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The Impact of Continuous Professional Development Program on Students Satisfaction, Academic Achievement and Classroom Engagement in the Training Colleges in Northern Region of Ghana: The Role of Teaching and Learning Strategies

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A B S T R A C T

Continuous professional development (CPD) is critical for college tutors to maintain their effectiveness as educators and keep their teaching practices up-to-date. By investing time and effort in CPD, tutors can provide a better learning experience for their students and ensure that they are well-equipped to meet the challenges of a rapidly changing educational landscape. In this regard, the study examined how the CPD impacted the student's Satisfaction, Academic Achievement, and Classroom Engagement. The study further assessed the moderating role of the tutor's teaching strategies and the student's learning strategies. A quantitative study and a quasi-experimental design were used to demonstrate links between the study variables. A sample of 346 students was taken from a total population of 3200 students, and a sample of 191 teachers was taken from a population of 380 teachers using Krejcie and Morgan (1970). The data was coded with SPSS version 23 and transferred to SmartPLS4 for a partial least square regression analysis. The study found that the teacher's continuous capacity development was the important factor influencing students' academic performance. Besides, their teaching and the student's learning strategies. For policy recommendations in resources allocation to improve student's academic achievement, management should first focus on assisting teachers with better classroom management, and career development and improve their teaching skills through the CPD programs.

Abstrak

Pengembangan profesional berkelanjutan (CPD) sangat penting bagi pengajar perguruan tinggi untuk mempertahankan efektivitas mereka sebagai pendidik dan menjaga praktik pengajaran mereka tetap mutakhir. Dengan menginvestasikan waktu dan tenaga dalam CPD, tutor dapat memberikan pengalaman belajar yang lebih baik bagi siswanya dan memastikan bahwa mereka diperlengkapi dengan baik untuk menghadapi tantangan lanskap pendidikan yang berubah dengan cepat. Dalam hal ini, penelitian ini mengkaji bagaimana CPD berdampak pada Kepuasan siswa, Prestasi Akademik, dan Keterlibatan Kelas. Penelitian ini lebih lanjut menilai peran moderasi dari strategi pengajaran tutor dan strategi pembelajaran siswa. Penelitian kuantitatif dan desain eksperimen semu digunakan untuk menunjukkan hubungan antar variabel penelitian. Sampel diambil sebanyak 346 siswa dari total populasi 3200 siswa, dan sampel guru diambil sebanyak 191 siswa dari populasi 380 guru dengan menggunakan Krejcie dan Morgan (1970). Data diberi kode dengan SPSS versi 23 dan ditransfer ke SmartPLS4 untuk analisis regresi kuadrat terkecil parsial. Studi ini menemukan bahwa pengembangan kapasitas guru yang berkelanjutan merupakan faktor penting yang mempengaruhi kinerja akademik siswa. Selain itu, pengajaran mereka dan strategi belajar siswa. Untuk rekomendasi kebijakan dalam alokasi sumber daya untuk meningkatkan prestasi akademik siswa, manajemen pertama-tama harus fokus pada membantu guru dalam pengelolaan kelas yang lebih baik, dan pengembangan karir serta meningkatkan keterampilan mengajar mereka melalui program CPD.

1. Introduction

To avoid a dependency relationship on outsiders from forming, the management of Ghana's training colleges has adopted measures to encourage the capacity building of its teachers (Korantwi-Barimah & Schultz, 2019). the idea is to equip teachers with the right skills to act on teaching and learning issues to foster a sense of ownership and empowerment that helps them gain greater control of their future development (Perry & Bevins, 2019). Through extensive capacity-building measures, teachers at Ghana's training colleges have received training on student-centred teaching methodology, pedagogy, and social and emotional learning (Adriansen & Madsen, 2019). In addition, the training is to enable them to make effective use of equipment, teaching aids and technology to ensure that each student gains enough knowledge from the learning. One of such training currently enforced across the training colleges is the continuous professional development program (CPD), which focuses on building teachers' capacity rather than imposing training on the teachers (Chitiyo, Kumedzro, Hughes & Ahmed, 2019).

The CPD programme is organised through systematic in-service training to improve teacher efficiency and effectiveness in knowledge delivery to students. In addition, the Ghana education service is mandated with logistics to all training colleges for the program's success (Coffie, 2019). The CPD programme is designed to run on a three-year cycle in its third cycle. It has awarded teachers certificates and credit points for rising in ranks. Over the past decade, the programme has allowed teachers to attend workshops, seminars, and training on curricular knowledge, school-based inset (SBI), department-based inset (DBI), cluster-based inset (CBI) and many related programmes approved by the NTC (Perry & Bevins, 2019). the CPD programmes are strictly monitored to ensure absolute compliance and efficiency. For instance, each teacher must keep records of training activities, especially credit points, registration, certificates and attendance, to be submitted to the NTC for further action (Wolf, Aber, Behrman & Tsinigo, 2019). Similarly, a framework was created to group activities into mandatory, ranked-based and recommended activities. The idea is for teachers in specific ranks to access ranked-based or mandatory-based activities.

However, the recommended activities were to supplement teachers' credit points if they fell short in the developing professional rank cycle (Suaka & Kuranchie, 2018). The CPD programme offered these opportunities to experienced and novice (beginner) teachers to acquire new learning, exploration, growth and development skills. According to Vanderpuye, Obosu and Nishimuko (2020), it promotes the recognition of the hard work that experienced teachers do under stressful conditions. The CPD is a lifelong learning process that starts with teachers' pre-service education but continues until teachers retire (Kim, Raza & Seidman, 2019). It means that training college teachers equip them with the skills and knowledge to perform several teaching and organizational functions like planning, designing and implementing teaching-learning activities, carrying out student assessment, organizing different curricular and co-curricular activities, participating in school administration and management, school development, and interaction with the community.

Therefore, it suffices to conclude that teachers are prepared for challenges as the teaching profession evolves with new knowledge and skills generated through experience, research and development in the education field (Opoku, Asare-Nuamah, Nketsia, Asibey & Arinaitwe, 2020). The study seeks to address several gaps identified in the patient literature on the impact of the CPD programme over the years. Firstly, though several students have examined the teacher's perception of the program's impact on teaching quality, limited studies, if any, have been done across the training colleges in the northern region. The region is home to some of Ghana's well-established teacher training colleges. It is known for producing many quality teachers annually for the country's education sector (Boadu, 2020). however, since the inception of the CPD programme, there has been hardly any extensive assessment of the impact of the programme on the colleges in the northern

region colleges. Secondly, the few studies on the impact of the CPD programme in the literature are qualitative studies focused on the teacher's perception (Adriansen & Madsen, 2019).

No studies have established a link to its impact on the students from the student's perspective (Wolf, Aber, Behrman & Tsinigo, 2019). the rationale is that the programme is designed to ensure effective teaching and learning, ultimately ensuring better students' academic achievement. However, since the programme's inception, the chief examiner's report has indicated poor student performance, with fewer students graduating successfully over the past decade (Coffie, 2019). Furthermore, in the pertinent literature, most training college students' must retake the teacher license exams at two times to gain their license, indicating poor performance. The argument in this study is to assess how the CPD programme has influenced students' academic achievement besides other factors such as classroom engagement and students' satisfaction with teaching methods used by the teachers. With the CPD programme, teachers are to improvise teaching strategies that give students a high degree of attention, curiosity, interest, optimism, and passion when they are learning or being taught. such strategies extend their motivation to learn and progress in their education, as seen in (Opoku et al., 2020).

No study has examined the causality between the CPD programme and classroom engagement based on the teacher's teaching strategies. Finally, the extent to which college students are satisfied with the CPD program's impact on their teacher's strategies has not been examined in the literature. Student satisfaction is a prime determinant of their performance, and many studies have established a direct relationship between the two (Adriansen & Madsen, 2019; Vanderpuye, Obosu, & Nishimuko, 2020). this study seeks to fill the gap in the literature by examining how the CPD programme influences all these factors and its ultimate impact on student performance.

The study makes the following assumptions:

1. there is no significant relationship between CPD and student's academic achievement
2. there is no significant relationship between CPD and classroom engagement
3. there is no significant relationship between CPD and students' satisfaction
4. there is no significant relationship between CPD and student's academic achievement
5. the CPD programme does not significantly influence the teacher's teaching strategies
6. teacher's strategies do not play a significant moderating role
7. Students learning strategies do not play a significant moderating role

2. Literature Review

2.1. CPD Policy Framework in Ghana

To meet the rapidly changing demands in the quality of education, global reform initiatives are focused on improving teacher professional development for improving the quality of teaching and learning within schools (Abreh, 2018). Because of this recognition, the continuous professional development of training college teachers has failed to attract enough policy interest in educational reforms. The literature suggested that these challenges have retarded efforts to improve the quality of education across sub-Saharan Africa (Coffie, 2019). However, although several reform initiatives have been adopted within Ghana's teacher education curriculum and structure, efforts to implement it on a broader scale and as a coherent policy framework to guide training college teacher CPD practices, design, and implementation has been relatively slow (Annan, 2020). In 2008, the Education Act (Act 774) was passed to give legislative support to the Pre-Tertiary Teacher Professional Development and Management (PTPDM) policy (Anlimachie & Avoada, 2020).

The goal was to create standard guidelines for teachers' professional development activities. Accordingly, the program's specification and assessment were based on a competency-based

approach. For instance, PTPDM enforced that professional development activities must equip teachers to meet specific demands of the teaching profession and the management and responsibilities that go with them (Yalley, 2022). According to Gunu, Nantomah and Inusah (2022), this informed the design of the CPD programs to reflect the aims and objectives of tertiary education in Ghana. In this regard, the existing promotion of training college teachers included evidence of continuous professional development activities besides the years of teaching experience (Oduro & Yalley, 2022). Such requirements linked the teacher's participation in continuous professional development activities with their career advancement and professional growth as the basis of career progression and awards. On the other hand, the PTPDM policy requires a teacher's license to guarantee that teachers are up-to-date with pedagogical knowledge and classroom management (Abakah, Widin & Ameyaw, 2022).

Other mandatory requirements include the completion of induction and participation in other required in-service training programs. For these reasons, critics argued that the PTPDM policy is trying to institutionalize teachers' professional activities; besides, Ghana does not have an absolute number of years for the professional development programme nor the specifications of a professional development standard (Akyeampong, 2020). According to Abakah et al. (2022), these challenges create a deficit in the framework to guide CPD implementation as an ongoing learning process for teachers. Against this background, the study explores the current CPD situation in training colleges within its impact on student satisfaction, classroom engagement, student academic achievement and the moderating effect of the teacher's strategies. Focusing on teachers in the training colleges of the northern region of Ghana, the study explores teachers' impact of continuous professional development on teaching strategies and its moderate effects.

2.2. Conceptualising Teacher CPD

The teacher CPD aims to equip teachers with professional and up-to-date professional knowledge in pedagogy and management. It is a continuous process that builds on the teachers existing knowledge and understanding to access up-to-date knowledge needed to transfer knowledge to students effectively (Shaibu & Abubakari, 2021). It means that teachers gain the professional knowledge, skills, and attitudes of educators and, in turn, improve students learning. CPD focuses on activities addressing teachers' behaviours, knowledge, emotions, and cognition to improve classroom practice. In Boateng (2019) opinions, such activities are not isolated events but relatively continuous learning processes throughout the teachers' working lives. Therefore, CPD must not be viewed as an event to limit teachers' learning opportunities. Instead, it must be viewed as a continuous job-embedded process that presents various learning opportunities every day (Amponsah, Ampadu & Thomas, 2021).

2.3. Teaching Strategies

In line with the objectives of continuous professional development programmes, teaching is a continuous process of adapting to learners' needs through appropriate teaching strategies (Amponsah, Adasi, Mohammed, Ampadu & Okrah, 2020). Therefore, to ensure the right changes in students learning needs are met, the choice of teaching strategies should ideally align with the subject matter. This is akin to Acheampong and Gyasi (2019) assertions that sustained that teaching strategies work effectively only if they suit learners' needs since every learner interprets and responds to questions uniquely. Similarly, Adasi, Amponsah, Mohammed, Yeboah and Mintah (2020) contends that the alignment of teaching methods with students' needs and preferred learning strategies influences students' academic attainments.

Teachers adopted different strategies to enhance the teaching and learning processes. For instance, with the teacher-centred strategy, there is little engagement as students receive information through theoretical and memorizing without much participation in subject (Armah & Kissi, 2019). Critics argue that it lacks activity-based learning to encourage students to learn real-life problems based on applied knowledge. Also, since the teacher controls the transmission and sharing of

knowledge, the teacher can maximize the delivery of information while minimizing time and effort, causing lost interest and understanding (Mohammed & Amponsah, 2018). Conversely, a student-centred strategy employs discovery learning to enhance active learning. It promotes interest, analytical research, critical thinking and enjoyment among students (Wongnaa & Boachie, 2018).

The literature indicates that scholars regard it as an effective teaching strategy since it does not centralize the flow of knowledge from the lecturer to the student. Besides, it motivates goal-orientated behaviour among students, effectively improving student achievement. Finally, a teacher-student interactive strategy adopted essential features of teacher-centred and student-centred approaches (Wongnaa & Boachie, 2018). For instance, the subject information produced by the learners is remembered better than the same information presented to the learners by the teacher. Similarly, Adasi et al. (2020) noted that the strategy significantly improves students' performance because it encourages them to search for relevant knowledge rather than the lecturer monopolizing the transmission of information to the learners.

2.4. Students' Academic Performance

A proper assessment of academic performance requires thoroughly examining students' classroom performance and graduation rates. It results from standardized tests in different academic subjects (Budu, Abalo, Bam, Budu & Peprah, 2019). Such achievements are defined in literature as the extent to which a student has attained their short or long-term educational goals based on continuous assessment or a cumulative grade point average. According to Oduro and Yalley (2022), working towards good academic achievement is vital for the successful development of students in society. For instance, students who perform well in school transition properly into adulthood and achieve occupational and economic success, as seen in Ofori and Achiaa (2018). Teacher training plays a pivotal role in producing qualified teachers that accelerates economic development and solves some of the fundamental problems of a community's educational needs (Nyarko, Kugbey, Kofi, Cole & Adentwi, 2018).

Therefore, training college students are also expected to invest in their education and graduate with good academic results. However, the chief examiner report indicates that the trend of graduating students in the training colleges in the northern region is not proportional to that of enrolled students. In addition, an increasing number of students committed readmission, suggesting poor academic performance. Such poor performance has been found to cause significant stress to the parents and low self-esteem to the students (Boahene, Fang, & Sampong, 2019). For these reasons, the Ghana education services have made the CPD programme mandatory to train college teachers with the necessary skills in pedagogy and classroom management. The idea is for them to impact and transfer knowledge to students effectively (Adriansen & Madsen, 2019). Therefore, education experts argue that the CPD programme must provide information to guide the provision, reforms, and effective teaching practice and reiterate (Abreh, 2018).

Alternatively, some experts argued that the knowledge, skills and experience teachers acquire from the CPD programme should be used to help students develop effective self-regulated learning strategies (Annan, 2020). Zimmerman (1989) and Pintrich (1999) pioneered work on self-regulated learning strategies and provided a crucial understanding of the critical processes in modern educational psychology. However, studies from these authors noted that the concept of students learning strategies has not changed from its initial definition as students who set goals for their learning and then attempt to monitor, regulate and control their cognition, intentions and behaviour. For example, Pintrich (1999) argued that cognition, motivation, behaviour, and context are the primary determinants of student learning strategies that inform students' ability to plan, monitor, control, and react to academic challenges.

Zimmerman (1989) argued that planning, monitoring, controlling and reacting to academic challenges are based on previous task analysis and motivational beliefs, self-control and self-

observation, and finally, self-reflection, self-evaluation and reaction. The CPD programme adopts these self-regulation processes and encourages them to be taught to students to help develop a better learning strategy for academic performance. According to Dornyei (2019), such an approach is crucial for teacher-trainee education, as good learning is related to solid self-regulated skills

2.5. Classroom Engagement

Although there is a consensus that student engagement is vital to the educational process, how to create engaged students remains unclear in the pertinent literature (Olivier, Archambault, De Clercq & Galand, 2019). According to The Glossary of Education Reform, an effective teaching strategy must focus on classroom engagement and attract students' attention, curiosity, interest, optimism, and passion during learning. It extends their motivation to learn and helps them progress rapidly in their education (Núñez & León, 2019). For these reasons, the CPD programme provides teachers with the skills that engage students in the learning process, increase their attention and focus, and motivate them to aspire to higher-level critical thinking (Baafi, 2020).

Therefore, teachers who adopt student-centred strategies can increase student engagement opportunities, which helps them achieve their learning objectives more successfully (Manu, Ying, Oduro & Boateng, 2021). Also, the CPD programme encourages teachers to adopt active learning strategies to promote student engagement. The rationale is that active learning is an instructional approach in which students actively participate in the learning process instead of sitting quietly and listening. The question-and-answer sessions, discussion, and interactive lectures make students respond to or ask questions that help them in writing assignments, hands-on activities, and experiential learning.

3. Methodology

The study used a quantitative research method to examine the CPD program's impact on student academic achievement, classroom engagement and satisfaction and the moderating effect of teachers' and students' learning strategies. The data on the CPD programme and teaching strategies were taken from the teachers. In contrast, a questionnaire gathered data on student academic achievement, classroom engagement, learning strategies and satisfaction from students of training colleges in the northern region of Ghana. Specifically, a sample of 346 students was taken from a total population of 3200 students, and a sample of 191 teachers was taken from a population of 380 teachers using Krejcie and Morgan (1970). The data was coded with SPSS version 23 and transferred to SmartPLS4 for subsequent analysis. In addition, a quasi-experimental design was used to demonstrate links between the study variables, as shown in figure 1. Like actual experimental designs, Gopalan, Rosinger, and Ahn's (2020) Quasi-experimental research designs test causal hypotheses stated earlier, making it appropriate to establish if the teacher's experience with the CPD programme significantly influenced the student's academic achievement, classroom engagement and their satisfaction using the partial least square (PLS) regression technique.

Rogers and Revesz (2019) explained that the techniques allow a study to understand the nature of relationships between independent variables (student's academic achievement), dependent variables (student satisfaction, classroom engagement) and moderating variables (teaching strategies and learning strategies) using metrics like construct reliability and validity, discriminant validity and model fit. According to Hair, Sarstedt and Ringle (2019), the PLS algorithm reduces the number of variables using a technique like principal components analysis by extracting a set of components that describe the maximum correlation between determinants. The technique also calculates many components as variables using cross-validation to identify the smaller components that provide the most significant predictive ability (Helland, Sæbø & Rimal, 2018). In this way, the total variability in the data is explained by the regression model (Hair Jr, Matthews, Matthews & Sarstedt, 2017).

Table 1. Reliability and Validity of Model

Construct	Key Factors	Outer Loadings (%)	Cronbach's Alpha (%)	rho_A (%)	Composite Reliability (%)	Average Variance Extracted (AVE)
Digital Healthcare	Health Information Technology	82.7	61.2	71.3	80.4	0.672
	broader collaborative healthcare service	81.3				
	Ambulatory healthcare services and health teams	75.5				
Healthcare Delivery	Affordable Healthcare services	78.8	77.5	70.5	80.1	0.507
	Advanced precision medical treatment	80.8				
	Digitisation of healthcare specialties	76.9				
Performance Improvement	Effective Staff Engagement	77.3	70.6	72.5	74.7	0.521
	Effective Feedback System	84.8				
	Reliance on Quality Information	84.0				
Knowledge Management	Categorisation of data and information	0.773	79.7	74.8	80.8	0.515
	Critical Data Processing	0.709				
	Integration of Knowledge Management in Healthcare Service	0.712				
	upgrade of knowledge and Management Tools	0.766				

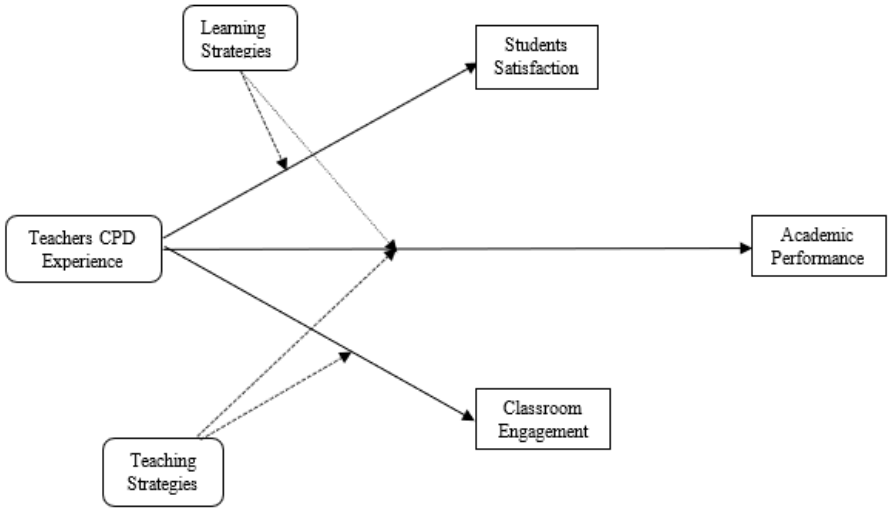

Figure 1. Analytical Framework

4. Result

The results in table 1 are the quality criterion of the research variables, it involves evaluating the design, conduct, and reporting of a study to determine the level of confidence that can be placed on its findings. This is important because studies that are poorly designed or conducted can lead to inaccurate or misleading conclusions. Therefore, it presents a detailed reliability of the analysis in line with the study's objectives. The Cronbach's Alpha values show that the determinant of the study's constructs (teachers' CPD experience, students' satisfaction, classroom engagement, learning strategies, and teaching strategies) are very reliable since the Cronbach's Alpha is ≥ 70%. It is akin to the accepted range defined by Hayes and Coutts (2020) who explained that in such instances, the respective factors can be considered for policy regarding resourcing allocation to deal with teachers'

continuous capacity development. On the other hand, the composite reliability values, also known as construct reliability, measure the internal consistency of the constructs in scale items much like Cronbach's alpha (Netemeyer, 2003). Statistically, it is equal to the total actual score variance in construct relative to the total scale score variance (Brunner & Süß, 2005).

Stated differently, it measures the reliability of the constructs as a model shown in blue in figure 1. Also, rather than measuring the internal consistency of the factors explaining each construct (coloured yellow), the composite reliability measures the reliability of each construct in the model making it the preferred determinant of reliability. It means that the constructs in the model were highly reliable since they each have a composite reliability value $\geq$ 70%. The rho_A values or the communality of each construct indicates how much each construct contributed to the overall model in figure 1. For example, it can be observed that about 74.8% of the changes in the model were caused by the student's academic achievement while 81.3% was caused by teacher's continuous capacity development.

In the same way, the student's classroom engagement, their satisfaction of teachers' performance, their own learning strategies, and the teachers teaching strategies contributed 70.3%, 75.6%, 72.0%, and 77.4% respectively to the model in figure 1. It means that the teacher's continuous capacity development and teaching strategies are the principal contributors to the model. Finally, the AVE values measure the amount of variance captured by a construct concerning the amount of variance due to measurement error. Therefore, as an indicator of discriminant validity, the AVE assessment aims to ensure that the construct has the most vital relationships with its indicators, as explained by Hair et al. (2022). Stated differently, the AVE value $\geq$ 0.5 indicate a direct association between the factors of each construct though they do not linearly predict each other.

Table 2. Construct Reliability and Validity

Construct	Key Factors	Outer Loadings (%)	Cronbach's Alpha (%)	rho_A (%)	Composite Reliability (%)	Average Variance Extracted (AVE)
Academic Achievement	High Motivation	85.2	78.8	74.8	82.1	0.606
	Improvement in Test and Exams Scores	76.8				
	Standardized Scores	71.0				
Teacher CPD Experience	Better Classroom Management	92.5	76.2	81.3	86.3	0.679
	Career Advancement	83.2				
	Improved Teaching Skills	70.0				
Classroom Engagement	Better Teacher-Student Relationship	78.2	76.4	70.3	76.4	0.524
	Improved Classroom Management	82.9				
	Teacher Effectiveness	73.8				
Student Satisfaction	Increased Dialogue	80.4	74.3	75.6	85.2	0.657
	Active Learning	84.1				
	Clear Communication	78.6				
Learning Strategies	Setting Learning Goals	85.8	72.0	72.0	84.0	0.724
	Utilizing Study Groups	84.4				
Teaching Strategies	Collaborative Learning	71.1	76.0	77.4	81.3	0.593
	Future Opportunity	84.3				
	Inquiry-Based Learning	75.1				

Source. Field data, 2023

Table 2 is a measure of the validity of the research instrument in its ability to accurately measure the concept or construct as intended. In other words, it assesses whether the instrument is measuring what it is supposed to measure. Thus, since the Fornell-Larker criteria values $\geq$ 0.7, it means that the

constructs were accurately measured as defined by Fornell-Larcker (1981). Therefore, it is sufficient to conclude that the degree to which the key factors are interrelated shows significant differences between the constructs (Fornell-Larcker, 1981). Also, since the HTMT values are smaller than one and the AVE values are more than 0.5, it implies discriminant validity was established. Thus, regarding policy direction and resource allocations, the F-squared values show that it should be guided by the relationship between students' satisfaction and their learning strategies (f-squared value = 12.559) followed by the relationship between teaching strategies and classroom engagement (f-squared = 1.371) then the relationship between the teachers CPD and students' academic achievement.

Table 3. Convergent Validity of the Model

Measurement Criteria	Constructs	Academic Achievement	Classroom Engagement	Learning Strategies	Student Satisfaction	Teacher CPD Experience	Teaching Strategies
Fornell-Larcker criterion	Academic Achievement	0.779					
	Classroom Engagement	0.793	0.724				
	Learning Strategies	0.725	0.727	0.851			
	Student Satisfaction	0.725	0.724	0.967	0.811		
	Teacher CPD Experience	0.745	0.760	0.731	0.031	0.824	
	Teaching Strategies	0.712	0.935	0.721	0.736	0.710	0.770
F-sqaured	Academic Achievement						
	Classroom Engagement						
	Learning Strategies	0.002			12.559		
	Student Satisfaction						
	Teacher CPD Experience	0.927	0.044		0.003		
	Teaching Strategies	0.012	5.443				
HTMT	Academic Achievement						
	Classroom Engagement	0.621					
	Learning Strategies	0.181	0.255				
	Student Satisfaction	0.227	0.239	1.393			
	Teacher CPD Experience	0.960	0.574	0.124	0.108		
	Teaching Strategies	0.420	1.371	0.184	0.213	0.409	

Source. Field data, 2022

Nature of Impact

A detailed illustration of the intricate relationship between the study's constructs is shown in figure 2. It can be observed that the teachers' CPD experience has a direct relationship with the student's academic achievement and classroom engagement. Currently, 57.1% of the student's academic achievement changes can be attributed to the teacher's CPD experience. Also, further positive changes in the teacher's CPD experience can increase the student's academic achievement by 69.0%. In the same way, 87.9% of the current improvement in classroom engagement was caused by the teacher's CPD experience and could increase further by 7.7%. on the contrary, there was an inverse

relationship between the teacher's CPD experience and the student's satisfaction. Currently, the students are about 93.7% satisfied with the teaching experience but it can be reduced by 1.5%. it suffices to conclude that the key to increasing student satisfaction with teacher strategies is to create a learning environment that is engaging, supportive, and personalized to meet the needs of each student.

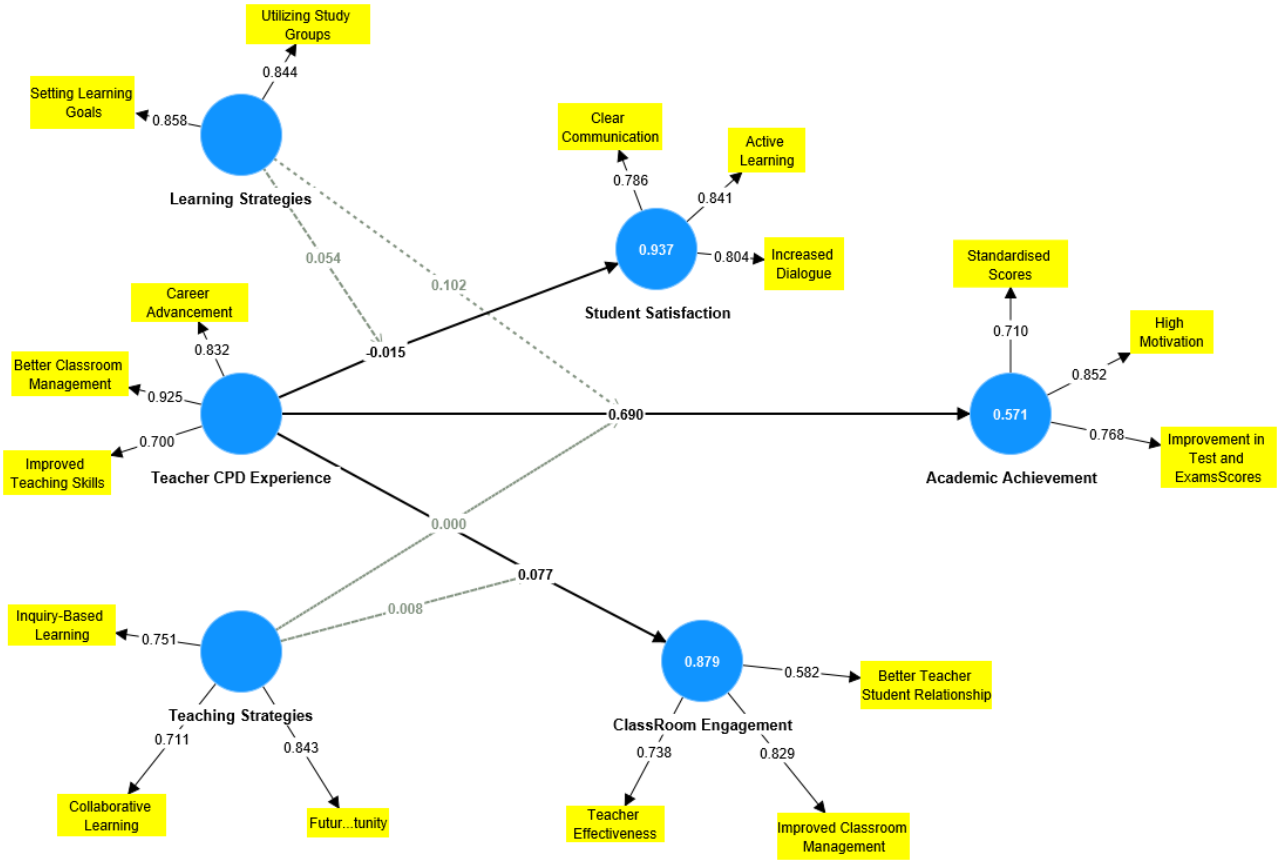

Figure 2. The Model of the Study

The role of Teaching and Learning Strategies

The teaching strategies and the learning strategies had different moderating effects in the model in figure 1. Firstly, the study argued that the relationship between the teacher's CPD experience and classroom engagement is influenced by the teaching strategies adopted by the teachers and the academic achievement of the students. Conversely, the results revealed that the teaching strategies did not have any impact (0.00) in magnitude on the relationship between the CPD experience of the teachers and students' academic achievement. However, it augments the relationship between the teacher's CPD experience and classroom engagement by 0.8%. the literature shows that classroom engagement and student achievement are influenced by a complex interplay of factors that include both student and teacher factors, as well as environmental and instructional factors. Teachers can only effectively manage these factors to create a learning environment that promotes engagement and maximizes student learning.

Secondly, students' learning strategies had a 5.4% direct influence on the relationship between the teacher's CPD experience and their satisfaction with their teachers. In addition, it strengthened the relationship between the teacher's CPD experience and the student's academic achievement by 10.2%. it means that teachers who engage in continuous capacity development are better equipped to meet the diverse learning needs of their students, and provide a high-quality education that can positively impact their performance and learning strategies.

Significance of Impact

The hypotheses testing was based on the p-values < 0.05. it is observed that the teacher's CPD experience did not significantly influence the student's satisfaction and in the same way, the student's learning strategies did not significantly influence their academic performance. For the rest of the relationships, the null hypothesis was rejected.

Table 4. Hypothesis Test

Null Hypothesis	Relationship between constructs	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Hypothesis Test
H0.	Teacher CPD Experience -> Academic Achievement	0.692	0.031	22.017	0.000	Rejected
H0.	Teacher CPD Experience -> Classroom Engagement	0.077	0.020	3.959	0.000	Rejected
H0.	Teacher CPD Experience -> Student Satisfaction	-0.015	0.015	1.062	0.288	Retain
H0.	Teaching Strategies -> Academic Achievement	0.078	0.036	2.218	0.027	Rejected
H0.	Teaching Strategies -> Classroom Engagement	0.908	0.015	60.923	0.000	Rejected
H0.	Learning Strategies -> Academic Achievement	-0.034	0.034	0.989	0.323	Retain
H0.	Learning Strategies -> Student Satisfaction	0.949	0.005	185.218	0.000	Rejected

Source. Field data, 2023

Recommendations for Policy

In figure 3, it can be observed that though the student's learning strategies contributed more to the general student's achievement (performance = 70%), its importance in terms of the policy to improve students' achievement is very low (3%). Therefore, policy formulation for the allocation of resources should focus on improving the teacher's CPD experience first since its relative importance and performance to students' academic achievement is the highest (performance = 45% and importance = 69%). Then, the teacher's teaching strategies should be the next point of consideration (performance = 30% and importance = 9%).

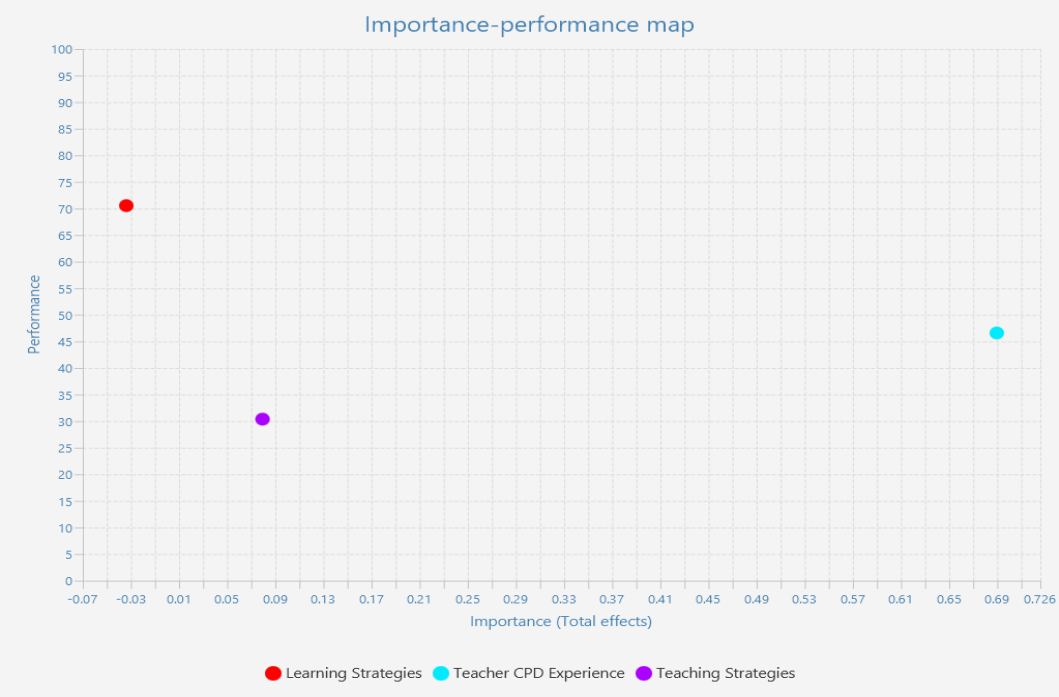

Figure 3. Importance - Performance Analysis

Regarding the specific factors to channel resources, the policy can focus on three categories of factors. Firstly, resources should be allocated to improve classroom management, career advancement, and teaching skills. Secondly, resources should focus on developing future opportunities, collaborative learning, and inquiry-based learning. Lastly, resources should be channeled to utilizing study groups and setting learning goals.

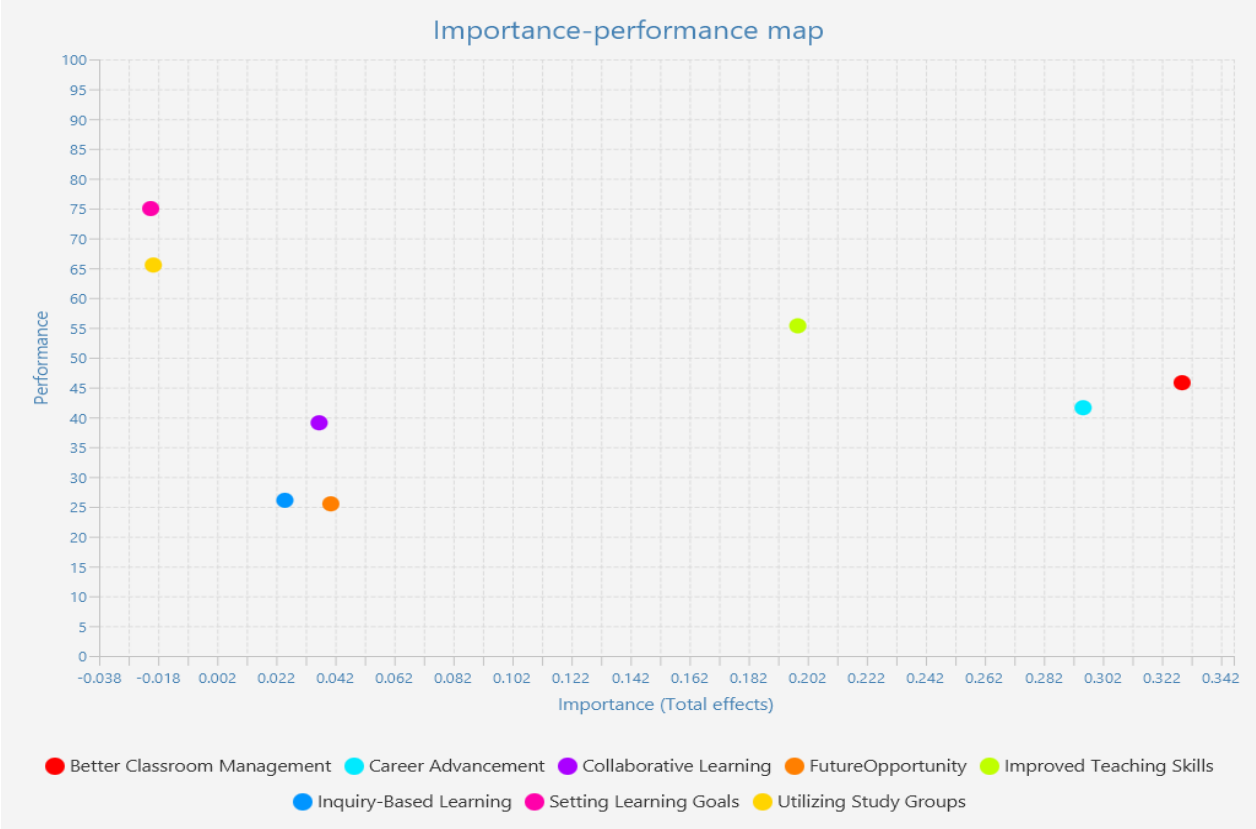

Figure 4. Importance - Performance Analysis

5. Conclusion

In summary, continuous capacity development for teachers is essential for ensuring effective teaching, improved student learning outcomes, proper classroom engagement, and a positive school environment. Teachers who engage in continuous capacity development can acquire and refine their teaching skills, such as instructional design, classroom management, and student engagement. This can lead to more effective teaching practices and better learning outcomes for students. Further, the results indicated that since education is constantly evolving, teachers who participate in continuous capacity development can stay up-to-date with changes in the curriculum, teaching methods, and educational technology. This ensures that their teaching remains relevant and effective and can improve their ability to meet the diverse needs of their students, resulting in improved learning outcomes for students.

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