

Strengthening competence: teacher views on challenges in continuing professional development

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ABSTRACT

This study investigates the challenges master teachers face across the preparation, training, and follow-up stages of a continuing professional development (CPD) program on literacy and numeracy conducted by a provincial education office in Indonesia. A qualitative case study design was employed using semi-structured interviews with three purposively selected informants (master teachers) during a four-day offline training program in 2023. The results showed distinct challenges at each stage of the CPD process. During preparation, teachers struggled with time conflicts and late notifications. During training, weak time discipline, excessive hours, and substitute participant misalignment disrupted program delivery. In the follow-up stage, obstacles emerged at three levels: classroom (student competency variation, low reading habits, adaptation challenges, and time constraints), peer (limited teacher engagement), and district (overlapping schedules). These findings indicate that CPD effectiveness is influenced not only by program content but also by how logistical and systemic obstacles are addressed. Strengthening institutional support and scheduling coordination can enhance teacher engagement, refine classroom practice, and facilitate effective knowledge dissemination, ultimately promoting sustainable professional development outcomes.

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1. INTRODUCTION

Teachers are expected to engage regularly in continuing professional development (CPD) to maintain and enhance teaching quality. CPD is an essential component of lifelong learning that supports the sustained development of the twenty-first-century teacher competencies [1]. Evidence shows that teachers who receive more training and ongoing professional development are more confident, skilled, and effective in the classroom, reinforcing professional commitment [2], [3]. Similarly, professional development, qualification, and professional support are crucial for maintaining high-quality education [4]. A two-year international project identified three features of effective CPD, namely adequate training time, a focus on solving real teaching problems, and the development of specific teacher skills [5]. CPD is increasingly regarded as a practical and goal-oriented learning process shaped by the teacher context, with clear objectives, relevant content, and appropriate approaches [6].

Although CPD offers clear benefits, the implementation often varies across contexts and fails to meet essential quality standards. Several empirical studies have examined professional development challenges

across countries [7]–[11] and commonly categorized obstacles into three interrelated levels, namely systemic, classroom, and personal (teacher). Systemic obstacles, top-down approaches, and limited teacher participation in planning reduce the effectiveness and relevance [12]–[14]. A study by Maashi *et al.* [8] underscores systemic issues among science, technology, engineering, and mathematics (STEM) teachers, including disorganized schedules, an absence of clear community plans, and poor coordination in accessing STEM experts as factors aggravating systemic failures. Similarly, Mekie and Gezahegn [9] found a misalignment between CPD programs and EFL teacher needs, with administrator-selected content often failing to address subject-specific knowledge gaps and classroom requirements. Broader tensions such as accountability pressures, conflicting school goals, and teacher professional needs also complicate CPD implementation, underscoring the critical role of leadership in offering high-quality training to support teacher engagement and learning [15]. A review of design and technology professional development programs further identifies systemic shortcomings, such as lack of teacher preparedness, low-quality programs, and participation obstacles [11]. These results emphasize the need to revisit CPD practices by incorporating teacher perspectives and matching training content with the needs and expectations to achieve meaningful outcomes [16].

Pedagogical obstacles undermine the effectiveness of professional development by constraining classroom-level teaching and learning processes. In Ghana, teachers reported continuous needs in pedagogy, technology, and management, but found CPD programs irrelevant and poorly designed [12]. Ghanaian teachers in distance education (DE) programs further outlined challenges such as inflexible curricula, dependence on printed materials, and the use of traditional teaching methods [7]. Additional obstacles in Nepalese secondary schools include classroom implementation, insufficient teaching resources, and limited financial support [10]. These gaps weaken the connection between training and practice, hindering teacher ability to apply new methods in the classroom. However, pedagogical interventions such as quality teaching rounds (QTR) and active teaching and learning (ATL) are considered to enhance student achievement and skill development across diverse contexts [17], [18]. This shows the broader need to strengthen both subject matter and pedagogical content knowledge in areas such as inquiry-based instruction, teaching strategies, curriculum planning, and assessment [19]. Another major concern relates to individual-level constraints that limit teacher engagement in professional development activities. Studies in Malaysia and Philippines showed that teacher struggled to balance work demands, family obligations, financial pressures, excessive paperwork, limited technological skills, alongside issues of time management, motivation connectivity [20], [21].

In one Indonesian province, the regional education authority regularly conducts CPD programs to strengthen teacher competence in alignment with national initiatives of the Ministry of Education and Culture (MEC), which provide CPD activities based on teacher and school needs [22]. Despite these efforts, recent studies have documented persistent challenges in teacher professional development (TPD) implementation across the country [23], [24]. These challenges range from infrastructural and institutional constraints to weaknesses in program design and coherence. For instance, TPD reforms have reported inconsistent implementation of effective practices, including limited consideration of teachers' skills and backgrounds, insufficient training relevance, weak feedback mechanisms, and inadequate follow-up support [24]. Collectively, these studies predominantly examine TPD at the policy and program levels, focusing on systemic implementation constraints within the broader education system.

However, comparatively limited attention has been given to how such challenges are experienced by master teachers formally appointed by the provincial authorities to participate in and disseminate CPD initiatives. These teachers occupy a dual institutional role: they apply CPD content in their own classrooms while also facilitating its dissemination to peers at the district level. Positioned between provincial directives and school-level practice, they navigate challenges that emerge across preparation, training, and post-training phases. The lack of accounts grounded in their perspectives constrains understanding of how CPD initiatives are interpreted, enacted, and transmitted within everyday teaching contexts. Accordingly, this study explores the challenges as perceived by master teachers participating in a provincially facilitated literacy and numeracy CPD program. By examining their experiences throughout these phases, the study offers a practitioner-grounded understanding of CPD enactment within decentralized education systems, responding to calls for greater attention to teacher perspectives in professional development research [25].

2. METHOD

This study employed a qualitative research design [26], [27], which enables in-depth exploration of how individuals navigate real-world settings by capturing the richness of their experiences, thoughts, and perceptions [28]. This approach was selected because the study seeks to understand how master teachers perceive and respond to implementation challenges across different stages of a CPD program. Qualitative inquiry is well suited to examining context-specific experiences and the processes through which professional development is enacted in practice. A single-case design with embedded units of analysis was adopted [29], consistent with established approaches for defining and bounding cases in qualitative study [30]. The case

comprised a literacy and numeracy-focused CPD program facilitated by a provincial education authority. It was bounded by its implementation in 2023 across three selected secondary schools within one urban district, with activities coordinated at the regional level. The embedded units consisted of three master teachers officially designated within the program. Their roles as both classroom practitioners and CPD facilitators made them as information-rich cases capable of providing insight into challenges emerging before, during, and after implementation.

Participants were selected through purposive sampling (also referred to as judgmental sampling). This technique was appropriate as it allowed the inclusion of individuals capable of providing rich and relevant insights into the CPD program [26], [30]. Collecting in-depth data from a small number of information-rich cases aligns with qualitative case study research, which prioritizes depth over numerical breadth [27], [29]. The sufficiency of three participants is supported by their dual roles and involvement across all phases of the program. Given the limited and context-specific sample, the findings are not intended for statistical generalization but rather to analytical insight into CPD enactment within a provincial setting. Transferability is supported through detailed reporting of the study context and participant roles.

The CPD program was conducted in several batches throughout 2023, involving teachers from various subject areas such as science, social science, language, and mathematics. Each batch included more than 45 participants from different districts who participated in a four-day intensive training. This study focused on one cohort whose training content aligned closely with the research objective of examining the development of teachers' pedagogical competence. Focusing on a single cohort enabled a clearly bounded and contextually coherent exploration of teachers' experiences. Participants were drawn from senior secondary schools within one urban district under the same provincial education authority. Within this context, the selection of master teachers reflects the importance of involving experienced teachers who also serve as mentors in both pre-service and in-service programs [1].

Data were collected through semi-structured interviews, a method appropriate for case study research investigating participants' ideas, feelings, and experiences that are not directly observable [30]. The interview protocol covered three stages of CPD involvement: preparation, implementation, and follow-up practice. Individual face-to-face interviews were conducted with three participating teachers, each lasting 45-60 minutes. All interviews were audio-recorded and transcribed verbatim. Data analysis followed a five-stage qualitative cycle, comprising compilation, disassembly, reassembly, interpretation, and conclusion drawing [28]. The data were analyzed thematically to identify pattern meanings across participants' accounts while remaining attentive to stages-specific differences in implementation. NVivo software supported systematic coding and theme development. Credibility was strengthened through the use of a consistent interview protocol, member checking, and peer debriefing to enhance the trustworthiness of the interpretations.

3. RESULTS AND DISCUSSION

This section presents results on the challenges faced by three master teachers in a CPD program on literacy and numeracy, facilitated by a regional education authority. Based on semi-structured interviews and thematic analysis, the results are organized into three phases, namely preparation, implementation, and follow-up, reflecting both the interview design and how participants described experiences. Thematic map of challenges identified across CPD phases as shown in Figure 1.

3.1. Preparation phase challenges

This section explores challenges encountered by master teacher participants before the commencement of the CPD program. Two key sub-themes emerged from the experiences, namely time conflict burden and delayed notification. These early-stage issues underscore how scheduling and communication obstacles hindered teacher readiness for the training.

3.1.1. Time conflict burden

A central challenge during the preparation phase was the time conflict between participants' regular teaching duties and the demands of professional development. All three informants emphasized the difficulty of balancing school responsibilities with training schedules, particularly when these obligations overlapped. Informant 1 described the strain of maintaining classroom continuity:

"The obstacle is that I still have to manage my teaching hours at school. I can't leave the students without a teacher, so I have to find and pay a replacement, sometimes even a final-year student, even though I still question their competence."

To avoid leaving classes unattended, the teacher sought help from fellow teachers or final-year students. However, concerns remained regarding the capability of student substitutes and the potential impact on teaching quality during the teacher's absence. As the informant explained:

“It becomes a challenge when I’m away.”

This account indicates that attending training created additional logistical and emotional responsibilities beyond the teacher's formal role.

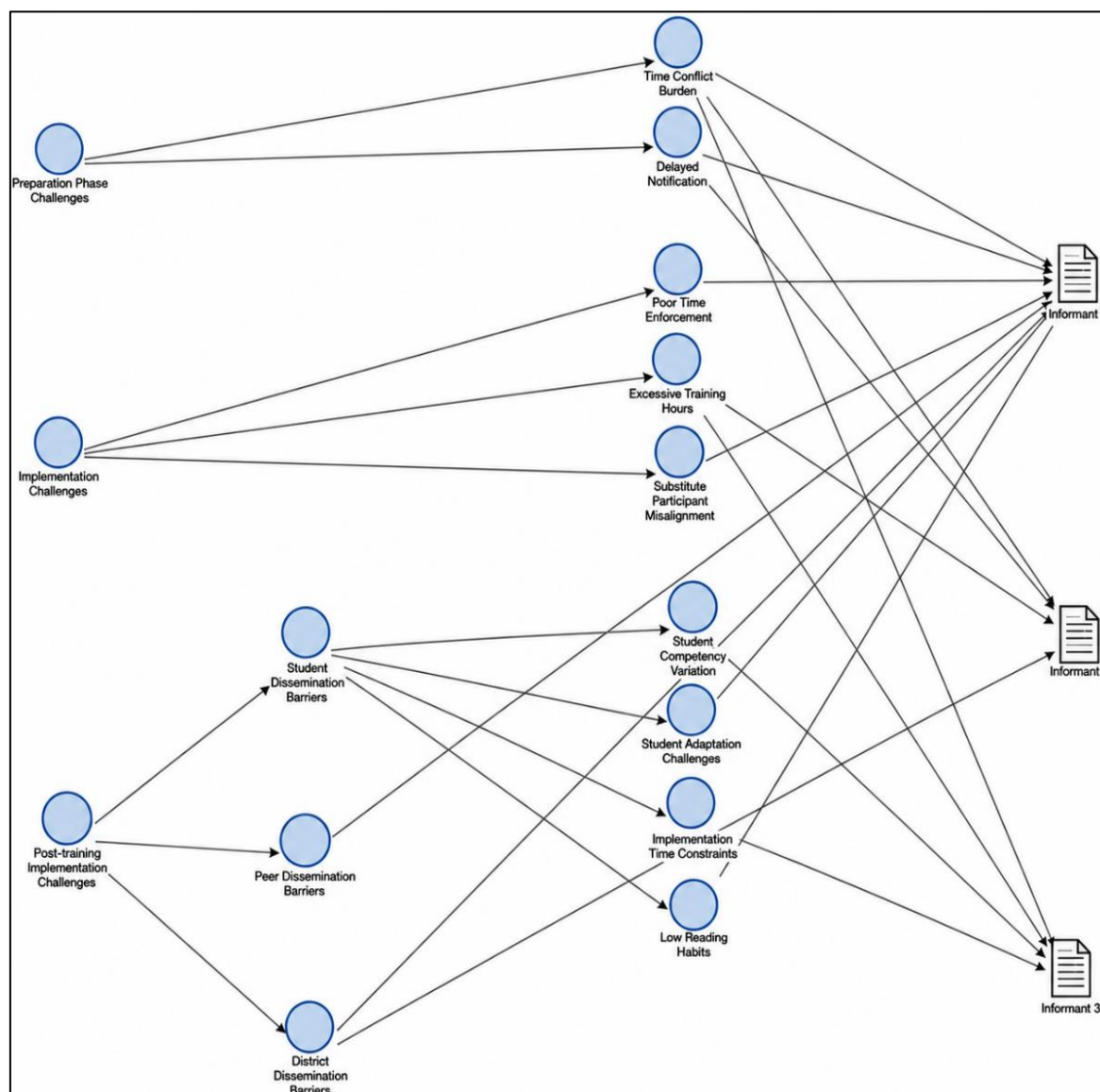


Figure 1. Thematic map of challenges identified across CPD phases

Informant 2 described similar time constraints but emphasized the financial consequences. Although the training assignment was issued by the education department, responsibility for arranging and paying substitutes teachers fell on the participants:

“We have to find substitute teachers ourselves and pay them out of pocket... the burden falls on the teacher... How can we work comfortably if even without receiving an honorarium, we still have to spend extra money?”

The informant further explained:

“Even though the assignment we’re carrying out is from the education department... the burden falls on the teacher, who must find and fund their own substitute.”

These statements suggest limited institutional support during the preparation stage. Teachers were required to manage substitute arrangements independently, which created additional financial pressure. Informant 3 also acknowledged the time conflict, but emphasized the emotional tension associated with leaving classroom responsibilities:

“One of the challenges is time, because our main duty is teaching at school. Attending training means leaving our responsibilities behind, and being away from students too often makes us feel uneasy.”

Although substitutes were arranged to maintain learning continuity, the Informant indicated that the quality of substitute teaching remained a concern:

“We provide a substitute so learning does not fall behind, but it is not always the same as being present in the classroom. That is why the school reminds us to find someone with actual teaching experience; otherwise, there may be complaints.”

Unlike Informants 1 and 2, Informant 3 noted that the school provided financial support for substitute teachers when the training was formally assigned:

“Except for the substitute where we participate as participants — those are still covered.”

This experience shows variation in school-level support. While the logistical responsibility of arranging substitutes remained, the financial burden was not always borne by the participant. Informant 1 also highlighted the personal impact of training participation on domestic responsibilities:

“Moreover, aside from being teachers, we are also housewives. At home, even things like washing the refrigerator can’t get done because we [teachers] don’t have time, that’s also a constraint.”

This statement suggests that professional development participation may intensify time-related pressures by interfering with domestic responsibilities. Taken together, the account of the three participants indicates that time conflict, substitute arrangements, and financial costs were the primary challenges during the preparation phase of CPD participation.

These findings suggest that participation in professional development can generate multiple burdens for teachers when institutional support mechanisms are limited. Prior research similarly identifies time constraints often impede teacher participation in professional development [31]. The present findings extend this evidence by demonstrating that teachers may also face financial and emotional pressures when substitute arrangements are not adequately supported. Informants 1 and 2 were required to both arrange and personally fund substitute teachers, despite participating in an officially assigned program. This situation indicates a policy-practice gap in which formal training assignments were not matched with sufficient institutional support. Similar studies identify limited time, funding, and organizational support as common obstacles to professional development participation [32]. Further research shows that successful professional development depends on adequate logistical planning and institutional support [33]. Without such support, teachers may bear the practical costs of participation.

The experience of Informant 3 illustrates how school-level support can mitigate these challenges. When financial assistance for substitute teachers is provided, the burden on participants may be reduced. The variation underscores the importance of school leadership and institutional backing in shaping teachers’ engagement in professional development. Prior research indicates that leadership support and emotional stress influence teacher motivation to participate in professional learning activities [34]. These conditions created both logistical strain and emotional tension related to teachers’ absence from their classrooms. From the perspective of adult learning theory, adult learners are strongly driven by their professional responsibilities and real-life contexts [35]. This suggests that CPD policies should consider teachers’ workload conditions and provide structural support, including workload adjustments and funding for substitute teachers.

3.1.2. Delayed training notification

Another challenge during the preparation phase was the late or sudden notification of training schedules, which had a ripple effect on teacher ability to plan and participate effectively. Although the program aimed to support professional development, participants noted that the lack of timely communication increased their logistical burden.

Informant 1 indicated that official training information was often received late. The participant shared:

“It’s often late, even though when we look at the letter, the date is the same as the one sent to the regions.”

This statement suggests that the delay did not occur at the central (provincial) level but more likely during the distribution process at intermediary levels such as district offices or schools. Informant 1 also expressed frustration with the recurring delays:

“Oh, so it’s like that too, the people from the city are also late.”
“Even though we are close to the fire, why is the information always late?”

These comments indicate that communication delays occurred not only in remote areas but also in locations closer to administrative centers. Such inefficiencies hinder teachers’ ability to maintain classroom continuity, coordinate substitutes, and manage personal responsibilities.

Informant 2 reinforced this concern, noting that scheduling announcements were often made suddenly:

“Most of the obstacles are related to the scheduling, sometimes a lot of the training is often announced suddenly.”

The sudden notification created uncertainty and time pressure, forcing teachers to make last-minute adjustments to their teaching schedules and routines. It also complicated the process of arranging substitute teachers, an issue previously highlighted under the sub-theme of time conflict burden.

This finding indicates that delayed or last-minute notifications limit teachers’ readiness to participate effectively in CPD programs. Weak communication, whether at the district level or within schools, undermines preparation and increase professional pressure. Previous studies similarly identify ineffective communication as a major obstacle to CPD participation [36], [37]. Research has also shown that insufficient information about available CPD opportunities can limit teachers’ participation [38]. The findings of this study suggest that late notification further complicates existing workload pressures and substitute arrangements. Inconsistent information flow may also reduce teachers’ autonomy and undermine the objectives of professional development. This suggests an implementation gap between CPD policy design and its execution at the district and school levels. The persistence of delays across both central and remote areas indicates that the issue is structural rather than geographic, reflecting weak coordination among administrative actors. Therefore, CPD providers should strengthen communication channels and ensure the timely dissemination of training information to support teacher participation.

3.2. Training implementation challenges

During implementation, participants encountered obstacles such as poor time enforcement, excessive training hours, and poorly aligned substitute participants who were not well-suited to the program’s objectives, disrupting concentration and engagement. These challenges reduced learning quality and caused fatigue and frustration among core teachers.

3.2.1. Poor time enforcement

A notable concern raised during program implementation was inconsistent time management across training sites. Weak schedule enforcement, specifically during afternoon sessions, disrupted the flow of activities. One informant explained:

“What often happens at one of the training locations is that, especially in the afternoon, some participants often take a long time to ask for permission to leave, so there needs to be more firmness in addressing this.”

This statement suggests a procedural weakness in training implementation, particularly in maintaining consistent time discipline during training sessions. Weak schedule enforcement can interrupt learning activities, reduce participant concentration and limit opportunities for interaction. Previous studies indicate that

professional development is most effective when it provides sufficient and sustained learning time [39]. However, effectiveness depends not only on the amount of time allocated but also on how productively that time supports meaningful teacher learning [40]. This situation suggests a challenge to the principle of readiness to learn in adult learning theory [35], which emphasizes that adult learners benefit from well-structured and purposeful learning environments. Therefore, strengthening monitoring and enforcing time discipline during training sessions are essential to support both administrative accountability and meaningful learning outcomes.

3.2.2. Excessive training hours

Beyond schedule enforcement, participants reported that the excessive duration of daily sessions posed a major challenge. Training activities frequently extended late into the evening and resumed early the next morning, limiting time for rest and recovery. Informant 2 stated:

“The training often runs late into the night...sometimes until after 10 p.m., and then starts again early the next morning at 8 a.m. This leaves teachers less time to rest.”

Informant 3 expressed a similar concern:

“We worked from morning until around 10 p.m. for several days, which made us tired and the program feel less effective.”

These accounts indicate that the compressed schedule reduced opportunities for rest and contributed to physical exhaustion and diminished concentration. This situation suggests a tension between training intensity and participant well-being. Extended sessions with limited recovery may overload participants' cognitive capacity and reduce learning effectiveness. Previous studies show that heavy teacher workload, including administrative tasks and extended working hours, can undermine well-being and contribute to stress and burnout [41]. Cognitive load theory emphasizes the importance of sequencing learning content, providing problem-solving support, encouraging productive mental effort, and adapting instruction to learner expertise [42]. When training schedules are excessively intensive, they may increase extraneous cognitive load, which remains largely within instructors' control and can be minimized through better instructional design [43]. Such conditions may reduce motivation, engagement, and the long-term retention of training content. These findings suggest that CPD providers should balance training intensity with adequate rest time. Designing schedules that consider teachers' cognitive and physical capacity can help maintain engagement and improve the effectiveness of professional learning.

3.2.3. Substitute participant misalignment

Another implementation issue concerned the substitution of participants. Although original trainees were selected based on their teaching roles and subject expertise, replacement participants did not always meet the intended criteria. This mismatch sometimes reduced training relevance and disrupted learning continuity. One informant expressed that:

“Even if it is not a core teacher, the participant should still meet the given criteria. Schools should not send just anyone, because when replacements are honorary teachers, sometimes they don't really have much impact.” (Informant 1)

Although the program primarily targeted core teachers, challenges emerged when absent participants were replaced by individuals who did not meet the established selection criteria. This situation indicates inconsistencies in participant selection and suggests weaknesses in the implementation process.

Previous research indicates that effective CPD requires alignment between participant background and training content to ensure relevance and meaningful application [33]. Studies also show that ineffective participant targeting and inconsistent implementation of best practices can undermine training quality and lead to systemic incoherence rather than purely technical weaknesses [24], [44]. In this study, Informant 1 indicated that such inconsistencies disrupted the learning process and weakened the connection between participant roles and training objectives. These findings suggest that clearer procedures for participant replacement are necessary. Education offices and schools should ensure that substitute participants fulfil the required qualifications and are actively engaged in relevant teaching roles. Maintaining alignment between participant expertise and training content is crucial to preserve program coherence and strengthen the long-term effectiveness of professional development initiatives.

3.3. Post-training implementation challenges

Upon completion of the training, participants faced challenges in applying and disseminating newly acquired knowledge. These difficulties affected both individual teaching practices and the wider transfer of learning at school and district levels. This section examines three critical constraints in the post-training phase, namely student, peer, and district-level dissemination obstacles. Each sub-theme underscores contextual factors that limited the transfer of training outcomes into sustained practice.

3.3.1. Student-level dissemination obstacles

Several student-level challenges were identified that hindered the dissemination of training outcomes. These challenges included student competency variation, student adaptation challenges, low reading habits, and implementation time constraints.

a. Student competency variation

A key post-training dissemination challenge was the wide variation in student competencies, particularly in schools with heterogeneous intakes. In school C, for instance, 60% of students were admitted through local community quotas and 40% through entrance examinations. This created classrooms where students with markedly different abilities were taught together. Informant 3 stated that:

“There are conceptual challenges due to the wide range of student competencies at School C. Because 60% of the students are admitted from surrounding communities and 40% through entrance tests, classes include students with very diverse abilities, from low to high levels. As a result, we have to vary our teaching methods to reach all students.”

Such diversity made it difficult for teachers to apply the training content consistently, as some instructional strategies were hard to adapt to uneven levels of understanding. Teachers were required to differentiate instruction extensively, which increased both cognitive and practical demands during dissemination.

These findings indicate the complexity of implementing uniform training strategies in mixed ability classrooms. Previous studies confirm that effective teaching in diverse classes requires instruction tailored to student readiness, interests, and learning profiles [45]. A study in New Zealand also found that lower-achieving classes often receive more tightly controlled instruction and fewer opportunities for autonomy than higher-achieving groups [46]. Thus, differences in classroom composition require teachers to adjust instructional pace and methods, which may unintentionally modify the strategies promoted during training. These findings suggest that effective dissemination depends not only on teacher readiness but also on institutional support for differentiated learning. Without such support, literacy and numeracy-focused training content may not be implemented consistently across classrooms with diverse student abilities.

b. Student adaptation challenges

A further obstacle to dissemination arose from students' difficulties in adapting to new instructional approaches. Although the training programs promoted literacy-oriented strategies such as engaging with extended texts, many students responded with resistance or discomfort. As one teacher remarked:

“When it comes to literacy, students always complain that their teachers give them long texts, perhaps they've become used to being given direct questions.” (Informant 1)

This response indicates a misalignment between the training's pedagogical vision and students' established learning habits. Students who are accustomed to short or direct questions may struggle when asked to engage with longer texts that require deeper reading and interpretation. Previous research similarly notes that instructional materials are often adapted by adding or modifying activities rather than simplifying or reorganizing them, which can lead to mismatched difficulty levels and low learner competence [47]. However, these challenges were not experienced uniformly. Informant 2 reported no major difficulty in applying similar strategies and attributed this to students' prior exposure to diverse reading materials:

“I've already implemented it because I use advanced reading texts from standardized proficiency tests including formats such as multiple choice, true-false, not given, incomplete texts, and so on. With this kind of variation, it's nothing new for my students.”

These contrasting experiences suggest that student readiness plays a critical role in shaping how teachers implement literacy-oriented strategies after training. The variation across classrooms indicates that the program assumed a relatively homogeneous level of student preparedness, while in practice schools differ considerably in students' prior learning experiences. Consequently, teachers working with students who have limited literacy exposure may face greater classroom resistance, whereas teachers whose students are already familiar with diverse reading tasks may implement the strategies more smoothly. This variation indicates the

program's limited contextual responsiveness and the absence of differentiated implementation strategies. To ensure effectiveness at scale, CPD initiatives should consider both teacher readiness and student preparedness as interdependent factors supporting sustainable pedagogical change.

c. Low reading habits

Aside from adaptation challenges, a persistent obstacle in the post-training phase was students' low engagement with reading tasks. Despite efforts to integrate literacy across subjects, many students resisted longer or text-rich assignments, which hindered the implementation of literacy-focused pedagogical strategies. One informant explained:

"It's a habit issue. Students aren't used to reading, especially long texts... and when given questions, they often do not read but simply voice them." (Informant 1)

This comment indicates that some students increasingly bypass reading by using voice-input search tools (e.g., Google Voice) to obtain answers. Instead of engaging with written texts, they rely on quick technology-mediated solutions. This behavior suggests a shift toward surface-level information retrieval, which weakens the deeper literacy engagement promoted by the training program.

Although the program emphasized literacy and numeracy integration across subjects, its effectiveness also depended on students' willingness to engage with reading tasks. When students avoid reading or rely on technological shortcuts, the intended literacy outcomes become difficult to achieve. Such habits reduce sustained engagement with texts and limit deeper comprehension. Prior research showed that students' reading habits strongly influence academic performance and reading comprehension [48]–[50]. These findings suggest that fostering a school-wide reading culture and promoting responsible digital literacy practices are essential for sustaining the impact of literacy-focused professional development.

d. Implementation time constraints

Another major post-training challenge was the limited instructional time available to incorporate newly learned literacy and numeracy strategies into regular lessons. Teachers often struggled to balance curriculum demands with the instructional approaches introduced during training. Informant 3 reported that tight schedules and external academic demands restricted opportunities for meaningful instructional change:

"The main constraint is time. We already have curriculum targets, but with only two or three hours of lessons per week, the time is very short. There should be time for enrichment or reflection, But at School C these sessions were handled by external tutors, so our time to reflect was quite limited and not optimal."

This statement indicates a structural obstacle to implementing training outcomes. The pressure to meet curriculum targets within limited instructional hours reduced teachers' opportunities to experiment with newly learned strategies. Informant 3 further reinforced that enrichment activities, such as exam preparation, were outsourced to external tutors, which limited teachers' ability to apply the training approaches in classroom practice. However, experiences varied across schools. Informant 2 reported no significant difficulties in implementing the strategies:

"Actually, there weren't any. There were no obstacles. Nothing was particularly difficult."

This contrast suggests that post-training implementation is influenced by institutional conditions such as workload distribution and school support. Insufficient instructional time, combined with competing academic priorities, may restrict teachers' capacity to integrate new practices into routine instruction. Prior studies similarly indicate that limited instructional time and associated time pressure, along with institutional expectations, can restrict the transfer of professional development outcomes into classroom practice [51], [52]. Darling-Hammond *et al.* [39] argue that even well-designed professional development programs may fail when implementation is hindered by systemic constraints such as time pressure. Other studies also demonstrate that teacher engagement in CPD is shaped by institutional support, with insufficient backing limiting implementation [14], [53]. These findings suggest that aligning school policies, especially scheduling structures and workload management, with professional development objectives is essential for sustaining instructional change and maximizing the long-term impact of CPD initiatives.

3.3.2. Peer-level dissemination obstacles

A key post-training challenge was the dissemination of literacy and numeracy concepts from trained teachers to their peers. Although resistance was limited in some schools, others experienced misconceptions

and uneven teacher engagement during the dissemination process. Informant 1 explained that misunderstanding about the scope of literacy and numeracy created obstacles among teachers:

“At first, literacy and numeracy were still unfamiliar to the teachers. Many colleagues thought literacy was only the responsibility of language teachers and numeracy only for math-related subjects, so others felt they had no role, even though in reality everyone should be involved.”

This statement indicates that some teachers perceived literacy and numeracy as subject-specific responsibilities rather than cross-disciplinary competencies. Such misconception may limit the integration of literacy and numeracy practices across subjects and weaken the intended school-wide impact of the training. However, the experiences reported by other informants differed. Informant 2 described a more supportive environment:

“We didn’t face any obstacles because the school fully supported the programs organized by the learning community.”

Similarly, Informant 3 added:

“The schools that received the dissemination did not face major challenges; most were able to manage and participate well.”

These contrasting experiences suggest that the success of peer dissemination varies across schools and may depend on institutional conditions such as leadership support and collaborative culture.

Teachers’ reluctance to share responsibility for literacy and numeracy may hinder collective efforts to integrate these practices across subjects. Previous studies similarly report that teacher collaboration remains limited despite its recognized value for improving teaching and student learning, with time constraints, limited opportunities, and low willingness to share practices often identified as obstacles [54], [55]. The variation across schools in this study suggests that successful dissemination depends not only on individual teacher commitment but also on collaborative climate and administrative support. Research consistently highlights collaboration as a key driver of effective teacher professional development, although sustaining collaborative practices over time remains uncertain [56]. Effective professional development provides opportunities for idea-sharing and community-building, which can strengthen teaching culture and instructional practice across schools [39]. Teacher collaboration can vary in focus and depth and is influenced by both facilitating and hindering factors that shape opportunities for collaborative learning [57]. These findings suggest that effective professional development initiatives require school-level support that promotes collaboration and shared responsibility among teachers. Without such support, the dissemination of training outcomes may remain uneven across schools.

3.3.3. District-level dissemination obstacles

The final post-training challenge was the misalignment between district-level dissemination activities and teachers’ schedules. Although district follow-ups were intended to reinforce training outcomes, their effectiveness was often limited by poor scheduling and competing teaching responsibilities. Dissemination sessions were often scheduled immediately after school hours, when teachers were still managing teaching duties or family responsibilities. One teacher explained:

“We finish teaching around 2 o’clock. By the time we get home and others arrive around 3, we still haven’t finished the material. After that, everyone is busy picking up their children and so on. So, I think it’s not effective.” (Informant 1)

Another teacher reported a similar experience:

“The time feels too rushed. We finish teaching at around 2 or 2:30, and by then we already have to be at the training location. The time is very tight because dissemination takes place on the same day as our teaching duties.” (Informant 2)

These excerpts indicate that follow-up activities scheduled without considering teachers’ time constraints were often perceived as burdensome rather than a meaningful extension of learning.

This finding suggests that teacher engagement in post-training activities is strongly shaped by workload conditions and competing responsibilities, which can limit sustained participation in district-level dissemination activities. Previous studies identify scheduling conflicts and limited time as major obstacles to effective professional development [58]. Research also highlights the need for policy-level adjustments to

school timetables [39], while teachers often perceive time as a complex constraint requiring flexibility to support meaningful engagement in professional learning [59]. These findings indicate that CPD programs should incorporate context-responsive scheduling and institutional flexibility. Without such adjustments, dissemination activities may be difficult to sustain, limiting the broader impact of CPD across schools and districts.

4. CONCLUSION

This study explored the challenges faced by master teachers participating in a CPD program on literacy and numeracy facilitated by a regional education authority in Indonesia. The findings reveal that teachers encountered time conflicts and late notifications during the preparation phase, disruptions from weak time discipline, excessive training hours, and substitute participant misalignment during implementation, as well as obstacles to classroom application and dissemination in the follow-up stage. These insights, drawn from master teachers' perspectives, suggest that the effectiveness of CPD depends both on program content and on how logistical and systemic challenges are managed throughout the training cycle. Consistent with adult learning theory, effective professional growth requires relevance, timing, and supportive conditions, while workload theory shows the pressures that arise when training demands compete with core teaching duties. This study contributes by revealing how these challenges manifest uniquely for master teachers who serve dual roles as mentors and practitioners, an area rarely examined in CPD studies. The findings hold policy significance for designing context-responsive and sustainable CPD frameworks within decentralized education systems. However, this study is limited by the small number of participants and its reliance on master teacher perspectives within a single regional context. Future research could extend this work by incorporating the perspectives of the target teachers and other stakeholders across multiple districts to deepen understanding of CPD implementation and outcomes.

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Name of Author	C	M	So	Va	Fo	I	R	D	O	E	Vi	Su	P	Fu
Elfia	✓	✓	✓	✓	✓	✓		✓	✓		✓		✓	✓
Faridah Mydin Kutty	✓	✓		✓	✓		✓			✓		✓	✓	✓
Shahlan Surat	✓	✓		✓	✓		✓			✓		✓	✓	✓

C : **C**onceptualization

M : **M**ethodology

So : **S**oftware

Va : **V**alidation

Fo : **F**ormal analysis

I : **I**nvestigation

R : **R**esources

D : **D**ata Curation

O : Writing - **O**riginal Draft

E : Writing - Review & **E**ditng

Vi : **V**isualization

Su : **S**upervision

P : **P**roject administration

Fu : **F**unding acquisition

CONFLICT OF INTEREST STATEMENT

The authors have no relevant financial or non-financial interests to disclose.

INFORMED CONSENT

Informed consent was obtained from all three master teacher participants. Participation was voluntary, and participants were assured of confidentiality and their right to withdraw at any time.

DATA AVAILABILITY

The data supporting the findings of this study are available from the corresponding author, [FMK], upon reasonable request. Due to confidentiality and privacy considerations, the data are not publicly available.

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