

Working towards a triadic collaboration among teachers, academics, and community: a review of curriculum co-design

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Abstract

Purpose – This review synthesises empirical studies on collaborative curriculum co-design involving schools, universities, and community stakeholders. It examines how different partnership configurations: teachers-community, academics-community, teachers-academics, and triadic collaborations are conceptualised, enacted, and studied in practice. The purpose is to identify common collaborative approaches, methodological trends, and reported strengths and challenges, with particular attention to the underexplored role of three-way partnerships. By mapping existing evidence, the review aims to inform more culturally responsive, equitable, and sustainable curriculum development and co-design practices across educational contexts.

Design/methodology/approach – This study adopts a systematic review approach guided by PRISMA principles. Peer-reviewed empirical studies published since 2015 were identified through searches of five databases (ProQuest, Web of Science, Scopus, EBSCO, and PsycINFO) using a PCC framework. Records were independently screened by multiple reviewers, with disagreements resolved through consensus. Twenty-nine studies were included and categorised by collaboration type (teachers-community, academics-community, teachers-academics, and triadic). Data were extracted and analysed using both deductive and inductive thematic analysis to examine collaboration models, processes, and reported strengths and challenges.

Findings – The review found that collaborative curriculum co-design most commonly occurs through dyadic partnerships, particularly between teachers and community or academics and teachers, while triadic teachers-academics-community collaborations remain rare. Teacher-community partnerships emphasise socially responsive and culturally relevant pedagogy, academic-community collaborations support reciprocal learning and equitable solutions, and teacher-academic partnerships strengthen professional learning and innovation by linking theory and practice. Across all models, collaborations enhance curriculum relevance and teacher development but are constrained by time pressures, differing priorities, power imbalances, and limited institutional support, which hinder sustainability and scalability.

Practical implications – The findings suggest that effective curriculum co-design requires sustained institutional support, clear role negotiation, and time structures that accommodate collaboration across schools, universities, and communities. Universities can play a key mediating role by facilitating dialogue, providing methodological expertise, and supporting long-term partnerships beyond project timelines. Educators and community partners should prioritise shared decision-making, trust-building, and reciprocal knowledge exchange to enhance cultural relevance and professional learning. Policymakers and leaders can strengthen impact by embedding collaborative curriculum design into professional development frameworks and resourcing mechanisms to support sustainable, multi-stakeholder partnerships.

Originality/value – This review makes an original contribution by systematically comparing dyadic and triadic collaboration models in curriculum co-design across school, university, and community contexts. While prior research often examines partnerships in isolation, this study synthesises how different configurations operate,



what roles stakeholders enact, and where gaps persist. By highlighting the scarcity yet potential of three-way collaborations, the review advances understanding of how universities can act as mediators to support culturally responsive and socially engaged curriculum development. The findings offer practical and conceptual insights for researchers, teacher educators, and policymakers seeking to design more equitable and sustainable collaborative partnerships.

Keywords Teachers-academics-community, Curriculum co-design, Community-engaged collaboration, Education partnership, Triadic collaboration

Paper type Research article

1. Introduction

Collaborative curriculum co-design has increasingly been positioned as a critical strategy for developing educational programs that are socially responsive, culturally relevant, and contextually meaningful. Contemporary curriculum scholarship recognises that educational knowledge is not produced solely within schools or universities, but is co-constructed through interactions among teachers, academics, and community stakeholders (Barkas *et al.*, 2022; Stentiford and Koutsouris, 2022). Engaging with community partners in curriculum and educational resource development enables initiatives to draw upon local knowledge, lived experience, and cultural resources, thereby strengthening the relevance of learning and supporting students' sense of identity and belonging (Hall, 2019; Saha *et al.*, 2022). These community involved approaches align with broader movements toward inclusive and socially just education that seek to value diverse knowledge systems and challenge traditionally dominant, institution-centred models of curriculum and resource design.

As education systems confront complex social, cultural, and equity challenges, understanding how multiple stakeholders engage in curriculum and resource co-design becomes increasingly important (Adler and Schlinzig, 2025). In recent research, community-engaged and participatory approaches have emerged as key strategies to bring together the diverse expertise of teachers, academics, and community knowledge holders, recognising that meaningful curriculum innovation emerges through their shared knowledge, experience, and values in the co-design processes (Hall, 2019; Kelter *et al.*, 2021). Within these collaborations, academics play a pivotal role in bridging schools, universities, and communities by facilitating dialogue, mediating power dynamics, and translating between academic knowledge, professional practice, and community priorities. However, despite growing advocacy for such collaborative practices, research on multi-stakeholder collaborations remains under-represented in the empirical literature. In particular, there is limited synthesis of how different partnership configurations operate, how teachers, academics and community stakeholders perform their roles within these collaborations, and what challenges arise in practice.

In response to this gap, this paper synthesises empirical studies examining collaborative approaches among teachers, academics, and community stakeholders in the co-design of curriculum, educational resources, and pedagogies. By bringing together findings across different partnership types, the review seeks to identify common models of collaboration, examine how these partnerships are conceptualised and enacted, and analyse their reported strengths and limitations. Developing a clearer understanding of these collaborative configurations is essential for informing future curriculum design initiatives and for supporting more sustainable and equitable partnerships between educational institutions and the communities they serve.

The following questions guide this review:

- (1) What methodological approaches have been employed to investigate co-design collaborations among teachers, academics, and community?
- (2) What collaborative approaches do teachers, academics, and community adopt in curriculum co-design?

- (3) What are the strengths, challenges and suggested strategies of each dyadic and triadic collaboration?

2. Methods

This review is guided by a triadic collaboration framework involving teachers, academics, and community. Given the limited literature explicitly examining collaboration among all three stakeholder groups, the review draws on research across three related forms of collaboration: (1) teachers-community collaboration, (2) academics-community collaboration, and (3) teachers-academics collaboration (see Figure 1).

To address the above three research questions, this paper aims to provide insights into the collaborative approaches among different stakeholders following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Tricco *et al.*, 2018). The search strategy was developed in consultation with a subject librarian in the university and was informed by the PCC framework, which includes Population (i.e. teachers, academics, community), Concept (i.e. community-engaged/co-design), and Context (i.e. university/higher education/school). Five databases (ProQuest, Web of Science, Scopus, EBSCO, and PsycINFO) were searched using the Boolean search strings (Grewal *et al.*, 2016) outlined in Table 1. The search was completed on 31 January 2026.

The search terms were deliberately kept broad to capture as many relevant studies as possible across the dyadic collaboration types, especially for the ones with communities. However, given the breadth and diversity of collaborations between academics and teachers, additional searching terms were necessary to more precisely identify studies that involve intentional collaborations rather than loosely defined partnerships, key searching words such as “co-design,” “co-develop,” and “co-creat*” were included to signal explicit participatory processes between academics and teachers.

In light of the review’s aim to synthesise how collaborative and co-design approaches are investigated and enacted in practice, the inclusion criteria were limited to peer-reviewed empirical journal articles published in English within the past eleven years that focus on community-based curriculum resource development and/or pedagogies, thereby ensuring both relevance and scholarly rigour. More details of the inclusion and exclusion criteria are presented in Table 2.

To enable a more focused review, the key terms were clearly defined and agreed upon by the review team. Teachers, academics, and community are distinguished according to their institutional roles within curriculum co-design. Teachers include school-based practitioners across early childhood, primary, and secondary (K-12) settings responsible for classroom implementation. This category also includes pre-service teachers due to their emerging professional participation in curriculum design and teaching in school contexts. Academics refer to university-based researchers or teacher educators contributing disciplinary,

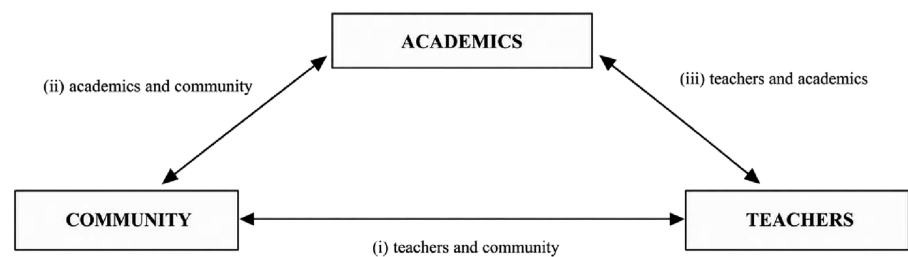


Figure 1. Triadic collaboration among teachers, academics and community. Source: Authors created with the assistance of Manus AI, 2026

Table 1. Search terms for each mode of collaboration

Search	Types of collaboration	Boolean search
1	teachers and community collaboration	“communit* based” or “communit* engage*” or “communit* involv*” or “communit* participat*” AND teacher* or educator* AND “curriculum resource*” or pedagog* or “curriculum material*”
2	academics and community collaboration	“communit* based” or “communit* engage*” or “communit* involv*” or “communit* participat*” AND “Tertiary education” or “higher education” or universit* or college* or academics AND “curriculum resource*” or pedagog* or “curriculum material*”
3	academics and teachers collaboration	“Tertiary education” or “higher education” or universit* or college* or academics AND teacher* or educator* AND “curriculum resource*” or pedagog* or “curriculum material*” AND co-design or co-develop or co-creat*

Table 2. Inclusion and exclusion criteria

Criteria	Inclusion	Exclusion
Type of evidence	Empirical studies	Non-empirical in nature (i.e. conceptual paper, review paper, discussion paper, opinion piece)
Type of publication	Peer-reviewed full text journal articles	Conference papers and/or abstracts, dissertations, reports, policy paper, books or book chapters, other grey literature
Study context	Education context from early years, primary or secondary level education (K-12), to higher education	Industry collaborations only, or activities not intended for educational purposes
Study focus	Curriculum and/or related resource or pedagogical development undertaken through co-design processes that involve direct participation and effective contributions of stakeholders from schools, universities, and/or community groups	Curriculum and/or related resource or pedagogical development conducted developed solely by teachers, academics, or community members without collaborative co-design involvements or effective contribution
Timeframe	Papers published since 2015	Published outside this timeframe
Language	English	Other languages

theoretical, or methodological expertise within higher education contexts. Community encompasses stakeholders beyond formal education institutions, including cultural organisations, industry partners, local associations, and other community knowledge holders who contribute contextual understanding and lived experience that inform and enhance the relevance and authenticity of curriculum related co-design. Stakeholder groups must demonstrate meaningful and active contributions within the study to be included in this review.

To strengthen the eligibility and reliability of the screening process, each record (title and abstract) was independently reviewed by at least two authors to assess relevance. The initial

search yielded 5,910 records, which were reduced to 147 full-text articles after removing duplicates and conducting preliminary screening. These 147 articles were then independently reviewed by two authors, with a third reviewer consulted to resolve any discrepancies. The final sample comprised 29 articles: five on teachers-community collaborations, nine on academics-community collaborations, 10 on teachers-academics collaborations, and five classified as triadic collaborations involving all three stakeholder groups (see [Figure 2](#)).

The 29 papers were then categorised by type of collaboration, and data from the papers were extracted and charted on an Excel spreadsheet. A summary of the charted data is presented in [Appendix](#). Each included study is analysed both deductively and inductively. In the deductive analysis, we focus on three areas: how the collaborations are conceptualised, what processes are involved, and how they are evaluated for strengths and weaknesses. In the inductive analysis, we look for recurring key ideas across the data.

3. Results and discussion

This section reports on the findings organised according to the three types of collaborations illustrated in [Figure 1](#): (1) teachers-community collaboration, (2) academics-community collaboration, and (3) teachers-academics collaboration. Additionally, we have included studies that examined three-party collaborations, namely (4) teachers-academics-community collaboration.

3.1 RQ 1: what methodological approaches have been employed to investigate co-design collaborations among the teachers, academics, and community?

The methodological approaches used to investigate co-design partnership varied across the four collaborative types but shared several common features. [Table 3](#) summarises the dominant research designs, participants, data collection methods, and analytical approaches employed in each collaboration category, with greater details provided in the sections below.

The teachers-community collaboration examines diverse educational contexts, including language education ([Badenhorst et al., 2024](#); [Barnes and Boyd, 2021](#)), inclusive education ([Ferrarini, 2023](#)), and social studies ([Popielarz, 2024](#); [Popielarz and Galliher, 2023](#)). With all five studies were conducted in the United States, they consistently explored how community engagement and community-based learning support curriculum co-design, with particular attention to cultural responsiveness, social justice, and sustainable educational practices (see [Appendix](#)). Across these studies, qualitative approaches were predominantly adopted to explore teachers' and pre-service teachers' experiences of community engagement. Specifically, as shown in [Table 3](#), reflective journals and interviews were commonly used to examine participants' learning and reflections ([Badenhorst et al., 2024](#)), while participant observation provided insights into pre-service teachers' sense of accountability within community partnerships ([Popielarz, 2024](#)). In addition, [Ferrarini \(2023\)](#) employed a combination of comparative case studies, reflective journals, observations, and surveys to capture the perspectives of multiple stakeholders involved in the collaboration.

The academics-community collaboration explores how collaborations offer reciprocal learning opportunities, build trust, and create equitable partnerships that address educational and local community needs ([Flaisher-Grinberg and Willson, 2023](#)). Many partnerships involve community members as co-leaders in research ([Collins et al., 2018](#)), and as co-educators in curriculum or educational programs development ([Coombe et al., 2020](#)). Such collaborative approaches help amplify underrepresented perspectives and addressing locally relevant issues ([Adler and Schlinzig, 2025](#); [Collins et al., 2018](#)). Others focus on advancing discipline-specific educational outcomes through community-engaged approaches ([Doubeni et al., 2022](#); [Olcoń et al., 2023](#)).

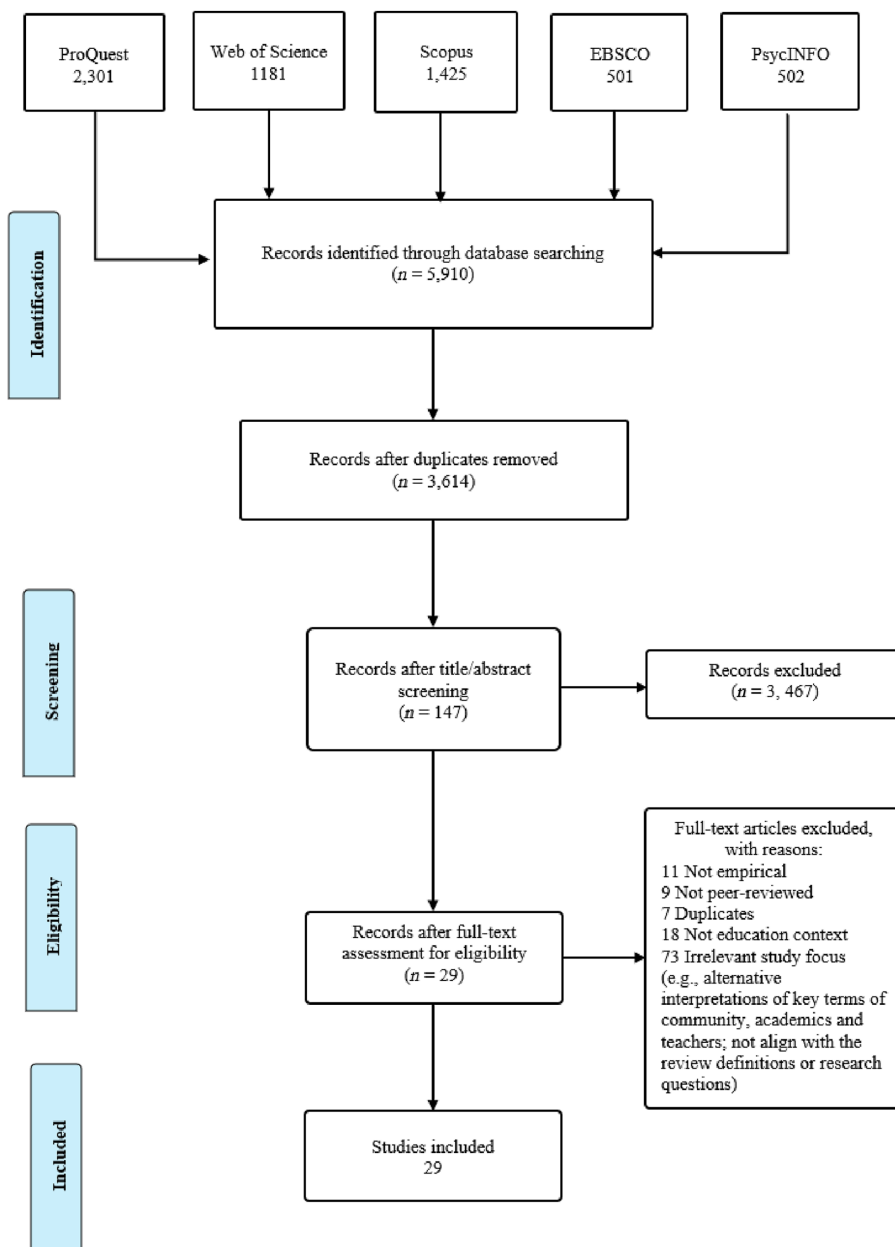


Figure 2. PRISMA. Source: Authors, based on the PRISMA guidelines [Tricco et al. \(2018\)](#)

Across the nine studies, community members were positioned as active partners throughout the research process, as co-designers of curriculum and learning activities ([Adler and Schlinzig, 2025](#)), and as collaborators in educational and capacity-building programmes ([Corić, 2020](#)). The collaborations spanned diverse disciplinary and national contexts, including public health in the United States ([Coombe et al., 2020](#); [Doubeni et al., 2022](#)), psychology in the United

Table 3. Methodological approaches used to investigate co-design collaborations

Collaboration type	Research design	Common approaches	Studies involved
Teachers-community	Primarily qualitative case studies	• Reflective journals • Semi-structured interviews • Participant observations • Surveys	Barnes and Boyd (2021) , Ferrarini (2023) , Popielarz (2024) , Popielarz and Galliher (2023) Badenhorst et al. (2024) , Popielarz (2024) , Popielarz and Galliher (2023) Popielarz (2024) , Popielarz and Galliher (2023) Ferrarini (2023)
Academics-community	• Predominantly qualitative • Several mixed-methods and community-based participatory approaches	• Semi-structured interviews • Focus groups • Surveys • Intervention assessments • Reflective journals	Jackson and Marques (2019) , Corić (2020) , Olcoń et al. (2023) , Adler and Schlinzig (2025) Collins et al. (2018) , Olcoń et al. (2023) , Adler and Schlinzig (2025) Frank and Sieh (2016) , Coombe et al. (2020) , Adler and Schlinzig (2025) Coombe et al. (2020) , Doubeni et al. (2022) , Flaisher-Grinberg and Willson (2023) Doubeni et al. (2022)
Teachers-academics	Mainly qualitative studies with one mixed-methods study	• Semi-structured interviews • Focus groups • Classroom observations • Video-recorded lessons	De Costa et al. (2024) , Evangelio et al. (2024) , Huang and He (2023) , Fine (2022) , Tian (2022) , Wang and Wong (2019) , Nash-Patel et al. (2022) , Nilsson and Lund (2022) Fine (2022) , Lim (2023) , Lim and Nguyen (2023) Evangelio et al. (2024) , Huang and He (2023) , Lim (2023) , Nash-Patel et al. (2022) , Tian (2022) , Wang and Wong (2019) Huang and He (2023) , Lim (2023) , Tian (2022)
Teachers-academics-community	Qualitative case studies and mixed-methods approaches	• Reflective journals • Co-designed workshops • Semi-structured interviews • Observations • Surveys • Pre/post assessment	Evangelio et al. (2024) , Fine (2022) , Huang and He (2023) , Tian (2022) Bradford et al. (2023) , Gampell et al. (2024) , Penuel et al. (2022) Bradford et al. (2023) , Vaughn and de Beer (2020) Gampell et al. (2024) , Vaughn and de Beer (2020) , Penuel et al. (2022) Green (2016) , Penuel et al. (2022) Bradford et al. (2023)

States ([Collins et al., 2018](#)), social work with immigrant communities in the United States ([Olcoń et al., 2023](#)), music education in Croatia ([Corić, 2020](#)), and community-based sociology and neighbourhood development in the United States ([Adler and Schlinzig, 2025](#)), demonstrating the broad applicability of community-engaged partnerships across higher education disciplines (see [Appendix](#)).

Methodologically, qualitative approaches predominated across the academics-community studies. Referring to [Table 3](#), semi-structured interviews and participant observation were used to examine collaborative processes and stakeholder experiences ([Jackson and Marques, 2019](#)), while individual and focus group interviews captured

participants' experiences of community-engaged programs (Olcoñ *et al.*, 2023). Participatory and arts-based approaches were also employed to document experiences of community collaboration (Corić, 2020), together with case-study and survey-based approaches to examining community engagement (Frank and Sieh, 2016). Several studies adopted mixed-methods approaches, with Coombe *et al.* (2020) combining quantitative survey measures with qualitative responses, Adler and Schlinzig (2025) integrating surveys, interviews, observations and secondary data, and other studies combining programme or intervention evaluations with qualitative data (Doubeni *et al.*, 2022; Flaisher-Grinberg and Willson, 2023). These approaches enabled researchers to examine both the processes and outcomes of academics-community collaboration.

Regarding the teachers-academics collaboration, 10 studies examined partnerships that bridged educational theory and classroom practice through reciprocal learning and curriculum co-design. Collaboration commonly focused on developing curriculum resources (De Costa *et al.*, 2024), refining assessment practices (Fine, 2022), integrating technology-enhanced pedagogies (Lim and Nguyen, 2023; Nilsson and Lund, 2022), and strengthening subject-specific teaching approaches (Evangelió *et al.*, 2024; Huang and He, 2023). These studies were conducted across diverse educational contexts. In language education, studies examined contexts in China and Singapore (Tian, 2022; Wang and Wong, 2019), as well as the United States (Lim, 2023; Lim and Nguyen, 2023). Science education was explored in Sweden and the United States (Fine, 2022; Nilsson and Lund, 2022), while other studies focused on physical education in Spain (Evangelió *et al.*, 2024), and nursing education in the United Kingdom (Nash-Patel *et al.*, 2022). De Costa *et al.* (2024), meanwhile, examined decolonising pedagogy through a United States-Nepal partnership. Participants primarily comprised schoolteachers, academics, and students, although several studies also involved pre-service teachers, disciplinary specialists, and professional staff (Huang and He, 2023; Nash-Patel *et al.*, 2022).

Methodologically shown in Table 3, qualitative approaches dominated, with nine of the 10 studies adopting qualitative research designs. Semi-structured interviews were frequently used to explore teachers' experiences before and after the collaborative process (Evangelió *et al.*, 2024), while focus groups captured participants' reflections on co-design and professional learning (Lim and Nguyen, 2023). Other studies employed participant observations to examine collaborative classroom practices (Nash-Patel *et al.*, 2022), video-recorded lessons to analyse pedagogical interactions (Tian, 2022), and reflective journals or field notes to document iterative learning and curriculum refinement (Huang and He, 2023). Lim (2023) was the only study to adopt a mixed-methods design, combining qualitative data with quantitative measures to examine teachers' implementation of multimodal literacy.

About the triadic collaboration, only five out of the total 29 included studies examined triadic partnerships involving teachers-academics-community collaboration. These collaborations centred on the co-design of curriculum and educational programmes that addressed local, cultural, environmental, and equity-related issues through shared expertise and participatory decision-making. Across the studies, community knowledge informed the design of learning experiences (Green, 2016; Vaughn and de Beer, 2020), while teachers and academics jointly developed curriculum resources and pedagogical innovations to support diverse and underrepresented learners (Bradford *et al.*, 2023; Penuel *et al.*, 2022). Collaboration also extended to the use of digital technologies and place-based learning to connect students with authentic community contexts (Gampell *et al.*, 2024).

The studies were conducted across Australia (Green, 2016), New Zealand (Gampell *et al.*, 2024), South Africa (Vaughn and de Beer, 2020), and the United States (Bradford *et al.*, 2023; Penuel *et al.*, 2022), primarily within primary and secondary science education. Participants commonly included school teachers, academics, community members, and school students, while one study focused on pre-service teachers working alongside environmental educators in place-based learning (Green, 2016) (see Appendix). All five studies adopted predominantly

qualitative approaches as indicated in Table 3. Gampell *et al.* (2024) used a participatory approach, while Green (2016) adopted an interpretive, place-based case study using surveys and reflective assignments. Penuel *et al.* (2022) drew on design artefacts, reflective surveys and workshop discussions within a co-design process. Vaughn and de Beer (2020) used semi-structured interviews, while Bradford *et al.* (2023) complement qualitative data artefacts with pre- and post-assessments to evaluate student learning outcomes.

Based on the above-mentioned overview of methodological approaches of researchers examining collaborative curriculum and programme co-design among multiple stakeholders, we found that methodological approaches varied across collaboration types while sharing several common characteristics. Figure 3 below further synthesises cross-case methodological patterns, enabling comparison of the prevalence of different methods across studies. The qualitative inquiry dominated all four collaboration types, with interviews serving as the principal method for exploring collaborative processes and stakeholder experiences. Reflective journals and observations were also widely used to document iterative curriculum development in teachers-academics and teacher-community collaborations. In contrast, mixed-methods approaches and pre-/post-assessments were less common and were primarily used to evaluate programme outcomes. Notably, participatory co-design methods and design-based research were more evident in academics-community and triadic collaborations, reflecting a stronger methodological emphasis on stakeholder participation and shared decision-making with further discussions in the next section.

These patterns highlight several gaps in the existing literature. The limited use of mixed-methods and quantitative approaches suggests a need for greater methodological diversity to complement qualitative insights and strengthen the evaluation of collaborative outcomes. Research across a broader range of geographical and cultural contexts is also needed to develop a more comprehensive understanding of how collaboration models operate beyond predominantly Western settings. Further research, alongside stronger policy integration, may also help establish the longer-term impacts and sustainability of triadic collaborations.



Figure 3. Cross-case methodological patterns. Source: Authors created with the assistance of ChatGPT, 2026

3.2 RQ 2: what collaborative approaches do the community, academics, and teachers adopt on curriculum co-design?

The reviewed studies adopted a range of collaborative approaches to support curriculum co-design across different partnership types. As shown in Table 4, these approaches differ in their structure and focus but share a commitment to stakeholder participation, reciprocal learning, and the integration of diverse expertise. The following sections examine these approaches in greater detail.

The teachers-community collaborations were characterised by participatory approaches that actively involved community members throughout the curriculum co-design process. Community-based teaching and critical reflection facilitated teachers' engagement with community contexts, with [Badenhorst et al. \(2024\)](#) emphasising learning through community engagement and [Barnes and Boyd \(2021\)](#) using critical reflection to examine community contexts. Cross-cultural engagement further promoted ongoing dialogue and reflection between teachers and diverse communities ([Ferrarini, 2023](#)). Youth and community participation was also evident, with [Popielarz \(2024\)](#) involving youth organisers and adult allies in shaping teacher education, while [Popielarz and Galliher \(2023\)](#) drew on youth-led grassroots organisations to inform community-based curriculum and teaching practices. In the studies, collaboration centred on community participation, reciprocal dialogue, and shared contributions to curriculum design.

The teachers-community collaborations primarily occur through pre-service teacher education and localised curriculum co-design. We found that direct engagement with communities can bridge university-based teacher preparation and the social and cultural realities of teaching practice. By positioning communities as active partners, local knowledge

Table 4. Collaborative approaches adopted in curriculum co-design across partnership types

Collaboration type	Common collaborative approaches	Studies involved
Teachers-community	- Community-based teaching and reflection - Cross-cultural engagement - Youth and cultural participation	Badenhorst et al. (2024) , Barnes and Boyd (2021)
Academics-community	Experiential learning	Ferrarini (2023)
	Participatory curriculum co-development	Popielarz (2024) , Popielarz and Galliher (2023)
Teachers-academics	Co-design workshops/ collaborative design sessions	Coombe et al. (2020) , Flaisher-Grinberg and Willson (2023) , Frank and Sieh (2016) , Corić (2020) , Olcoñ et al. (2023)
	Co-teaching/Collaborative implementation	Adler and Schlinzig (2025) , Collins et al. (2018) , Coombe et al. (2020) , Doubeni et al. (2022)
	Collaborative reflection and iterative refinement	De Costa et al. (2024) , Evangelio et al. (2024) , Fine (2022) , Huang and He (2023) , Lim (2023) , Lim and Nguyen (2023) , Nash-Patel et al. (2022) , Nilsson and Lund (2022) , Tian (2022) , Wang and Wong (2019)
Teachers-academics-community	- Participatory co-design/ Design-based partnerships - Community-engaged curriculum development - Place-based partnerships	Fine (2022) , Huang and He (2023) , Lim (2023) , Lim and Nguyen (2023) , Nash-Patel et al. (2022) , Tian (2022) De Costa et al. (2024) , Evangelio et al. (2024) , Fine (2022) , Lim (2023) , Lim and Nguyen (2023) , Nilsson and Lund (2022) , Tian (2022) , Wang and Wong (2019) Bradford et al. (2023) , Gampell et al. (2024) , Penuel et al. (2022) Bradford et al. (2023) , Gampell et al. (2024) , Vaughn and de Beer (2020) Green (2016) , Vaughn and de Beer (2020)

and lived experiences can inform curriculum development, strengthen pre-service teachers' cultural competency, and enhance curriculum relevance (Badenhorst *et al.*, 2024; Ferrarini, 2023). However, these collaborations are often ad hoc and dependent on individual initiatives rather than institutional frameworks, raising concerns about their sustainability. Given the limited research on this dyadic collaboration, particularly beyond pre-service teacher education, researchers and teacher educators should take a more active mediating role in facilitating and sustaining partnerships, especially with in-service teachers.

In the academics-community collaborations, stakeholders collaborate on curriculum design through several key approaches, with Community-Based Participatory Action Research (CBPAR) playing a central role. This approach actively involves community members across multiple stages of collaboration. Collins *et al.* (2018) emphasise community participation in shaping research questions and data-collection processes, while Adler and Schlinzig (2025) involve community partners in identifying research priorities and informing the design of student research projects. Coombe *et al.* (2020) extend this collaborative approach through co-learning and the development of community-academics partnerships, whereas Doubeni *et al.* (2022) emphasise the co-design and implementation of curriculum with community partners to ensure responsiveness to local needs and assets. Its iterative process, comprising planning, acting, observing, and reflecting, allows continuous adaptation based on feedback (Corić, 2020). Experiential learning is another widely used approach, integrating students into real-world projects to foster engagement and practical application. Frank and Sieh (2016) engage urban planning students in community-based initiatives, while Olcoñ *et al.* (2023) and Flaisher-Grinberg and Willson (2023) use simulations to develop empathy and professional skills, and Corić (2020) explores participatory music education to promote social inclusion. These approaches demonstrate how community involvement, hands-on learning, and institutional support contribute to curriculum co-design, ensuring relevance and responsiveness to local needs.

These results suggest that academics-community collaborations can bridge academic knowledge and community priorities by positioning community members as active partners in curriculum development. Through participatory and iterative approaches such as CBPAR, these partnerships foster reciprocal learning and enable curriculum to respond more closely to local needs (Adler and Schlinzig, 2025; Coombe *et al.*, 2020). Experiential learning, such as real-world projects and co-create simulations, further strengthens this connection by translating academic knowledge into authentic community contexts (Olcoñ *et al.*, 2023). However, sustaining community engagement beyond individual projects and research timelines remains a key challenge, highlighting the need for stronger institutional commitment to support longer-term partnerships.

The teachers-academics collaborations were characterised by participatory and iterative co-design approaches, with Participatory Design-Based Research (PDBR) being the most frequently adopted methodology. Fine (2022) employed (Trans)Formative Assessment Co-design (TAC) cycles, while Lim (2023) used design-based research to collaboratively design, enact, reflect on, and refine multiliteracies lessons. Nilsson and Lund (2022) combined design-based research and participatory design within TPACK-informed digital design workshops, while Tian (2022) adopted participatory design research involving sustained teacher-researcher co-planning, classroom enactment, and reflection. Evangelio *et al.* (2024) adopted a collaborative approach to co-design and implement hybrid pedagogical models. Across these approaches, teachers and academics contributed complementary expertise and jointly designed and implemented curriculum innovations.

Across studies spanning from a few weeks to two years, collaboration typically began with initial meetings to establish needs and shared understandings (De Costa *et al.*, 2024), or with observations of existing classroom practices, as in Lim (2023). This was followed by joint curriculum design and classroom implementation, with ongoing reflection and feedback informing subsequent refinement. Huang and He (2023) incorporated co-design and co-teaching across three phases, while Tian (2022) used recurring planning, classroom

implementation, and debriefing to support iterative development. [Evangelio et al. \(2024\)](#) similarly used planning, observation, and feedback cycles to refine subsequent lessons.

These results indicate that teachers-academics collaborations can connect educational research and classroom practice by combining academics' theoretical expertise with teachers' contextual and pedagogical knowledge. Iterative co-design, implementation, and reflection enable curriculum innovations to be continuously adapted to classroom needs while supporting teachers' professional learning ([Nilsson and Lund, 2022](#); [Tian, 2022](#)). However, maintaining alignment between research objectives and the practical demands of classroom contexts could remain an ongoing challenge.

The triadic collaborations among teachers-academics-community were characterised by participatory and community-engaged co-design approaches that actively involved teachers, academics, community members, and students throughout the curriculum design process. Participatory discussions and collaborative decision-making were commonly used to identify culturally and environmentally relevant issues and jointly develop curriculum resources ([Bradford et al., 2023](#)). Several studies adopted academically facilitated co-design, where researchers worked alongside teachers and community partners through iterative design cycles to develop and refine curriculum materials ([Penuel et al., 2022](#)). Other collaborations employed place-based and environmental partnerships, engaging pre-service teachers with environmental educators and local communities to co-design learning experiences grounded in authentic field contexts ([Green, 2016](#)). Across these studies, student and community voices were incorporated throughout the co-design process to inform curriculum planning and ongoing refinement ([Gampell et al., 2024](#)). The above evidence indicates that triadic collaborations can extend curriculum co-design beyond school and academic contexts by incorporating community knowledge and perspectives. The integration of multiple stakeholder voices can support more culturally, environmentally, and locally responsive curriculum ([Bradford et al., 2023](#); [Gampell et al., 2024](#)). However, the limited number of studies indicates that these collaborations remain underexplored, highlighting a need for further research into their potential to support more equitable and inclusive curriculum development.

3.3 RQ 3: *what are the strengths, challenges and suggested strategies of each dyadic and triadic collaboration?*

The reviewed studies reported both benefits and challenges associated with curriculum co-design partnerships. The [Table 5](#) below summarises the key strengths, challenges, and associated strategies for success across the four collaboration types. The following sections provide a more detailed analysis of these findings.

The teachers-community collaborations were consistently reported strengthened teachers' understanding of social justice, diversity, and multiculturalism through direct engagement with local communities. [Badenhorst et al. \(2024\)](#) highlighted how community engagement exposed teachers to diverse lived experiences and encouraged critical reflection, while [Ferrarini \(2023\)](#) emphasised intercultural understanding through cross-cultural dialogue. However, challenges included navigating cultural differences and biases during community-based experiences ([Badenhorst et al., 2024](#)), as well as communication and logistical issues ([Ferrarini, 2023](#)). The studies highlighted critical reflection, cross-cultural preparation, and clear communication as important strategies for supporting effective collaboration ([Badenhorst et al., 2024](#); [Ferrarini, 2023](#)). These results highlight the transformative potential of teachers-community collaboration, particularly in connecting teachers with diverse lived experiences and fostering more culturally responsive practice. However, meaningful engagement requires more than simply exposing teachers to community contexts; cultural differences and existing biases need to be critically negotiated to avoid reinforcing unequal relationships ([Badenhorst et al., 2024](#); [Ferrarini, 2023](#)). This underscores the importance of structured reflection, cross-cultural preparation, and sustained communication in developing more reciprocal and equitable teachers-community partnerships.

Table 5. Strengths, challenges and suggested strategies of co-design partnerships

Collaboration type	Key strengths	Key challenges	Suggested strategies
Teachers-community	- Enhanced understanding of social justice and diversity (Badenhorst <i>et al.</i>, 2024) - Strengthened intercultural understanding (Ferrarini, 2023)	- Cultural differences and biases (Badenhorst <i>et al.</i>, 2024) - Communication and logistical difficulties (Ferrarini, 2023)	- Critical reflection and cross-cultural preparation (Badenhorst <i>et al.</i>, 2024) - Clear communication (Ferrarini, 2023)
Academics-community	- Improved context-responsive programmes/interventions (Coombe <i>et al.</i>, 2020; Doubeni <i>et al.</i>, 2022) - Strengthened trust and equitable partnerships (Collins <i>et al.</i>, 2018) - Supported community empowerment and applied learning (Adler and Schlinzig, 2025) - Enhanced student engagement and interpersonal learning (Corić, 2020; Flaisher-Grinberg and Willson, 2023; Olcoñ <i>et al.</i>, 2023)	- Limited resources, participation and funding (Jackson and Marques, 2019) - Tensions between academic timelines and community priorities (Adler and Schlinzig, 2025; Frank and Sieh, 2016)	- Long-term funding and institutional support (Jackson and Marques, 2019) - Flexible engagement schedules to accommodate community needs (Adler and Schlinzig, 2025; Frank and Sieh, 2016)
Teachers-academics	- Strengthened professional learning, pedagogical practice and curriculum innovation (Evangelio <i>et al.</i>, 2024; Lim, 2023; Wang and Wong, 2019) - Enhanced cultural and inclusive understandings (De Costa <i>et al.</i>, 2024; Nash-Patel <i>et al.</i>, 2022) - Improved student engagement and learning (Fine, 2022; Huang and He, 2023; Tian, 2022)	- Power imbalances and logistical difficulties (De Costa <i>et al.</i>, 2024; Wang and Wong, 2019) - Workload and teacher-autonomy tensions (Evangelio <i>et al.</i>, 2024; Wang and Wong, 2019) - Limited time, resources and support (Fine, 2022; Lim, 2023) - Resistance to new practices (Lim and Nguyen, 2023)	- Build trust and reciprocal relationships (De Costa <i>et al.</i>, 2024; Fine, 2022) - Use structured planning and institutional support (Evangelio <i>et al.</i>, 2024) - Promote collective decision-making and reflection (Huang and He, 2023; Lim, 2023)
Teachers-academics-community	- Connected curriculum with authentic community issues and contexts (Bradford <i>et al.</i>, 2023; Gampell <i>et al.</i>, 2024) - Integrated community and Indigenous knowledge (Vaughn and de Beer, 2020) - Strengthened teachers' curriculum-design knowledge (Penuel <i>et al.</i>, 2022)	Time required to build trust and shared understanding; tensions between differing stakeholder priorities (Bradford <i>et al.</i>, 2023)	- Collaborative reflection and inclusive brainstorming (Bradford <i>et al.</i>, 2023) - Ongoing dialogue and iterative refinement (Gampell <i>et al.</i>, 2024) - Continuous negotiation and shared decision-making (Penuel <i>et al.</i>, 2022)

The academics-community collaborations generated a range of educational and community benefits, including improved programme outcomes, stronger community partnerships, and enhanced student learning. In health education, involving community members in research contributed to more appropriately tailored health interventions (Doubeni *et al.*, 2022), while community-based participatory research fostered trust and more equitable partnerships, especially in underserved communities (Collins *et al.*, 2018). Sustained university-community partnerships also produced mutually beneficial outcomes, such as research reports, grant support, and local initiatives that empowered communities while extending university students' applied learning (Adler and Schlinzig, 2025). Within higher education, action research and reflective practice increased student engagement (Corić, 2020), whereas community-engaged learning strengthened empathy and interpersonal skills among psychology and social work students (Olcoń *et al.*, 2023).

Despite these benefits, challenges remained in sustaining effective partnerships. Limited resources, uneven participation, and funding constraints often affected the continuity of collaborations (Jackson and Marques, 2019). In addition, tensions between academic timelines and community priorities, particularly within semester-based programmes, restricted opportunities for fieldwork and ongoing engagement (Adler and Schlinzig, 2025). Suggested strategies included securing long-term funding, adopting more flexible engagement schedules, and establishing dedicated institutional support to strengthen collaboration over time (Jackson and Marques, 2019).

These results demonstrate that the academics-community collaboration can generate reciprocal benefits by connecting academic expertise and student learning with community knowledge and priorities. Importantly, its value extends beyond educational outcomes to strengthening trust, community capacity, and more locally responsive practices (Olcoń *et al.*, 2023). However, tensions between short-term academic structures and the sustained engagement required by communities can limit this potential (Adler and Schlinzig, 2025). This highlights the need to embed such partnerships within institutional structures through flexible timelines, dedicated support, and sustained funding, rather than relying on individual or project-based initiatives.

In the teachers-academics collaborations, teachers in partnership with researchers often report strengthened professional development through pedagogical and curriculum innovations (Evangelió *et al.*, 2024), as well as the research-informed practices (Wang and Wong, 2019). Fine (2022) demonstrated how collaborative assessment design strengthened teachers' confidence and capacity to interpret multilingual students' learning, while Lim (2023) highlighted the development of teachers' pedagogical knowledge and classroom practices. Collaborations also broadened teachers' cultural and contextual awareness (De Costa *et al.*, 2024) and understanding of inclusive learning (Nash-Patel *et al.*, 2022). Benefits also extended to students. Fine (2022) reported greater confidence and participation among multilingual learners, while Tian (2022) found that co-designed translanguaging practices supported student engagement, content understanding, and academic performance. Other studies similarly reported positive effects on student learning and engagement through collaborative pedagogical innovations (Huang and He, 2023).

However, various challenges were reported that can hinder authentic collaborations. Common barriers included power imbalances and logistical difficulties (De Costa *et al.*, 2024; Wang and Wong, 2019), increased workload and tensions between teacher autonomy and academic guidance (Evangelió *et al.*, 2024), as well as limited time, resources, and structured professional support (Fine, 2022; Lim, 2023). Some studies also noted that uncertainty or discomfort among teachers and students could reduce their willingness to adopt new practices (Lim and Nguyen, 2023). Meanwhile, several strategies were identified to sustain these collaborations. De Costa *et al.* (2024) emphasised building trust through active listening and recognising teachers' professional expertise, while Fine (2022) highlighted the value of pre-meetings to establish shared expectations and reciprocal partnerships. Evangelió *et al.* (2024) recommended structured planning and addressing institutional barriers, such as workload and

funding, to support sustained collaboration. During implementation, [Huang and He \(2023\)](#) found that collective decision-making and participant feedback supported ongoing curriculum refinement, whereas [Lim \(2023\)](#) highlighted critical reflection as an important mechanism for adapting teaching practices throughout the collaboration process.

The value of teachers-academics collaboration lies in combining research expertise with teachers' contextual knowledge to strengthen professional learning and translate pedagogical innovation into improved student experiences. However, these benefits depend on genuinely reciprocal partnerships, as power imbalances, competing expectations, and resource constraints can undermine teachers' agency and sustained participation ([De Costa et al., 2024](#)). Establishing shared expectations, recognising teachers' professional expertise, and maintaining collective decision-making and reflection are therefore important for balancing academic guidance with teacher autonomy and sustaining meaningful collaboration.

Different with the reported dyadic collaborations, the triadic collaborations among teachers-academics-community offered benefits for students, teachers, and communities by connecting curriculum with authentic social and environmental issues. [Bradford et al. \(2023\)](#) found that co-designed learning experiences promoted civic engagement by linking classroom learning with community issues. [Gampell et al. \(2024\)](#) demonstrated that community-based digital learning strengthened teachers' professional practice while engaging students with local disaster contexts. [Vaughn and de Beer \(2020\)](#) showed that involving Indigenous knowledge holders and museums as community partners helped contextualise the Western science curriculum and integrate Indigenous knowledge into STEM education. Similarly, [Penuel et al. \(2022\)](#) reported that sustained collaboration among teachers, academics, and community members enhanced teachers' practical curriculum design knowledge.

However, building and sustaining partnerships required considerable time to develop trust and shared understanding among stakeholders. [Bradford et al. \(2023\)](#) noted that collaboration across diverse groups with different priorities could create tensions during the co-design process. To address these challenges, [Bradford et al. \(2023\)](#) emphasised collaborative reflection and inclusive brainstorming, [Gampell et al. \(2024\)](#) also highlighted ongoing dialogue and iterative refinement, and [Penuel et al. \(2022\)](#) recommended continuous negotiation and shared decision-making to balance stakeholder perspectives throughout curriculum development. The distinctive potential of triadic collaborations to integrate teachers' pedagogical expertise, academics' research knowledge, and communities' contextual perspectives, thereby connecting curriculum more closely with authentic social and environmental issues. However, involving multiple stakeholder groups also increases the complexity of collaboration, particularly when priorities, expectations, and resources differ ([Gampell et al., 2024](#)). Sustaining these partnerships therefore requires ongoing negotiation, shared decision-making, and reflection, supported by sufficient time, mutual trust, and institutional commitment ([Bradford et al., 2023](#)).

3.4 Towards a triadic model of collaboration

Collaborative partnerships among teachers, academics, and community demonstrate the potential to connect theoretical knowledge, classroom practice, and local knowledge in ways that support more inclusive, culturally responsive ([De Costa et al., 2024](#)), and socially relevant curriculum ([Badenhorst et al., 2024](#)). As discussed across the four collaboration types, each stakeholder contributes distinctive but complementary expertise: teachers bring pedagogical, classroom, and curriculum knowledge ([Evangelio et al., 2024](#)), community contributes local priorities, cultural knowledge, and lived experiences ([Jackson and Marques, 2019](#)), while academics provide research expertise and can facilitate collaborative curriculum co-design ([Penuel et al., 2022](#)). The value of collaboration therefore lies not simply in bringing stakeholders together, but in creating reciprocal relationships through which different forms of knowledge can inform curriculum decision-making.

As shown in the Figure 4 below, this review synthesises these relationships by illustrating how the three dyadic forms of collaboration can provide pathways towards a more integrated triadic model. Teachers-community collaborations connect classroom practice with local knowledge and culturally responsive pedagogy; academics-community collaborations facilitate knowledge exchange and community-responsive curriculum development; and teachers-academics collaborations connect research and theory with professional and pedagogical practice. Rather than viewing these collaborations as separate models, we argue that their complementary strengths can be brought together through triadic collaboration based on co-design (Bradford *et al.*, 2023), shared decision-making (Penuel *et al.*, 2022), reciprocal relationships (De Costa *et al.*, 2024), and ongoing dialogue and iterative refinement (Gampell *et al.*, 2024).

Importantly, the review suggests that academics may play a particularly valuable mediating role in activating and sustaining this triad. Through initiating partnerships, connecting stakeholders, facilitating co-design, and negotiating different priorities, academics can help create conditions in which teachers and community knowledge are more meaningfully incorporated into curriculum development. This role should not position academics as dominant decision-makers, but rather as facilitators who support more equitable participation (Collins *et al.*, 2018), and knowledge exchange across stakeholder groups (Kelter *et al.*, 2021). Such mediation is particularly important given the recurring challenges identified across the literature, including power imbalances, competing priorities, limited resources, and difficulties sustaining engagement.

Triadic collaboration therefore represents a promising extension of existing dyadic partnerships, but its potential depends on moving beyond short-term or individually driven initiatives towards more sustained institutional support. Adequate time, funding, recognition of different forms of expertise, and structures for ongoing dialogue are needed to maintain reciprocal relationships. Given that triadic collaborations remain comparatively underexplored, further research is needed to examine how these partnerships can be initiated, mediated, and sustained across different educational, cultural, and geographical contexts. This review thus provides a conceptual framework for understanding how existing dyadic relationships may be connected and strengthened to support more sustainable and equitable triadic curriculum collaboration.

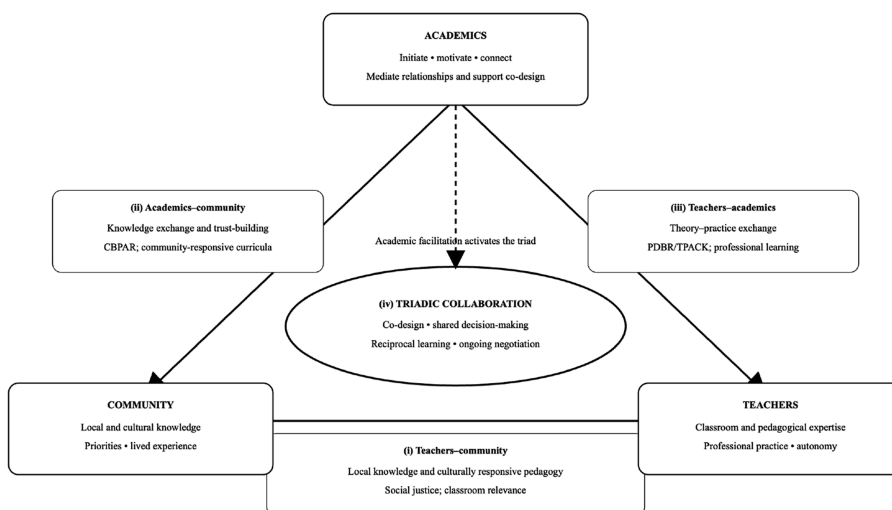


Figure 4. Conceptual framework of triadic collaboration among teachers, academics, and community. Source: Authors created with the assistance of Manus AI, 2026

4. Conclusion

This review underscores the transformative potential of collaborative curriculum development among teachers, academics, and community stakeholders in advancing equitable educational outcomes. By integrating local knowledge and prioritising cultural responsiveness, these multi-stakeholder partnerships foster inclusive learning environments that resonate with diverse student identities. However, while existing literature predominantly focuses on dyadic configurations, namely, teachers-community or academics-community interactions, this study highlights an urgent imperative for robust frameworks that support and formalise triadic collaborations connecting all three stakeholder groups simultaneously.

Synthesizing empirical research from the past decade, our analysis provides a comprehensive framework of best practices, structural barriers, and persistent challenges in collaborative curriculum design. By elevating the strategic importance of triadic partnerships, this review bridges a critical gap in the literature, offering actionable insights to advance both theoretical models and practical applications in the field. Crucially, these findings signal a call to action for educational policymakers to institutionalise and sustain collaborative initiatives. Establishing continuous organisational support, cultivating environments for reciprocal learning, and embedding shared decision-making structures are fundamental to maximising partnership efficacy.

To ensure long-term sustainability and overcome operational hurdles such as conflicting timelines and divergent institutional priorities, partnerships must move beyond ad-hoc, project-specific engagements toward enduring strategic alliances. This requires establishing transparent communication channels, securing dedicated funding streams, and providing structured professional development for all collaborators. Finally, future research must examine triadic dynamics across diverse global and non-Western educational contexts to better understand how socio-cultural settings influence partnership frameworks. Ultimately, fostering sustainable, reciprocal collaborations among schools, universities, and communities remain essential to building more equitable, resilient, and transformative educational systems.

Acknowledging the use of AI

Gemini AI was used for editorial assistance, grammar checking, and improving the clarity of the manuscript. The authors reviewed and edited all AI-generated text and take full responsibility for the final content. In addition, ChatGPT and Manus AI were used to assist in formatting and improving the visual clarity of the figures.

Appendix

Table A1. A summary of the charted data from the 29 papers categorised by collaboration type

Author(s) and year	Study context	Method of research	Discipline area	Teaching level	Participants
<i>Teachers-Community collaborations</i>					
Badenhorst et al. (2024)	United States	Qualitative	Language (English and Spanish)	Pre-school, primary and secondary (K-12)	18 pre-service and in-service teachers, 4 field supervisors, 6 administrators, and 4 community advocates
Barnes and Boyd (2021)	United States	Qualitative	Language (English)	Secondary	Pre-service teachers and diverse community members
<i>(continued)</i>					

Table A1. Continued

Author(s) and year	Study context	Method of research	Discipline area	Teaching level	Participants
Ferrarini (2023)	United States	Mixed-method	Inclusive education	Pre-school, primary and secondary (K-12)	29 pre-service teachers, school teachers, and local community organizations
Popielarz (2024)	United States	Qualitative	Social studies	Pre-school, primary and secondary (K-12)	10 pre-service teachers, 8 youth organizers, and 3 adult community allies
Popielarz and Galliher (2023)	United States	Qualitative	Social studies	Pre-school, primary and secondary (K-8)	22 pre-service teachers and local community members
<i>Academics – Community collaborations</i>					
Adler and Schlinzig (2025)	United States	Mixed-method	Sociology	Graduate	University students and staff, community partners and local residents
Collins <i>et al.</i> (2018)	United States	Quantitative	Psychology	Not specified	University researchers, community advisory board members, and the residents of the DESC ^a
Coombe <i>et al.</i> (2020)	United States	Mixed-method	Public health	Not specified	72 participants: 36 academic-community pairs, with academics mainly in public health and community members
Doubeni <i>et al.</i> (2022)	United States	Mixed-method	Public health	Undergraduate and graduate levels	University students and faculty staff, as well as community members and organization employees
Corić (2020)	Croatia	Qualitative	Music education	Undergraduate and graduate levels	University students, children with disabilities and their parents, volunteers, local organizations, and schools
Flaisher-Grinberg and Willson (2023)	United States	Mixed-method	Psychology	Undergraduate level	21 CLB ^b students, 47 SnP ^c students, and community participants from local animal shelters
Frank and Sieh (2016)	United Kingdom	Mixed-method	Urban planning	Undergraduate and graduate levels	University students, lecturers, and local authorities, grassroots activists to representatives of community organizations

(continued)

Table A1. Continued

Author(s) and year	Study context	Method of research	Discipline area	Teaching level	Participants
Jackson and Marques (2019)	United States	Mixed-method	Urban planning	Graduate level	University faculty and students, community residents and leaders, and local non-profit organizations
Olcoñ <i>et al.</i> (2023)	Australia	Qualitative	Social work education	Undergraduate and graduate levels	10 university teaching staff and a technical officer, and 10 community members
<i>Teachers – Academics collaborations</i>					
De Costa <i>et al.</i> (2024)	Nepal	Qualitative	Language (English)	Secondary	2 university academics, 6 graduate students and a Nepalese Ninth-grade English teacher
Evangelio <i>et al.</i> (2024)	Span	Qualitative	HbPE and SE ^d	Primary	1 primary PE teacher, 2 university academics, and 30 fifth-grade students
Fine (2022)	United States	Qualitative	Science	Secondary	3 secondary school science teachers, and a university academic
Huang and He (2023)	China	Qualitative	Science (Chemistry)	Secondary	6 pre-service science teachers, university academics, and local in-service teachers and secondary students
Lim (2023)	Singapore	Mixed-method	Language (English)	Primary and Secondary	4 university academics, 2 researchers, 3 external collaborators, and teachers from primary secondary schools
Lim and Nguyen (2023)	Singapore	Qualitative	Language (English)	Primary	2 university academics, 2 primary school English teachers, and 40 fourth-grade students
Nash-Patel <i>et al.</i> (2022)	United Kingdom	Qualitative	Health education	Students with special needs	15 university students, 7 students with special needs with their guardians, 2 arts/drama specialists; 2 university academics, 2 teachers from special school and 1 registered nurse
Nilsson and Lund (2022)	Sweden	Qualitative	Science	Primary	University academics, 14 primary science teachers, and approximately 60 primary school students
Tian (2022)	United States	Qualitative	Language (Chinese)	Primary	1 university academic, 22 third-grade students and 1 Mandarin teacher

(continued)

Table A1. Continued

Author(s) and year	Study context	Method of research	Discipline area	Teaching level	Participants
Wang and Wong (2019)	China	Qualitative	Language (English and Chinese)	Primary	43 teachers from 3 primary schools, 2 university academics, and 1 postgraduate student
<i>Teachers – Academics – Community collaborations</i>					
Bradford <i>et al.</i> (2023)	United States	Mixed-method	Science	Secondary	386 secondary students and 3 teachers from 2 schools, researchers from university, and local community members
Gampell <i>et al.</i> (2024)	New Zealand	Qualitative	Science	Primary and Secondary	About 90 school students, researchers from university, school teachers, and local emergency management personnel
Green (2016)	Australia	Mixed-method	Outdoor learning (Science and Maths)	Primary	45 pre-service teachers, 1 teacher educator, and 1 community outdoor educator
Penuel <i>et al.</i> (2022)	United States	Qualitative	Science (Chemistry)	Secondary	19 classroom teachers, 7 researchers from university, and 1 community science coordinator
Vaughn and de Beer (2020)	South Africa	Qualitative	STEM ^e	Primary and Secondary	37 science teachers, 40 math teachers, and 8 community members

Note(s): ^aDowntown Emergency Service Center, ^bCanine Learning and Behaviour, ^cSensation and Perception, ^dHealth-Based Physical Education (HbPE) and Sport Education (SE), ^eScience, Technology, Engineering, and Mathematics (STEM)

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