptation, and institutional support are crucial to overcoming the persistent challenges.

CONCLUSION

This study explored the obstacles and strategies for promoting interdisciplinary collaboration in educational research. It addressed crucial challenges such as the persistence of disciplinary silos, conflicting research perspectives, and institutional frameworks that promote discipline-specific outcomes, all of which impede effective collaboration. Although recent research suggests that worries about power imbalances and publication hurdles are reducing, practical challenges like limited time, insufficient multi-disciplinary training, and suspicions about compromised academic rigour persist.

Despite these challenges, the study discovered that intentional strategies such as promoting cross-disciplinary dialogue, establishing interdisciplinary research centres, and using mixed-methods approaches can lead to more effective collaboration and innovative solutions to complex educational problems. These initiatives rely heavily on long-term institutional support that realigns research incentives, funding channels, and assessment measures to encourage and reward interdisciplinary efforts. Finally, the study emphasises the transformative power of interdisciplinary research in education and advocates for specific reforms to maximise its impact on both policy and practice.

The study reinforces the usefulness of interdisciplinary frameworks in solving multiple educational difficulties and contributes to the continuing discussion about the role of power and equity in collaborative research. It

demonstrates how equitable work distribution and reciprocal recognition of contributions can diminish disciplinary dominance while fostering more balanced, inclusive research settings. Practically, it underlines the importance of structural improvements inside educational institutions to encourage and sustain interdisciplinary work.

Based on these results, the study recommends the following actions:

- Revise academic evaluation measures to include and reward inter-disciplinary outputs, giving them the same weight as traditional discipline-specific results.
- Create specialised funding streams for multi-disciplinary research projects to eliminate competition from typical disciplinary grants and demonstrate institutional commitment.
- Create and support interdisciplinary research centres that foster discourse, resource sharing, and collaborative project incubation across departments and faculties.
- Formal interdisciplinary training programs at the graduate and faculty levels should be implemented to develop the capacity required for effective cross-disciplinary collaboration.
- To address power imbalances within research teams, promote equitable team structures by using shared leadership models, clear role distribution, and regular reflection.
- Facilitate the use of open-access publication platforms to increase the dissemination of interdisciplinary research and encourage participation from a wide range of academic and policy audiences.
- Protected research time should be allocated to faculty engaged in multi-disciplinary work to alleviate the pressure of balancing numerous disciplinary requirements.

By implementing these strategies, educational institutions and research stakeholders can enhance the foundation and future of interdisciplinary research, increasing the influence and relevance of educational inquiry in tackling today's complex concerns.

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