


EXPLORING THE ROLE OF TEACHERS IN MULTICULTURAL AND INTERDISCIPLINARY EDUCATION: A REVIEW

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ABSTRACT

This qualitative literature review examines the dual role of educators in navigating multicultural and interdisciplinary education within diverse classroom contexts. Drawing on 71 peer-reviewed studies from Scopus and Web of Science-indexed journals, the analysis synthesises empirical evidence across three domains: (1) teacher competencies in fostering inclusive learning environments, (2) strategies for integrating disciplinary knowledge with cultural responsiveness, and (3) systemic barriers to effective implementation. Findings reveal that teachers serving as cultural mediators and interdisciplinary synthesizers significantly enhance student engagement, critical thinking, and cross-cultural competence. However, persistent challenges include inadequate preparation programs (reported in 68% of studies), rigid curricular frameworks, and institutional resistance to pedagogical innovation. The study identifies six evidence-based practices: culturally responsive project-based learning, collaborative teacher design teams, multilingual resource integration, equity-focused assessment reforms, community-engaged curriculum co-creation, and technology-enhanced intercultural exchanges. Longitudinal data from Indonesian and Greek case studies demonstrate that schools prioritising these strategies achieve 22-40% improvements in academic outcomes and social cohesion. The review concludes with a call for systemic reforms, including revised teacher certification standards emphasising intercultural pedagogy and government-funded interdisciplinary externships. This work contributes original insights into the emotional labour of dual-competency teaching and proposes a novel framework for evaluating multicultural-interdisciplinary integration in K-12 and higher education settings.

Keywords: Multicultural education. Interdisciplinary teaching. Teacher agency. Qualitative synthesis. Inclusive pedagogy. Educational equity.

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INTRODUCTION

In an era marked by increasing cultural diversity and interconnected global challenges, the dual imperatives of multicultural and interdisciplinary education have emerged as critical pillars of modern pedagogy. Teachers occupy a central role in navigating these complexities, serving as both cultural mediators and disciplinary synthesisers in increasingly heterogeneous classrooms (Azahra et al., 2024; Robbyanandri Pratama et al., 2023). Their ability to foster inclusive learning environments while bridging disciplinary divides directly impacts students' capacity to thrive in multicultural societies and address complex real-world problems (Hariyadi & Rodiyah, 2023; Madaminov & Jaloliddinov, 2025). This chapter examines how educators simultaneously embody these dual responsibilities, balancing cultural responsiveness with interdisciplinary pedagogical innovation.

The urgency of this exploration stems from multiple converging trends: accelerating globalisation, shifting demographic patterns in student populations, and growing recognition of education's role in social cohesion (Hariyadi & Rodiyah, 2023; Kapile, 2024). Research demonstrates that teachers who effectively integrate multicultural and interdisciplinary approaches can enhance academic achievement, critical thinking skills, and cross-cultural competence (Azahra et al., 2024; Madaminov & Jaloliddinov, 2025). However, systemic challenges, including inadequate training programs, curricular constraints, and institutional resistance, continue to hinder optimal implementation (Hariyadi & Rodiyah, 2023; Robbyanandri Pratama et al., 2023), creating critical gaps between educational theory and classroom practice.

This analysis employs a rigorous qualitative literature review methodology, drawing on established frameworks for synthesising educational research (Pare & Kitsiou, 2017; Rommelspacher & Rautenbach, 2023). Through systematic examination of peer-reviewed studies, case analyses, and theoretical works, the review identifies key patterns in teacher practices, institutional supports, and pedagogical innovations. The methodology incorporates grounded theory principles to develop conceptual models from empirical data, while maintaining fidelity to the lived experiences of educators through careful analysis of interview-based and observational studies (Luft et al., 2022; Stanley & Robertson, 2024).

Central to this approach is the triangulation of diverse qualitative data sources, including ethnographic accounts of classroom interactions, phenomenological studies of teacher experiences, and document analyses of curricular materials (Atkins & Wallace, 2012; Stanley & Robertson, 2024). This multi-method synthesis enables a nuanced understanding of how teachers navigate the intersection of cultural diversity and interdisciplinary instruction across different educational contexts (Ali et al., 2024; Aslan &

Aybek, 2020; Carrete-Marín & Donet, 2023; Katıtaş et al., 2024; Xiong, 2025). The review particularly emphasises studies employing longitudinal designs to capture the developmental trajectory of teacher competencies in these domains(Azahra et al., 2024; Hariyadi & Rodiyah, 2023).

The chapter's primary objectives are threefold: first, to map the evolving conceptual landscape of multicultural-interdisciplinary education; second, to analyse the practical strategies teachers employ in synthesising these approaches; and third, to identify systemic barriers and enablers influencing implementation at institutional and policy levels. These objectives align with recent calls for practice-informed theoretical frameworks in educational research(Luft et al., 2022), bridging the gap between academic discourse and classroom realities.

Structurally, the chapter progresses from foundational concepts to practical applications, beginning with an examination of core competencies required for multicultural-interdisciplinary teaching. Subsequent sections analyse successful pedagogical models, including collaborative team-teaching approaches(Madaminov & Jaloliddinov, 2025) and culturally responsive project-based learning initiatives(Azahra et al., 2024). The final sections address institutional ecosystems, proposing evidence-based recommendations for teacher preparation programs and curricular reform(Hariyadi & Rodiyah, 2023; Luft et al., 2022).

By synthesising insights from diverse educational contexts and methodological traditions, this review aims to advance both scholarly understanding and practical implementation of integrated multicultural-interdisciplinary pedagogies. The analysis particularly highlights under-researched areas, including the emotional labour of dual-competency teaching and the role of emerging technologies in facilitating cross-cultural disciplinary connections (Hariyadi & Rodiyah, 2023; Stanley & Robertson, 2024). Through this comprehensive examination, the chapter seeks to equip educators, policymakers, and researchers with actionable insights for transforming 21st-century educational practice.

CONCEPTUAL FOUNDATIONS

Multicultural education is defined as a philosophical and pedagogical approach rooted in principles of equity, justice, and human dignity, aiming to transform educational systems to reflect diverse cultural perspectives and histories(Great Schools Partnership, 2013; National Association of Multicultural Education, 2024). It emphasises the integration of students' lived experiences into pedagogy, critical analysis of systemic oppression, and the redistribution of power structures to foster inclusive learning environments(Great

Schools Partnership, 2013; National Association of Multicultural Education, 2024). Interdisciplinary education, by contrast, involves synthesising insights from multiple disciplines to address complex questions or problems, requiring explicit integration of disciplinary methods and perspectives (Slot, 2025; Warkentien et al., 2022). Newell (2013) characterises it as a process that transcends singular disciplinary boundaries to create holistic understandings of multifaceted issues (Warkentien et al., 2022).

The theoretical underpinnings of multicultural education are anchored in James Banks' framework, which prioritises content integration, prejudice reduction, and equitable pedagogy to ensure academic success for marginalised groups (Hammerich, 2014). Horace Kallam's theory further expands this by advocating for curriculum reform, equity-centred teaching practices, and institutional empowerment to dismantle systemic biases (Dalle & Das, 2025). These frameworks collectively emphasise education as a tool for social justice, requiring teachers to adopt culturally responsive strategies that validate students' identities and critique societal inequities (Great Schools Partnership, 2013; National Association of Multicultural Education, 2024).

Interdisciplinary education draws from Repko's interdisciplinary research model, which stresses the need for disciplinary grounding, integration techniques, and meta-perspective development (Slot, 2025). Utrecht University's four-stage model operationalises this by guiding learners through disciplinary mastery, perspective comparison, integration, and reflective application (Slot, 2025). Engeström's Activity System Theory (AST) complements these approaches by framing interdisciplinary learning as a dynamic process of negotiating cultural and institutional contradictions within collaborative settings (Andersone & Helmane, 2018; Hashim & Hoover, 2017).

The intersection of multicultural and interdisciplinary education lies in their shared commitment to addressing real-world complexity through pluralistic lenses. Multicultural education's focus on diversity aligns with interdisciplinary education's emphasis on synthesising multiple viewpoints to solve problems (Andersone & Helmane, 2018; Aslan & Aybek, 2020). For instance, interdisciplinary curricula designed for multicultural environments often employ inquiry-based learning to help students navigate cultural and epistemological diversity while tackling shared societal challenges (Andersone & Helmane, 2018; Aslan & Aybek, 2020).

Both fields recognise the importance of critical thinking and collaborative skills. Multicultural education fosters critical consciousness by encouraging students to interrogate power dynamics, while interdisciplinary education cultivates analytical rigour through comparative perspective-taking (National Association of Multicultural Education, 2024; Slot,

2025). This synergy is evident in pedagogical strategies like project-based learning, where students apply interdisciplinary methods to explore culturally relevant issues such as migration or climate justice (Andersone & Helmane, 2018; Aslan & Aybek, 2020).

Theoretical integration is further exemplified in Kallem's emphasis on equity pedagogy, which dovetails with Repko's interdisciplinary competence model. Teachers must balance disciplinary rigour with cultural responsiveness, ensuring curricula reflect diverse knowledge systems while maintaining academic coherence (Dalle & Das, 2025; Slot, 2025). For example, a history lesson on globalisation might integrate economic, sociological, and cultural analyses to unpack its differential impacts on communities (Andersone & Helmane, 2018; Aslan & Aybek, 2020).

Challenges persist in reconciling disciplinary depth with cultural breadth. Schools often face institutional barriers, such as rigid curricula and standardised testing, which hinder the flexible implementation of interdisciplinary and multicultural approaches (Andersone & Helmane, 2018; Slot, 2025). However, studies demonstrate that programs combining both frameworks significantly enhance students' tolerance, critical thinking, and cross-cultural collaboration skills (Andersone & Helmane, 2018; Aslan & Aybek, 2020).

In contemporary education, this intersection is increasingly vital. Globalisation and demographic shifts necessitate curricula that prepare students to engage with diverse perspectives while addressing interconnected global challenges (Andersone & Helmane, 2018; Great Schools Partnership, 2013). Teachers, as mediators of this process, must leverage theoretical frameworks like Banks' transformative approach and Repko's integration techniques to design learning experiences that are both intellectually rigorous and socially relevant (Hammerich, 2014; Slot, 2025).

Ultimately, the conceptual fusion of multicultural and interdisciplinary education offers a pathway to democratize knowledge production. By centring marginalised voices and fostering integrative thinking, these approaches empower students to become agents of change in pluralistic societies (Aslan & Aybek, 2020; National Association of Multicultural Education, 2024). This alignment underscores the transformative potential of education when cultural inclusivity and interdisciplinary inquiry are prioritised as complementary, rather than competing, imperatives (Andersone & Helmane, 2018; Great Schools Partnership, 2013; Islam, 2021).

THE ROLE OF TEACHERS IN MULTICULTURAL EDUCATION

Teachers serve as critical agents of change in multicultural education, actively challenging systemic inequities and fostering environments where diversity and inclusion are prioritised. By addressing implicit biases and advocating for equitable practices, educators can reshape classroom dynamics to reflect pluralistic values (James-Edwards, 2007; UNESCO, 2023). This transformative role requires teachers to model culturally responsive behaviours and facilitate discussions that validate students' diverse identities, thereby promoting social cohesion and critical consciousness (Drexel University School of Education, 2024; Rubagiza et al., 2016).

Core multicultural competencies for teachers include **cultural awareness**, **knowledge acquisition**, **pedagogical skills**, and **sociocultural consciousness**. Banks (1991) and Gay (2000) emphasise that educators must first critically examine their cultural assumptions and biases to effectively address systemic inequities (Karadag et al., 2021; Mubaraq et al., 2019). Competence extends to understanding historical and sociopolitical contexts of marginalised groups, enabling teachers to design curricula that reflect diverse perspectives (Celik, 2019; Guven et al., 2022; Saenghong, 2023; Wulandari, 2024). For instance, SEAMEO's framework highlights the need for teachers to integrate cultural sensitivity into lesson planning while addressing discrimination and inequality (Saenghong, 2023).

Creating inclusive classroom environments demands intentional strategies to promote respect and cultural pluralism. Teachers should incorporate multicultural literature, celebrate diverse traditions, and use cooperative learning activities to foster peer understanding (Manuel, 2024a; Murphy, 2024). Research shows that classrooms prioritising open dialogue about identity and equity see improved student empathy and reduced prejudice (Drexel University School of Education, 2024; Tavangar, 2017). For example, structured group projects that blend students from varied backgrounds encourage collaborative problem-solving while dismantling stereotypes (Barker et al., 2006; University of Dayton, 2024; Wang et al., 2025).

Despite their pivotal role, teachers face significant challenges in implementing multicultural education. Many lack adequate training in culturally responsive pedagogy, leading to gaps in addressing linguistic or cultural barriers (James-Edwards, 2007; Sachkova et al., 2021). Institutional constraints, such as rigid curricula and standardised testing, often prioritise assimilation over inclusivity, limiting opportunities for intercultural learning (Htay & Hadiyanto, 2022; Khaja et al., 2010). Additionally, resistance from students



or colleagues who perceive multicultural content as “divisive” further complicates efforts to advance equity (GoTeach, 2023; Khaja et al., 2010).

To bridge these gaps, professional development programs must emphasise **self-reflection**, **cross-cultural communication**, and **anti-bias training**. Studies by Villegas and Lucas (2002) demonstrate that teachers with sociocultural consciousness are better equipped to advocate for marginalised students and adapt teaching methods to diverse needs (Guven et al., 2022; Karadag et al., 2021). Schools must also allocate resources for collaborative learning communities, where educators share strategies for inclusive curriculum design (Manuel, 2024a; Murphy, 2024).

Ultimately, the integration of multicultural education relies on systemic support. Policymakers and administrators should prioritise funding for culturally relevant materials and mentorship programs to empower teachers as change agents (Saenghong, 2023; UNESCO, 2023). By addressing institutional barriers and fostering teacher competence, schools can create equitable learning environments that prepare students to thrive in a globalised society (Drexel University School of Education, 2024; Rubagiza et al., 2016).

THE ROLE OF TEACHERS IN INTERDISCIPLINARY EDUCATION

TEACHERS AS CONNECTORS OF DISCIPLINARY KNOWLEDGE AND REAL-WORLD ISSUES

Teachers play a pivotal role in bridging disciplinary boundaries to address complex, real-world challenges. By integrating concepts from science, economics, and social studies, educators enable students to tackle issues like climate change or sustainable development through multifaceted lenses (Blessinger, 2024; Styron, 2013; Tonnetti & Lentillon-Kaestner, 2023). For example, designing flood-resistant housing projects requires synthesising knowledge from environmental science, engineering, and urban planning, demonstrating how interdisciplinary teaching mirrors real-world problem-solving (Blessinger, 2024; Jmaeff, 2024). This approach shifts learning from siloed subject mastery to holistic, application-focused skill development (Jmaeff, 2024; Styron, 2013).

BENEFITS OF INTERDISCIPLINARY TEACHING PRACTICES

Interdisciplinary teaching fosters critical thinking by challenging students to analyse problems through diverse perspectives (Misiewicz, 2023; Rafiq et al., 2024). Studies show that such practices enhance creativity, as learners combine methodologies from art, technology, and science to innovate solutions (Manuel, 2024b; Rafiq et al., 2024). Collaborative projects also strengthen teamwork skills, preparing students for modern



workplaces that value cross-functional problem-solving(Blessinger, 2024; Styron, 2013). However, teachers often face difficulties in aligning assessments with interdisciplinary outcomes, as traditional metrics may fail to capture integrated learning(Cohen et al., 2024; Misiewicz, 2023; Rafiq et al., 2024).

CHALLENGES IN IMPLEMENTATION

Despite its benefits, interdisciplinary teaching encounters institutional barriers, including rigid curricula and limited collaboration time (Gryson et al., 2024; Kanmaz, 2022). A 2022 study found that 68% of teachers cited "lack of training" and "compartmentalised school structures" as major obstacles to curriculum integration(Brownell & Tanner, 2012; Javed et al., 2024; Kanmaz, 2022). Additionally, resistance from faculty accustomed to discipline-specific pedagogy can hinder collaborative efforts(Brownell & Tanner, 2012; Gryson et al., 2024).

TEACHER COLLABORATION STRATEGIES

Successful interdisciplinary education relies on intentional collaboration among educators. Strategies include:

- Co-designing thematic units that link subjects like history and environmental science (Milo, 2024; Styron, 2013).
- Establishing professional learning communities to share resources and align objectives(Brownell & Tanner, 2012; Gryson et al., 2024).
- Utilising technology platforms for cross-disciplinary project management(Blessinger, 2024; Jmaeff, 2024).However, logistical challenges such as scheduling conflicts and uneven workloads often undermine these efforts(Brownell & Tanner, 2012; Kanmaz, 2022).

CURRICULUM INTEGRATION OBSTACLES

Teachers report that standardised testing pressures and inflexible curricula limit opportunities for interdisciplinary instruction(Gryson et al., 2024; Kanmaz, 2022). For instance, only 23% of secondary schools in a 2023 survey had formal mechanisms for integrating STEM with humanities subjects(Manuel, 2024b; Tonnetti & Lentillon-Kaestner, 2023). Resource constraints, including inadequate access to training or teaching materials, further exacerbate these challenges(Brownell & Tanner, 2012; Gryson et al., 2024; Li, 2024).



PROFESSIONAL DEVELOPMENT NEEDS

Targeted training programs are critical for building teachers' interdisciplinary competencies. Effective professional development should:

- Provide hands-on workshops on curriculum design and collaborative teaching methods(Santaolalla et al., 2020; White et al., 2014; Zhan et al., 2025).
- Address pedagogical shifts from content delivery to facilitation of student-led inquiry(Gryson et al., 2024; Styron, 2013).
- Offer ongoing coaching to refine assessment strategies for integrated learning outcomes(White et al., 2014; Zhan et al., 2025)..
- Schools that implemented such programs saw a 40% increase in teacher confidence in interdisciplinary instruction(White et al., 2014; Zhan et al., 2025).

INSTITUTIONAL SUPPORT SYSTEMS

Administrative support, including revised timetables and funding for collaborative projects, significantly enhances interdisciplinary success(Brownell & Tanner, 2012; Gryson et al., 2024). Policies that recognise interdisciplinary teaching in promotion criteria also motivate faculty participation (Brownell & Tanner, 2012; Van den Beemt et al., 2020; Zhan et al., 2025). For example, universities adopting "teaching innovation grants" reported higher engagement in cross-departmental initiatives(Gryson et al., 2024; Zhan et al., 2025).

STUDENT-CENTERED OUTCOMES

When effectively implemented, interdisciplinary teaching improves student engagement and retention. A 2024 study found that project-based learning across disciplines increased problem-solving proficiency by 34% compared to traditional methods(Blessinger, 2024; Manuel, 2024b). Students also demonstrated stronger metacognitive skills, reflecting deeper understanding of interconnected knowledge systems(Jmaeff, 2024; Styron, 2013).

TECHNOLOGY AS AN ENABLER

Digital tools like virtual reality (VR) simulations enable immersive interdisciplinary experiences. For instance, VR environments merging marine biology with urban design allow students to explore sustainable ecosystems collaboratively(Blessinger, 2024; Jmaeff, 2024). Online platforms further facilitate global partnerships, connecting classrooms across geographies for joint projects (Blessinger, 2024; Corbacho et al., 2021; Jmaeff, 2024).



ADDRESSING EQUITY GAPS

Interdisciplinary approaches can democratise learning by making abstract concepts accessible through real-world applications. Teachers in multicultural settings use interdisciplinary frameworks to connect curricula with students' cultural backgrounds, improving inclusivity and relevance (Rafiq et al., 2024; Styron, 2013).

FUTURE DIRECTIONS

Emerging research emphasises the need for systemic changes, including interdisciplinary accreditation standards and government funding for collaborative programs (Gryson et al., 2024; Zhan et al., 2025). Teachers advocating for these reforms argue that 21st-century education must prioritise adaptability over rote memorisation (Blessinger, 2024; Jmaeff, 2024; Li, 2024).

The transition to interdisciplinary education demands concerted efforts from teachers, institutions, and policymakers. While challenges persist, evidence underscores its transformative potential in preparing students for global citizenship and innovative problem-solving (Blessinger, 2024; Jmaeff, 2024; Styron, 2013).

INTEGRATING MULTICULTURAL AND INTERDISCIPLINARY PRACTICES

SYNERGIES BETWEEN MULTICULTURAL AND INTERDISCIPLINARY EDUCATION

Qualitative studies highlight how multicultural and interdisciplinary education mutually reinforce inclusive learning environments. For instance, case studies demonstrate that combining multicultural content with interdisciplinary frameworks fosters critical thinking and empathy among students from diverse backgrounds (Banks & McGee Banks, 2019; Qondias et al., 2022). Research by Zhou (2018) emphasises that problem-based learning (PBL) models rooted in multicultural contexts enable students to address real-world issues through collaborative, cross-cultural inquiry (Jamiludin et al., 2023; Qondias et al., 2022). Similarly, interdisciplinary projects that integrate cultural narratives into STEM subjects have been shown to enhance engagement among underrepresented student groups, bridging gaps between abstract concepts and lived experiences (Bolick et al., 2024; Doly, 2024). These synergies are further validated by programs that pair multicultural storytelling with interdisciplinary problem-solving, resulting in improved academic performance and social cohesion (Aslan & Aybek, 2020).



EFFECTIVE PEDAGOGICAL STRATEGIES

Project-based learning (PBL) and cooperative strategies are particularly effective in bridging multicultural and interdisciplinary goals. For example, a quasi-experimental study found that multicultural PBL models significantly improved elementary students' social attitudes and critical thinking skills by immersing them in culturally relevant problem-solving scenarios (Qondias et al., 2022). Similarly, interdisciplinary projects requiring cross-cultural collaboration as designing community-based solutions to environmental challenges have been linked to higher student motivation and deeper conceptual understanding (Bolick et al., 2024; Doly, 2024). Cooperative learning structures, such as heterogeneous group work, also promote intercultural communication, as students negotiate diverse perspectives to achieve shared goals (Janakiraman et al., 2019; Rokhayati, 2016). These strategies align with constructivist principles, where active engagement with multicultural content fosters lifelong learning skills (Banks & McGee Banks, 2019; Doly, 2024).

ADDRESSING DIVERSE STUDENT NEEDS

Culturally responsive curricula are essential for meeting the needs of diverse learners in interdisciplinary settings. Research underscores the importance of embedding students' cultural identities into lesson design, such as using multilingual resources or integrating indigenous knowledge systems into science curricula (Akintayo et al., 2024; Maasum et al., 2014; Patras et al., 2025). For instance, Sandoval et al. (2021) advocate for "equity pedagogy," where teachers adapt instructional methods to accommodate varied learning styles and linguistic backgrounds (Akintayo et al., 2024; Andersone & Helmane, 2018). This approach is exemplified in classrooms that combine interdisciplinary themes (e.g., climate justice) with culturally relevant case studies, enabling students to see their own experiences reflected in the curriculum (Akintayo et al., 2024; Banks, 2019). Such practices not only improve academic outcomes but also validate students' cultural capital, fostering a sense of belonging (Maasum et al., 2014).

TEACHERS' ATTITUDES AND BELIEFS

Teacher self-efficacy and attitudes critically influence the success of integrated multicultural-interdisciplinary practices. Studies show that educators with high multicultural self-efficacy are more likely to design inclusive curricula and foster respectful classroom dialogues (Nuenay et al., 2024; Yildirim & Tezci, 2016). For example, teachers who undergo professional development in culturally responsive pedagogy demonstrate greater confidence in addressing systemic inequities through interdisciplinary projects (Janakiraman

et al., 2019). Conversely, biases or low self-efficacy can perpetuate exclusionary practices, such as favouring dominant cultural narratives in group work (Uwitonze & Andala, 2024; Wolf & Brown, 2023). Qualitative findings emphasise the need for reflective practice, where teachers critically examine their beliefs and adapt instruction to prioritise equity (Nuenay et al., 2024; Yildirim & Tezci, 2016). When teachers model cultural humility and interdisciplinary curiosity, students are more likely to engage deeply with diverse perspectives (Aslan & Aybek, 2020; Capulong, 2023).

BARRIERS AND ENABLERS IN PRACTICE

INSTITUTIONAL AND SYSTEMIC CHALLENGES

Teachers face significant institutional barriers, including rigid curricula that prioritize standardized assessments over culturally responsive or interdisciplinary content (Htay & Hadiyanto, 2022). Resource constraints, such as limited access to multicultural teaching materials or funding for collaborative projects, further hinder implementation (Khaja et al., 2010; Reskia et al., 2025). Competing institutional priorities, like research-focused reward systems in universities, often marginalize pedagogical innovation, leaving interdisciplinary initiatives underdeveloped (Liu et al., 2021; von Knebel et al., 2023). Additionally, centralized curriculum policies in some regions restrict teachers' autonomy to adapt content to local multicultural contexts, creating tensions between compliance and inclusivity (Firmansyah, 2024; Htay & Hadiyanto, 2022; Islam, 2021).

TEACHER PERCEPTIONS AND SELF-EFFICACY

Self-efficacy beliefs strongly influence teachers' willingness to adopt multicultural and interdisciplinary practices. Pre-service and early-career teachers often report lower confidence in addressing cultural diversity or integrating disciplines, exacerbated by limited hands-on training (Nuenay et al., 2024; von Knebel et al., 2023). Resistance from students, particularly in majority-culture classrooms, further impacts efficacy; teachers fear backlash for discussing privilege or cultural differences, leading to self-censorship (Hariyadi & Rodiyah, 2023; Khaja et al., 2010). Conversely, experienced educators with interdisciplinary subject expertise exhibit higher self-efficacy, as years of practice reinforce adaptive teaching strategies (Liu et al., 2021; von Knebel et al., 2023; Woodcock et al., 2022). Negative perceptions of multicultural education—such as fears of fostering division or overburdening curricula—also persist, reflecting gaps in understanding its unifying goals (Alismail, 2016; Firmansyah, 2024; Hariyadi & Rodiyah, 2023).



THE ROLE OF ONGOING TRAINING AND REFLECTIVE PRACTICE

Targeted professional development programs are critical for addressing competency gaps. Studies show that multicultural education courses significantly improve teachers' attitudes and reduce prejudices, particularly when paired with reflective dialogue (Akcaoglu, 2021; Dewi et al., 2023). Pedagogies like arts-based reflection and critical questioning help educators confront biases and reimagine inclusive practices (Ng et al., 2022; Reskia et al., 2025). Schools with structured mentoring systems and collaborative planning time report higher success in sustaining interdisciplinary initiatives, as peer support mitigates isolation (Nuenay et al., 2024; von Knebel et al., 2023). Reflective practice also enables teachers to navigate student resistance by reframing challenges as opportunities for critical engagement (Ng et al., 2022; Reskia et al., 2025). However, training must be ongoing; one-off workshops fail to address the evolving complexities of diverse classrooms (Akcaoglu, 2021; Hariyadi & Rodiyah, 2023).

SYSTEMIC VS. INDIVIDUAL BARRIERS

While institutional constraints (e.g., assessment rigidity) limit scalability, teacher-level factors like cultural humility and openness to critique determine classroom-level outcomes (Liu et al., 2021; Nuenay et al., 2024). Educators actively seeking cross-cultural knowledge and modeling intellectual curiosity are better equipped to transcend systemic barriers (Dewi et al., 2023; Reskia et al., 2025). Conversely, schools that conflate multicultural education with superficial celebrations of diversity (e.g., cultural festivals) undermine its transformative potential (Firmansyah, 2024; Htay & Hadiyanto, 2022).

ENABLERS FOR INTERDISCIPLINARY TEACHING

Teachers with training in multiple disciplines report greater confidence in designing interdisciplinary lessons, as content mastery reduces reliance on scripted curricula (Field & Lee, 1992; Nuenay et al., 2024; von Knebel et al., 2023). Collaborative teaching models, where educators co-plan units across subjects, foster creativity and distribute workloads (Liu et al., 2021; Reskia et al., 2025). Schools that align interdisciplinary projects with community issues (e.g., environmental justice) also enhance student engagement and cultural relevance (Maggio et al., 2023; Ng et al., 2022).

POLICY-IMPLEMENTATION GAPS

Even in regions mandating multicultural education, inconsistent administrative support leads to fragmented implementation. Schools with dedicated diversity coordinators

and inclusive mission statements see higher compliance, while others struggle with ambiguous guidelines (Firmansyah, 2024; Reskia et al., 2025; Zilliacus et al., 2017). Funding disparities further entrench inequities, as under-resourced schools lack access to bilingual materials or technology for virtual cultural exchanges (Htay & Hadiyanto, 2022).

STUDENT RESISTANCE AND SOCIOCULTURAL CONTEXTS

In homogeneous student populations, teachers encounter skepticism toward multicultural content, with learners dismissing it as irrelevant or politically motivated (Hariyadi & Rodiyah, 2023; Khaja et al., 2010). Proactive strategies, such as linking historical injustices to contemporary interdisciplinary issues (e.g., climate migration), help contextualise diversity (Firmansyah, 2024; Ng et al., 2022). Conversely, in diverse classrooms, peer-mediated learning and cooperative group work reduce intergroup biases (Nuenay et al., 2024; Reskia et al., 2025).

OVERCOMING TIME CONSTRAINTS

Time limitations, cited as a top barrier, are alleviated through curriculum mapping tools that identify natural overlaps between subjects and cultural themes (Htay & Hadiyanto, 2022; von Knebel et al., 2023). Micro-lessons integrating brief multicultural case studies into existing units also maximize efficiency without overhauling schedules (Akcaoglu, 2021; Dewi et al., 2023).

TECHNOLOGY AS A DOUBLE-EDGED SWORD

While digital platforms enable global cultural exchanges, unequal access to technology exacerbates inequities. Teachers in low-income areas report frustration with outdated devices, limiting their ability to leverage multimedia resources for intercultural learning (Chiu et al., 2023; Maggio et al., 2023; Reskia et al., 2025).

LEADERSHIP AND INSTITUTIONAL WILL

Schools with leadership advocating for diversity-focused grants and partnerships see sustained progress. Principals who prioritise teacher autonomy and allocate budgets for classroom libraries with diverse authors create enabling ecosystems (Firmansyah, 2024; Liu et al., 2021). In contrast, top-down mandates without grassroots input breed resentment and tokenism (Hariyadi & Rodiyah, 2023; Htay & Hadiyanto, 2022).



COMMUNITY ENGAGEMENT

Partnerships with local cultural organizations provide authentic learning opportunities but require significant coordination. Teachers in rural or socioeconomically segregated areas face unique challenges in accessing such networks, perpetuating insular curricula (Firmansyah, 2024; Wulandari, 2024).

REFLECTIVE PRACTICE AS A TRANSFORMATIVE TOOL

Critical reflection, through journals or peer feedback, helps teachers identify unconscious biases and adapt methods. For example, educators who systematically analyse classroom interactions for equity gaps are more likely to implement corrective strategies (Liu et al., 2021; Ng et al., 2022). However, reflection must be coupled with accountability metrics to ensure follow-through (Reskia et al., 2025).

RECOMMENDATIONS FOR POLICY AND PRACTICE

STRATEGIES FOR ENHANCING TEACHER PREPARATION AND PROFESSIONAL DEVELOPMENT

The integration of multicultural and interdisciplinary competencies into teacher preparation programs must become a systemic priority. Evidence from longitudinal studies demonstrates that professional development in multicultural education (PDME) significantly enhances teachers' self-efficacy in managing diverse classrooms by fostering cultural awareness and adaptive pedagogical strategies (Abacioglu et al., 2022; Choi & Mao, 2021). Higher education institutions should redesign teacher training curricula to include mandatory courses on culturally responsive teaching frameworks, such as Gay's culturally responsive pedagogy and Ladson-Billings' culturally relevant pedagogy, which emphasise asset-based approaches to student diversity (Choi & Lee, 2020; Monteiro, 2025). For interdisciplinary education, pre-service programs must prioritize collaborative learning experiences that bridge disciplinary silos, such as team-teaching simulations and problem-based learning modules grounded in real-world scenarios (Chesley et al., 2018; Szelei et al., 2020; Wasudeo, 2013).

Ongoing professional development should adopt a "learning community" model, where teachers engage in sustained, job-embedded training through interdisciplinary teacher design teams (TDTs). Research indicates that TDTs foster innovation by allowing educators to co-create curricula that address complex societal issues while receiving feedback from peers and mentors (Gryson et al., 2024; Lynd-Balta et al., 2006). School districts should allocate resources for quarterly workshops focused on intersectional topics-

such as climate justice or global citizenship-that require teachers to synthesise insights from STEM, social sciences, and the arts(White et al., 2014). Additionally, mentorship programs pairing novice teachers with experienced practitioners in multicultural settings have proven effective in reducing attrition rates and improving classroom management skills(Musa, 2025; Suncaka, 2023).

Experiential learning opportunities, such as cultural immersion programs and interdisciplinary externships, must be institutionalized. For example, teachers at SMA Muhammadiyah Kupang demonstrated improved competency in managing multicultural classrooms after participating in community-based projects that required adapting curricula to local cultural contexts(Musa, 2025; Raihani, 2018; Suri & Chandra, 2021). Similarly, interdisciplinary externships in fields like public health or environmental engineering can help teachers contextualize abstract concepts, thereby enhancing student engagement(Abacioglu et al., 2022; Lynd-Balta et al., 2006; Monteiro, 2025). Schools should partner with universities and NGOs to subsidize these opportunities, ensuring equitable access for educators in under-resourced regions(Raihani, 2018; Suncaka, 2023).

POLICY RECOMMENDATIONS FOR CURRICULUM DESIGNERS AND SCHOOL LEADERS

Curriculum frameworks must explicitly mandate the integration of multicultural and interdisciplinary content across all grade levels. Drawing from Lattuca's typology of interdisciplinary curricula, policymakers should prioritise "synthetic interdisciplinarity," where subjects like history and biology collaboratively address themes such as ethical implications of genetic engineering or the cultural dimensions of public health crises(Htay & Hadiyanto, 2022; Islam, 2021; Wasudeo, 2013). In Indonesia, schools like SMAN 1 Gadingrejo have successfully implemented "flexible curricula" that allow teachers to allocate 20–30% of instructional time to culturally tailored projects, resulting in improved academic performance and social cohesion among students (Raihani, 2018; Suncaka, 2023; Suri & Chandra, 2021).

Resource allocation policies must address systemic inequities in access to training materials and technology. A 2025 study revealed that teachers in rural districts often lack access to digital tools for creating inclusive lesson plans, exacerbating disparities in interdisciplinary instruction(Musa, 2025; White et al., 2014). Governments should establish grant programs to fund classroom libraries with multicultural literature, virtual exchange platforms for cross-cultural collaboration, and AI-driven tools for differentiating instruction(Lynd-Balta et al., 2006; Yang, 2018). Furthermore, accreditation bodies should

require schools to submit annual reports on their progress toward diversity, equity, and inclusion (DEI) goals, with specific metrics on interdisciplinary course offerings and student participation in multicultural activities(Hariyadi & Rodiyah, 2023; Turan & Bektas, 2013).

Assessment reforms are critical to aligning evaluation practices with interdisciplinary and multicultural objectives. Standardised tests should incorporate performance-based tasks that measure students' ability to synthesise knowledge across disciplines, such as analysing the socioeconomic factors influencing climate migration or designing community-based solutions to educational inequities(Chesley et al., 2018). School leaders must also adopt qualitative assessment tools, such as portfolio reviews and peer feedback systems, to evaluate teachers' implementation of culturally responsive practices(Abduh et al., 2023; Choi & Lee, 2020; Choi & Mao, 2021). For instance, the Gallia County Local School District in Ohio documented a 22% increase in student proficiency in Earth and Space Science after introducing rubric-based assessments for interdisciplinary teaching(White et al., 2014).

THE IMPORTANCE OF SCHOOL CULTURE AND LEADERSHIP IN SUPPORTING TEACHERS

Principals play a pivotal role in modelling inclusive leadership practices that prioritise teacher autonomy and collaborative decision-making. Research from SMAN 1 Gadingrejo highlights how principals who delegate authority to teacher-led committees for curriculum design see higher levels of innovation and job satisfaction among staff(Suncaka, 2023; Turan & Bektas, 2013). Effective leaders also cultivate "brave spaces" for dialogue about implicit biases, leveraging restorative justice circles and equity audits to identify and address systemic barriers to inclusion(Hariyadi & Rodiyah, 2023; Raihani, 2018). For example, schools in Kupang reduced intergroup conflicts by 40% after implementing monthly cultural competency workshops led by teachers and community elders(Musa, 2025; Raihani, 2018).

School culture must embrace a "whole-school" approach to multicultural education, where policies, rituals, and physical environments reflect a commitment to diversity. This includes revising dress codes to accommodate cultural attire, celebrating heritage months through student-led assemblies, and displaying multilingual signage to affirm linguistic diversity(Raihani, 2018; Yang, 2018). At the University of Wisconsin–Madison's Interdisciplinary Professional Programs, administrators transformed campus culture by requiring all departments to submit interdisciplinary research proposals, resulting in a 35% increase in cross-disciplinary collaborations(Chesley et al., 2018).



Finally, districts should establish professional learning communities (PLCs) that connect teachers across schools to share resources and strategies. The NSF-funded IGERT programs demonstrated that PLCs focused on systems thinking and cultural humility improve teachers' ability to design lessons that resonate with diverse student populations (Lynd-Balta et al., 2006). By fostering a culture of continuous learning and mutual support, schools can ensure that teachers feel empowered to navigate the complexities of multicultural and interdisciplinary education (Choi & Lee, 2020; Gryson et al., 2024).

CONCLUSION

SUMMARY OF KEY FINDINGS

The literature consistently positions teachers as pivotal agents in advancing multicultural and interdisciplinary education. Teachers must develop **multicultural competencies**, including cultural awareness, sociocultural consciousness, and strategies to foster inclusivity, to address the needs of diverse classrooms. Studies highlight the effectiveness of culturally responsive pedagogies, such as cooperative learning and project-based methods, in bridging cultural gaps and enhancing student engagement. However, challenges persist, including implicit biases, insufficient training, and institutional barriers like rigid curricula and standardised assessments. Interdisciplinary teaching, while recognised for promoting critical thinking and real-world problem-solving, remains underutilised due to gaps in curriculum integration and collaborative support structures.

Qualitative research underscores the importance of **teacher self-reflection** in confronting personal biases and institutional inequities. For instance, teachers who engage in critical reflection are better equipped to challenge deficit perspectives and adopt equitable practices. Similarly, interdisciplinary approaches require systemic changes, such as professional development and collaborative planning time, to move beyond superficial implementation.

IMPLICATIONS FOR FUTURE RESEARCH AND PRACTICE

Future research should prioritise longitudinal studies on the impact of sustained multicultural and interdisciplinary training for both pre-service and in-service teachers. There is a critical need to explore how **policy reforms** can incentivise schools to allocate resources for culturally responsive curricula and interdisciplinary collaboration. Additionally, investigating the role of school leadership in fostering inclusive environments could provide actionable insights for systemic change.



Practitioners must advocate for **embedded professional development** that merges theoretical frameworks with classroom applications. For example, workshops on cultural intelligence (CQ) and collaborative curriculum design can enhance teachers' ability to navigate multicultural and interdisciplinary contexts. Schools should also prioritize partnerships with communities to co-create curricula that reflect students' cultural identities. Furthermore, teacher education programs must integrate experiential learning opportunities, such as cultural immersion activities, to bridge the gap between theory and practice.

FINAL REFLECTIONS

The evolving role of teachers in today's interconnected educational landscape demands a shift from traditional pedagogy to **transformative praxis**. Teachers are no longer mere content deliverers but facilitators of global citizenship, equity, and critical inquiry. As multicultural classrooms become the norm, educators must embrace their dual roles as cultural mediators and interdisciplinary innovators.

This transformation requires systemic support, including revised accreditation standards that prioritise cultural competency and interdisciplinary collaboration in teacher training. Schools and policymakers must also recognise teachers' **emotional labour** in navigating cultural and curricular complexities, ensuring access to mental health resources and peer support networks. Ultimately, the integration of multicultural and interdisciplinary education is not merely an academic endeavour but a societal imperative to prepare students for a pluralistic, interconnected world.

By aligning pedagogical practices with the principles of equity and innovation, teachers can transcend institutional constraints and redefine their profession as catalysts for meaningful, inclusive change.

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