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Micro-Communities of Practice for Inclusive Science Teaching in Multilingual Indian Classrooms

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Abstract: Teachers face challenges in multilingual and multicultural classrooms, and often collaborate on problems. This study examines how middle-school science teachers collaborate to address linguistic and cultural diversity, through Communities of Practice (CoP) and Micro CoP (as one of the constructs) theoretical lenses. The subject of science teaching provides a uniquely demanding context: abstract concepts, technical vocabulary, and lab practices that amplify the challenges of multilingual and culturally diverse classrooms, since teachers must simultaneously translate specialized terms, simplify explanations across languages, and adapt examples or demonstrations to align with students' varied cultural backgrounds and lived experiences. We present the findings of the semi-structured interviews with two science teachers from a public and a private school using the thematic analysis approach. Findings show that teachers' collaboration enacted core CoP features. The key contribution of this study is an account of how micro-CoPs operate in diverse science classrooms in Indian urban contexts. Despite small-N, thick descriptions support transferability. Implications: design school-based learning that strengthens micro-CoPs, supports bilingual pedagogies, and recognises parents and external partners as routine collaborators.

Keywords: Communities of Practice (CoP), Micro- Communities of Practices (MCoP), Linguistic and cultural diversity, Science education, Teacher collaboration

1. Introduction

Classrooms in multilingual, multicultural contexts routinely challenge teachers to make content accessible while sustaining equitable participation. Collaboration among teachers is one powerful way such day-to-day problems are solved in practice. We examine these practices through the lens of Communities of Practice (CoP) theory proposed by Wenger (Wenger, 1998). In our study, we used CoP to describe how teachers collectively negotiate meaning, circulate resources, and refine inclusive strategies as part of their ordinary work. In multilingual science classrooms, where technical vocabulary and culturally situated phenomena (e.g., local environmental contexts, lab experiments) require careful mediation, collaboration becomes especially critical. While CoP has often been used to study teacher learning, we focus on how micro-CoPs, smaller, frequently interacting subgroups,address linguistic and cultural diversity in science classrooms, a well-documented challenge in multicultural settings (Mo et al., 2024). To ground our analysis empirically, we draw on semi-structured interviews with two middle-school science teachers from Mumbai, one from a public school and one from a private school.

1.1 *Contribution and Research Questions*

The paper addresses two research questions: (RQ1) How do middle school science teachers' collaborative practices reflect the defining characteristics of a Community of Practice

(CoP) in addressing language and cultural diversity? and (RQ2) How do micro-CoPs enact such practices in the classroom? Its contribution lies in offering an empirical account of teachers' collaborative strategies through the lens of micro-CoPs, showing how inclusion is negotiated collectively in the science classroom, where the cognitive and linguistic demands of the subject intensify challenges. By situating findings within CoP theory, and aligning them to key constructs and LPP, the paper informs the design of professional learning that emphasizes community-driven, culturally responsive practice as central to teacher professional development.

2. Background work

2.1 *Community of Practice (CoP) Theory and Teacher Collaboration*

Wenger's Community of Practice (CoP) model (Lave & Wenger 1991; Wenger 1998, 2015) provides a social learning framework to analyze how groups of practitioners (e.g. school teachers) collaborate over time. In Wenger's view, CoPs have three defining dimensions. The domain is a shared sphere of interest (e.g. subject matter or pedagogical issue) that gives the community its identity: membership implies commitment to that topic and the cultivation of a shared competence that shapes members' professional identities, who they are becoming as practitioners through participation and the artifacts they co-create. The community is the set of people engaged in joint activities: members interact regularly, build relationships, help one another, and develop a sense of belonging. Learning here often proceeds through legitimate peripheral participation (LPP), as newcomers engage in low-risk, recognized tasks alongside experienced peers and gradually move toward fuller participation. The practice is the body of shared resources (experiences, stories, tools, routines, problem-solving strategies) that community members create and use over time. These resources frequently function as boundary objects that travel across settings (e.g., departments, schools, parent groups), while brokers carry ideas between communities, enabling adaptation and alignment at the boundaries. In other words, beyond just meeting or networking, CoP members participate in a joint enterprise (the shared goals and norms) and build a shared repertoire of materials and methods. Learning in a CoP is inherently social: newcomers engage in legitimate peripheral participation, working with experienced peers and gradually moving toward full participation in the community's practice.

2.2 *Micro-Communities of Practice in K–12 Teacher Professional Development*

Ervin-Kassab and Drouin (2021) describe MCoPs as "areas of specialisation within a larger, complex CoP," emerging in a multi-year K–12 teacher development program. In their case study, two MCoPs formed around distinct content- and pedagogy-focused groups within the broader PD cohort. Similarly, Patton et al. (2005) found that a mentored PD project generated multiple overlapping CoPs, for teachers, mentors, and researchers, each with its own focus. Murray (2008) also notes that teacher-educator induction happens at "micro levels of the teaching team". These findings suggest that MCoPs often arise organically (for example, within grade-level teams, subject departments or co-teaching pairs) whenever teachers collaborate on a specific goal or role.

Micro-CoPs provide targeted collaborative learning that can directly improve classroom practice. Admiraal et al. (2012) note that teacher communities (including small subgroups) "are important for teacher learning and collaboration" and "contribute to teaching practice improvement" and school capacity. MCoPs often align with mentoring relationships. Patton et al. (2005) highlight that formal mentoring projects produce separate CoPs of mentors, mentees, and researchers. Being part of an MCoP helps teachers develop a sense of professional identity. Admiraal et al. (2012) identify group identity as a core feature of teacher communities

3. **Methodology**

A case study approach was used for the investigation into the practices of middle school science teachers, as it enables an in-depth, context-sensitive exploration of how teachers navigate linguistic and cultural diversity in real settings. This method is particularly suited for examining situated practices and social meaning-making within Communities of Practice (Yin, 2018). The methodological details are elucidated as follows:

3.1 *Participant details*

The study involved semi-structured interviews with two (N = 2; 1 male and 1 female) middle school science teachers from a government, and a private school in Mumbai, India. These schools were selected to ensure variation in socio-cultural and linguistic contexts and based on the presence of active teacher networks, and active NGO-led collaborations. Participants were identified through purposive sampling from these schools. The decision to focus on two teachers was intentional: as a preliminary study, it enabled us to generate thick descriptions of practices in two contrasting school contexts (public vs. private). This depth-oriented approach aligns with qualitative case study methodology (Yin, 2018) and enhances trustworthiness by situating findings in richly contextualized accounts rather than surface-level breadth. Male teacher was from a government school with 25 years of teaching experience and the female teacher was from a private school. To ensure anonymity while allowing for traceable attribution of practices, each teacher was assigned a pseudonym (T1 and T2), along with their self-identified gender: T1 (male) and T2 (female). Informed consent was obtained from all participants, and ethical clearance was secured through the institutional review board.

3.2 *Data collection*

Data for this study was collected through semi-structured interviews in English or Hindi via face to face interviews, lasting between 60 to 80 minutes. The interviews aimed at exploring teachers' experiences of addressing diversity, and strategies followed for inclusive science teaching including how these practices are developed collaboratively and adapted within their micro-CoPs. The semi-structured format of the interview enabled teachers to reflect on how they collaborate to handle cultural and linguistic diversities in their respective communities. Examples of interview questions include: " *How senior/ junior teachers helped you learn or adapt to new ways of teaching to address cultural and language diversity?*", and "*What kinds of things do you and your colleagues do together to support students from diverse cultural or language backgrounds?*". Audio recordings from the interviews were transcribed using the Cockatoo transcription tool (https://www.cockatoo.com/). Sections where teachers spoke in Hindi were transcribed manually by an expert and were then checked by another researcher for confirming its accuracy.

3.3 *Data analysis*

This study employed the Thematic analysis approach on the interview data (Braun & Clarke, 2006), where the analysis moved from an inductive stage to a deductive stage. The teachers' accounts and experiences were interpreted through the constructs of the Communities of Practice (CoP) framework (Lave & Wenger, 1991; Wenger, 1998; Wenger-Trayner & Wenger-Trayner, 2015), which served as the overarching theoretical lens. While the constructs provided the top-level categories, initial codes and sub-categories were generated inductively from the transcripts. These sub-categories were then mapped to their respective CoP constructs, allowing for analysis that was both grounded in participants' accounts and theoretically informed. Inductive analysis commenced with repeated reading of the interview transcripts to achieve familiarity and immersion in the data. All transcripts were read and re-

read to capture contextual details. Two researchers independently conducted line-by-line open coding, using a qualitative content analysis approach, to identify initial meaning units that captured how teachers enacted and experienced collaborative practices within their communities. This first step generated codes directly grounded in teachers' accounts of navigating linguistic and cultural diversity collaboratively in classrooms. Related codes were split, merged, or refined to form broader categories that minimized overlap.

Through constant comparison and discussion, related codes were refined into broader categories. For example, the category 'Collective Problem Solving Practices' includes sub-codes such as Peer Evaluation Loop and Peer-based Problem Solving. Similarly, the category 'Shared Responsibility for Student Support' included sub-codes such as, Morning Assembly for Character Building, and Culturally Respectful Interaction, while 'Guided or Principle-led Adaptations' encompassed Principal-Guided Language Adaptation and Department-Based Event Expertise. Discrepancies were reviewed with a third researcher and resolved by consensus to enhance trustworthiness. Data management and coding were supported by MAXQDA24. This combined inductive–deductive strategy kept sub-codes grounded in participants' lived experiences, while the CoP framework provided an interpretive structure to explain how teachers' practices, resources, and identities developed within and across communities.

Table 1: Codebook For RQ1 used in the study

Theme	Category	Definition
Mutual Engagement: Peer Collaboration and Inclusive Dialogue	Collective Problem Solving with Structured Feedback	Teachers co-construct solutions by mutually negotiating meaning in practice
	Peer Learning and Knowledge Exchange	Ongoing dialogue and joint work to support diversity
Shared Repertoire: Collective Resources and Inclusive Practices	Shared Problem-Solving Practices	Exchanging strategies to address teaching or student issues.
	Shared Instructional Artefacts	Co-creating and circulating teaching materials and resources
Joint Enterprise: Shared Goals and Inclusive Engagement	Shared Goals & Practices	Shared school wide routines for common goal
	Collaborative Cultural & Multilingual Engagement	Coordinated efforts to adapt teaching practices for inclusion
Boundary Practices: Cross-Community and Family Partnerships	Guided or Principle-led Adaptations	Adjusting teaching practices based on leadership guidance
	Cross-Community and & Parent–School Collaboration	Sharing and adapting ideas across grades, schools, and subject domains
	External Expertise Support	Coordinating with families to enhance student support

4. Findings

This section reports the findings for our two research questions, which are presented as emergent themes in the following sections to illustrate the practices employed by teachers to address cultural and linguistic diversity.

4.1 *Collaborative practices reflecting the characteristics of a CoP (RQ1)*

The analysis revealed that teachers' collaborative practices clearly align with the core characteristics of a CoP as described by Lave and Wenger (1991) and Wenger (1998).

Table 2: Codebook For RQ 2 used in the study

Theme	Category	Definition
Micro-CoPs in Practice	Collective Problem Solving Practices	Teachers collaborate to resolve classroom challenges with shared strategies
	Collective Value-Building Practices	Shared routines and events reinforce moral, and disciplinary values among students
Inclusive Cultural Norms and Multilingual Practice	Multilingual Pedagogical Practices	Teachers use multiple languages to ensure inclusion and comprehension
	Culturally Responsive Practices	Teaching adapts to students' cultural and religious contexts to foster participation
Collaborative Knowledge Exchange and Supporting Engagement Across Diversity	Knowledge Exchange (Resource & Idea Sharing)	Sharing resources, strategies, and ideas through formal and informal channels
	Adaptive Pedagogy and Peer Support	Teachers adapt methods for inclusion while drawing on colleagues' insights for shared problem-solving and support
Boundary links that amplify micro-CoPs	Institutional and Cross-Community Boundary Links	Institutional and inter-school connections circulate strategies and enrich micro-CoP practices
	Family and External Expertise Boundary Links	Parent and expert collaboration strengthens classroom support
Learning, identity, and newcomer participation inside micro-CoPs	Identity Transformation through Participation	Participation shifts teachers' roles toward collaborative, inclusive identities
	Legitimate Peripheral Participation and Reciprocal Exchange	Juniors contribute fresh ideas while seniors provide mentorship, creating reciprocal learning

These elements were deeply embedded in the routines and interactions of teachers' professional lives. The findings are elucidated as themes, which are elaborated as follows:

4.1.1 *Mutual Engagement (Peer Collaboration and Inclusive Dialogue)*

Across both schools, mutual engagement appeared in daily collaboration, where teachers addressed challenges through ***Collective Problem Solving with Structured Feedback***. *Peer-based problem solving* (T2) noted: *"We sit, we meet… our HOD asks us, do you have any idea? She listens to our suggestion, whatever is better"* and supported by *Peer Evaluation Loop* (T1), "*We discuss and try to evaluate whether our plans are proper and whether we are going in the proper direction or there are some issues",* enabling teachers to collectively adapt to linguistic and cultural differences. Teachers actively engaged in **P*eer Learning and Knowledge Exchange*** for inclusion through shared ideas, resources, and strategies. *Peer Idea Adaptation in Science Activities* (T2) *"Whoever was taking or will be taking science club what they will do or what they used to do , they gave me few ideas. So according to that, I did my own."* highlighted the value of colleague contributions. Beyond sharing, teachers fostered *Collaboration for Inclusion* (T1) through culturally attuned dialogue on sensitive issues: *"During teaching, there are certain things… which are culturally or linguistically very sensitive, religious etc., so we just keep it open for discussion".*

4.1.2 *Shared Repertoire (Collective Resources and Inclusive Practices)*

Teachers built a shared repertoire of resources, strategies, and artefacts through collaboration. ***Shared Problem-Solving Practices*** include *Cross-Grade Activity Exchange and Resource Sharing* (T2), where materials moved fluidly across levels: "*this is related to*

education, I share to my peer teachers…we sometimes adapt that". Teachers engaged in *Collaborative Problem-Solving for Student Issues* (T2), exchanging solutions to language and cultural challenges: *"When I get stuck with a student issue, I tell my colleague… they share how they handled similar cases".* ***Shared Instructional Artefacts*** emerged through *Collaborative Development & Sharing of Instructional Resource*s (T1), where teachers co-produced worksheets and lesson plans for varied needs: *"Every teacher makes different class worksheets. So the work is being divided among us".* This extended into *Shared Inclusive Practices* (T1) and *Curriculum-Embedded Event Artefacts* (T2) such as exhibitions and cultural projects: *"Maths day we conduct maths exhibitions… model of Pythagoras theorem".* Together, these artefacts formed an evolving repertoire responsive to diversity.

4.1.3 *Joint Enterprise (Shared Goals and Inclusive Engagement)*

The teachers worked toward shared goals with inclusion as a central aim. Teachers engaged in ***Shared Goals & Practices*** was evident in *Targeted Academic Support Meetings* (T2): *"We sit together after the test and decide which students need extra help."* Additionally, (T1) emphasized *Shared Vision for Inclusion* (T1): *"We try to facilitate and help each other adjust our choices so that students do not feel they are from a minority."* Together, these examples show how teachers aligned collective pedagogical goals with inclusive practice. ***Shared Responsibility for Student Support*** captures how teachers collectively supported students by aligning academic help with multilingual adaptations and culturally respectful practices, ensuring no learner was excluded. Teachers also reinforced values through *Morning Assembly for Character Building* (T2): *"After assembly, we need to tell how they need to behave here."* Similarly, in *Culturally Respectful Interaction* (T1), teachers responded sensitively to religious practices : *"During Ramadan, Musa is not eating… he is tired… it's religious and cultural beliefs that people are doing.''*

4.1.4 *Boundary practices (Cross-Community and Family Partnerships)*

Teachers did not work in isolation; they regularly drew on ideas, tools, and guidance from outside their classrooms and adapted them for their contexts. ***Guided or Principle-led Adaptations*** shaped this process, as seen in *Principal-Guided Language Adaptation and Department-Based Event Expertise* (T1) : *"Our principal earlier, she helped me. She told like not to use difficult English words, accent, mellow down on your accent, use simple words in school."* Teachers regularly engaged in ***Cross-Community and & Parent–School Collaboration*** to strengthen student support. Through *Cross-Community Resource & Knowledge Exchange* (T2), they shared activities across grades and schools: *"If you get activities related to higher grade, please send us also". Inter-CoP Knowledge Exchange* (T1) in monthly meetings allowed teachers from different schools to compare strategies and challenges: *"Once a month we discuss the general problems and we take input from all the different types of schools".* Beyond school walls, collaboration extended to families. *Parent–Teacher Feedback Loop and Dialogue* (T1, T2) ensured continuity between home and classroom: *"Parents told me what works at home, so I try it in class", "We discuss with parents… I suggested her to do that work, and later she told the child has improved" .* Together, these practices show how teachers bridged school and home boundaries to sustain problem-solving and support diverse learners. ***External Expertise Support*** strengthened the community through *Collaborative Strategy Development* (T1), as when an outside trainer helped launch a STEM activity: *"We collaborated with outside trainer… we successfully launched that STEM activity."* These examples demonstrate how boundary practices linked local classrooms with wider networks of knowledge and support.

4.2 *Operation of Micro-CoPs in addressing language and cultural diversity (RQ2)*

Drawing on the notion of micro-communities of practice (Ervin-Kassab, L., & Drouin, S. 2021) and analyzing the data, we operationalize micro-CoPs in our data as teacher groups that convened through brief planning and message threads, exchange artefacts and so on. Below

we show how such micro-CoPs operate to address language and cultural diversity through themes.

4.2.1 *Micro-CoPs in Practice*

The emergence and day-to-day functioning of micro-CoPs centered on addressing language and cultural diversity through collaboration. Collaborative Planning, Problem-Solving and Resource Development were evident in *Multi-Level and Cross-Domain Efforts* (T1): *"Collaboration with other language teachers also… they are facing difficulties in English comprehension"*, and in *Collaborative Problem Solution Finding* (T1): *"There are certain things… regarding being more flexible and giving more chance to those who are having difficulty in language comprehension".* ***Peer Support for Handling Diversity Challenges*** was evident in *Tiered Help-Seeking in Diversity Challenges,* (T2): *"First I ask my co-teachers; if I need more help, I go to the HOD. Only if needed, I approach the vice-principal or HM, going level wise."* and *Mentorship for Diversity-Inclusive Science Teaching*, (T1): *" We guide them with respect to handling the classroom and make them understand about the diversity."* These examples show how different micro-CoPs operated with tight membership, quick feedback loops, and visible changes in practice, differing from department-wide or principal-led initiatives by being faster, more localized, and driven by small teacher groups.

4.2.2 *Inclusive Cultural Norms and Multilingual Practice*

Micro-CoPs protected spaces for diversity-related dialogue through multilingual and culturally responsive practices. ***Multilingual Pedagogical Practices*** were evident in the use of *Multilingual Interaction Norm* (T2) : *"Whichever language is comfortable, we talk in that language."* and maintained in *Simplified Language for Comprehension and Assessment*, (T1) "*That is a language issue, but like that is a baseline challenge or problem for us. So our projects and activities do not involve a long write-ups.*" ***Culturally Responsive Practices*** appeared in *Equitable Treatment Across Cultural/Religious Absences* (T1), where teachers accommodated student absences during festivals: *"Jantati Festival, Dunga Picha, students remain absent, that time nobody talks because majority of students remain absent"* and *Cultural Linkages in Science Teaching (T2), ""Air pollution I can relate it to a festival Diwali … firecrackers … we should also enjoy and we should also save our Earth."*

4.2.3 *Collaborative Knowledge Exchange and Supporting Engagement Across Diversity*

Teachers sustained ***Knowledge Exchange (Resource & Idea Sharing)*** through *Structured Subject-Led Event Coordination* (T2), *"Maharashtra days are arranged by Marathi teachers. Certain events are to be hosted by certain subject teachers"* and *HOD-Mediated Idea Diffusion* (T2): *"If I am doing something new related to the subject I first tell my HOD; if she likes the idea, she tells other teachers, they will also do the same in their class."* This was reinforced by *Formal & Informal Staff Knowledge Sharing* (T1) *"Staff meetings once a month, informal meetings are every day, discussing at free time."* , ensuring contributions came from all teachers. Teachers engaged in ***Supporting Engagement Across Diversity*** by working together to address classroom challenges and adapt practices for inclusion. *Multilingual Confidence Building* (T1), and *Adapting Language and Project Methods for Inclusion* (T1) enabling participation despite linguistic barriers: *"Across the classes, Multilingual make them comfortable… they speak in Hindi and little English…modification in classroom language. Activity project, all free hand, so less writing work."* These strategies were refined collectively and extended through *Mutual Problem-Solving Exchanges* (T2): *"When I get stuck with a student issue, I tell my colleague… they share how they handled similar cases….".*

4.2.4 *Boundary Links that Amplify Micro-CoPs*

Teachers sustained inclusive practice through ***Institutional and Cross-Community Boundary Links***. Cross-school ties included *Cross-Community Resource & Knowledge Exchange* (T2): "If you get activities related to higher grade, please send us also" and *Inter-CoP Knowledge Exchange* (T1) during monthly meetings: *"Once a month we discuss the*

general problems and we take input from all the different types of schools." These boundary ties sustained resource circulation and consistent practices across settings. ***Family and External Expertise Boundary Links*** showed how teachers extended micro-CoPs by connecting with families and external actors. *Parent–Teacher Feedback Loops* (T2) emerged when parents shared home strategies: *"Parents told me what works at home, so I try it in class." Parent–Teacher Dialogues for Student Support* (T1) reinforced this continuity: *"We discuss with parents, I suggested her to do that work, and later she told the child has improved."* External actors enriched practice through *Collaborative Strategy Development with External Expertise* (T1): *"We collaborated with outside trainer… we successfully launched that STEM activity."* These boundary links integrated family insights and expert knowledge, strengthening teachers' capacity to address diversity.

4.2.5 *Learning, Identity, and Newcomer Participation in Micro-CoPs*

Teachers' engagement in micro-CoPs fostered ***Identity Transformation through Participation***, shifting from authority to inclusive and adaptive roles, reflected in the *Inclusive Facilitator Identity* (T1): *"Teacher is not a boss… my role is always to assist, be a friend, helper, and facilitator,"*; *Becoming a Collaborative Educator* (T2): *"Teacher's part is to learn and then teach. It sometimes is like learning from the kids also,"* and *Evolving Professional Identity* (T1) : *"Over the years, my role has changed with new methods."* These shifts show how Micro-CoPs supported teachers' professional growth and inclusive identities. ***Legitimate Peripheral Participation and Reciprocal Exchange*** showed how newcomers were integrated through mutual learning. Juniors enriched Micro-CoPs through *Ideas Contribution* (T2): *"Get involved in their discussion… no one should stay silent"* while seniors provided *Support via Collaborative Discussions* (T1) : *"We have the young teachers, the senior teachers, with them we discus, modify,"* and *Mentorship* (T2):*"Senior teachers, even with just a few more years of experience, have dealt with many types of students and backgrounds. It is important for us to learn from them, as they share ideas, suggest solutions, and explain how they overcame challenges."*, guiding classroom practice and diversity handling. Together, these practices show how micro-CoPs nurtured professional growth and integrated newcomers, sustaining inclusive teaching across generations.

5. Discussion and Conclusion

The findings from this preliminary study suggests that teachers' collaborative practices were not isolated acts of cooperation but instead constituted the enactment of a Community of Practice (CoPs). These practices embodied the defining CoPs characteristics of mutual engagement, shared repertoire, joint enterprise, boundary practices, identity construction, and legitimate peripheral participation (Lave & Wenger, 1991; Wenger, 1998).

Mutual engagement among teachers extended beyond routine collegial exchanges into structured feedback and peer-based problem solving that addressed linguistic and cultural challenges. Suggestions were openly discussed and refined in departmental meetings to ensure classroom plans remained contextually appropriate. Peer learning circulated resources and strategies, ranging from working math models to tested activities so that successful practices remained siloed. Engagement also extended culturally attuned dialogue, keeping language and culture open for discussion. Such practices align with Wenger's (1998) view of CoPS as reciprocal systems of accountability, mutual engagement in these micro-CoPs functioned as a negotiation space where teachers built trust, shared responsibility, and collectively shaped inclusive classroom norms.

The shared repertoire was sustained through ongoing exchange and adaptation of resources, strategies, and artefacts. Cross-grade sharing, peer consultations, co-produced worksheets and lesson plans ensured resources responsiveness to linguistic and cultural diversity. Beyond instructional tools, inclusive practices were embedded into events and exhibitions, linking pedagogy with students' social worlds. Rather than static "hand-me-

downs," these resources evolved through everyday negotiation, balancing curriculum demands with responsiveness to diversity. This reflects Wenger's (1998) view of shared repertoire as not just a toolkit but a set of negotiated meanings and norms. Uniquely, our findings show that these repertoires became cultural artefacts, continually reshaped to embed inclusivity and turn diversity into a routine resource for collective practice.

Our findings show that teachers' joint enterprise extended beyond curriculum delivery to a moral and professional commitment to equity, affirming Lave and Wenger's (1991) view that a joint enterprise is "never just a technical task" but a socially and ethically negotiated project. In these micro-CoPs, success meant not only syllabus completion but also practices that ensured equitable participation of students from different backgrounds. Assemblies and moral messaging positioned joint enterprise as shaping community values as well as instruction. Culturally responsive practices, from simplifying English into Hindi to accommodating Ramadan fasting show that joint enterprise in multilingual classrooms encompassed not just pedagogical goals but also the cultural and ethical work of inclusion, turning diversity into a shared resource for inclusive practice.

Teachers drew on leadership, peers, parents, and external experts to refine inclusive practice such as principals guided language use, departments embedded inclusion into cultural events, and inter-school exchanges circulated strategies. Parents contributed cultural and linguistic insights through feedback loops that linked home and classroom, while external trainers helped expand activities , showing the CoP as a boundary-spanning network where collaboration meant both sharing resources and negotiating cultural values (Wenger, 1998). Teachers' boundary practices extended CoPs beyond classrooms, where principals, parents, peers, and experts shaped language, resources, and strategies, making collaboration both knowledge exchange and value negotiation for diverse learners.

5.1 *Implications of CoP Characteristics*

These findings show that teachers' collaborations in diverse classrooms were not acts of compliance but community-driven negotiations of practice. Mutual engagement built trust and responsiveness; shared repertoires embedded inclusive strategies; joint enterprises aligned pedagogy with social values; boundary practices linked local work with wider expertise; and evolving identities marked professional growth. Thus, school-based CoPs acted as engines of adaptation and anchors of stability, helping teachers address linguistic and cultural diversity while sustaining a coherent professional ethos (Wenger, 1998).

5.2 *Micro-CoPs as Mechanisms for Navigating Linguistic and Cultural Diversity*

Small, purpose-bound groups (by subject, grade, or student case) functioned as micro-communities of practice (micro-CoPs), normalizing inclusive talk, coordinating multilingual clarity, and adapting supports as everyday mechanisms for navigating linguistic and cultural diversity. This resonates with Admiraal et al. (2012), who found that small teacher subgroups enhanced collaboration and school capacity, and with Ervin-Kassab and Drouin (2021), who showed that micro-CoPs emerge around specialized pedagogical concerns in professional development. Teachers in our study engaged in collaborative problem-solving, blending quick peer exchanges with cross-domain adaptations to support students struggling with comprehension, echoing Murray's (2008) emphasis on mentoring at micro-levels of teaching teams. They normalized diversity through multilingual dialogue and culturally responsive routines such as adjusting classroom language, accommodating festival-related absences, and embedding moral messaging in assemblies extending prior accounts of culturally responsive teacher practices (Gay, 2010). Knowledge exchange was sustained through both structured practices like HOD-mediated diffusion and subject-led coordination and informal staff interactions, similar to findings by Patton et al. (2005) on how mentoring projects produce overlapping CoPs with formal and informal exchanges. Boundary practices further strengthened micro-CoPs: principals encouraged simpler English, parents shared home-based insights, and external experts introduced new activities without displacing local

judgment. Participation also reshaped teacher identities, with newcomers gradually integrated through observation, co-teaching, and mentorship, reflecting legitimate peripheral participation (Lave & Wenger, 1991). Collectively, these practices illustrate how micro-CoPs enabled teachers to transform diversity from a classroom challenge into a shared resource for inclusive pedagogy. Taken together, these examples illustrate how different micro-CoPs formed around mentoring, peer exchanges, boundary links, and identity work, each operating in distinct ways while collectively helping teachers navigate linguistic and cultural diversity.

Limitations and Future Work

This preliminary study is based on two middle-school science teachers from two Mumbai schools; transferability is limited by the small, urban sample and subject focus. Data rely on self-reports from single interviews; we did not triangulate with classroom observations, student artifacts, or learning outcomes. Bilingual transcription may introduce nuance loss, and our hybrid inductive–deductive coding risks confirmatory bias toward CoPs constructs. Finally, social-desirability effects and researcher positionality may have shaped accounts.

Teacher professional development should expand across diverse regions and subjects with longitudinal follow-ups, using classroom observations, artefact audits, and stakeholder interviews to trace boundary practices. Mixed methods and design-based cycles can model micro-CoP dynamics and co-create supports such as bilingual templates, with outcomes focusing on student participation, comprehension, and teacher identity. In practice, school leaders should scaffold micro-CoPs through joint planning and resource sharing, while policymakers can formalize these structures to embed inclusion as a collective responsibility.

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