

# Influence of Continuous Professional Development on Teacher Competencies: The Moderating Role of School Leadership Support

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## ABSTRACT

This study investigated the influence of continuous professional development (CPD) on teacher competency (TC) and assessing how school leadership support (SLS) moderates this relationship among junior high school teachers in the Amansie Central District of Ghana. The research used a convergent mixed-methods design. Quantitative data were collected through standardized questionnaires and analyzed using Partial Least Squares Structural Equation Modelling (PLS-SEM) with 10,000 bootstrap samples, while non-parametric tests such as the Mann-Whitney U and Wilcoxon H-test were also applied. Qualitative responses were gathered through open-ended questions and analyzed thematically. Results showed that many teachers in the district had high levels of competency, especially in teaching methods, classroom management, assessment, and subject knowledge. Teachers who participated in CPD activities demonstrated stronger professional practices. The study also revealed that SLS positively moderated the relationship between CPD and TC. When school leaders actively supported CPD efforts by sharing information, giving encouragement, and providing resources, the influence of CPD on competency became stronger. Yet, this moderating effect was also minimal, mainly due to inconsistent support across schools. Furthermore, there were no discernible differences in competency between male and female teachers, indicating that both sexes function equally in the classroom. The main challenges for effective CPD were financial constraints, inadequate availability of resources, poor internet connection, and lack of motivation coupled with lack of relevance of CPD programs. Conclusion Findings suggest that the District Education Directorate and school leadership need to collaborate to overcome financial and logistical barriers, enhance the quality of CPD, and make it equitably accessible to all teachers. These efforts will help to improve the impact of CPD and build stronger teacher capacities. This research adds practical knowledge to the field by showing how teacher development can be improved when CPD efforts are backed by strong and consistent school leadership.

## INTRODUCTION

### Background to the Study

Teachers serve as the main agents for the implementation of any educational policy. It means there is the need to adapt their abilities and knowledge to be current to implement educational policy effectively. Many academics emphasize that teachers require assistance to carry out their crucial role in implementing educational changes (Darling-Hammond & Oakes, 2019; Granger, Bevis, Southerland, & Saka, 2019). This can be achieved when they undergo continuous professional development. The continuous process by which educators actively participate in learning activities throughout is known as CPD. Their goal in advancing their professions is to increase their knowledge, abilities, and teaching methods. This agrees with the education strategic plan 2030, thus establishing a system to regulate the effectiveness of educational programs and initiatives is very important (Ghana education service, 2020) By keeping up with contemporary instructional trends, students may improve their results (Abakah et al., 2023). CPD is not just about the teacher acquiring new information but is about him actively applying what has been learned to refine his teaching strategies to positively influence students' learning (Abakah et al., 2023). The main components of CPD are collaboration, content concentration, active teaching, and collective teacher participation (Main and Pendergast, 2015; Abonyi et al., 2020). There is the need to study teachers' CPD to improve teaching quality and address evolving educational needs. Intensive examination of CPD in the Amansie Central District can help identify difficulties in participating in CPD or accessing it, as well

as the functions of school leadership who advocate CPD. According to research, effective CPD requires support from school administrators (Ofori-Atta, 2020).

School leadership support involves active engagement from school leaders in guiding, sustaining, and facilitating the professional development of their instructional staff. Effective leaders ensure that continuous professional development is strategically aligned with both student learning goals and teacher growth needs, while consistently providing the motivation and encouragement necessary for implementation. (Awodiji & Naicker, 2023; IEPA, 2024; Ofori-Atta, 2020; Stevenson et al., 2016). It covers needs analysis, curriculum development, scheduling, coaching and mentoring, evaluation and feedback, and fostering a healthy school climate. Teachers are more likely to participate and feel appreciated in their professional development when leaders actively support and encourage CPD, which is why SLS is crucial for CPD (Awodiji & Naicker, 2023). Additionally, school leaders can ensure that CPD activities directly contribute to achieving the school's strategic priorities and improvement plans. Moreover, they can guarantee that teachers are accessing high-quality professional learning experiences (Stevenson et al., 2016). As school leaders support the implementation of CPD, it will enhance teacher competencies (TC) in the classroom.

TC refers to the set of skills, knowledge, and attitude that a teacher needs to effectively deliver quality instructions. According to Bouley et al. (2015), competence encompasses not only knowledge and skills but also a willingness to complete a task. This suggests that competence is a construct that encompasses cognitive and situational skills, such as reasoning, that are evident in the classroom, as well as personal traits like attitudes, values, and beliefs toward teaching (Bloemke & Kaiser, 2017). It covers areas like subject matter expertise, pedagogical practices, classroom management, student assessment, cultural awareness and sensitivity, digital literacy, and adaptability, which instructors are expected to continuously develop and improve through ongoing professional initiatives. The primary goal of TC is to optimize students' learning outcomes by equipping teachers with the necessary skills to cater to diverse learners and effectively facilitate learning (The Wing Institute, 2009; Abakah, 2022). Understanding TC is very crucial because it will allow teachers in the Amansie Central District to identify specific areas where they need improvement. This will help them to tailor their professional development plans to ultimately enhance students' learning as they focus on key skills and knowledge needed for effective teaching in the classroom.

Research has consistently shown that there is a profound positive link between CPD and TC (Darling-Hammond et al., 2017; Rodrigues et al., 2023; Nkundabakura et al., 2024; Ambon et al., 2023; Oseisi et al., 2024; Njenga, 2022; Evona, 2023). CPD positively influences TC by giving teachers the chance to learn new knowledge, skills, and pedagogical approaches, allowing them to stay updated with current educational practices, enhancing their classroom management abilities, and ultimately improving student learning outcomes. Despite the plethora of studies on the link between CPD and TC, to the best of the researcher's knowledge, no study has investigated this relationship among Ghanaian teachers. Additionally, past studies that have investigated this relationship failed to clarify our understanding of how SLS influences this relationship.

## Statement of the Problem

Teaching competencies has been a critical concern for teachers in Ghana. Teaching competencies has been a critical concern for teachers in Ghana. According to studies, a large proportion of instructors lack the necessary technical knowledge to incorporate digital technologies in their classrooms, sufficient instruction in lesson preparation, questioning strategies and differentiated teaching (Aidoo et al., 2022; Boateng, Ankrah & Manteaw, 2023). This situation is also worry for teachers in the Amansie Central District. According to the District Training Officer–NTC report (2024), shows that teachers rely heavily on outdated pre-service knowledge for teaching, classroom management, and assessment while lacking competence in contemporary teaching techniques, digital literacy, and cultural sensitivity. This situation is also worry for teachers in the Amansie Central District. According to the District Training Officer–NTC report (2024), shows that teachers rely heavily on outdated pre-service knowledge for teaching, classroom management, and assessment while lacking competence in contemporary teaching techniques, digital literacy, and cultural sensitivity. This has resulted in sporadic attendance, poor academic performance, and little student participation. The Chief Examiners' Reports for the years 2020–2024 demonstrate that pupils in the district have consistently done poorly with several students not being accepted into the senior high schools of their choice in the BECE.

The sociocultural theory (Vygotsky, 1978) provides a strong explanation for this issue. The theory posits that learning and professional growth occur through interaction, collaboration and continuous exposure to new cultural and educational practices. According to the sociocultural theory (1978), if teachers don't participate in ongoing professional development (CPD), they are still restricted to their pre-service knowledge base, which is frequently insufficient to meet current needs in classroom demand and affects the quality of their instruction delivery, ultimately affecting student's outcomes. The theory further explains that pre-service training of teachers does not fully prepare instructors to meet the current needs of society, and this results in teachers not being able to holistically prepare learners to meet 21<sup>st</sup>-century needs. The absence of CPD leads to low competencies of teachers. Empirical studies confirming this theoretical claim on the relationship between CPD and TC are abundant in literature. (Darling-Hammond et al., 2017; Rodrigues et al., 2023; Nkundabakura et al., 2024). However, despite the plethora of studies on this relationship, the role of school leadership support in this association is not known in the district. This study is an attempt to fill this gap in knowledge by investigating the moderating role of school leadership support in the relationship between CPD and TC. For if the issue of TC is not well addressed in the district, overtime, the educational aspiration of most students will be a thing of the past, hence increasing the school dropout rate in the district. Therefore, it is against this that the current study examines the role of school leadership support in the relationship between CPD and TC in the Amansie Central District.

## Objective of the Study

### General Objective

The study's primary goal was to assess the influence of ongoing professional development on teacher competence, with an emphasis on the moderating role of school leadership support among instructors at the Junior High School in the Amansie Central District.

### Specific Objectives

Specifically, this study sought to

1. analyze the level of teacher competency among teachers before and after being exposed to continuous professional development.
2. assess the CPD on TC among Junior High School teachers in the Amansie Central District.
3. examine the role of SLS in the relationship between CPD and TC in the Amansie Central District.
4. explore the challenge's teachers have in accessing and engaging in CPD programs.

### Research Question

1. What is the level of teacher competency before and after participation in continuous professional development?
2. What is the influence of CPD on TC in the Amansie Central District?
3. What is the role of SLS in the relationship between CPD and TC in the Amansie Central District?
4. What challenges do teachers confront in accessing and engaging in CPD programs?

### Research Hypotheses

H1: There is no statistically significant difference between male and female teachers' level of competencies among Junior High School teachers in the Amansie Central District.

H2: CPD has no significant positive impact on TC among Junior High School teachers in the Amansie Central District.

H3: The influence of CPD on TC will be stronger when SLS is higher in the Amansie Central District.

### **Significance of the Study**

It is envisaged that the study will benefit the MOE, GES, NaCCA, head teachers, and classroom instructors. To the Ministry of Education (MOE), this study will provide empirical evidence to increase their awareness of the present condition of teacher competency and the role of TPD. The findings will help them develop targeted interventions to increase and strengthen teacher competency through continuous professional development. It will also help them understand the need for investment in continuous professional development to make it accessible for every teacher to improve teaching standards in Ghana.

The study will also help the Ghana Education Service to come out with strategic and tailored interventions to enhance continuous professional development among teachers, boosting their competency level and mastery in their subject areas. It will further draw their attention to the present condition of instructors' need for CPD. These findings will elucidate more light on the gains achieved when CPD is promoted in the country.

Furthermore, the study will create awareness for NaCCA on the role of CPD in enhancing teacher competency. This will help them streamline workable and regular intervention programs or workshops to train teachers in various subject areas to increase their competency level. It will also help them create awareness and link various investors, universities and professional development services to collaborate in enhancing teachers' growth through continuous professional development in curriculum implementation.

In addition, it will help headteachers understand the relevance of professional development, encourage their staff to embark on such programs, and support them to enrol in such programmes. It will also create awareness among teachers of the need for CPD to enhance their knowledge and skills in their professional fields. This will help them reach a high standard and remain competitive on a global scale. Finally, for future researchers, the study will provide literature on the influence of continuous professional development on teacher competencies.

### **Delimitation**

The topic of ongoing teacher skills spans the entire Ashanti area, but because of limited time and resources, the present study concentrated on the Amansie Central District. Focusing on this area enabled a deeper understanding of the issue and led to a locally effective solution. Apart from support from school management, all other factors including financial and geographical limitations, school leadership assistance, and individual learning style were omitted from the research. The research concentrated on three primary factors overall: teacher abilities, ongoing professional development, and school leadership support. Getting a complete grasp of how continuous professional development enhances or mitigates the connection between teacher skills was made possible by the inclusion of school leadership support. Because public JHS teachers were the main target group of this study, data was assembled exclusively from them. The study was able to concentrate entirely on teachers instructing at that level because they were included. Moreover, data was compiled from participants using both open-ended and closed-ended questionnaires. The participants provided thorough details thanks to the use of this tool.

### **Limitations**

Data collection included both open and closed-ended surveys. Since answering the questions on such a questionnaire requires sufficient time, participants tend to skip most of them when they are pressed for time among the questions, resulting in so many incomplete questionnaires. This is what occurred in the study: most of the educators were in a hurry, so they skipped most of the questions without providing any answers. We must schedule time with some individuals for them to answer the questions. Additionally, we need to bring some of them to our attention because their response is incomplete. The response rate was impacted by this challenge,

which lowered our anticipated response rate. The validity and reliability of the results were unaffected by these restrictions.

### **Definition of Terms**

**Teacher competencies (TC)** refer to the set of skills, knowledge and attitude that a teacher needs to effectively deliver quality instructions (Abakah, 2022).

**Continuous professional development (CPD)** refers to an ongoing process where educators actively engage in learning activities throughout their careers to enhance their knowledge, skills and teaching practices with the aim of boosting students' outcome by staying updated with current educational trends (Abakah et al., 2023; NTC, 2024).

**School leadership support (SLS)** refers to the active role school leaders play in facilitating, guiding and overseeing the professional development opportunities available to teachers within their school (Awodiji & Naicker, 2023).

### **Organisation of the Study**

This study is divided into five chapters. Chapter one focused on the introduction of the study. It dealt with issues such as the background to the study, the statement of the problem, the general and specific objectives of the study, the significance of the study, delimitation, limitation, the definition of terms, and the organization of the study. Chapter two presented a review of related literature. It touched on issues such as theoretical framework, conceptual review, empirical review, and conceptual framework. Chapter 3 was devoted to research design, and it also dealt with issues such as research paradigm, approach, design, study area, population, sampling and sampling procedure, data collection instrument, data collection procedure, data processing, and analysis. Chapter four focused on results and discussion of research findings, while chapter five focused on summary, key findings, conclusion, recommendation, and suggestion for future studies.

### **Summary of Chapter**

The chapter included a description of the study's history, its actual scope, the statement of the problem, and the study's objectives, both overall and specifically. The study's specificity, research questions, importance, boundaries, limitations, terminology definitions, and structure.

## **LITERATURE REVIEW**

### **Introduction**

The main subject of this chapter was a review of pertinent literature on continuous professional development (CPD) and teacher competencies (TC). The review examines the study's empirical review, conceptual review, and theoretical framework difficulties. Sociocultural theory (Vygotsky, 1978) formed the basis of the theoretical framework. The empirical portion of the study addresses the existing situation, while the conceptual review covers a range of ideas pertaining to the study's main variables. of the issue in comparison to what others have said or published on the subject.

### **Theoretical Framework**

#### **Sociocultural Theory (Vygotsky, 1978)**

The groundwork of sociocultural learning theory (SCT) is based on the work of the Russian psychologist Lev Vygotsky (1971). According to SCT, knowledge is created when individuals interact with other individuals, things, and occurrences in social settings. As a result, the production of knowledge is inextricably related to social, cultural, and historical outcomes (Johnson, 2009). According to SCT, knowledge is a unique culture that has been created and refined over time in order to address actual social issues that arise in the community and society in question (Greeno, 2003; Lave & Wenger, 1991). This suggests that the most important aspect of

effective teaching is how well students can utilize their newfound knowledge to solve challenges in their social environments. Consequently, instructors participating in CPD activities will be required to utilize the information they have acquired in order to address actual issues in the classroom.

According to SCT, there are four primary elements that explain how people develop and learn: (1) mediation; (2) tools; (3) the Zone of Proximal Growth (ZPD); and (4) community of practice. These concepts are covered in the chapters that follow.

**Mediation:** SCT is founded on the idea that mediation is the mechanism via which human development and learning take place, which means that students' environments have an impact on their learning (Lantolf, 2001). This perspective holds that mechanisms either mediate or facilitate human learning and development. In addition to social interaction with humans, these methods also include material, cultural, or symbolic tools (Vygotsky, 1978; Lantolf, 2001;). These tools include those that are social interactions with others, as well as material, cultural, or symbolic interactions (Vygotsky, 1978; Lintolf, 2000). According to Vygotsky (1978), active learning depends heavily on the social interactions between two or more people with different levels of expertise and understanding. Furthermore, Vygotsky stated that the development of human cognitive skills occurs through two processes: the individual learner's (intra-psychological) development and the social level between individuals (inter-psychological).

Furthermore, this theory views learning and development as a gradual shift from externally mediated social interactions (e.g. the social plane) to internally mediated ones (e.g., the psychological domain), which is controlled by individual learners through internalization (Johnson & Golombek, 2003). The process by which an individual's conduct is initially mediated by other people or cultural objects, but ultimately comes under their control, is described as internalization. They have complete autonomy over how they allocate resources in order to regulate their conduct (Chavajay, 1995; Johnson & Golombek, 2002; Rogoff &). By appropriation, internalization is made possible. When someone transforms what they have internalized and raises the acquired information to the level of their own needs, they are said to be appropriating it, which means they are altering the how knowledge is acquired and used by oneself and by others (John-Steiner & Mahn, 1996). Shan (2011) defines contextualization of learning, which in this case includes CPD as well as associated methodologies and the outcome of this process. The resources are directly related to the learner's (teacher's) background and experiences. Contextualization, according to Tang & Choi (2009), allows instructors to adapt and reorganize CPD learning activities to meet real needs in real classrooms. The idea of learning as "acquisition," in which a teacher gains knowledge and transmits it to students, is refuted by mediation, which places emphasis on the interactive social aspect of learning (Sfard, 1998). Johnson, 2007). Through their involvement in CPD, they don't acquire any skills (Golombek & Johnson, 2007). The mediators found in the co-construction Professional knowledge have an impact on the teacher's capacity to instruct. These mediation aids include CPD (Kozulin, 2003), structured human interaction, and other instruments. The usage of cultural or material resources (textbooks, technical tools, textual material) and learning activities (teachers engaging with other outsiders) all play a role and contribute to the transmission and absorption of knowledge in the classroom.

**Tool:** Cultural or symbolic tools facilitate the process of mediation. As emphasized earlier, SCT suggests that knowledge is not embodied directly but using tools that are not found by the individual in isolation but are the product of sociocultural development (John-Steiner & Mahn, 1996). Thus, tools are objects that connect the outer and inner planes, facilitate social and personal tasks, and help build cognitive communication capabilities as a person shifts from social to conscious (Liu & Matthews, 1999; Nasir & Hand, 2007). Language, drawing, the use of symbols, the use of concepts, and any other learning tool are examples of tools. Tools have an influence on how individuals (instructors) organize, process, and remember knowledge. However, they are dynamic, evolving throughout time and being utilized by many ethnic groups (Kozulin, 2003). New thought patterns and general human mental functioning are mediated by objects and signals in one's sociocultural surroundings (Wertsch, 1991).

There are three categories of tools that can be used in mediation: self-regulated (abstract complex mind), other-regulated (human behavior or social relationships), and object-regulated (physical or cultural tools). Thus, tools moderate the relationship between an individual and the social material world and act as a buffer between an individual and their surroundings (Johnson & Golombek, 2013; Lantolf et al., 2015; Shi, 2018).

The Zone of Proximal Development: The Zone of Proximal Development (ZPD) was developed by Vygotsky in 1978 to illustrate the relationship between learning and development. He promoted the notion that there are two growth stages: the actual and the potential. Real skills represent what students can demonstrate on their own, while abilities include what students will need help or instruction with. As Vygotsky (1978) explained, the ZPD is "the distinction between a potential stage identified by solving problems following the guidance of more empowered or cooperative peers" (p. 89) and a developmental stage self-established by independent problem solution. ZPD is a metaphorical image for observing and understanding mediated-internalization processes rather than physical space over time using cultural resources (Lantolf, 2000). For instance, teachers seek help from teachers or other experts or self-regulate, in which case teachers control and become masters of their own learning activities (Johnson & Golombek, 2003). The developmental phase of ZPD involves the development and transformation of an individual's external knowledge to internal knowledge under the guidance of a highly qualified individual who can improve the individual's consciousness (Shi, 2017). Using scaffolding and social networking, individuals can move through ZPD with the help of scaffolding and social networks. A more experienced participant can help improve a beginner's existing abilities and skills to greater competence through social interaction (Turuk, 2008). The use of scaffolding allows high-capacity individuals to support students who are unable to perform roles on their own in their existing environment so that they can enhance their knowledge and skills (Shi, 2017). However, scaffolding strategies can be removed after students have made sufficient progress. Additionally, point out, ZPD is in fact a shared activity not only with the learner but also with other participants and resources at hand (Bonk & Cunningham, 2010). Both teachers' own pedagogical roles, and the quality of the communication environment will determine how well they learn in ZPD.

Community of Practice: Another SCT construction is the community of practice (CoP), where learning is seen as a process of joining a community of practice rather than a subject area (Lave & Wenger, 1991). A community of practice (CoP) is referred to as a professional learning community (Riveros, Newton, & Burgess, 2012). CoP is a collection of people with specialized experience in some major areas of cultural practice (Nuthall, 1997). Members learn about and identify with the common histories and commitments of their practice when they engage and participate within their CoP (Wenger, 1998). The larger ideas of the sociocultural views of learning that were previously mentioned frame the current investigation. However, because the participating instructors did not identify as members of a CoP, CoP receives less attention in this study than it does in studies including mediation, tools, and ZPD principles. Teachers did, however, offer suggestions for how to implement a "community of practice" to influence professional development and education.

### **Implications of SCT for teacher learning and professional development**

Since Vygotsky's SCT recognizes social interaction as the key driver of human learning and development, it seems appropriate to consider the current study in this perspective (Eun, 2008). SCT offers a basis for examining the interplay between teachers' CPD activities as learners and the larger context they are embedded in. First, SCT suggests that learning is not a stand-alone activity but rather through participation and interaction on social practices. It turned out that learning is a cooperative process between individuals. Collaborative learning makes sure that CPD doesn't happen in a vacuum; rather, it happens among groups of people with comparable teaching experiences who connect, communicate, and exchange ideas to improve their profession (Mansour et al., 2014). Instead of receiving instruction from "experts" in a didactic manner, instructor participants who engage in such engagement are encouraged to actively learn. However, if teacher-student interaction is to result in desired development, it needs to be focused on objectives (Alfred, 2002). Furthermore, the idea that education is a mediated process made possible by both technologies and artifacts has consequences for continuing professional development for teacher. Professional journals, newsletters, and online forums are examples of internal mediators, including teachers' associations, instructional materials, textbooks, educational materials, and expert advice and support (Shabani, 2016). Another resource that instructors should have access to and utilize to direct their CPD activities is the CPD policy document (John-Steiner & Mahn, 1996). Technology is another instrument in teachers' professional "toolbox" that can facilitate both professional development as well as education (Lantolf, 2004; Eady & Lockyer, 2013). Learning tool usage and access can support active learning for better classroom performance within the framework of CPD for instructors. Teachers need training manuals and other essential resources to facilitate their learning during and after CPD.

Sociocultural theory, despite its utility, is not without its critics. The theory aims to highlight the zone of proximal development (ZPD) as the main mode of education. Nevertheless, the ZPD may not be as widely applicable and does not fully accomplish its goal (Jones, 2019). Additionally, Lev Vygotsky's method failed to account for the component of that learning is influenced by emotion and motivation. Even though it acknowledged the importance of emotional aspects, it fails to adequately address the emotional component of development (Brown, 2020). The method intends to highlight the zone of proximal development (ZPD) as the primary method of instruction. However, the complexity of learning processes is not completely explained by the ZPD, and it may not have as wide applicability. (Jones, 2019) by Lev Vygotsky. Moreover, the role of motivation and emotion in learning was ignored. Brown (2020) noted that although it acknowledged the importance of emotional factors, it failed to adequately address the emotional aspect of development.

## Conceptual Review

### The Concept of Teacher Competencies

The flexible use of knowledge and abilities in everyday situations, as seen in self-learning, problem solving, and future adaptation, is what defines competence (Wang et al., 2019; Wang, 2020). One can gain skills and knowledge in social, professional, and personal areas that are deemed proficient after finishing a course or program. According to Braun, Woodley, Richards, et al., competency is defined as a certain degree of competence and the capacity to perform successfully in a professional environment. (Leidner, 2012; Oyerinde, Onajite, & Aina, 2020; Strijbos et al., 2015). Competence is proposed to be a concept that includes both cognitive and situational skills that may be displayed in the classroom, such as reasoning. as specific attributes such as values, ideas, and opinions on teaching (Bloemeke & Kaiser, 2017). It is unsettling, especially considering Bouley et al.'s (2015) findings that competence is not only defined by one's knowledge and abilities. It involves being prepared to carry out an action. This means that competence is determined by the task and situation (Kaendler et al., 2015). Therefore, competence is a dynamic, adaptable notion that varies depending on the task and the circumstances (Wiedmann, Rummel, Kaendler, and Spada, 2015).

The term professional competence has become more well-known, and several academics in teaching have done a lot of study on it (Toshboeva, 2015). A range of skills, such as communication, knowledge, and technical proficiency, are used regularly to serve the individual and the community, competency, clinical judgment, emotions, morals, and introspection (Epstein & Hundert, 2002). The ability to master knowledge is known as professional competence (Rahman, 2014). The word is used to identify the abilities necessary for providing exceptional care. Expert competence encompasses a range of remarkable, non-technical behaviors that are expertly exhibited when engaging with patients, coworkers, and other members of the healthcare team. People who engage in those overly high-achieving behaviors become somewhat well-rounded, humanistic, morally vigilant, contemplative, socially aware, and accountable physicians who are also resilient (Angelle, 2018). These skills augment the traditional traits, tools, and practices associated with being a medical professional. Professional competence is defined as the capacity to perform a certain expert task or the duties that come with one's profession at a fair level of proficiency.

Teachers' professional competence has a significant impact on their overall performance and career advancement (Lautermann & Koings, 2016). Intentional teacher behavior is characterized by its descriptive qualitative nature, as described by Wajdi et al. (2018). Teacher's professional competence refers to a teacher's ability to perform in the classroom. The skills, skills, values, attitudes, and beliefs that teachers need to perform well in their jobs are considered to make up their professional competence. A variety of professional, intellectual, interpersonal, cultural, and pedagogical skills are necessary for successful teaching. A teacher's professional abilities should include the capacity to utilize media, understand educational foundations, handle the classroom, manage learning programs, and master materials, evaluating student success in learning interactions, comprehending associated roles and procedures.

A teacher's competency is made up of three components: practical skills, the arts (such as performing and public speaking), and the sciences, such as specialized, systematic, psychological, and instructional instruction. factors like work relationships, fostering student learning, and making the most of resources, procedures, and teaching strategies. Since simply accumulating information is not enough to produce skilled professionals, teachers today

need a high degree of responsibility. The goal of instruction is to teach students the systematic knowledge base, new concepts, and practical methodologies. The purpose of education is to help students grow as people and as individuals. The main objective of their development is to increase their intellectual abilities in areas such as thought, cognition, society, politics, and self-sufficiency in the classroom. A teacher must have mastered the art of instruction to accomplish all of these objectives with children.

The idea of instructor skills has grown in recent years to encompass classroom implementation, technology integration, and the capacity to address diverse student needs. With teachers needing to learn new ways to integrate technology into their instructional methods, Kohler and Mishra's (2009) The Technology-Pedagogical Content Knowledge (TPACK) model highlights the significance of doing so skills for using digital resources to their full potential at the school.

### **Factors Influencing Teacher Competence**

Hattie (2009) points out that aspects such as feedback, self-efficacy, teacher-student relationships, and classroom management strategies have an impact on teacher competencies. Teachers use feedback to enhance their skills and eventually improve student performance, while self-efficacy comprises their expectations about their influence on learning. A favorable teacher-student relationship is helpful in providing an interactive and interesting class, and effective management strategies contribute to keeping order in the class. Again, Guskey (2002) also suggested that professional development is essential for maintaining and enhancing teacher competence. He contends development programs targeted at teachers, which are ongoing teamwork and geared towards transformation of teaching and learning, are the ones that enhance teacher ability. This perspective is also echoed by Darling-Hammond et al. (2017), where it is argued that a well-designed CPD should include reflective engagement, peer collaboration, and teaching feedback.

Recently, there has been an increased focus on job-embedded CPD, whereby teachers are involved in learning that is related to their work. Based on the work of Opfer and Pedder (2011), including learning opportunities such as coaching, peer observations, or lesson studies into a teacher's daily schedule is the best way to implement professional development since it guarantees that learning is sustained within the workplace. In addition, the government's educational policies and education ministry have their effects on teacher efficacy. Teacher efficacy is significantly influenced by national and regional educational policies. For instance, more countries introduce competency-based education (CBE), and teachers must modify their teaching approaches to a more student learning and skill-mastering one (OECD, 2019). In many areas, for instance, policy changes geared towards the improvement of teachers' training and certification have also raised the standards of teacher competence (European Commission, 2020). Nevertheless, Cochran-Smith and Villegas (2015) indicate in their research that such policy reforms are aggrandized and often overlook the realistic aspect of teaching and teachers. They contend that policies must undergo the input of teachers and provide the required help for the development of the teachers. Finally, it is in the consideration of the assessment of teachers' skills that the issue of technology in learning and teaching has gained prominence, especially after the COVID-19 outbreak.

It is now a requirement that teachers possess skills to utilize digital devices for the purposes of instruction, assessment of learners, and remote classroom management. Trust and Whalen (2021) consider that the coronavirus crisis showcased the importance of orienting teachers towards more digital means of communication and organization. The unplanned transition to distance learning revealed some concerns with the preparedness of teachers to use various technologies. Numerous teachers were not adequately prepared to utilize technology in their teaching methods (Kraft & Simon, 2020).

### **Key Components of Teacher Competence**

Pedagogical content knowledge: According to Sorge et al. (2017), classroom management, instructional strategies, individual learning processes, and student performance evaluation comprise pedagogical content knowledge. A teacher's pedagogical content expertise is one of the key components of their competence. Through the acquisition of classroom experiences and the improvement and mastery of their skills, the teachers use it to expand their abilities. Factors that occasionally have an influence on the teacher's and students' performance are the teacher's abilities and skills (Luneta, 2012). According to Solis (2009), many nations,

including the Netherlands, England, the United States, and Australia, have widely adopted the principle of pedagogical content knowledge (PCK). A subject-matter expert who lacks pedagogical abilities is just as inadequate as a teacher who possesses pedagogical skills but lacks subject-matter expertise, claims Bosu (2010). This emphasizes how important it is for educators to be knowledgeable about both methodology and subject in order to be effective in their careers.

**Subject matter:** Shulman (1987) stressed that a teacher's competence still relies heavily on their knowledge of the subject. Teachers must have a solid grasp of the material they are teaching in order to be able to communicate complex ideas to pupils. Research, on the other hand, suggests that a teacher's effectiveness is not solely based on their subject matter expertise. Ball, Thames, and Phelps (2008) highlight that one of the most important components of PCK is that teachers must also gain expertise in their profession.

**Classroom Management:** This term refers to the methods and specific subjects through which teachers establish a productive, positive, and welcoming learning environment. To facilitate orderly classroom conduct, a study by Wong and Li (2019) emphasizes the need to create explicit guidelines and expectations at the start of the academic year. According to Morse (2016), classroom management entails correcting pupils' boisterous and unruly conduct. He argues that educators should closely monitor instruction and the arrangement of the course materials and ensure that students who struggle with hearing, reading, writing, spelling, or study habits are identified and provided with additional support. In addition to how the teacher teaches the subject, classroom management also includes how the students interact with the teacher and each other. Leader (2014). To achieve the desired learning outcomes, classroom management is the systematic regulation of students, the classroom environment, and instructional resources, which has the potential to raise students' academic performance (Sulaiman, 2013). For educators, having the ability to effectively manage the classroom environment and enhance student learning is an essential skill (Fernandez, 2020).

**Teacher Efficiency:** Instructor's belief in their ability to have a good impact on student conduct and learning is referred to as teacher efficiency. Bandura (2016) found a correlation between teacher effectiveness, student motivation, and student achievement. Effective teachers typically set high expectations for student achievement and use effective teaching methods (Brown, 2017). Teacher effectiveness is a crucial talent for educators because it refers to their self-assurance in their capacity to have a beneficial impact on student conduct and learning (Tschannen-Moran & Hay, 2021).

**Teacher skills:** The fundamental abilities and understanding required to successfully manual and assist scholars in the study room are covered in the teacher competencies. Hattie's (2015) highlights the importance of presenting professional improvement opportunities for educators to continuously beautify their pedagogical knowledge and abilities. Furthermore, gifted trouble-solving, conversation, and classroom management talents are necessary for teaching success (Darling-Hammond, 2021).

**Behaviour management:** Behaviour management is the term used to describe tactics teachers use to deal with and forestall unacceptable behaviour inside the study room. Creating a welcoming and encouraging lecture room atmosphere can help to reduce tough conduct, declare Marzano & Marzano (2016). Behaviour management is an important skill for a teacher to effectively manage and control student behaviour in the classroom (Sugai & Horner, 2023). Preventive measures such as routines and standards for the classroom can be put in place to help before behaviour problems get out of hand (Jones & Curwin, 2023).

**Assessment for learning:** The main purpose of practice assessment is to use structured assessment to assess student understanding and to provide constructive criticism. According to Black and William (2018), an ongoing assessment is important in guiding instructional choices. Peer assessment and self-assessment are two methods of assessment that teachers can use to help students learn and grow (Heritage, 2022). Black and William (2024) explain that teachers should be more competent in assessment for learning for teaching in order to improve teaching and student learning outcomes. ways and means of teaching.

**Strategies and methods of teaching.** This pertains to the instructional strategies and tactics educators employ to support students' learning. Hattie (2017) findings shows that instructional strategies that can improve student achievement include explicit instruction, collaborative learning, and inquiry-based learning. Rosenberg (2020)

argues it will increase student engagement and provide a deeper understanding of the subject matter by integrating technology and applications in a real-world setting. Teachers must be able to accommodate students with varying learning preferences and engage them in meaningful learning opportunities. Teachers then use the competences to discern the elements of their own classroom practice most influencing learning. These skills can help them in making decisions, implementing, and reviewing potential future changes when they assess their status, identify strengths and weaknesses, and evaluate work done.

## Historical Background of Continuous Professional Development

Continuous professional development, which was mostly referred to as teacher education in Africa, was first implemented in the early 1990s. It was broken into three phases: (a) pre-service teacher preparation; (b) induction training, which entails preparing new teachers for their first years in the classroom; and (c) ongoing support classroom or even their first year at a particular school or continuous professional development for teachers who are currently working. (Professional Development of Teachers in Africa; the African Symposium, 2013). The number of private schools that prioritize high standards of teaching is increasing, which means that this training is gradually becoming obsolete. When the Education Act (Act 778) was passed in Ghana in 2008, it gave legal support to the Pre-Tertiary Teacher Professional Development and Management (PTPDM) approach. (Anlimachie & Avoada, 2020) provide some guidelines and standards for teacher-targeted professional development initiatives. The goal was to develop consistent criteria for teacher professional development programs. Consequently, the system was defined and examined using a competency-based method. The PTPDM, for instance, requires that professional development programs equip educators to handle the specific requirements, obligations, and responsibilities of the teaching profession (Yalley, 2022). As a result, several CPD initiatives were created in Ghana to reflect the goals and objectives of higher education (Gunu, et al., 2022; Oduro & Yalli, 2022). Additionally, workers need to be trained in how to oversee development projects. The Ministry of Education (2012) recommends that CPD programs be created with the goals and goals of pre-tertiary education in Ghana in mind. This regulation would build upon existing policies that promote instructors based on their years of classroom experience by documenting their professional development initiatives. Professional development initiatives, according to the Ministry of Education (2012), should be tied to teachers' professional success, with evidence of expert development and achievements serving as the organization for vocational progress and awards. Teacher licensure is also emphasized in the PTPDM policy as a need for teachers to stay abreast of changes in classroom instruction and knowledge. A license is required for teachers, and in order to be eligible for one, they must complete an induction and engage in other required in-service training programs. The PTPDM policy aims to institutionalize teachers' professional programs. The Cabinet Memorandum on Policy on Teacher Education Reform (CMPTER), a new teacher reform program, was also introduced in 2018. important. The National Teaching Council (NTC), 2017) refers to the new policy as The National Teachers Standards (NTS), which, in contrast to the PTPDM, places more emphasis on teachers' professional values and how they are reflected in their critical and collaborative practice to improve their professional and personal development through CPD and lifelong learning. PTPDM plan requires a teacher's license (Abakah, Widin, & Ameyaw, 2022).

## The Concept of Continuous Professional Development

Despite its widespread acceptance in national discussions about education development, many researchers have used different definitions of the term in various studies. The term Continuous Professional Development has become accepted as a standard course of training and education for most professions (Earley & Bubb, 2004). To emphasize professional development as a continuous and dynamic process, the word continuous is put in front of it (Curtis & Cheng, 2001). Although formal CPD is simple to define and identify, it can be hard to define a lifelong process. The term's scope and definition are subject to scholarly and practical discussion. Despite the numerous conceptions of CPD, which complicate its definition, it relates to activities that concentrate on the growth of workers outside of their formal schooling. As a result, CPD may be defined simply as the methodical growth, upkeep, development, and expansion of employees' relevant knowledge, skills, talents, and capabilities in relation to the goal. of enhancing one's professional skills in any given area (Day & Sachs, 2004) This ensures that professional performance capacity is improved by intentional tasks designed to promote careers and increase capacity. It ensures that professional performance capability is enhanced by deliberate actions designed to promote careers and increase competence. CPD is defined by the Organization for Economic Cooperation and

Development (OECD, 2008) as any planned, organized, educational, and training activities that individuals participate in to advance their prospects for employment and a career, now or in the future.

This idea has also been described as teachers' lifelong learning, which includes all the educational possibilities aimed at improving their professional knowledge, comprehension, and skills. and skills throughout their careers (Teaching Council, 2011). Furthermore, Caena (2011) defines continuous professional development as a set of activities intended to improve instructors' skills, knowledge, and other attributes that are not taught during their professional training. Similarly, Creemers and Kyriakides (2013) define CPD as any learning a teacher engages in after finishing their initial training (p. 3). Ongoing professional development includes boosting employees' capacity for continuous improvement in their job performance (Kuranchie, 2019) Additionally, it includes a wide variety of formal and informal personnel development programs that are designed to address teachers' needs for professional development and improve their skills. their teaching methods by sharing helpful techniques, information, and abilities (Mwila et al., 2022). It has been observed that ongoing professional development is creative and imaginative (Burns & Lawrie, 2015), with the goal of maintaining participants' knowledge and skills so that they can perform their responsibilities successfully.

The wide array of official and unofficial workforce development programs aimed at satisfying the professional needs of employees is known as continuous professional development (CPD). support the development needs of each instructor and improve their performance by sharing best practices, knowledge, and data. One of the most crucial elements necessary to raise a teacher's quality and level of professionalism (Collin et al., 2012) The three primary goals of teacher professional development programs are listed by Kizilbash (2016). These include changes in pupils' learning outcomes, changes in teachers' attitudes and beliefs, and changes in their classroom practices. Continuous professional development (CPD) is necessary because pre-service training is inadequate as a basis for long-term professional competence due to the quick advancements in education and society. is necessary to advance and modernize education. The curriculum, instructional, material, and pedagogical knowledge bases of the teachers should be used to inform the thorough needs assessment that informs the design of these CPD programs. The theoretical framework known as knowledge bases serves as the cornerstone of professional advancement. According to studies, teachers who participate in the development of professional development programs perform better (Luneta, 2012). As stated by Lewis, Collin, and Van der Heijden (2012), continuous professional development (CPD), which includes both official and unofficial initiatives, is intended to improve professional understanding. and experiences. CPD promotes learning without concentrating on it specifically.

The concepts' definition still had a gap (Goodall, Muijs, Day, Harris & Lindsay, 2006). On-the-job training and in-service training are limited in scope, primarily address work-related growth, and attempt to meet organizational rather than individual objectives. In general, it aligns with the nature of the task and the demands of the job (Chan & Lee, 2007). CPD is, in essence, a wide-ranging activity that includes a variety of systematic and unintentional actions that result in personal and career advancement (Inid, 2007). Notably, CPD provides a more holistic approach to employee development that addresses the requirements of both individuals and organizations. It is therefore more inclusive and adaptable, favouring psychological needs for physicians for life and active learning. To learn about life, CPD activities should focus on the why, what, and how of events. One of the main goals of CPD is to keep professional standards high and make sure that knowledge is translated into best practice.

### **Methods Used in Continuous Professional Development**

Generally, Bayar (2014) classified professional development activities into two general categories, which are traditional and non-traditional activities. The duration or length of the professional development activity is among the determinants of the classification of an activity as traditional or non-traditional (Ozer, 2018).

Traditional professional development activities include off-site events such as brief workshops, conferences, seminars, lectures, etc. that are thought to be useful for retraining and reskilling teachers in areas pertaining to their curriculum and knowledge. These kinds of professional development events frequently happen outside of regular business hours and educational sessions. According to Rucker (2018), while traditional professional development has its strengths, it is criticized on the following grounds:

One of the criticisms of traditional teacher professional development is that teachers are perceived as passive learners. Such teacher professional development tends to be lecture-based, with workshops failing to help participants connect content to participants' own environments for deeper understanding and with no opportunity for participants to try new skills or methods in practice. Man learns naturally through the virtue of trial and error, and through that, one gets proficient (Rucker, 2018). Again, for such professional development, it normally involves continuous guidance by an instructional mastermind. For instance, if a workshop completes its duration, all expert guidance stops after that. This means that when teachers need help the most, especially in the classroom when they want to replicate newly taught techniques and ideas, support is typically unavailable. School administrators typically select this kind of professional development to address skills shortages, but they often overlook the possibility that these shortages won't be addressed until underlying issues are resolved (Rucker, 2018).

The other drawback is that such professional development does not deal with concrete practical problems. Professional development of teachers needs to be customized to meet personal problems teachers face at various points of their teaching careers (Boyle et al., 2004). For example, if one plans a program for a veteran and a beginning teacher to present the same material, the old-timers will have no interest and may already have the new skill being offered. Moreover, generic traditional professional development does not give teachers time to reflect on what they do. These programs tend to be on learning skills and techniques with hardly any room for reflective examination of the teacher's existing practice (Easton, 2008).

Therefore, traditional professional practice is criticized on the basis that it primarily occupies a short duration, is ineffective in enabling participants to achieve their intended goal, is wasteful and ineffective, does not have an evident effect on teaching, and is nearly time-consuming (Kelleher, 2003; Easton, Abadiano & Turney, 2004;2008). Consequently, they contribute little or nothing to participants' competence (Boyle et al., 2004). Professional development effectiveness emanates from how much it is rooted within the workplace. It is important to relate all professional learning activities back to day-to-day practice in the present; this is the only way that teachers can develop, enhance, and affect student achievement.

## **Mentoring**

Mentorship has been shown to have significant effects on outcomes related to career development, general professional growth, and job happiness. This means that a less experienced person in their profession gets to be guided by someone who is better-off helping them along the way—and that is much-needed, ongoing professional development. One strategy to promote learning at work is mentoring, which aims to "use directed learning to increase the knowledge and skills necessary for high achievement," according to Freedman (2011). Mentoring falls into two categories: psychological and job-related. Mentoring can assist in fostering achievement, encouragement, and sociability, in addition to other professional development activities (Lishchinsky, 2019). The results of mentoring can include modifications to one's skills, awareness, and behaviors. Mentors can assist mentees in overcoming obstacles, setting objectives, and learning new abilities by offering direction, criticism, and encouragement (Freedman, 2011). According to Gibson (2014), the results may have to do with education, psychological development (personal growth), employment, self-analysis in the context of teamwork, and having a positive attitude toward work and career incentives. Mentoring, in Krupp's opinion, is a means of enhancing teachers' effectiveness in the classroom. Effective mentoring programs, according to him, help teachers become more self-assured, better at applying educational theory to real-world situations, and improve their communication skills. According to Lishchinsky (2019, p. 45), "Schools gain from employing highly motivated teachers with higher self-esteem and greater efficiency. Consequently, when educators obtain mentorship, the scholastic achievement of their pupils increases.

## **Induction Service**

Induction is the official process of introducing and orienting new employees to their roles, duties, and the organization (Meghana, 2020). In the field of education, John (2022) describes induction as the support and guidance provided to new teachers as they address the challenges and opportunities within the classroom. Induction services act as a link from student instructor to student teacher. The goal of induction services for teachers is to assist a smooth transition into their new roles, help them understand the school policies and

procedures, and ensure they feel supported as they start their teaching careers. Therefore, induction services, as part of continuing professional development (CPD) activities, help teachers learn extensively about the school and the community. Tiberondwa (2012) notes that induction services are designed for various categories of school staff through local connections, seminars, and workshops. Units, departments, or groups can participate in these courses. In this context, newly hired teachers, newly appointed department heads, and other staff members are expected to attend specific short courses to familiarize themselves with their new responsibilities. A study undertaken by Save the Children Rwanda (2014) found out that induction trainings for teachers made them gain confidence and competence in the schools and classes they were assigned. The recommendation in the Teacher Development Position paper (2014) is to have mentors in each school to have induction trainings for new teachers so that the latter can be able to gain confidence and put their learning into practice effectively (TDPP, Save the Children Rwanda, 2014). However, this is achieved less than they should, thereby leading to weak education standards. Induction will assist teachers with learning the basics as they adjust to the class and receive their first assignment. (Tiberondwa, 2012).

### **Seminars**

These are another style of continuous professional development and come in the form of a series of lectures or presentations over several days on a specific subject. Seminars as a resource are an excellent way for professionals to expand themselves through learning from the best in their field, conversations with colleagues, and keeping up with industry news (Brown & White, 2022). Attending seminars can help individuals expand their knowledge, gain new perspectives, and build their professional network. One must enroll in seminars and continuing education courses in addition to textbooks to fully comprehend the position and develop into a great teacher (Hill, 2012). It is going above and beyond what is required and what is in the textbook that is good. Teachers need to continue attending classes in order to become great educators.

### **Workshops**

Workshops represent a good example of continuous professional development, especially given their tangible, experiential nature (Garcia & Martinez, 2020). Workshops are a good way for professionals to get hands-on experience, get real-time feedback, and be able to use the skills learned in real life. Further dependability of workshops for educators was offered through onsite as well as online workshops (Hill, 2012). Workshops are interactive, hands-on sessions where professionals can practice techniques, learn new skills, and work with peers.

### **In-service Training**

Employers often offer in-service training as a means of continuous professional development to help employees improve their skills and abilities. Johnson and Smith (2023) argue that on-the-job training programs can improve employee productivity, help them become familiar with industry best practices, and learn new technologies. Employers can increase productivity, job satisfaction, and employee retention by investing in on-the-job training. Professional training aims to improve teachers' ability to respond to new knowledge, perspectives, and changing circumstances, either as a team or individually. The goal of this is to either directly or indirectly raise the bar for students' education (Shanmugavelu, 2015). It achieves this by supporting staff development, a process that aims to improve an employee's performance in a position that entails certain job responsibilities, by encouraging individual professional growth (Sulley, 2018). Problem-focused, learner-centered, and time-bound activities make up in-service training. Sulley (2018) states that these activities offer the chance to develop a sense of purpose, extend the customers' perspective, and boost the ability to learn skills that will enable participants to become masters. This must be done through open and remote learning since it offers many people a consistently high-quality education at a cheap cost (Danaher & Umar, 2010) Globalization of remote education provides numerous ways by which countries can achieve their goals for their whole learning systems. Remote education has grown in demand because of advances in technology and the necessity to continually develop and retrain (Buselic, 2012, p. 25). The goal of distance learning is to provide learning to students who are unable to participate in a traditional setting such as a class, generally one-on-one. Distance learning emphasizes technological advances and teaching strategies to achieve this (Buselic, 2012).

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## Conferences

Conferences are large gatherings of professionals from a company for the purpose of knowledge sharing, networking, and professional learning. Patel and Singh (2021) state that conferences provide a great way for employees to interact with their peers, learn new ideas, and stay abreast of industry trends. Employees can attend events to expand their knowledge, strengthen their professional networks, and keep up with the latest developments in their field. According to Opfer and Pedder (2010), p. 241, the UK offers the following forms of continuous professional development (CPD): (1) workshops that take place in or outside of schools; (2) certified courses; (3) university courses; (4) teacher collaboration activities; (5) conferences; (6) mentoring, coaching, or watching other teachers in the classroom (lesson study); (7) joining committees; (8) teacher learning communities; and (9) self-learning.

### Effectiveness of Existing CPD on Teachers Development

Research (Nyaaba et al., 2023; Rajendran et al., 2023; Abakah et al., 2022; Ambon et al., 2024) has consistently indicated that existing CPD programs significantly enhance teacher effectiveness by improving teaching pedagogical skills, content knowledge, classroom methods, and student learning outcomes.

First, research has indicated that CPD programs improve teaching quality by enhancing teachers' pedagogical practices, such as classroom management, differentiated instruction, and technology utilization. For example, Nyaaba et al. (2023) evaluate the influence of CPD on teachers on student engagement and satisfaction. Utilizing a combination of methods, the study enrolled 346 students and 191 instructors. According to the partial least squares findings, CPD improves the quality of instruction by assisting instructors in acquiring better pedagogical abilities, which in turn raises students' academic performance. Rajendran et al. (2023), on the other hand, came to a similar conclusion and systematically reviewed the literature to determine how CPD activities affected instructor retention and performance. The findings revealed that well-designed CPD programs positively correlate with teacher performance and retention. The research concluded that CPD programs improve teacher pedagogical content knowledge (TPCK) and classroom management. Based on this, it was recommended that institutions should increase TPCK by providing them with relevant CPD programs. Ambon et al. (2024) examined the effects of CPD initiatives on the quality of teachers using a systematic review approach. According to the inclusion criteria, 24 articles conclude that CPD greatly improves teaching quality by enhancing teachers' pedagogical and problem-solving abilities in the classroom. Based on the conclusion that CPD enhances the quality of instruction, the research suggested that schools foster a supportive environment that promotes CPD.

Again, research has found that existing CPD can improve teacher efficacy by boosting their confidence in their abilities, which leads to a greater commitment to their profession, which in turn results in a greater dedication to their career. Additionally, it aids teachers in improving their self-perception. For instance, Rajendran et al.'s (2023) systematic review discovered that when teachers actively engage in a well-designed CPD program, it helps to heighten their instructional efficacy, which increases their likelihood to remain in the profession. The results indicate that CPD programs may boost instructors' self-assurance in their work as they are able to keep up with current information and skills in their fields and enhance their sense of self-assurance in the job, which encourages them to stay in the profession. In a similar vein, Abakah et al. (2022) found that participating in CPD programs helps to increase teachers' confidence in remaining in the service. The authors explained that CPD programs give the teacher hope in their work because it increases their chances of staying updated, thereby increasing their likelihood of remaining in the service to improve teaching and learning.

Moreover, the current CPD was found to have a beneficial influence on student instruction. When CPD is in line with course objectives and classroom needs, research shows a connection between participating in high-quality CPD and better student learning results. Nyaaba et al. (2023) discovered that CPD programs not only enhance teacher quality but also play a significant role in impacting scholarly performance. The connection between CPD and academic achievement is favorable in their study. The more teachers receive well-designed CPD programs, the better students' academic achievement, according to the hypothesis. Likewise, in the research of Rajendran et al. (2023), their methodical examination revealed that CPD is positively associated with student involvement and results. They explained that as CPD improves instructors' instructional effectiveness, they gain a deeper understanding of their work, and this in turn leads to improved student engagement and academic outcomes.

Finally, current CPD was discovered to enable instructors to assess their instructional methods and pinpoint areas for development. Abaka et al. (2023), for example, in the Ekumfi district, carried out a qualitative study in 2023 and used 32 teachers to examine instructors' experiences with distance education enrichment programs and their recommendations for improvement. One of the discoveries made was that DE, as a component of CPD, helps improve teachers' understanding of their subject areas, and this helps them to critically identify their strengths and weaknesses in their subject areas.

Existing studies have demonstrated that CPD has a significant positive relationship with teacher development. Implying that CPD programs are effectively done, they turn to improving the teachers, making them current in their work. Despite these past studies highlighting the role of CPD in teacher development, it fails to clarify the underlying mechanisms that influence this relationship. Also, these studies relied on cross-sectional data, which collected snapshot data from participants, failing to account for the long-term impact of the relationship. Furthermore, most of the research that is currently available was conducted outside of Ghana, and the few studies that were conducted there are not relevant to this one. It is challenging to comprehend these relationship dynamics in the study's current context due to this contextual vacuum. As much as that, this study aimed to respond to this call to address these contextual gaps and use qualitative insight to understand the underlying mechanisms that influence this relationship.

## **Empirical Review**

### **Level of Teacher Competence**

In order to address the demand of their students, instructors must possess professional competence. It is therefore imperative to find out the levels of professional competence as reported in previous studies. The study by Wachidi, Rodgers, and Tucano (2020) examined the professional competence understanding level of 100 basic school instructors in Bengkulu City, Indonesia, in implementing the 2013 curriculum. The research used an exploratory and descriptive research design, with data collected through a questionnaire and paper study. The study employed descriptive and exploratory research design, collecting data via a questionnaire and paper. The findings showed that the teachers were competent and highly skilled, with professional competence being highly significant, as it has the potential to improve learners' instructional outcomes. The study underscores the significance of professional competence in ensuring the successful implementation of curriculum in education.

In 25 secondary schools in Konawe, Southeast Sulawesi, Hakim (2015) examined the relationship between teacher competency and student achievement. The study found that instructors displayed strong professional abilities, suggesting that competence is a fundamental trait associated with the effectiveness of individual performance. Because competence is a personal trait that influences whether one succeeds or fails in circumstances, teacher professional competence must be greatly improved.

For future instructors of physical culture, Voitovska (2013) investigated the computer diagnostics of the development of professional competence in Ukrainian higher education establishments. This study examined students' capacity for questioning and described a computer program called VSD, which monitors the proficiency of aspiring physical education teachers in biological topics. Researchers employed mathematics to analyze the outcomes of experiments and observations of teachers' instruction. The students noticed and responded favorably to the fact that instructors with superior abilities performed their jobs better. According to the study, teachers should constantly strive to enhance their abilities in demand to support their students' success.

Teygong (2018) investigated how teachers' instructional skills affected pupils' academic achievement in Chepkorio Ward, Elgeyo-Marakwet County's public elementary schools. The research, based on Vygotsky's social constructivist theory, involved 42 head teachers and 226 teachers, using questionnaires, interview guides, and document analysis tools. The findings showed that teacher pedagogical competencies significantly influenced academic performance. The study, which was based on Vygotsky's social constructivist theory, included 42 head teachers and 226 instructors. Learner-centered approaches were more prevalent than teacher-centered ones. Teachers used textbooks and reference books more frequently in classrooms than audio and video media. Assessment methods were based on questions and answers rather than continuous tests and regular examinations. Teachers used schemes of work more in the teaching and learning process than lesson plans,

progress records, and lesson notes. The study concluded that frequent and varied pedagogical competencies improved learning in schools, leading to improved academic performance by students. According to the study, students' academic performance improved because of consistent and diverse pedagogical strategies that enhanced learning in the classroom.

Mendez et al. (2017) assessed the professional development skills of preschool educators in Singapore. The research, which surveyed 97 teachers, revealed that they participated in informal CPD initiatives but not official CPD. The degree of participation of teachers was impacted by how they saw the worth of official and unofficial CPD programs. Classroom procedures and self-efficacy were improved through informal CPD initiatives. According to the research, frequent and diverse teaching skills enhance classroom learning and raise students' academic achievement.

Kunter et al. (2013) developed a thorough model of the effects of teacher competence traits. Data from the COACTIV project in Germany, which included 181 instructors from 194 schools, served as the basis for the study. According to the study, teacher professionalism predicted teaching quality, and professional development and general academic abilities had no effect on it. Teachers should concentrate on issues particular to the subject matter to enhance their teaching methods.

### **Comparison of Male and Female Teachers Level of Competencies**

Scholars have given attention to the disparity in skill levels between male and female instructors. However, empirical results have been inconclusive. Some studies revealed no significant difference; others found it had a significant difference.

To begin with, the outcomes have been uneven in terms of classroom management and resource utilization. There were conflicting results in studies about whether female instructors had superior skills. Those who discovered a substantial difference argue that female teachers are better at communicating with students, maintaining order, minimizing disruptive conduct, using resources efficiently, and establishing a favorable learning atmosphere to engage students more effectively than instructors of the opposite gender (Kumari, 2024). Those who found no differences argue that competencies should not be based on gender. For example, in India, Kumari (2024) discovered that female teachers are typically better at handling students than male teachers. On the contrary, Mustafa (2013) discovered the differences in the degree of teacher competency in classroom management and use of resources between male and female Indonesian teachers.

Again, studies have found that male teachers have found higher levels of competencies in techno-pedagogical skills. These studies explain that in terms of knowledge and skills in the use of technological tools to deliver lessons, male teachers show higher knowledge in that than females (Dar, 2022; Jan & Qureshi, 2021; Najjar & Yousuf, 2021). For instance, Jan and Qureshi (2021) found a notable distinction between public and private secondary schools' male and female teachers' techno-pedagogical competencies, with males having more competency than females.

Additionally, there have been mixed results on attitudes. Female teachers have been found to have more competencies and a better attitude towards the teaching profession than males. These studies explain that female teachers can observe professional codes of practice in teaching and maintain higher competencies in comporting (Basapur, 2019). On the contrary, some found no significant distinction between men and women instructors. However, they discovered no appreciable disparity in the professional demeanor of male and female educators (Dar & Khan, 2018; Ahiatrogah & Barfi, 2016). For example, in the Cape Coast metropolis, Ahiatrogah and Barfi (2016) discovered that there were no statistically significant differences between men and women ICT teachers' attitudes and levels of competencies in teaching the subject.

Moreover, certain studies examined the overall aspect of teacher competencies to determine if there was a notable variation. According to most of the research, women typically have higher competencies compared to men (Said et al., 2023; Rasheed & Sultan, 2023). 2019)

From the above, it can be concluded that there have been mixed results on men and women instructors' level of competencies. This can be due to the specific areas assessed and the population studied. Also, perceptions about gender roles in teaching can influence how teachers are evaluated, and this could potentially impact their assessment of their competencies. However, this study will provide empirical evidence to support or disagree with these inconclusive results.

### **Influence of Continuous Professional Development on Teacher Competencies**

Empirical evidence has shown that there is a robust and direct connection between TC and CPD. It has consistently shown that engaging in CPD activities significantly improves a teacher's knowledge, skills, and overall professional competencies. Key themes emerging from thematic analysis on this link include knowledge acquisition and updating, skill development, reflection and self-assessment, confidence building, and contextual relevance.

First, knowledge acquisition and updating is one of the key links between CPD and TC. CPD provides teachers with access to new pedagogical approaches, curriculum development, and emerging research in their field. This enables them to stay current and adapt their teaching accordingly. For example, Darling-Hammond et al. (2017) discovered that CPD training improved instructors' knowledge and abilities. The study concluded that teachers should be regularly given CPD as it improves their competencies. Similarly, Rodrigues et al. (2023) found that CPD programs enhance TC by increasing their pedagogical content knowledge and improving students' outcomes.

Again, the link between CPD and TC helps in the skill development of teachers. Through targeted CPD programs, teachers can hone specific skills like differentiated instructions, classroom management, assessment strategies, and technology integration. These lead to improved teaching effectiveness. For instance, Nkundabakura et al. (2024) examined the effectiveness of CPD on teachers' pedagogical content knowledge among upper primary teachers in Rwanda. The research employed an explanatory sequential integrative research approach to gather data from 290 teachers using structured interviews and achievement tests. The study found that CPD programs help to enhance teachers' interest, engagement, and confidence, thereby enhancing their pedagogical content knowledge in the teaching of mathematics and science. Likewise, Ambon et al. (2023) carried out a systematic review on the impact of CPD on teaching quality among Malaysian teachers. Based on the question of inclusion and exclusion, 24 articles were involved in the study. It became clear that CPD has a strong positive effect on the quality of by developing their pedagogical content knowledge, problem-solving skills, and assessment techniques in the classroom. Oseisi et al. (2024) studied the impact of CPD and attitudes on teaching effectiveness among 230 primary school teachers in Nigeria. The study employed a combined-method design. Quantitative instruments used included the attitude towards teaching scale, the teaching effectiveness scale, and the teaching professional development scale, while a semi-structured interview was used for qualitative data. The findings indicated results that CPD has a significant positive impact on teaching effectiveness by enhancing teachers' instructional skills, assessment, and classroom management.

Additionally, the CPD enhances TC by enhancing teachers' reflection and self-assessment. Effective CPD encourages teachers to reflect on their own practices, recognize areas they need to improve on, and establish personal targets for professional growth. This helps to promote the continuous growth of teachers. For example, a qualitative case study by Abaka (2023) examined teacher learning from CPD based on a sociocultural perspective revealed that CPD serves as a critical tool to help instructors reflect on their teaching strategies. The study explained that as teachers increase their skills through CPD, they stand better chances of assessing what they do in their classroom, and this helps them improve their professional practices. The only limitation was that the study used a small sample size, which affects the generalization of findings. In the same way, Njenga (2022) also explored the vocational teachers' learning needs on CPD. The research embraced a combined -methods design and recruited 170 instructors in Kenya. The research found that teachers were highly in need of CPD programs, as they found it essential for helping them improve their reflective skills in their field. The study further observed that teachers who had been given CPD before were in higher need than new teachers, and they suggested that CPD programs help to re-examine their practices in the classroom.

Moreover, CPD has been found to improve TC through confidence building. Research shows that participating in CPD boosts confidence of teachers in what they do, thereby fostering improved motivation and active class engagement. Competency is born out of confidence. It is achieved through teachers engaging in CPD programs. For example, recent research by CIPD (2024) revealed that CPD programs help teachers obtain comprehensive knowledge in their field, and this goes a long way to build their confidence in classroom management, assessment, and lesson delivery. Similarly, Evona (2023) highlighted that the use of CPD enhances teachers' confidence, broadens their knowledge, and helps them stay ahead of the curve.

Lastly, CPD helps contextual relevance by helping teachers to satisfy certain needs of the school. When CPD matched the demands of educators and their school environment. It is more likely to have a positive impact on their teaching practices and students' learning outcomes. For example, Rodrigues et al. (2017) found CPD to be an essential tool for meeting the professional needs of elementary science teachers by improving their instructions and student outcomes.

From the review, the major limitations of most of the studies were the use of a small sample size, which questioned the generalization of findings. Also, the reviewed studies fail to clarify our understanding of the underlying mechanisms that influence this relationship. For CPD to be effective in improving TC, it depends on the quality of the program design, delivery, follow-up support, and teachers need for that program. In addition, the studies failed to account for the long-term impact of CPD on TC. All the reviewed studies were cross-sectional. Lastly, from the review, little is known about this relationship in the Ghanaian context. However, this study bridges this contextual gap by investigating this relationship using a large sample size to enhance generalisation of study findings.

### **Relationship between School Leadership Support and Teacher Competencies**

There exists empirical evidence on the relationship between SLS and TC. Studies have demonstrated that there is a positive link between SLS and increased TC. These studies have highlighted that when school leaders actively support their teachers through means like professional development, feedback, and resource allocation, it leads to improved teacher efficacy and overall teaching skills. For instance, Li and Gong (2016) conducted a qualitative study where they interviewed 14 teachers on how teacher agency shapes professional learning in cross-sectional teaching contexts. The study found that when school leaders create a supportive environment for teachers, it enhances their agency to engage in mutual learning, thereby increasing students' outcomes. The study concluded that schools should provide a welcoming environment where they may assist their employees.

Similarly, Lee et al. (2020) examined the mediating role of teachers' psychological needs in the relationship between SLS and teacher work-related outcomes. The study used 180 Singapore primary teachers. The research confirmed that SLS has a direct influence on teacher work-related outcomes. In addition, it was found that teachers' psychological needs mediate this relationship. The study concluded that schools should aim at supporting the work of the teacher to enhance their satisfaction in the work.

So-oabed and Plessis (2023) explored the perspective of Namibian principals to find out their leadership skills for teacher professional growth. The study recruited 24 participants, with 6 being principals, 8 HoDs, and 9 teachers. A mixed-method approach was used. The results revealed that schools that have a positive and enabling environment for their teachers help to enhance their teacher's professional development. Based on this, the study concluded that SLS enhances teacher quality.

The impact of school leadership methods on Rwandan secondary school teachers' dedication was investigated by Musabayire and Sikubwabo (2024). The study used 207 participants, with 44 being school leaders and 167 teachers. Correlational design guided the study. The results revealed that school leadership practices and support led to increased teacher quality and commitment. The study concluded that school leaders should continuously monitor their teachers and support them to be committed to their work.

When a culture of CPD is cultivated in school. It strengthens school leaders to build teachers' capacity which will help them adapt to new challenges, contributing to the resilience of the education system (Quartey,2025).

Again, research indicates that when CPD gets support with the required embarkment of resources by school leaders, it results in higher teacher efficacy and students' performance. (Asare&Osei,2021)

From the above, SLS positively increased TC. However, most studies were qualitative with a small sample size, limiting the generalisation of findings. In addition, the studies could not clarify how context can impact specific leadership behaviour and TC. If teachers are supported with specific needs without clear instruction and collaborative decision-making, there will be no way SLS can work effectively on TC. Also, how teachers perceive the level of support they receive from their schools matters in this relationship.

### **The Moderating Role of SLS in the Relationship Between CPD and TC**

School leaders play a crucial role in the link between CPD and TC. They are involved in designing and implementing CPD programs, facilitating participation, creating a supportive environment, monitoring and evaluating CPD impact on teachers' effectiveness, and providing personalized support. First, school leaders take the responsibility by identifying the specific needs of their teachers and designing CPD programs that directly address those needs. They make sure the content is relevant and aligned with school goals to make the teacher current in their pedagogical skills, assessment, and classroom management.

Also, schools create a culture of learning. When school leaders actively promote a positive attitude towards continuous learning and provide opportunities for reflection and feedback, teachers will be more engaged with CPD and apply what they have gained. In addition, leaders can provide regular feedback to teachers on their performance, identifying areas for improvement and tailoring CPD support to address those needs (Baxter & Jack, 2010). In the same way, leaders can ensure teachers have dedicated time to engage in CPD activities and provide necessary resources such as funding for relevant training or access to external support (King, 2020).

Moreover, leaders support the link between CPD and teacher competency by monitoring and evaluating CPD impact. As leaders actively track the influence of CPD on teacher practice and student outcomes. Through that, leaders can identify areas for improvement and make adjustments to future CPD programs (King, 2020). So-oabeb and Plessis (2023) explain that without clear leadership direction, teachers might not see the value in participating in CPD activities, leading to low engagement and limited impact. Again, without strong leadership support, teachers may not receive the necessary guidance and feedback to fully develop their competencies (Baxter & Jack, 2010).

From the above review, if teachers are not involved in planning CPD, programs might not address the specific needs of teachers or the school context. Higher school leadership support helps to amplify the positive impact of CPD on teacher quality.

### **Challenges Facing Teachers in Accessing and Engaging in CPD Programs**

Accessing CPD programs is very critical for every teacher. Research has consistently highlighted that teachers face so many challenges in accessing CPD programs, and these include lack of school management support, motivation, training, facilitators, time, recognition, and poor resonance.

First, lack of school support is one of the challenges teachers face in accessing CPD programs. Research has indicated that most teachers do not receive adequate support from their school management or leadership. These challenges include lack of input, resources, or budget to implement CPD. This challenge was clear in a study by Geldenhuys and Oosthuizen (2015) as they explored the challenges influencing teachers' involvement in CPD among South African teachers. One of the major challenges they discovered was the insufficient contribution of school management to teachers' CPD. The research further identifies that because of these challenges; most teachers lose interest in attending CPD programs.

Another challenge of accessing CPD is lack of motivation. It has been shown that most teachers have been found to be reluctant to attend CPD events due to low interest or commitment. This challenge was evident in the work of Geldenhuys and Oosthuizen (2015), as they found in the qualitative study that most teachers lack interest in participating in CPD activities as they consider it a waste of time and resources. Similarly in the work of Abraham

(2019), as he examined the practices and challenges in the implementation of school-based CPD among 101 Ethiopian teachers. The study employed a descriptive survey design and used a simple random technique to sample participants. The results revealed most teachers lack motivation or interest in implementing CPD activities in their classroom.

Additionally, lack of training is one of the challenges in accessing CPD activities. It has been shown that most teachers lack adequate training or skills in implementing CPD activities such as action research. Although CPD is given to them, its implementation is a problem as they did not receive comprehensive training and skills on that. The theoretical-based CPD activities make teachers not know the practicality of those programs. This challenge was evident in Abraham's work (2019), as he found that most Ethiopian teachers lack adequate skills in the implementation of action research, portfolio assessment, classroom management skills, etc. Similarly, this challenge was found in the work of Fumbo (2024) as he examined the challenges and opportunities of CPD among teachers in Cameroon. The study found that inadequate training remained a problem, as many teachers find it difficult to implement CPD activities in their classroom

Lack of time is another challenge in accessing CPD programs. Studies have found that lack of time has been a major barrier to why teachers cannot access CPD programs. Most teachers are busily scheduled with other activities, which makes them unavailable for these programs. The International Teachers Monitoring and Assessment Department (2019) found that 60% of teachers engage in personal business activities, which limit their full involvement in school-related programs. This highlights that most teachers engage in other business apart from their schoolwork, preventing them from having time for other school programs. This challenge is evident in the work of Abraham (2019), as it was found that most Cameroonian teachers do not access CPD programs due to time. In the study, most teachers complain that they engage in other personal activities apart from schoolwork. Also, others said they want to spend most of their time with their families. Similarly, Okpalauwaekwe et al. (2024) explored barriers for not participating in CPD programs. The study adopted a collaborative inquiry design and recruited 34 participants from Saskatchewan provinces, Canada. Time constraints were found to be one of the barriers affecting the accessibility of CPD programs.

Poor resonance and lack of recognition are also another factor affecting CPD programs accessibility. Empirical evidence reveals that most teachers do not resonate with the materials or presenters during CPD programs. This indicates that most facilitators cannot effectively deliver teachers to better appreciate activities taking place. Also, most of the materials given to these teachers do not contain the needed information they want. This suggests that needs assessment was not properly done to know what teachers need before organizing such programs. Also, it has been found that most teachers do not gain any recognition for their teaching. For instance, Okpalauwaekwe et al. (2024) found that most of the CPD programs organised in rural settings are not well presented, and this contributes to poor resonance and lack of recognition.

The above review has highlighted some major barriers teachers face in accessing CPD programs. Despite the plethora of studies on these barriers, there are gaps that need to be addressed. The above studies failed to account for contextual variations. Many of these studies did not adequately consider the unique challenges faced by teachers in different contexts, such as rural schools or schools with limited resources. This gap makes it difficult to understand the barriers these teachers face. Additionally, most of the studies relied on small sample sizes, making it difficult to generalize the findings. Again, the above studies failed to highlight how these challenges affect students' outcomes. Despite these limitations, the above study has comprehensively highlighted major barriers teachers face in accessing CPD programs.

## Conceptual Framework

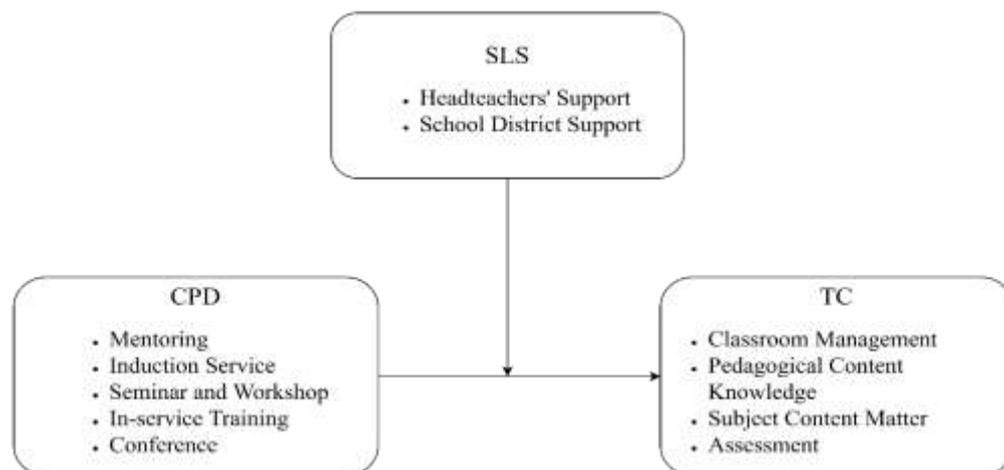


Figure 1: Conceptual Framework

(Source: Author's Construct, 2025)

From figure 1, continuous professional development (CPD) served as the independent variable while teacher competency served as the dependent variable. It is believed that CPD will positively increase teachers' competencies when effectively delivered. School leadership support (SLS) served as the moderate variable. It is believed that the level of school support will amplify or buffer the relationship between CPD and TC. These three variables were measured using a self-developed, validated, and reliable instrument.

## Summary of Chapter

The chapter started with an introduction, which was followed by a theoretical review that was inspired by social cognitive learning. A conceptual review that elicited the definition and explanations of CPD, the historical background of CPD, the purposes and functions of CPD, an explanation of the concept of competence, key components of teacher competence and methods used in CPD, and a conceptual framework was discussed. The chapter concluded with the empirical review, whereby research studies by scholars on topics of interest to the study were elaborated. The empirical review was organized based on the themes of CPD practices for teachers, the nature of CPD programs, the influence of the implemented CPD on teachers' competence, instructors' participation in CPD, and challenges teachers face in accessing or engaging in CPD programs.

## RESEARCH METHODS

### Introduction

This chapter presents the methodology used to carry out this study. It focuses on issues such as research paradigm, research approach, research design, research area, population, sample and sampling techniques, data collection instrument, data collection procedure, data preprocessing and analysis, and ethical issues.

### Research Paradigm

The study was guided by pragmatism paradigm. This paradigm dwelt on three major assumptions. First, it is grounded in the belief that knowledge is derived from experience and that inquiry is a process of problem solving and reflection (Turner et al., 2017). Secondly, it prioritizes practical outcomes and the usefulness of ideas over abstract principles (Bailey et al., 2022). Thirdly, it allows for flexibility and adaptability in research methods (Amofa, 2024).

This paradigm supports this study as it offers a practical and flexible framework for studying CPD and TC. Additionally, CPD aligns with pragmatic principles encouraging teachers to develop competencies through real-

world problem solving and reflective practices. Despite its usefulness to this study, critics argue that pragmatism lacks the philosophical depth needed to address more abstract or theoretical educational questions (Turner et al., 2017; (Damyanov, 2023), however, this study chose this paradigm as it focuses on real-world application and adaptability for achieving this study objectives.

## Research Approach

This study was rooted in a mixed-method approach. This approach allows for a comprehensive understanding by combining quantitative data with qualitative insight. This approach aligns with the study objective of getting a comprehensive understanding of the challenges of accessing CPD and how it impacts TC. However, the approach is time-consuming and expensive. Additionally, the use of this approach brings challenges in interpreting results and the need for expertise skills (Damyanov, 2023). Despite the limitations of this approach, it was the preferred approach because it makes results more credible and deepens understanding of a phenomenon (Bailey et al., 2022).

## Research Design

The study was rooted in a convergent mixed-method design. This design involves the collection of qualitative and quantitative data simultaneously, analysing them separately, and integrating results during interpretation. This design was used to leverage the strength of both the qualitative and quantitative research methods to provide a total insight on the impact of CPD on TC. Additionally, it helped in triangulating data by using the qualitative data to cross-verify the quantitative data; this helped to increase the reliability and validity of the research findings (Turner et al., 2017). Also, the use of this design helped the researcher to explore interconnections of the different datasets, and this helped us to gain more nuanced insights about the relationship between CPD and TC.

Despite this design being beneficial to this study, there were some limitations we encountered that need to be acknowledged. The use of this design was resource-intensive in terms of time and effort during data collection. Also, data integration was a bit challenging due to the differences in data types and analysis methods. However, these limitations did not affect the validity and reliability of the findings due to careful planning and resource allocation.

## Study Area

The research was confined to the Ashanti Region of Ghana. There are sixteen administrative regions in Ghana, including this one. The research was carried out in the Ashanti region, to be precise, the Amansie Central District. It can be found in the southern part of the region. It is located between longitudes 1000W and 2000W and latitudes 6000N and 6030N. It covers roughly 901 square kilometers in total. The district is bordered by Amansie East District to the northeast, Obuasi Municipal to the southeast, Adansi North to the east, and Amansie West District to the west. The district has borders with Adansi South District to the south and Upper Denkyira in the Central Region. Jacobu is the district capital. This district, which is primarily rural and has a diverse population involved in a variety of economic activities, was chosen as a great place to collect data on teacher CPD because it contains a wide variety of junior high schools with different sizes, student demographics, and resources, offering a rich context for examining how CPD programs affect teachers' competence with the district's school leadership's support.

## Population

The target population for this study comprised all public Junior High School (JHS) teachers in the Amansie Central District. A population of 420 teachers (256 males and 164 females) across eight educational circuits teaching in 51 public schools (Amansie Central Education Directorate, 2024). The eight circuits were Jacobu, Homase, Fiankoma, Tweapease, Fenaso -Fawomang, Mile 18, Nimeraso and Hia. Due to accessibility constraints, data collection was conducted in four of the eight circuits, and the circuits were Jacobu, Homase, Fiankoma and Tweapease, covering 31 public schools with a total of 275 teachers (174 males and 101 females).

The teachers' ages ranged from 26 to 48 years, and their educational qualifications varied from diploma to PhD. The majority had more than five years of teaching experience. Table 1 presents the distribution of the population.

Table 1: Population Distribution Across 31 Schools in the Four Circuits

Schools	Males	Female	Total
<b>Jacobu Circuit</b>			
1. Amansie Royal JHS	3	2	5
2. Birbiwomang D/A JHS	4	2	6
3. Jacobu Experimental D/A JHS	3	3	6
4. Jacobu R/C JHS	5	2	7
5. Jacobu Methodist JHS	7	4	11
6. Jacobu S.D.A JHS	7	4	11
<b>Homase Circuit</b>			
7. Afoako D/A JHS 'B'	5	2	7
8. Afoako D/A JHS	6	3	9
9. Adubriem D/A JHS	6	3	9
10. Aketechieso JHS	6	4	10
11. Akrofruum D/A JHS	6	4	10
12. Amamom-Anyan Kyerem Presby JHS	4	5	9
13. Amponya D/A JHS	9	4	13
14. Heman Akokoaso D/A JHS	5	5	10
15. Homase D/A JHS	5	3	8
16. Patase D/A JHS	7	4	11
17. Domiabra D/A JHS	8	5	13
<b>Fiankoma Circuit</b>			
18. Abuakwa D/A JHS	4	3	7
19. Abuntunso D/A JHS	6	4	10
20. Fiankoma D/A JHS	6	5	11
21. Fiankoma R/C JHS	5	3	5
22. Kente D/A JHS	5	3	8

<b>Tweapease Circuit</b>			
23. Adinkra D/A JHS	4	4	8
24. Apitisu D/A JHS	5	3	8
25. Aboo D/A JHS	5	2	7
26. Fenaso 3 D/A JHS	6	2	8
27. Nyamebekyere D/A JHS	6	3	9
28. Suhyenso D/A JHS	8	2	11
29. Woroworoso D/A JHS	7	2	9
30. Tweapease D/A JHS	6	4	12
31. Adinkra D/A JHS	5	2	7
<b>Grand Total</b>	<b>174</b>	<b>101</b>	<b>275</b>

(Source: Field Data, 2025)

### Sampling Procedure

In this study, Yamane’s formula was used to estimate the sample size for the study. The formula is expressed as:  $\frac{N}{(1+N(e)^2)}$ , where “N” is the population and “e” is the margin of error which is 0.05. Applying this formula ( $275 / 1 + 275 \times 0.05^2 = 163$ ) with a population of 275, the calculated sample size was 163. Following this, the sample proportion for each of the 31 schools within the four circuits was computed using the formula:  $SP = \frac{SF \times SS}{TP}$ , where SF is the sampling frame, SS as sample size and TP as total accessible population (Amofa, 2025).

For example, for Amansie Royal JHS, the male teachers were 3, applying the formula ( $SP = \frac{3 \times 164}{275} = 2$ )

After data collection, 159 responses were received out of 163. Two responses were removed due to incomplete data, leaving 157 valid responses, representing a response rate of 96% and a loss rate of 4%. The impact of this loss on the statistical power of the study was assessed at a 95% confidence level using the formula developed by Amofa (2025):

$$Power = ESP - \left[ ESP - \frac{ESP}{1 + (ESP \times LR^2)} \right]$$

where ESP is the effective statistical power confidence level (0.95) and LR is the loss rate (0.04). The calculation is as follows:

$$Power = 0.9480.95 - \left( 0.95 - \frac{0.95}{1 + (0.95 \times 0.04^2)} \right) = 0.948$$

This result shows that the confidence level of 0.95 was effectively maintained. Comparing 0.948 with 0.95 reveals a 99.8% similarity, with only a 0.2% difference, indicating that the reduced sample size did not compromise the statistical power of the test. Table 2 presents the sample proportions for the participating schools.

Table 2: Distribution of Sample Proportion Across the Schools.

Schools	Males	Female	Total
<b>Jacobu Circuit</b>			
1. Amansie Royal JHS	2	1	3
2. Birbiwomang D/A JHS	2	1	4
3. Jacobu Experimental D/A JHS	2	2	4
4. Jacobu R/C JHS	3	1	4
5. Jacobu Methodist JHS	4	2	7
6. Jacobu S.D.A JHS	4	2	7
<b>Homase Circuit</b>			
7. Afoako D/A JHS 'B'	4	2	5
8. Afoako D/A JHS	4	2	5
9. Adubriem D/A JHS	4	2	6
10. Aketechieso JHS	4	2	6
11. Akrofruom D/A JHS	2	3	5
12. Amamom-Anyan Kyerem Presby JHS	5	2	8
13. Amponya D/A JHS	3	3	6
14. Heman Akokoaso D/A JHS	3	2	5
15. Homase D/A JHS	4	2	6
16. Patase D/A JHS	5	3	8
17. Domiabra D/A JHS	2	2	4
<b>Fiankoma Circuit</b>			
18. Abukwaa D/A JHS	4	3	7
19. Abuntubso D/A JHS	3	2	5
20. Fiankoma D/A JHS	3	2	5
21. Fiankoma R/C JHS	2	2	5
22. Kente D/A JHS	3	2	5
<b>Tweapease Circuit</b>			

23. Adinkra D/A JHS	4	1	5
24. Apitisu D/A JHS	4	2	5
25. Aboo D/A JHS	5	1	7
26. Fenaso 3 D/A JHS	4	1	5
27. Nyamebekyere D/A JHS	4	2	6
28. Suhyenso D/A JHS	3	1	4
29. Woroworoso D/A JHS	2	1	3
30. Tweapease D/A JHS	2	1	4
31. Adinkra D/A JHS	2	2	4
<b>Grand Total</b>	<b>103</b>	<b>60</b>	<b>163</b>

(Source: Field Data, 2025)

A multistage sampling technique was employed to derive the required sample size for the study. Initially, the schools with the district were grouped into eight circuits. Four circuits were purposively selected based on their accessibility to the researcher. Following that, teachers within the four circuits were stratified into male and female. The sample proportion for each gender was then calculated to ensure appropriate representation. Finally, simple random sampling was applied to recruit the selected males and females based on their proportional representation ensuring that the sample size was achieved.

The application of this multistage sampling technique proved advantageous as it incorporated multiple approaches, thus enhancing rigor and minimizing potential sampling biases (Amofa, 2024). In addition, the use of this approach enhanced greater precision and accuracy in analytical estimations (Amofa, 2023). However, one limitation of this approach is the requirement for researchers to possess adequate knowledge of its procedure, as it can be complex and demanding. Despite its limitation, it proved beneficial for this study, making it a preferred choice for the study.

### Data Collection Instruments

A self-developed questionnaire, comprising both open and close-ended questions, was used for data collection. The development of the questionnaire was guided by a review of relevant literature, which provided operational definitions for the key variables: TC, CPD, and SLS. Additionally, consultations were held with teachers, headteachers, and district training officers to obtain a localized definition of these variables, ensuring that the instrument was contextually relevant. Based on these definitions, items were developed for each variable.

The questionnaire was structured into three components: introductory, body, and conclusion. The introductory section provided an overview of the study’s topic, purpose, and consent form. The body of the questionnaire consisted of five sections:

**Section A** gathered demographic information, including age, marital status, years of teaching experience, and qualification.

**Section B** collected information on CPD. The section evaluated the effectiveness of CPD programs or activities for JHS teachers. It consisted of 12 items focused on five areas (mentoring, induction service, seminar and workshop, in-service training and attendance of conference) with six Likert response options ranging from strongly disagree to agree.

**Section C** collected information on TC. The section evaluated teachers' level of competencies on four dimensions: pedagogical content knowledge, subject content knowledge, classroom management, and assessment. It consisted of 14 items.

**Section D** collected information on SLS. This section evaluated how school leaders support the implementation of CPD using 10 items focusing on two major areas: headteachers support and school district support.

**Section E** addressed the challenges teachers face in accessing the CPD programs, consisting of 12 close-ended items and one open-ended question. The questionnaire used a six-point Likert scale ranging from Strongly Disagree (SD) to Strongly Agree (SA).

The inclusion of both close and open-ended questions was beneficial to the study as it allowed the researcher to gain a deeper understanding of the impact of CPD on TC, as both questions captured the structured opinions and nuanced perspectives of participants. The open-ended questions allowed participants to freely express their thoughts on the challenges they face by accessing CPD. That helped to reveal perspectives that were not captured by the close-ended questions. Additionally, the use of the close-ended helped provide data that helped in easily statistical analysis, while the open-ended responses added context and richness to the quantitative findings (Sexena, 2024). Despite its usefulness, its limitation lies in the increased complexity of data analysis due to the need to interpret both quantitative and qualitative data produced. Also, the use of this instrument was time-consuming as it requires more effort to code and categorised the open-ended responses.

### Validity of the Instruments

Prior to the main data collection, the instrument underwent both pre-testing and pilot-testing. Two validity checks: face and content validity were carried out before the instrument was pre-tested. Face validity was employed as a preliminary check to assess whether the instrument appeared useful and relevant at first glance. To achieve face validity, the instrument was reviewed by colleagues who provided feedback on the relevance, clarity, and difficulty of the items. Their suggestions were carefully considered and used to refine and enhance the quality of the items.

Content validity was then assessed to ensure that the instrument's items adequately represent the content domain being measured. To validate the content, the instrument was forwarded to the supervisor, who meticulously examined each item to ensure alignment with the study's objectives. Constructive criticism was provided, and the feedback was used to make final revisions to the items.

Following the two validity checks, the instrument was pre-tested using a cognitive interview approach. Cognitive interview is a pre-testing approach that aims at getting people's understanding of how they react to the items in order to enhance the general quality of the items. In order to achieve that, four teachers were given the instrument to respond; they were asked how they understood each of the items. Their interpretation was compared to the expected interpretation of each of the items. Based on that, seven items (2 were items on TC, 3 on CPD, and 1 on SLS) were found problematic as their interpretation did not align with what was expected. For example, an item on TC states, "I integrate real-world experiences into the content and method of teaching"; participants interpreted "integrate" as "add," so it was revised as "I incorporate practical experience into teaching content and method". These revisions help to improve the overall clarity of the items.

### Pilot Testing

During the pilot testing, data was collected from 20 participants (comprising 6 females and 14 males) randomly selected from two circuits. Afterwards, exploration factor analysis was performed using Jamovi software version 2.6.1 to explore the underlying dimension of the data. The aim was to reduce the number of items by removing items that do not relate to the major constructions (CPD, TC, SLS). Before the main analysis, an assumption test such as the Barlett test and Kaiser-Meyer-Olkin (KMO) test was performed. The Barlett test was performed to explore whether the correlation matrix is significantly different from an identity matrix, while the KMO test determines whether each item sampling is adequate for factor analysis. The two tests were not violated, demonstrating the suitability of performing factor analysis. Table 3 below shows the results of the factor analysis.

Table 3: Factor loadings and Variance Extracted

Items	Loadings	Variance Extracted	Uniqueness
CPD1	0.60	0.36	0.64
CPD2	0.78	0.6084	0.3916
CPD3	0.7	0.49	0.51
CPD4	0.82	0.6724	0.3276
CPD5	0.55	0.3025	0.6975
CPD6	0.67	0.4489	0.5511
CPD7	0.86	0.7396	0.2604
CPD8	0.88	0.7744	0.2256
CPD9	0.76	0.5776	0.4224
CPD10	0.6	0.36	0.64
CPD11	0.84	0.7056	0.2944
CPD 12	0.78	0.6084	0.3916
<b>Removed Items</b>			<b>4</b>
<b>Average Variance Extracted (AVE)</b>			<b>0.55</b>
TC1	0.56	0.31	0.69
TC2	0.79	0.62	0.38
TC3	0.67	0.45	0.55
TC4	0.81	0.66	0.34
TC5	0.9	0.81	0.19
TC6	0.67	0.45	0.55
TC7	0.64	0.41	0.59
TC8	0.77	0.59	0.41
TC9	0.76	0.58	0.42
TC10	0.88	0.77	0.23
TC11	0.55	0.30	0.70
TC12	0.89	0.79	0.21

TC13	0.75	0.56	0.44
TC14	0.79	0.62	0.38
<b>Removed Items</b>			<b>4</b>
<b>Average Variance Extracted</b>			<b>0.57</b>
SLS1	0.76	0.58	0.42
SLS2	0.72	0.52	0.48
SLS3	0.69	0.48	0.52
SLS4	0.73	0.53	0.47
SLS5	0.67	0.45	0.55
SLS6	0.89	0.79	0.21
SLS7	0.67	0.45	0.55
SLS8	0.7	0.49	0.51
SLS9	0.68	0.46	0.54
SLS10	0.71	0.50	0.50
<b>Removed Items</b>			<b>0</b>
<b>Average Variance Extracted</b>			<b>0.53</b>

(Source: Field Data, 2024)

From Table 3, 4 items were removed from CPD, giving us an AVE of 0.55. When it comes to TC, 4 items were removed, giving us an AVE of 0.57, while with SLS, no item was removed, giving us an AVE of 0.53. The results imply that the items explain the variation of CPD, TC, and SLS by 55%, 57%, and 53%, respectively, indicating that the three major constructs are well represented by the above-measured variables.

### Reliability Assessment

Reliability was assessed in order to find out the extent to which the items within the instrument are consistent and contribute to the overall measurement of the constructs. In simply term, reliability ask the question, “How well individual items for each construct hang together to contribute to a unified measurement of that particular construct?” An accepted threshold for reliability is a coefficient value of commonly 0.70 or higher. In order to assess that both Cronbach alpha (CA) and composite reliability (CR) was computed. Table 5 below shows the results.

Table 4: Reliability Results

Constructs	CA	CR
CPD	0.92	0.93
TC	0.93	0.94

USLS	0.95	0.95
CPD * SLS	0.87	0.88

(Source: Field Data, 2025)

From Table 4 both the CR and CA values for CPD, TC and SLS are greater than the recommended value of 0.70. Additionally, the reliability of the interaction term between CPD and SLS is greater than the threshold value of 0.50 (Amofa, 2025; Memon et al., 2019), indicating that there is a strong internal consistency, hence measurement of the above construct is free from measurement error. Hence, concluding that reliability is established.

### Data Collection Procedure

For this study, prior to data collection, a letter of permission was addressed to the Department of Educational Studies to request approval for the study. Upon receiving their letter of approval, the researcher applied for ethical clearance. The ethical clearance along with the approval letter was forwarded to the participating schools to secure their support for the study. Within one week, the schools granted permission. Following that, a data collection schedule was arranged with the schools, including the schools for the pilot study. In August 2024, data were collected from the piloting schools over one week with sessions held Wednesday and Friday.

For the main study, two months were used for the data collection (October to November). Mondays and Wednesdays were used for the data collection. Throughout this period, the research team adhered strictly to ethical protocols. We ensured that participants understood the study and provided informed consent prior to participation. Although some participants skipped several items, possibly due to time constraints. Some were complaining that we collect data from them, but we don't share the results with them. However, this challenge was resolved by carefully reviewing each questionnaire and prompting participants to complete any missing responses. Participants were also assured that after the study the results would be shared with them. In all, three months were used for data collection.

### Data Processing and Analysis

In this study, quantitative data collected was entered into an Excel spreadsheet. Following that, data processing was performed. Continuous data that was missing was filled with the mean, while categorical missing data was filled using the mode. Following that, outliers and duplicates were assessed and corrected. After the data processing, descriptive statistics and correlation was done to summarize the data and to understand the trends and relationships that exist among variables. Afterwards, hypothesis testing was performed. To answer research question one, Mann-Whitney U-test was used. To test for H1, Mann Whitney U- test was applied. For H2, H3, and H4, partial least square structural equation modelling (PLS-SEM) was performed to test them.

For research question 2, consensus and thematic analysis were performed. With the consensus analysis, the consensus score was calculated, and then interquartile range was used to group the responses into three (agreement, neutral, and disagreement). For the thematic analysis, the collected data was preprocessed to remove stop words, quotations, and symbols. Following that, open coding was done to capture essential codes for each statement. Close coding was done to reduce the total codes generated through open coding. After that, codes were grouped to form themes.

### Assessment of the Quality of the PLS-SEM Measurement Model

In assessing the measurement model, the factor loadings, construct reliability, construct validity, collinearity assessment, and model fit indices were assessed. Below shows the results.

Table 5: Measurement Model Assessment

	<b>Loadings</b>	<b>VE</b>	<b>Uniqueness</b>
CPD1	0.68	0.46	0.54
CPD2	0.763	0.58	0.42
CPD3	0.785	0.62	0.38
CPD4	0.748	0.56	0.44
CPD5	0.745	0.56	0.44
CPD6	0.808	0.65	0.35
CPD7	0.745	0.56	0.44
CPD8	0.765	0.59	0.41
CPD9	0.792	0.63	0.37
CPD10	0.787	0.62	0.38
CPD11	0.814	0.66	0.34
CPD12	0.769	0.59	0.41
<b>KMO = 0.901; Barlette &gt;.001</b>			
<b>(AVE = 0.59, CA = 0.93; CR = 0.94, Items Removed = 0)</b>			
TC1	0.621	0.39	0.61
TC8	0.667	0.44	0.56
TC9	0.664	0.44	0.56
TC10	0.808	0.65	0.35
TC11	0.698	0.49	0.51
TC13	0.74	0.55	0.45
TC14	0.722	0.52	0.48
<b>KMO = 0.849; Barlette &gt;.001</b>			
<b>(AVE = 0.50, CA = 0.83; CR = 0.87, Items Removed = 7)</b>			
SLS1	0.667	0.44	0.56
SLS2	0.574	0.33	0.67
SLS3	0.721	0.52	0.48

SLS4	0.804	0.65	0.35
SLS5	0.805	0.65	0.35
SLS6	0.789	0.62	0.38
SLS7	0.778	0.61	0.39
SLS8	0.807	0.65	0.35
SLS9	0.776	0.60	0.40
SLS10	0.792	0.63	0.37
<b>KMO = 0.901; Barlette &gt;.001</b>			
<b>(AVE = 0.57, CA = 0.90; CR = 0.93, Items Removed = 0)</b>			
<b>Interaction term Reliability (CPD*SLS): CA = 0.84; CR = 0.87</b>			

**Model Fit Indices Statistics:** RMSEA = 0.03; NFI = 0.95

(Source: Field Data, 2024)

Table 6: Discriminant Validity and VIF Results

Fronell and Larker Criterion				HTMT Ratio			VIF		
Construct	CPD	TC	SLS	CPD	TC	SLS	CPD	TC	SLS
CPD	<b>0.77</b>			0.73				2.29	
TC	0.45	<b>0.71</b>			0.67				
SLS	0.57	0.37	<b>0.75</b>			0.81	1.13	2.02	

(Source: Field Data, 2024)

From Table 5, the three major constructs were examined to check for indicator (item) reliability using a recommended threshold of 0.70 as an indicator of reliable items (Amofa, 2025; Hair et al., 2015). For CPD and SLS, only one item (CPD1; SLS1) was below the threshold; however, it was maintained as its inclusion did not affect the AVE. With the TC construct, 7 items were removed as their presence did not improve the AVE.

In terms of construct validity measured using AVE, all the constructs achieved the recommended AVE value of 0.50. The AVE for CPD, TC, and SLS were 0.59, 0.50, and 0.57, respectively. These indicate that construct validity is established. For the discriminant validity check, the Fornell and Larcker criterion and HTMT ratio were used. Discriminant validity assessment helps the researcher to know the distinctiveness of the constructs. The recommended ratio for HMTM is 0.85. For Fornell and Larcker criteria, the square roots of the AVE should be higher than the pair correlation of the construct with other constructs. The results in Table 6 reveal that all three constructs have HTMT values less than 0.85. Also, with the Fronell and Larker criteria, the squared root of all the AVE of all the construct is higher than the pair correlation between variables as seen in table 6 above, indicating the establishment of discriminant validity.

In addition, from Table 6, collinearity was assessed to check whether the independent variables strongly correlate among themselves instead of the dependent variable. The collinearity problem does not help us in determining

the contribution that each independent variable plays towards explaining the dependent variable. In addition, it contaminates the model for determining the true predictive power of the independent variables (Amofa, 2024). The common recommended threshold value used for assessing is a value below 3.3. In the study as a whole, the VIF was below the recommended value of 3.3, indicating that there is no issue of collinearity.

For the reliability check, Cronbach's alpha (CA) and composite reliability (CR) were used to measure the internal consistency of the responses produced by the instruments. Both CA and CR use a recommended value of 0.70. In addition, the interaction reliability was assessed using a recommended threshold of 0.50 (Amofa, 2025). From table 6, all the three values have both CR and CA values above 0.70. CPD had a CR and CA of 0.94 and 0.93, respectively. TC had a CR of 0.87 and CA of 0.83, while SLS had a CR of 0.93 and CA of 0.90. The interaction term (CPD \* SLS) had 0.84 and 0.87 for CA and CR, respectively.

Lastly, the fitness of the model to the data was assessed using two fit indices: RMSEA and NFI, as seen in Table 5. The recommended value is  $< .08$  for RMSEA and  $< .90$  for NFI. The provided results shown that both RMSEA and NFI were 0.03 and 0.95, respectively, greater than the recommended, indicating that the data fit perfectly for PLS-SEM model.

### **Ethical consideration**

Ethics in research involves gathering knowledge and consent from participants, respecting their rights, and avoiding harm. It includes cultural sensitivity, gender, anonymity, privacy, and secrecy. Researchers must maintain ethical conduct, obtain respondents' agreement and establishing a connection before data collection. They ensured the sample population provided required consent, ensuring no one was forced to participate. In the study, respondents were free to discontinue participation if they felt uncomfortable. Anonymity and confidentiality were maintained throughout the research process. In this study, the names of respondents were omitted, and specific elements of the respondent's requirements were described using appropriate terminology. Stakeholders were informed of the research's results and practical implications in an understandable, accessible, and suitable manner. To prevent plagiarism, the researcher recognized all authors and acknowledged all authors.

### **Summary of Chapter**

This chapter discusses the methodology that was employed to achieve the purpose of the study. The study used convergent mixed method design to collect data from 157 JHS teachers using a multistage sampling procedure. A self-developed validated questionnaire was used to gather data for the study. The study tested five hypotheses using one sample t-test, two independent sample t-test and partial least square structural equation modelling (PLS-SEM) for quantitative analysis while consensus and thematic analysis were used for the qualitative analysis. The study assessed the quality of the PLS-SEM before it was used for hypothesis testing. Additionally, during data collection, the study ensured ethical consideration.

## **RESULTS AND DISCUSSION**

### **Introduction**

The study employed a mixed method design to explore the impact of CPD on TC: the moderating role of the SLS. Data was collected from 157 JHS teachers within the Amansie Central District in Ashanti Region using both open and close-ended questionnaire. The one sample t-test, two independent sample t-test and partial least square structural equation modelling (PLS-SEM) were employed to test three hypotheses for the quantitative analysis while consensus and thematic analysis was used for the qualitative analysis. This chapter is divided into three parts: data understanding (descriptive statistics and correlation matrix), hypothesis testing results and qualitative analysis results, followed by interpretation and discussion.

**Presentation of Results**

**Demographic Data**

Table 7: Demographic Information

<b>Variables</b>	<b>Counts</b>	<b>% of Total</b>
<b>Sex</b>		
Female	43	27.4 %
Male	114	72.6 %
<b>Teaching Experience</b>		
1 - 5 Years	21	13.4 %
6 – 10 Years	46	29.3 %
11- 15 Years	37	23.6 %
16 - 20 Years	37	23.6 %
21 - 25 Years	13	8.3 %
Above 25 Years	3	1.9 %
<b>Age</b>		
26 - 35 Years	53	33.8 %
36 - 45 Years	75	47.8 %
46 - 55 Years	19	12.1 %
Above 55 Years	2	1.3 %
Below 25 Years	8	5.1 %
<b>Marital Status</b>		
Divorce	10	6.4 %
Married	107	68.2 %
Single	40	25.5 %
<b>Qualification</b>		
Degree	103	65.6 %
Diploma	25	15.9 %
Masters	27	17.2 %

PhD	2	1.3 %
<b>CPD Type</b>		
All the above	61	38.9 %
Certificate courses	12	7.6 %
External School INSET	2	1.3 %
In School INSET	34	21.7 %
Workshop	48	30.6 %

(Source: Field Data, 2024)

From table 7, majority of the respondents were male accounting for 114 (72.6%) while females constituted 43 participants (27.4%). In terms of teaching experience, participants reported varied years of teaching experience. Teachers with 6–10 years of experience formed the largest group, representing 46 participants (29.3%). Teachers with 11–15 years and 16–20 years of experience each accounted for 37 participants (23.6%). Teachers with 1–5 years of experience comprised 21 participants (13.4%), while those with 21–25 years made up 13 participants (8.3%). Only 3 participants (1.9%) reported having over 25 years of teaching experience.

Also, in terms of age, the distribution showed that the majority of teachers were between 36 and 45 years old, 75 (47.8%). Teachers aged 26–35 years followed, 53 (33.8%), then those aged 46–55 years, 19 (12.1%). A smaller group of teachers were below 25 years, 8 (5.1%), and above 55 years, 2 (1.3%), respectively.

In addition, when it comes to marital status, the majority of the respondents were married, 107 (68.2%), followed by single, 40 (25.5%), and divorced, 10 (6.4%). Again, when it comes to educational qualifications, the highest educational qualification was a degree, 103 (65.6%). Followed by a master's degree (27, 17.2%) and diploma (25, 15.9%). The qualification with the least participants was PhD 2 (1.3%). Lastly, in terms of CPD participation, 61 participants (38.9%) reported engaging in all types of CPD activities. Workshops were the next most common CPD type, 48(30.6%). In-school INSET was selected by 34 (21.7%), while 12 participants (7.6%) participated in certificate courses. External school INSET was the least common, 2 (1.3%).

Table 8: Descriptive Statistics

Variables	Mean	SD	% CoV (Disagree)	% CM (Agree)
CPD	5.04	0.712	22 (14%)	135 (86%)
TC	5.22	0.444	13 (9%)	144 (91%)
SLS	4.91	0.794	25 (16%)	132 (84%)

(Source: Field Data, 2025); CoV = Coefficient of Variation  $\left(\frac{\text{Mean}}{\text{SD}}\right)$ , CM = Clustered to Mean  $(1 - \text{CoV})$

From Table 8, participants reported high levels of the main variables: CPD, TC, and SLS. For CPD, the mean score was 5.04 with a standard deviation of 0.712, indicating that on average teachers perceive their CPD engagement as high. Specifically, 22 responses (14%) were identified as being distant from the mean, whereas 135 responses (86%) were closely clustered around the average score.

For teacher competency (TC), it was rated highly with a mean score of 5.22 and a standard deviation of 0.444. A substantial majority of responses (CM = 144 (91%)) were tightly grouped near the mean, with only 13

responses (9%) deviating from the average score. This low variability suggests a strong consensus among participants regarding their level of competency.

For school leadership support (SLS), the mean score was 4.91 with a standard deviation of 0.794. The responses showed moderate variability with 25 responses (16%) lying away from the mean and 132 responses (84%) clustering around it. From the results, teachers generally perceive themselves to have high levels of CPD, TC, and SLS. The relatively low percentage of the coefficient of variability (%CoV) for TC as compared to CPD and SLS reinforces that there is strong agreement among teachers about their competencies.

Table 9: Correlation Matrix

Variables	1	2	3	4
1. CPD	—			
2. SLS	0.57***	—		
3. TC	0.45***	0.37***	—	
4. CPD*SLS	0.85***	0.90**	0.54***	—

NB: \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

(Source: Field Data, 2025)

Table 10: Predictive Power Score Results

Predictors	Predictive Power Score (PPS)
CPD → TC	0.048
SLS → TC	0.031
CPD*SLS → TC	0.023

(Source: Field Data, 2025)

Table 9 and 10 shows that there is a moderate statistically significant positive correlation between CPD and SLS ( $r(157) = 0.57, p < .001$ ) implying that higher levels of school leadership support are associated with increased CPD. Also, there is a moderate and statistically significant positive correlation between CPD and TC ( $r(157) = 0.45, p < .001$ ), indicating that increased CPD leads to improved teacher competencies. However, there is a weak but still significant positive correlation between SLS and TC ( $r(157) = 0.37, p < .001$ ), indicating that higher levels of school leadership support are linked to better teacher competencies. Additionally, the interaction term (CPD\*SLS) has a moderate and statistically significant correlation with TC ( $r(157) = 0.54, p < .001$ ), indicating that the combined effect of CPD and SLS is associated with higher teacher competencies.

The PPS scores, which are computed using an advanced machine learning algorithm (Decision Tree) above, reveal that both CPD (PPS (157) = 0.048) and SLS (PPS (157) = 0.031) have a small predictive power for predicting TC; however, the predictive effect of CPD is a little higher than SLS. The interaction term also has a small predictive power (PPS (157) = 0.023), suggesting that while CPD and SLS together are related to TC, their combined predictive influence is minimal. These findings suggest that while CPD, SLS, and their interaction are related to teacher competencies, additional factors likely influence TC. This above analysis reveals that correlation only quantifies the strength and direction of a linear relationship but does not tell us the predictive pattern of that relationship. In order to comprehensively examine how the variables predict each other, there is a

need to use more robust models to capture the dynamics of this relationship. Hence, the use of PLS-SEM. Below are the results of the hypothesis tests.

## Quantitative Findings

### Research Question 1

#### What is the level of teacher competency before and after participation in continuous professional development?

This research question seeks to find out the level of teacher competency after teachers have been engaged in continuous professional activities. Specifically, it aims to compare whether the level of teacher competency improved before and after engagement in professional activities. To address this question, a two-independent-sample t-test was used. The dependent variable was teacher competency, and the independent variable was the two conditions (before and after). Teacher competency was measured using a scale ranging from strongly disagree to strongly agree.

Before the use of the independent t-test, an assumption test was performed. A normality test was conducted to check whether the data were normally distributed. The Shapiro–Wilk test showed that the data were not normally distributed (Shapiro-Wilk (157) = 0.906,  $p < .001$ ). The histogram also suggested that the data were negatively skewed. Additionally, the homogeneity of variance test was conducted to assess whether the variances for the before and after conditions were equal. Both the variance ratio (VR (83, 72) = 0.345,  $p < .001$ ) and Levene’s test (Levene (1, 155) = 9.89,  $p = 0.002$ ) result showed that the assumption of homogeneity of variance had also been violated. Based on these violations, the two-independent-sample t-test would give unreliable estimates. Hence, the Mann–Whitney U test, a non-parametric test, was used. The Mann–Whitney U test compares the medians of the before and after groups to determine whether there is a significant difference. The use of the median is robust when data are not normally distributed, as the mean becomes unreliable when both normality and equality of variance assumptions are violated. Effect size was also computed to explain the magnitude of the differences between the before and after conditions. Since the data violated both assumptions, Cohen’s effect size was not used. Instead, a rank-biserial correlation was used to measure effect size, with values of 0.2 indicating a small effect, 0.5 a moderate effect, and 0.8 a large effect. Table 12 below presents the results.

Table 12, below, shows the results of the test.

Table 11: Level of TC and its Interpretation

Level	Interpretation
0 – 1.4	Relatively lower
1.5 – 2.4	Low
2.5 – 4.4	Average
4.5 – 5.4	High
5.4 Above	Higher

(Source: Field Data, 2025)

Table 12: Mann-Whitney U Results on TC before and After Engaged in CPD

Variable	Median	SD	Percent	Mann-Whitney U	p
TC (After)	5.50	0.199	92%	0.00	<.001

<b>TC (Before)</b>	<b>4.96</b>	<b>0.339</b>	<b>83%</b>		
<b>Difference</b>	<b>0.54</b>	<b>-0.14</b>	<b>9%</b>		
<b>Effect Size</b>	<b>-1.00</b>				

(Source: Field Data, 2025)

From Table 12, the Mann–Whitney U results indicate that there is a large and significant difference between the levels of competency before and after engagement in continuous professional development ( $U = 0.00, p < .001$ ). The model suggests that before teachers were exposed to continuous professional development, their median level was 4.6 with a standard deviation of 0.339, representing 83%. However, after exposure to continuous professional development, their median rose to 5.50 with a standard deviation of 0.199, representing 92%.

The median difference between before and after was 9%, which means that on average, teachers exposed to continuous professional development increased their competency by 9% compared to those not exposed. The point-biserial correlation, which measures the size of the differences, was -1.00, indicating that exposure to continuous professional development has a profound impact on teachers’ competency levels. The results show that teachers who did not engage in continuous professional development and relied only on their pre-service knowledge had competency levels between moderate and high. However, teachers who engaged in professional development activities, such as short courses, programs, or certificate courses, increased their competency from moderate to higher levels.

The above results indicate that continuous professional development enhances teacher competency in areas such as assessment, classroom management, content delivery, interpersonal relationships, and lesson delivery, more than teachers who are not exposed to these activities. This suggests that when a teacher is exposed to these activities, it helps update their knowledge, making them more competitive in their field compared to teachers who rely only on pre-service knowledge. In practice, this result suggests that for teachers to stay current or up to date in their field, exposure to continuous professional development helps them become more competent. Teachers who have not engaged in such activities, or schools where teachers have not participated, are negatively affected in terms of professional progression, job performance, and students’ academic performance. This implies that teachers who are exposed to continuous professional development remain more relevant and productive, while that not exposed risk reduced relevancy, undermined currency, and low productivity.

Thus, the question of teachers’ competency before and after exposure has been answered. Teachers exposed to continuous professional development demonstrate enhanced competency in their field compared to those who are not. Hence, it is concluded that continuous professional development has a significant influence on professional competency.

### Hypothesis Testing Results

#### **H1: There is no statistically significant difference between male and female teachers’ level of competencies among Junior High School teachers in the Amansie Central District.**

This hypothesis sought to test whether the level of TC among male and female teachers is equivalent. A two independent sample t-test was performed to test this hypothesis with sex serving as the independent variable and TC as the dependent variable. Prior to the main test, a preliminary assumption test for normality and equality of variance was conducted. While the equality of variance test was satisfied; variance ratio (43, 114) = 0.927,  $p = 0.732$ ; Levene (1, 155) = 1.18), the normality assumption test was violated (Shapiro-Wilk (157) = 0.955,  $p < .001$ ). Consequently, a non-parametric Mann-Whitney U test was employed to assess the hypothesis. Table 13 below shows the results.

Table 13: Mann-Whitney U Test Results

Hypothesis	U	p	Median diff	Effect Size	% Similarity	Decision
H1: Sex → TC	2403	0.850	0.07	-.0198	98.7	Supported

(Source: Field Data, 2025)

From Table 13, the Mann-Whitney U test revealed no statistically significant difference between male and female teachers' level of TC;  $U(155) = 2403, p = 0.850, \text{median diff} = 0.07, \text{effect size} = -.0198$ . The median TC for males was 5.29 (SD = 0.419), while the median TC for females was 5.36 (SD = 0.508), showing a very small difference of 0.07 (approximately 1.3%). Amofa's similarity percentage index expressed as:

$ASP = 1 - \frac{(\text{Females Median} - \text{Males Median})}{(\text{Females Median})}$  yielded a similarity index of 98.7%, indicating that the two groups had a 98.7% similarity in their level of TC. Hence, this result provides a strong support for H1, confirming that there is no statistically significant differences in the level of competencies between male and female teachers in the Amansie Central District.

**H2: CPD has no statistically significant influence on TC among Junior High School teachers in the Amansie Central District.**

This hypothesis sought to examine the influence of CPD on TC. CPD served as the independent variable while TC was the dependent variable. This hypothesis was tested using partial least square structural equation modelling (PLS-SEM) based on 10,000 bootstrap samples. Cohen F2 was used to compute the marginal effect of CPD on TC (Cohen, 1988). An F2 value equal to or greater than 0.02, 0.15, and 0.35 shows small, moderate, and medium effects, respectively. The explanatory power of the model was evaluated using the coefficient of determination ( $R^2$ ), which was interpreted based on Hair et al.'s (2011) classification. This classification reflects contemporary educational concerns regarding the predictive power of an educational model. Its classification includes  $R^2$  less than 0.25 indicates very weak; values between 0.25 and 0.50 are considered weak; values between 0.50 to 0.75 indicates moderate; and values of 0.75 or higher substantial explanatory power. Table 14 below presents the results.

Table 14: PLS – SEM Results

Hypothesis	B	SE	t	p	R <sup>2</sup>	Decision
H2: CPD → TC	0.369	0.053	6.962	< .001	0.205	Supported

(Source: Field Data, 2025)

From the PLS-SEM results in Table 14, CPD shows a significant positive relationship with TC ( $B = 0.37, p = 0.001, \text{CI} [0.27-0.48]$ ). A one-unit increase in CPD was associated with an average increase of 0.37 units in TC. CPD accounted for or explained 20.5 percent of the variability in TC. Based on Hair et al.'s (2011) classification, the  $R^2$  shows that CPD has a very weak explanatory power in the regression model. This aligns with the predictive power score of 0.05.

The model further explained that when individual CPD was 0, the average TC was 5.22 (indicating a high baseline competency level). As CPD increases from 0 to 1 unit, TC correspondingly increased from 5.22 to 5.6 (reflecting a higher level of competency) with an F2 value of 0.26, indicating that CPD has a moderate effect on TC (Cohen, 1998). These findings provide strong support for H2, confirming that CPD has a significant positive impact on TC among junior high school teachers in the Amansie Central District.

**H3: The influence of CPD on TC will be stronger when SLS is higher in the Amansie Central District.**

This hypothesis sought to find out the moderation role of SLS in the relationship between CPD and TC. CPD served as the independent variable, while SLS and TC served as moderator and dependent variable, respectively. PLS-SEM was used to perform the moderation analysis using SMART-PLS software. Below are the results.

Table 15: Moderation Results

Hypothesis	B	SE	t	p	R <sup>2</sup>	Decision
H3: CPD* SLS → TC	0.190	0.031	6.129	< .001	0.35	Supported

(Source: Field Data, 2025)

Table 16: Simple Slope Estimates

Levels of SLS	Path	B	SE	t	p	Moderation (%)
Average SLS	CPD → TC	0.369	0.035	10.54	< .001	33
Lower SLS	CPD → TC	0.219	0.046	4.76	< .001	20
Higher SLS	CPD → TC	0.52	0.029	17.93	< .001	47

(Source: Field Data, 2025)

From the moderation results presented in table 15, SLS strengthens the positive relationship between CPD and TC with a significant interaction effect (B = 0.190, p < .001, CI [0.13 – 0.25]). The inclusion of SLS has increased the explanatory power of CPD from 20.5% to 35%, showing a positive difference of 14.5% improvement in R<sup>2</sup>. However, based on Hair et al. (2011) classification, the interaction term's contribution to the model's predictive power is categorized as "very weak." Conversely, the F<sup>2</sup> value of 0.22 suggests that the inclusion of SLS is meaningful and relevant.

An examination of the simple slope as seen in Table 16 reveals that all the levels of the moderator: low (B = 0.22, p < .001, CI [0.13–0.31]), average (B = 0.37, p < .001, CI [0.26–0.48]), and high (B = 0.52, p < .001, CI [0.38–0.66]) enhances the positive impact of CPD on TC. However, at higher levels of SLS (48%), the relationship between CPD and TC strengthens substantially as compared to low (20%) and average (33%) levels of support. These findings provide strong support for H3, confirming that higher levels of SLS amplify the positive impact of CPD on TC.

### Summary of the Hypothesis Testing

Table 17: Summary for Hypothesis Testing

Hypothesis	Coeff.	p	Pred Sign	Decision
H1: μ Female TC = μ Male TC	2403	0.850	=	Supported
H2: CPD → TC	0.369	< .001	+	Supported
H3: CPD* SLS → TC	0.190	< .001	+	Supported

(Source: Field Data, 2025)

### Qualitative Insight

#### Research Question 2:

**What are the challenges teachers have in accessing and engaging in CPD programs in the Amansie Central District?**

This research question sought to explore the challenges teachers face in accessing CPD in their respective schools. To address this question, two analytical approaches were used: consensus analysis and thematic analysis. The consensus analysis was used to examine the overall level of agreement or disagreement among participants based on their responses to specific statements. For each response, the mean and standard deviation were calculated, using these values Amofa’s consensus percentage score (CPS) was computed (Amofa, 2025) using the formula:  $\left(1 - \frac{\text{Standard Deviation}}{\text{Mean}}\right) \times 100$

A consensus percentage > 75% indicates general agreement while percentage score < 50% shows general disagreement. A score between 50 to 75% suggests neutral opinion. To further validate the ACPS, the inter-quartile range (IQR) was computed to group the responses into the various levels (agreement, neutrality and disagreement). Following the consensus analysis, thematic analysis was done to identify patterns and themes in the qualitative responses. This approach provided a richer understanding of the specific challenges teachers face in accessing CPD programs. Table 18 below shows the consensus results.

Table 18: Consensus Results on Challenges in Accessing CPD

No	Statement	Mean	SD	IQR	CPS	Overall Opinion
1	CPD not relevant	1.75	1.056	1	40	disagree
2	CPD is time wasting	1.7	0.964	1	43	disagree
3	Impossible to complete CPD	2.04	1.034	1	49	disagree
4	CPD is waste of money	1.86	0.977	1	47	disagree
5	Not accessing CPD due mode of delivery	2.26	1.039	1	54	disagree
6	Not accessing CPD due Location of delivery	3.01	1.235	2	59	neutral
7	Limited information about the available CPD activities	3.31	1.191	2	64	neutral
8	Government policy makes engagement of CPD programs not attractive.	3.38	1.304	2	61	neutral
9	Balancing work and engaging in CPD programs makes it difficult for me.	3.25	1.136	2	65	neutral
10	My school do not actively support teachers in their engagement of CPD programs.	2.78	1.2	2	57	neutral
11	Personally, financing CPD programs is a major challenge for me	3.25	1.171	2	64	neutral
12	Has relevant experience so no need for CPD	2.38	1.174	1	51	disagree
	<b>Total</b>	<b>2.58</b>	<b>1.123</b>	<b>2</b>	<b>55</b>	<b>neutral</b>

(Source: Field Data, 2025)

From table 18, the consensus results indicate that teachers generally disagreed with statement suggesting that CPD programs are irrelevant, waste of time, impossible to complete or waste of money as their consensus score fell below 50%. However, a neutral opinion was expressed regarding challenges such as mode and location of CPD delivery. Additionally, neutrality opinion was observed with challenges related to limited information above available CPD activities (64%), government policy making CPD unattractive (61%), inability to balanced work with CPD participation (65%) and personal financing of CPD programs (64%). The overall CPS was 55%, suggesting a mixed perception on challenges facing teachers in assessing CPD. Despite the mixed results, issues of limited information, personal financing and inability to balance CPD with work responsibilities were closer to agreement. These suggest the major barrier in accessing CPD. To further validate the consensus analysis, thematic analysis was done to finalize the challenges in accessing CPD programs.

### Thematic Analysis

The thematic analysis was conducted to group participants opinions to validate it with the results of the consensus analysis. With this analysis, collected responses from 157 teachers were coded (open coding), and throughout the coding, we had a total of 17 codes. After was, a closed coding was done then we had 11 codes grouped into four themes. Each of the four main themes had at least 3 supporting themes with their weight percentage. Following that, narratives from participants were used to support each supporting theme to provide comprehensive evidence to each underlying theme. Figure 2 below shows the results of the thematic analysis.

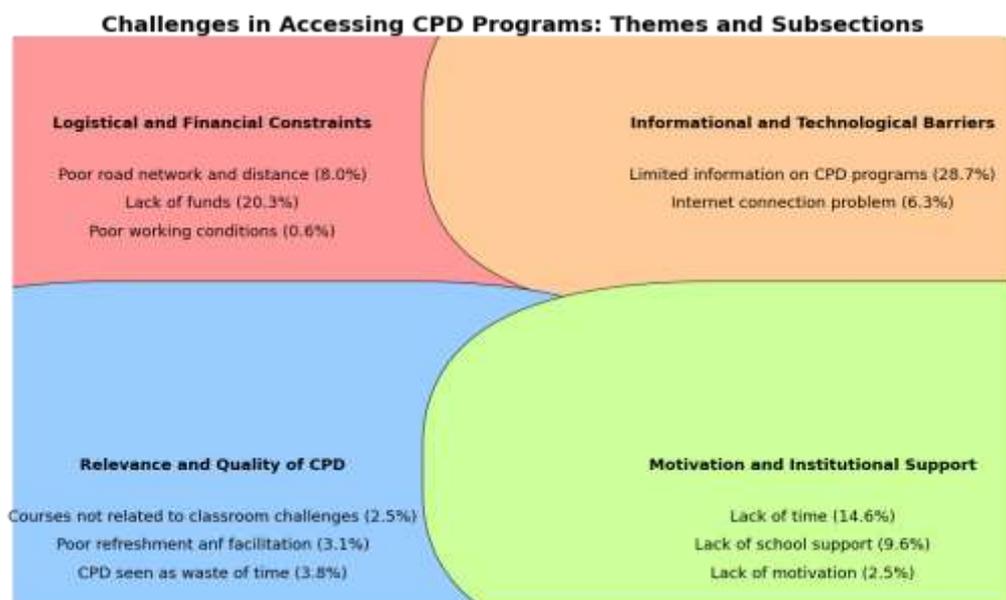


Figure 2: Themes and Sub-themes

From figure 2, thematic analysis revealed four essential themes: logistical and financial constraints, informational and technological barriers, relevance and quality of CPD programs, and motivational and institutional support.

### Logistical and Financial Constrains as a Barrier in Accessing CPD programs.

Logistical and financial support serves as a critical pillar where CPD programs are concerned. However, this has proven to be a significant challenge for teachers in the district. Teachers consistently highlighted the lack of funds as a barrier to registering for both online and face-to-face professional development programs, as exemplified by one participant stating that “money is a problem for me” (Teacher E, 2024). Additionally, teachers complain about the fees of most of the top-up degree programs are expensive and cannot be afforded, as clearly stated by one participant that “university top-up programs for diploma and first-degree holders are expensive ... we cannot afford those tuition” (Teacher K, 2024). Moreover, the geographic location of many CPD centres posed additional challenges. Some complain that their school locations are far from most of the areas where they organise CPD programs, and this prevents them from participating in CPD programs. Some also said their roads

are not motorable, of which they have to wait for motorcycles to CPD centres with high charged fares. For example, one participant stated that “sometimes the location of the CPD program is far away, and a motorcycle can only take you there with expensive fares” (Teacher L, 2024). They are not able to pay for transportation due to the poor working condition as specified by one teacher that “the peanut salary given to us cannot even feed us, let alone cover transportation costs to CPD programs.” (Teacher K, 2024). These logical and financial barriers have significantly limited teachers’ ability to engage in CPD programs, which ultimately affects their classroom competencies.

### **Information and Technological as a Barrier in Accessing CPD programs**

Teachers in the district are faced with limited information and the issue of internet connection, preventing them from accessing CPD programs. Most of the communities have network problems, slowing down their internet connection. First, challenge in accessing CPD programs conducted by GES. One teacher lamented that “Internet connection has been a major problem for us in rural communities” (Teacher M, 2024). Second is for those offering online top-up programs by various universities, as exemplified by one teacher stating, “I am not able to do my distance program” (Teacher A, 2024). In addition to internet issues, teachers reported limited information about available CPD activities and programs as a significant barrier. Many of the teachers stated they often learn about CPD opportunities or not at all. These challenge their ability to participate effectively. For instance, one teacher lamented that “Most of the time we miss out on the registering of CPD programs because we don’t hear about them” (Teacher P, 2024). Another remarked, “There is no proper communication about CPD activities... we only find them from colleagues by chance” (Teacher Y, 2024). This lack of information creates a disconnection between teachers and professional development, which is designed to enhance their competencies. This leaves so many teachers feeling excluded from initiatives that could improve their teaching effectiveness. This calls for the need to improve internet infrastructure in the district.

### **Relevance and Quality of CPD as a Barrier in Accessing CPD Programs**

Teachers in the district expressed concerns that many CPD programs lack relevance to their day-to-day experiences. They reported that the courses offered often fail to address practical classroom challenges, and this makes them unable to apply knowledge gained to improve their teaching practices. One teacher lamented. “The topics covered in CPD programs are too theoretical and not relevant in solving 21st classroom problems” (Teacher Q, 2024). Another added that “... most of the things they teach have no link to the subject content of the curriculum we use in class” (Teacher F, 2024). This disconnection between CPD content and classroom realities has diminished their enthusiasm for participating in CPD programs.

Also, some of the teachers noted that attending CPD programs is a waste of time, as these sessions often do not translate into improved teaching practice or tangible benefits. For example, one teacher stated that “From the look of things, it doesn’t benefit the learners we are teaching ... CPD is not necessary” (Teacher C, 2024). Another teacher explained, “We leave the sessions feeling nothing has changed ... it feels like a waste of time” (Teacher H, 2024). This perception has led to a decline in motivation to engage in CPD activities.

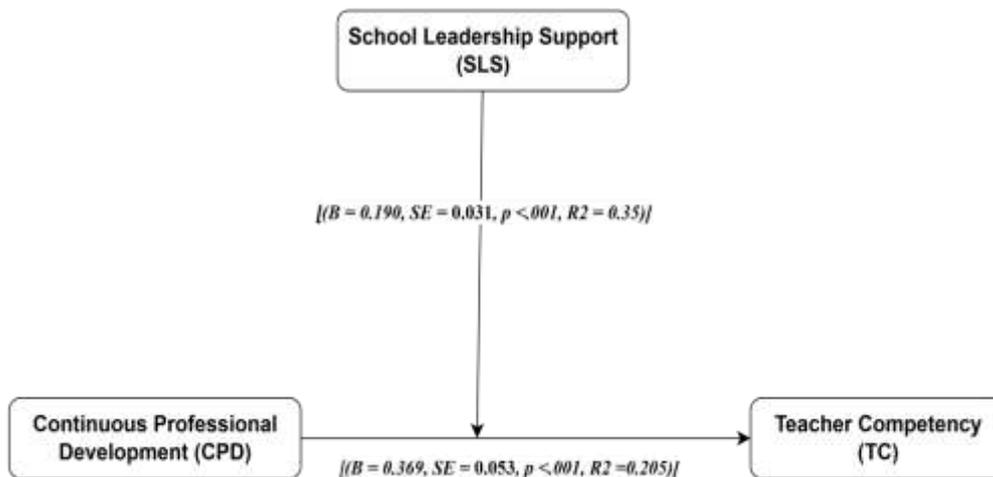
In addition to issues with content, some teachers criticised the quality of facilitation and logistical arrangements during CPD programs. Many of the teachers noted that facilitators often lack the expertise required to deliver impactful sessions. Furthermore, the quality of the refreshment provided during these programs added to their satisfaction. One teacher commented, “... they are unprepared to give quality sessions and sometimes ... no refreshments” (Teacher, S, 2024). These issues needed to be addressed to restore teachers’ confidence in participating in CPD programs.

### **Motivational and Institutional Support as a Barrier in Accessing CPD Programs**

Teachers in the district identified the lack of time as a significant barrier to their participation in CPD programs. Many reported that their heavy workload and packed schedules provide them with minimal space for professional development activities. One teacher explained, “I am always busy and tight” (Teacher G, 2024). Another added, “The workload in school and other duties” (Teacher K, 2024). Also, inadequate institutional support was mentioned as a critical factor limiting teachers from engaging in CPD programs. Teachers noted

that their schools often do not prioritise the necessary resources to facilitate their participation. One teacher stated, “Much effort should be put in to make CPD very attractive for the teacher, which will in return create a conducive atmosphere for teaching and learning” (Teacher X, 2024). Another added, “There is no arrangement to cover our classes when we attend CPD programs... making it hard for us to leave school” (Teacher N, 2024). Also, low motivation among teachers further compounds the challenges associated with CPD participation. These challenges call for immediate attention to offer institutional support and motivate teachers to fully participate in CPD programs.

## Conceptual Framework



(Source: Authors Construct, 2025)

## DISCUSSION OF FINDINGS

### Level of teacher competency before and after participation in continuous professional development

The research found that instructors who participated in CPD had higher levels of competency in classroom management, instructional delivery, assessment, and interactions with their learners compared to teachers who had not engaged in CPD activities. This indicates that CPD enhances teachers' competency and updates their current knowledge and practice in the field. Teachers who rely solely on pre-service training lack the requisite efficiency in classroom management, the adoption of 21st-century skills, and the implementation of hands-on activities. They are also less able to adopt current best practices in assessment. This addresses the research question regarding the level of teacher competency among those who have engaged in CPD versus those who have not. The results indicate that teachers involved in CPD exhibit higher competency than their counterparts who have not participated in such programs.

This finding aligns with the social constructivism theory (Vygotsky), which posits that knowledge is continually reconstructed. Reconstruction of knowledge allows individuals to adapt their practices within their context and remain competitive in their environment. Teachers who engage in CPD can update their knowledge and skills, adopt current trends and practices, and demonstrate increased productivity. The findings align with previous research. A study by Wachidi et al. (2020) found that teachers engaged in CPD demonstrated higher competency in assessment, adopted 21st-century assessment strategies, and addressed industry-relevant needs, making students more prepared after graduation. The study also revealed that teachers participating in CPD adopted diverse teaching methods to meet the individual needs of students, unlike those who had not engaged in CPD. Similarly, Hakim (2015) reported that teachers with higher competency levels presented lessons aligned with 21st-century core competencies, offering relevant knowledge and skills to learners.

These findings have practical implications. They highlight the importance of CPD in a complex society where new knowledge and skills emerge constantly. Teachers who participate in CPD remain updated, competitive locally and globally, and can provide students with relevant knowledge and skills. The findings suggest that the Ghana Education Service, the Ministry of Education, and other stakeholders, including school inspectors, should

implement regular CPD activities. These programs should be accessible, affordable, and aligned with emerging teaching practices. Collaboration with training institutions is also necessary to ensure that teachers can update their knowledge and apply it to enhance education delivery. The study also calls on teachers to engage in CPD to remain competitive both locally and globally.

However, the study has limitations. It compared only teachers who had participated in CPD with those who had not, without controlling for variables such as financial status, socio-economic background, accessibility, school support, prior pre-service experiences, and family responsibilities. These factors could influence a teacher's ability or willingness to engage in CPD. Additionally, the study was carried out in concise interval, with a limited sample, which restricts generalization of the findings to all teachers within the district or country. Future research should incorporate these control variables, expand the sample size across multiple districts or regions, and collect longitudinal data to validate and track whether the observed effects of CPD on teacher competency persist over time. Overall, the study demonstrates that teachers who engage in CPD programs exhibit higher competency compared with those who have not, within the Amansie central district.

### **The Influence of CPD on TC**

The study established that continuous professional development (CPD) has a statistically significant positive impact on teacher competencies (TC). Teachers who participated in CPD demonstrate enhanced skills in pedagogy, classroom management, assessment, and subject-content knowledge. Having these competencies demonstrates teacher effectiveness. The study provides strong support for the hypothesis that CPD significantly influences teacher competencies, contrary to the opposing views suggesting that CPD may have a limited impact on teacher competencies. The findings are consistent with earlier studies that suggest emphasizing the transformative role of CPD in professional growth (Darling-Hammond et al., 2017; Rodrigues et al., 2023; Ambon et al., 2023; Abaka, 2023). Consistent with earlier findings, this study underscores that well-structured CPD programs significantly enhance teaching quality (Njenga, 2022; Evona, 2023). This result aligns with sociocultural theory, which posits that investing in professional development increases an individual's knowledge, productivity, and efficiency. Future research could explore the specific elements of CPD that have the greatest impact on teacher competencies. Also, longitudinal studies could investigate how sustained CPD participation affects long-term teacher competencies. This study reaffirms that CPD is a vital tool for enhancing teacher competencies. So, investing in CPD programs can strengthen the teaching profession.

### **Moderation Role of SLS in the Relationship Between CPD and TC**

The study found that higher levels of SLS strengthens the relationship between CPD and TC. This suggests that when school leaders actively support CPD initiatives through resource allocation, encouragement and professional guidance, the impact of CPD on teacher effectiveness become more pronounced. This finding provided a strong support confirming the hypothesis that SLS moderate the relationship between CPD and TC. However, it refutes the notion that leadership support may have a negligible effect on CPD outcomes. This finding aligns with existing research that underscores the importance of school leadership in optimizing the outcomes professional development (Kilag, 2023; Wang, 2021; Noor, 2024; Nilikan, 2023). It also further resonates with the sociocultural theory that suggests that schools that adopt the practice of helping their teachers in development programs aid in increasing their efficacy. As this study focused on holistic leadership support on CPD and teacher competencies, future research can explore specific leadership practices that most effectively strengthen CPD – TC relationship. This study clearly provided evidence that school leaders that consistently support professional development programs helps to improve educational quality.

### **Factors Preventing Accessibility of CPD Programs**

The study identified several hindrances to teacher engagement in CPD programs. These included logistical and financial barriers such as poor road networks, long distances to training centers, lack of funds, and unfavorable working conditions; informational and technological barriers like limited information about CPD programs and internet connectivity issues; lack of motivation and school support such as insufficient time, minimal support, and low motivation; and issues with relevance and quality of CPD such as courses not addressing classroom challenges and perception of CPD as unproductive and a waste of time. The findings confirm the quantitative

results of why the CPD and SLS predictive effects were very small. This is so because teachers in the district are faced with many challenges affecting the implementation of CPD, which intends to affect the competency level of teachers. These findings support previous studies that documented logistics, motivational, and institutional challenges in CPD participation programs (Geldenhuys & Oosthuizen, 2015; Abraham, 2019; The International Teachers Monitoring and Assessment Department, 2019) and contradict those that found government policy as a major challenge in accessing CPD (Okpalauwaekwe et al., 2024). This finding also supports sociocultural theory, which emphasises the importance of a collaborative and supportive environment for the professional development of teachers. It again affirms the claim that insufficient investment in CPD resources hinders the development of teacher competencies (Abraham, 2019). Future research could explore interventions that could address these barriers. In all, this study has highlighted multifaceted barriers to CPD participation. Addressing them in the district will help increase the positive impact of CPD on teacher competencies.

## Summary of Chapter

This chapter explored the results, interpretation, and discussion of findings. Quantitative data analysis was done using a Wilcoxon H-test, Mann Whitney U-test and PLS-SEM using a 10,000 bootstrap samples, while qualitative data analysis was done using consensus and thematic analysis. The key finding was that instructors in the Amansie Central District have a high level of competency in terms of classroom management, assessment, and subject-matter expertise. Also, their level of competency was similar for both male and female teachers. Additionally, it was found that participation in CPD programs and school leaders positively impacts teacher competency levels. Furthermore, it was found that at a high level of school support, the positive impact of CPD on teacher competency increases. Lastly, the study found multifaceted barriers, such as logistics and information barriers, affecting the participation of CPD programs.

## SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

### Introduction

This chapter focuses on the summary of the study, key findings from the results, conclusion, recommendation and suggestion for future research.

### Summary

The study examined the impact of continuous professional development (CPD) on teacher competencies (TC) and assessed how school leadership support moderates this relationship among teachers in the Amansie Central District in the Ashanti Region. The study adopted a convergent mixed-method design to collect data from 157 teachers using both close and open-ended questionnaire. The independent variable that was operationalised in the study was CPD, while SLS served as a moderating variable and TC served as the dependent variable. With the quantitative analysis, the study utilized partial least square structural equation modelling (PLS-SEM) to test for hypotheses 2 and 3 using 10,000 bootstraps samples. A Wilcoxon H-test and thematic analysis was used to address question 1 and 2 respectively, while Mann Whitney U-test was used to test hypothesis 1. The research question was (1) What is the level of teacher competency among teachers before and after being exposed to continuous professional development? (2) What challenges do teachers confront in accessing and engaging in CPD programs? The tested hypotheses included: (H1) There will be no statistically significant difference between male and female teachers' levels of competencies among junior high school teachers in the Amansie Central District; (H2) CPD will have a significant positive impact on TC among junior high school teachers in the Amansie Central District; (H3) The impact of CPD on TC will be stronger when SLS is higher in the Amansie Central District. Three different software programs (Excel, Jamovi, and SMART PLS V 4.0.1.6) were used for the analysis. Below shows the findings based on each objective.

### **The level of teacher competency among teachers before and after being exposed to continuous professional development.**

The study examined teacher competency before and after participation in continuous professional development (CPD). Results indicate that teachers who engaged in CPD demonstrated higher competency in classroom

management, instructional delivery, assessment, and student relationships compared to those who had only pre-service training. Teachers without CPD showed limitations in adopting 21st-century skills, implementing hands-on activities, and applying current best practices in assessment. These findings align with Vygotsky's social constructivism theory, which emphasizes the continual reconstruction of knowledge. Teachers involved in CPD adapt their practices to current trends, update their skills, and improve professional productivity. The study highlights the practical importance of CPD in a dynamic educational environment. Teachers engaged in CPD are better equipped to provide students with relevant knowledge and skills. It is recommended that the Ghana Education Service, Ministry of Education, school inspectors, and other stakeholders implement regular, accessible, and affordable CPD programs. Limitations include the lack of control for factors such as financial status, socio-economic background, accessibility, school support, prior pre-service experiences, and family responsibilities. Upcoming research needs to enlarge the sample group, include control variables, and collect longitudinal data to track the long-term effects of CPD. In all teachers participating in CPD exhibit higher competency than those who do not within the Amansie Central District.

### **The influence of CPD on TC among junior high school teachers in the amansie central district.**

The study found that continuous professional development (CPD) has a significant positive impact on teacher competencies. Teachers who participate in CPD demonstrate improved skills in pedagogy, classroom management, assessment, and subject-content knowledge, reflecting greater teaching effectiveness. The findings align with sociocultural theory, which emphasizes that professional development strengthens knowledge, productivity, and efficiency. However, the component of CPD was not examined against TC. The study used overall CPD activities. Future research should examine which CPD components most influence teacher competencies and assess long-term effects. Overall, CPD is confirmed as a vital tool for strengthening teacher effectiveness and advancing the teaching profession.

### **The role of SLS in the relationship between CPD and TC in the Amansie Central District**

The study found that strong school leadership support (SLS) strengthens the relationship between CPD and teacher competencies (TC). When leaders provide resources, encouragement, and professional guidance, CPD's impact on teacher effectiveness is enhanced. This supports the hypothesis that SLS moderates the CPD–TC relationship, aligns with sociocultural theory, and demonstrates that consistent leadership support improves educational quality. However, the study did not examine which specific leadership practices are most effective, and results are limited to the sampled schools. The Ghana Education Service should ensure consistent CPD support, while future research could identify the practices that maximize CPD–TC outcomes.

### **The challenge's teachers have in accessing and engaging in CPD programs.**

The study identified several factors preventing teachers from accessing CPD programs. These included logistical and financial barriers, such as poor road networks, long distances to training centers, lack of funds, and unfavourable working conditions. Informational and technological barriers, including limited information about CPD programs and poor internet connectivity, were also noted. Lack of motivation and school support, such as insufficient time and minimal encouragement, further limited participation. Additionally, issues with relevance and quality of CPD, including courses not addressing classroom challenges and perceptions of CPD as unproductive, hindered engagement. These barriers explain the small predictive effects of CPD and school leadership support (SLS) on teacher competencies. The findings support sociocultural theory emphasizing the need for a collaborative and supportive professional environment. Future research should explore interventions to overcome these barriers, ensuring CPD can effectively enhance teacher competencies.

### **Key Findings**

1. The study found that teachers who engaged in CPD demonstrated higher competency in classroom management, instructional delivery, assessment, and student relationships compared to those who had only pre-service training.

2. Again, the research found no statistically significant difference in competencies between men and women teachers. Both genders exhibited comparable levels of assessment practice, classroom management, pedagogical content skills and subject knowledge. This finding supports the hypothesis (H1) that gender does not influence teacher competencies.
3. Furthermore, CPD was found to have a statistically significant positive impact on TC. Teachers who participated effectively in CPD programs showed enhanced pedagogy skills, subject content knowledge, classroom management, and practices. However, the effect size was relatively small as indicated by the predictive power score (PPS = 0.05) and the coefficient of determination ( $R^2 = 0.205$ ). These results suggest that while CPD positively influences TC, challenges in its implementation limit its full impact on TC. This finding provides strong support for H2, confirming that CPD significantly influences teacher competencies.
4. Furthermore, the study found that higher levels of SLS strengthen the positive relationship between CPD and TC. School leaders who actively support CPD initiatives enhance the influence of CPD on TC for their teachers, increasing the positive impact of CPD on TC. Although SLS plays a significant role in the relationship between CPD and TC. However, the moderating effect was minimal as reflected in the predictive power score (PPS = 0.023) and the coefficient of determination ( $R^2 = 0.35$ ). These findings suggest that challenges related to leadership support in some schools reduce the strength of the CPD–TC relationship. Nonetheless, the finding strongly supports H3, confirming that SLS moderates the relationship between CPD and TC.
5. Lastly, the study identified several hindrances to teacher engagement in CPD activities. These included logistical and financial constraints, limited access to information and technological issues, lack of motivation, inadequate school support, and issues with relevance and quality of CPD. These barriers explain the relatively small predictive effects of CPD and SLS on TC. Addressing these challenges is crucial to enhancing the effectiveness of CPD and increasing its impact on TC.

## Conclusion

The studies examined the impact of continuous professional development on teacher competency and moved further to assess the role school leadership support plays in this relationship. The conclusion is structured based on the study objectives.

### **The level of teacher competency among teachers before and after being exposed to continuous professional development.**

The study demonstrated that teachers who engage in continuous professional development (CPD) programs have higher levels of competency in classroom management, assessment, lesson presentation, and communication skills compared to teachers who have not participated in CPD. This study also demonstrated the effectiveness of social constructivist theory by Vygotsky, which posits that knowledge should always be reconstructed within the context in which an individual finds themselves. Teachers who undergo CPD are more competitive and able to demonstrate higher knowledge in management, assessment, and lesson presentation. CPD is therefore relevant in every field, as it updates knowledge and makes individuals competitive locally and globally. This is a call to the Ghana Education Service and the Ministry of Education to support teachers to embark on CPD programs. However, the study was limited by the lack of control variables, such as socioeconomic status, family responsibilities, accessibility, and it was conducted only in the Amansie Central District. Subsequent researchers are encouraged to conduct similar studies in different districts to validate the findings.

### **The influence of CPD on TC among junior high school teachers in the amansie central district.**

The study reconfirmed Objective One, indicating that teachers who participate in CPD programs demonstrate higher levels of competency regardless of gender. CPD enables teachers to stay updated, relevant, and competitive within their field. This reinforces social constructivist theory, emphasizing the need to adapt knowledge within one's context. The study highlights that CPD is effective in improving teacher competency.

This is a call to the Ghana Education Service to collaborate with institutions to provide affordable CPD programs and support teachers to engage in them. Future research should include variables such as gender to examine differences in CPD participation and its impact.

### **The moderating role of SLS in the relationship between CPD and TC in the Amansie Central District**

The findings additionally indicated that the association between CPD and teacher competency is strengthened by higher levels of school leadership support. When school authorities provide support, encouragement, and resources, CPD has a more significant impact on teacher competency. This indicates that CPD alone is insufficient; administrative and leadership support is essential. The study highlights the need to enhance CPD programs in our schools through leaders' support. School leaders should help support their teachers by making known to them available CPD programs. They should have made provisions for other teachers to support them while they are away for those programs. Additionally, this study has broadened the sociocultural theory that competency of workers increases when there is an enabling environment characterised by consistent support and collaboration. This calls for the district educational directorate to collaboratively work hand in hand to provide comprehensive support for their teachers to enhance CPD initiatives to effectively increase teachers' competency. Additionally, the findings call on school authorities to encourage, reward, and facilitate teacher participation in CPD. Future research could expand to other districts or regions to validate the findings.

### **The challenge's teachers have in accessing and engaging in CPD programs.**

The study identified barriers to CPD access, including technological, logistical, and financial challenges. Teachers in rural areas face difficulties with transportation, internet connectivity, and limited school support. Family responsibilities and prior negative experiences during pre-service training also limit participation. This highlights the need for the Ghana Education Service to ensure regular, accessible CPD programs, collaborate with training institutions, and provide career guidance and financial support to teachers. Despite these challenges, the study confirms that CPD enhances teacher competency and benefits students, schools, and the education system.

## **Recommendations**

### **Education Directorates**

1. The Amansie Central District Education Directorate (ACDED) should collaborate with school heads and financial institutions to offer flexible financial assistance to teachers. This support will enable teachers to participate in CPD programs and enhance their competencies. Additionally, schools should establish an internal generation fund to mobilise funds (IGF) to support in-school INSET programs.
2. ACDED should partner with registered organisations offering CPD programs to reduce registration fees for teachers. This initiative will encourage more teachers to engage in CPD activities. Efforts should also be made to promote participation in online CPD programs by addressing internet connectivity challenges. Most of the online CPD activities should be internet-free, where teachers can participate in those activities with little or no internet connectivity.

### **Ghana Education Service**

3. The Ghana Education Service (GES) should ensure that CPD activities organised in schools align with teachers' classroom challenges to enhance their practical relevance. Additionally, teachers' views must be taken back to be incorporated into the design of CPD events to ensure their relevance and effectiveness. Also, various universities offering professional development programs should ensure that their courses address contemporary and cross-cutting issues.

### **School Authorities**



4. School leaders should regularly share information about available CPD opportunities with teachers. They should provide consistent guidance, resources and encouragement to teachers to help them improve their competency level.
5. Finally, school leaders should ensure that CPD events provide equal chances for all teachers to improve their skills. Leaders must ensure that any assistance related to CPD initiative is distributed fairly among all teachers.

**Suggestions for Future Studies**

1. This study used school leadership support as the only moderator variable in the relationship between CPD and teacher competency. Future studies can add additional moderating and mediating variables such as teacher motivation, school culture, community or family support to help uncover the underlying mechanisms that influence this relationship.
2. This study was cross-sectional; future studies should investigate the long-term impacts of CPD on teacher competencies to understand its sustainability over time.
3. This study used JHS teachers as the target population; future studies can replicate this study using senior high school teachers.
4. The study used Amansie Central District; future studies can use different districts or regions to help gain a broader insight on the dynamics of the relationship between CPD and teacher competency across diverse contexts.

**Declaration**

**Candidate’s Declaration**

I certify that all sources have been properly cited and that this thesis is the product of my own independent study.

Candidate’s Signature: 

Date: 15/09/2025

Name: **Archimedes Oduro**

**Supervisor’s Declaration**

I confirm that the candidate has demonstrated a very high level of competence in conducting his research and producing work that was supervised in compliance with the Guidelines for Supervision of Thesis Work of the Catholic University of Ghana, Fiapre-Sunyani.

Supervisor’s Signature: .....

Date: 15/09/25

NAME: **REV. FR. PROF. AUGUSTINE OWUSU ADDO**

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## Dedication

To my spouse, Mrs. Joyce Oduro Mensah and my kids, Kenneth Oduro Kese and Michelle Oduro Arko.

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10<sup>th</sup> April, 2025

TO WHOM IT MAY CONCERN

**INTRODUCTORY LETTER FOR DATA COLLECTION**

I, the undersigned, Rev. Fr. Professor Augustine Owusu-Addo, Dean of the Faculty of Education of the Catholic University of Ghana, Fiapre, at this moment attest that the bearer of this note **Oduro Archimedes** with our student **ID Number MEW0402220240**, is a final year MPhil student of this University. He is pursuing a Master's Degree in Educational Administration and Management. As part of the requirements for graduation, he is conducting research titled:

**"IMPACT OF CPD ON TEACHER COMPETENCIES: THE MODERATION ROLE OF SCHOOL LEADERSHIP SUPPORT"**. He will need your permission and assistance regarding data collection and other information for his work. The information gathered will be used solely for academic purposes and will be treated with utmost confidentiality.

Your kind cooperation would be highly appreciated.

Yours faithfully,



Rev. Fr. Augustine Owusu-Addo (PhD)

[Professor and Dean, Faculty of Education]

**Catholic University Of Ghana, Fiapre – Sunyani**

**School Of Graduate Studies (SGS)**

**Topic:** Influence Of Cpd On Teacher Competencies: The Moderating Role Of School Leadership Support.

Dear Respondent,

This questionnaire has been designed to solicit information for a research work being undertaken on the above topic. JHS teachers at the Amansie Central District have been selected as a unit of analysis. You have been selected as one of the respondents. The survey is completely voluntary. Your co-operation and opinions are very

important to the success of the study and will be kept strictly confidential. Please kindly respond to the questionnaire by filing in as appropriate. The information given through this questionnaire is purely for academic purposes. I look forward to your participation and appreciate your support in this important effort. Please do not indicate your name on the questionnaire.

**Consent to Participate in Research:**

I understand that any information I share will remain confidential and that when the results of the research are published or discussed in conferences, no information will be included that would reveal my identity. I am 18 years of age or older. By agreeing to continue with the survey and submit a response to the researcher in question, I am giving consent to participate in this study.

I consent to participate in this survey:       Yes       No

**SECTION A: Background Characteristics of Respondents**

Please tick (√) or provide responses to the questions which follow:

1. Sex	Male	(   )
	Female	(   )
2. Age	Below 25 Years	(   )
	26 - 35 Years	(   )
	36 - 45 Years	(   )
	46 - 55 Years	(   )
	Above 55 Years	(   )
3. Qualification	Degree	(   )
	Diploma	(   )
	Masters	(   )
	PhD	(   )
4. Years of Teaching	< 5 Years	(   )
	10 – 15 Years	(   )
	16 – 20 Years	(   )
	21 Years Above	(   )
5. Marital Status	Married	(   )
	Single	(   )
	Divorce	(   )

6. CPD Type	Workshop	( )
	Certificate courses	( )
	External School INSET	( )
	In School INSET	( )
	All the above	( )

7. Do you engage in other personal work apart from teaching?

Yes ( ) No ( )

8. Are professional development programmes offered in your school?

Yes ( ) No ( )

9. How many professional development programmes have you participated in within the last 5 years?

\_\_\_\_\_

**Section B: Continuous Professional Development (CPD)**

Please read each statement carefully and indicates the extent to which you agree or disagree.

1 – Strongly Disagree, 2 – Disagree, 3 – Somewhat Disagree, 4 – Somewhat Agree, 5 – Agree, 6 – Strongly Agree

No.	Statement	1	2	3	4	5	6
	<b>Mentoring</b>	1	2	3	4	5	6
10	The program supports the use of new teaching skills like scaffolding and differentiated learning.	1	2	3	4	5	6
11	The program allows teachers to share ideas and learn from each other.	1	2	3	4	5	6
12	The program has enhanced my ability to use differentiated instruction to meet diverse students needs.	1	2	3	4	5	6
	<b>Induction Service</b>						
13	The program is in alignment with school goals and objectives.	1	2	3	4	5	6
14	The program is relevant to teachers’ roles and responsibilities.	1	2	3	4	5	6
15	It provides flexibility to accommodate diverse learning styles and schedules.	1	2	3	4	5	6
	<b>Seminars and Workshop</b>						
16	The program provides opportunities for self-reflection.	1	2	3	4	5	6
17	The program provides opportunity for self-assessment.	1	2	3	4	5	6

18	The facilitator delivers high-quality CPD sessions.	1	2	3	4	5	6
19	The program helps in monitoring and evaluating my professional development.	1	2	3	4	5	6
	<b>Attendance of Conferences</b>						
20	Teachers are actively involved and participate in CPD programs.	1	2	3	4	5	6
21	The program has improved my attitude towards teacher leadership and advocacy.	1	2	3	4	5	6
22	The program has improved my attitude towards assessment, feedback and curriculum development.	1	2	3	4	5	6

**Section C: Teacher Competencies (TC)**

Please read each statement carefully and indicates the extent to which you agree or disagree.

1 – Strongly Disagree, 2 – Disagree, 3 – Somewhat Disagree, 4 – Somewhat Agree, 5 – Agree, 6 – Strongly Agree

No.	Statement	1	2	3	4	5	6
23	I effectively differentiate instruction to meet the needs of diverse learners.	1	2	3	4	5	6
24	I use a variety of teaching strategies to engage students in learning.	1	2	3	4	5	6
25	I am confident in my ability to assess student learning effectively.	1	2	3	4	5	6
26	I create a positive and supportive classroom environment.	1	2	3	4	5	6
27	I am able to address student disruptive behaviour promptly and appropriately.	1	2	3	4	5	6
28	I effectively manage student behavior and maintain classroom order.	1	2	3	4	5	6
29	I incorporate technology tools to enhance student learning experiences.	1	2	3	4	5	6
30	I feel comfortable using digital tools and platforms to deliver instruction.	1	2	3	4	5	6
31	I actively participate in collaborative planning with colleagues.	1	2	3	4	5	6
32	I share best practices with other teachers to improve teaching quality.	1	2	3	4	5	6
33	I value feedback from colleagues to enhance my teaching practices.	1	2	3	4	5	6
34	I regularly reflect on my teaching experiences to identify areas for growth.	1	2	3	4	5	6
35	I use data to inform my instructional decisions and adjustments.	1	2	3	4	5	6
36	I am comfortable sharing my teaching challenges and seeking support from peers.	1	2	3	4	5	6

**Section D: School Leadership Support (SLS)**

Please read each statement carefully and indicates the extent to which you agree or disagree.

1 – Strongly Disagree, 2 – Disagree, 3 – Somewhat Disagree, 4 – Somewhat Agree, 5 – Agree, 6 – Strongly Agree

No.	Statement	1	2	3	4	5
37	My school actively encourages teachers to participate in professional development activities.	1	2	3	4	5
38	The school leadership support teachers with funds to attend relevant CPD courses and programs for thr school.	1	2	3	4	5
39	Teachers are encouraged to share their professional development experiences with colleagues.	1	2	3	4	5
40	The school provides opportunities for teachers to lead or co-facilitate professional development sessions for other staff.	1	2	3	4	5
41	My school provides adequate time during the school day for teachers to engage in professional development activities.	1	2	3	4	5
42	The school fosters a culture of collaboration where other teachers support colleagues when they are absent engaging in professional development programs.	1	2	3	4	5
43	The school leadership provides regular feedback and recognition to motivate teachers for their participation in continuous professional development programs.	1	2	3	4	5
44	My school encourages teachers to utilize their skills obtained from CPD programs in the school.	1	2	3	4	5
45	My school ensures that continuous professional development activities such as PLC are effectively organized in the school.	1	2	3	4	5
46	My school effectively encourages teachers to support their own colleagues during continuous professional development activities.	1	2	3	4	5
47	My school actively encourages teachers to participate in professional development activities.	1	2	3	4	5

**Section E: Challenges Teachers Face in Accessing the CPD Programs**

Please read each statement carefully and indicates the extent to which you agree or disagree.

1 – Strongly Disagree, 2 – Disagree, 3 – Somewhat Disagree, 4 – Somewhat Agree, 5 – Agree, 6 – Strongly Agree

No.	Statement	1	2	3	4	5	6
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48	Personally, I see continuous professional development programs as not relevant to me.	1	2	3	4	5	6
49	I believe engaging in professional development activities is a waste of time.	1	2	3	4	5	6
50	I think completion of CPD programs will not be possible for me.	1	2	3	4	5	6
51	Continuous professional development programs like distance education is a waste of money and time as it does not fully prepare teachers in their teaching career.	1	2	3	4	5	6
52	The mode (like face-to-face, online etc.) in which most of the professional development activities and programs are implemented prevent me from accessing.	1	2	3	4	5	6
53	The locations of most of the CPD programs prevent me from accessing them.	1	2	3	4	5	6
54	Limited information about the available CPD activities and programs prevent me from engagement in them.	1	2	3	4	5	6
55	The Ghana Education Service is not making engagement of CPD programs attractive to me.	1	2	3	4	5	6
56	Balancing work and engaging in CPD programs makes it difficult for me.	1	2	3	4	5	6
57	My school do not actively support teachers in their engagement of CPD programs.	1	2	3	4	5	6
58	Personally, financing CPD programs is a major challenge for me.	1	2	3	4	5	6
59	Years of teaching has prepared me enough and as such do not need to engage in any other CPD programs or activities.	1	2	3	4	5	6

60. In your own view, what are the major factors preventing you from accessing CPD activities or program?

Thank You.