

Analysing Tutor Involvement, Institutional Assistance, and Their Influence on the Fidelity of Bachelor of Education Curriculum Execution via Teacher Professional Development Initiatives at Ghana's Colleges of Education

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Research Article

Keywords: Teacher Professional Development, curriculum fidelity, Social Studies, National Teachers' Standards, mixed methods, Colleges of Education

Posted Date: September 14th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-10791085/v1>

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Additional Declarations: No competing interests reported.

Abstract

Teacher Professional Development (TPD) is indispensable for optimising curriculum implementation. This study evaluated the degree to which Teacher Professional Development enhances the implementation of the Bachelor of Education (B.Ed.) curriculum in Colleges of Education (CoEs) in Ghana. The population comprised 10 public educational colleges. The study employed a mixed-methods concurrent embedded design with a sample of 407, comprising 27 tutors, 10 chiefs of department, 10 principals, and 360 teacher trainees. Quantitative studies, which included descriptive and inferential data, were supplemented by qualitative studies obtained from structured class observations and semi-structured interviews. The results show that the frequency, significance, and collaborative design of Teacher Professional Development predict improved fidelity in curriculum implementation. This is evidenced by improved alignment of lesson objectives and assessment methodologies, and by the incorporation of the National Teachers' Standards (NTS). The study concludes that institutionalising PDS as a structured framework enhances tutor competency, promotes fidelity, and encourages reflective practice. It promotes the implementation of focused mentoring to reduce inter-college disparities, in conjunction with a systematic, CIPP-informed assessment of TPD quality and engagement.

1. Introduction

Teacher Professional Development Sessions (TPD) are globally indispensable for curriculum implementation, enhancing educators' expertise and ensuring curriculum integrity (OECD, 2023). TPD is vital for high-quality education and student outcomes, necessitating continuous investment (Guskey & Yoon, 2009; Darling-Hammond et al., 2009), transforming objectives into classroom practices via mentoring and reflection (Darling-Hammond & Hyler, 2020). In Ghana, TPD is crucial for aligning Colleges of Education (CoEs) with the four-year B.Ed. curriculum and National Teachers' Standards (NTS). Ghana's curriculum reforms aim to create capable educators and promote interactive, learner-centred pedagogy (Adu-Gyamfi, 2016; Aziabah, 2019; T-TEL, 2018; MoE/NTC, 2017), with TPD ensuring tutors assimilate NTS and maintain curriculum coherence. However, studies show inconsistent TPD implementation, ineffective PDS, and pro forma lecture notes compromise curricular fidelity (Ashun, 2023). Despite resources, integrating NTS competencies varies. This highlights that while TPD is a policy requirement, its institutional implementation is inconsistent. International research confirms successful curriculum reform relies on continuous collaborative learning and institutional support (Kennedy & Clarke, 2023). Without systematic TPD, even strong curricula risk superficial adoption, as teachers may lack pedagogical depth for competency-oriented lessons (Fullan, 2021).

Educator professional development (TPD) has evolved from traditional workshops to modern online and collaborative methods, facing the challenge of customizing effective strategies for unique contexts. Research consistently links TPD to improved teacher quality, student achievement, and a culture of continuous institutional improvement. Samundeeswari et al. (2024) underscore its necessity for adapting to new curricula, innovative teaching, and diverse student needs. Recent strategies prioritize active learning, collaboration, and sustained duration for lasting impact, with assessment shifting to

focus on student learning outcomes and teacher performance. Despite an expanding research base, best practices and assessment techniques still pose unanswered questions. This review aims to consolidate current research on effective TPD tactics and assessment to inform stakeholders on designing sustainable initiatives (Samundeeswari et al., 2024). Consequently, examining TPD's influence on B.Ed. curriculum implementation in Ghana's Colleges of Education is crucial. This investigation will illuminate how professional development leads to improved instruction, comprehensive NTS integration, and consistent achievement of curriculum goals.

Teacher Professional Development (TPD) is crucial globally for curriculum integrity and high-quality learning, boosting assessment alignment, engagement, and creativity (OECD, 2023). Yet, many institutions struggle to translate TPD into practice (Kennedy & Clarke, 2023; Darling-Hammond & Hylar, 2020). Effective TPD must be systematic, collaborative, and contextually embedded (Schleicher, 2023). However, in developing contexts, these structures are often weak or inconsistently implemented, with fragmented workshops and minimal follow-up undermining curriculum integrity (Fullan, 2021; UNESCO, 2022). The absence of robust evaluation and accountability further weakens reforms, particularly competence-based pedagogies (UNESCO, 2023).

The objective of the four-year Bachelor of Education (B.Ed.) curriculum and the National Teachers' Standards (NTS) in Ghana was to revolutionise teacher education by promoting reflective, learner-centred practices (MoE/NTC, 2017; T-TEL, 2018). Professional Development Sessions (PDS) were developed as a structured venue to assist tutors in internalising the NTS and aligning instruction with the new curriculum requirements. Nevertheless, empirical evidence indicates that PDS in numerous Colleges of Education (CoEs) is inconsistently implemented, lacks collaborative follow-up, and exhibits significant variations in quality and frequency (Ashun, 2023; Akyeampong et al., 2022). These difficulties highlight a recurring discrepancy between TPD's intended policy and its actual results in curriculum delivery. Despite T-TEL and the Ministry of Education having established several training frameworks, nothing is known about how well TPD supports the integrity of the B.Ed. curriculum's implementation across CoEs. Thus, by assessing the impact of Teacher Professional Development (TPD) on curriculum implementation fidelity in Colleges of Education, this study aims to close the gap. It seeks to determine the extent to which PDS supports reflective practice, pedagogical alignment, and the ongoing integration of NTS competencies across institutions. (1) *To what extent do tutors participate in key Teacher Professional Development (TPD) activities in the College?*

(2) *What support systems and administrative measures are in place to promote tutor participation in TPD activities?* (3) *How do TPD activities and College support influence the fidelity of B.Ed curriculum implementation?*

2. Theoretical framework

2.1 Theories underpinning the study

This research on Teacher Professional Development (TPD) in Ghana's Colleges of Education is grounded in three main theories: Adult Learning, Social Constructivism, and Reflective Practice. These theories provide a framework for understanding TPD's impact on curriculum implementation and teaching quality. Malcolm Knowles' Adult Learning Theory (Andragogy) asserts that adult learners are autonomous, bring prior experience, and prefer relevant learning. This aligns with findings that tutors engage in self-directed learning and peer collaboration, favoring internal collaboration and solo study over external conferences. TPD programs should thus integrate pragmatic, job-relevant activities to enhance engagement and curriculum implementation (Ngozwana, 2020). Social Constructivism (Vygotsky) posits knowledge is built socially through interaction. The study emphasizes collaborative lesson preparation, peer coaching, and Professional Learning Communities (PLCs) for teacher growth and effective curriculum implementation. Despite limited PLC involvement, the theory supports these social learning frameworks for professional discourse. Institutional support must prioritize collaborative environments for collective problem-solving and co-construction of teaching methods, enhancing curriculum adherence (Syah, Sukmana, & Yumitro, 2026). Schön's Reflective Practice Theory stresses continuous critical reflection for educators to enhance teaching. The study notes tutors' deficiencies in reflective practices despite their benefits for professional development and curriculum coherence. TPD projects must integrate mentoring, feedback, and reflective dialogues to foster professional understanding, improving curricular fidelity and teaching efficacy (Morsy, 2025).

2.1.1 Relevance and implications of the theories

This study outlines practical strategies for enhancing Teacher Professional Development (TPD) in Ghana's Colleges of Education by integrating various theories. Adult Learning Theory emphasizes that TPD activities should be pertinent, self-directed, and integrated into daily instruction, rather than standalone courses. Social constructivism highlights the need to institutionalize collaborative practices, such as peer observations and lesson studies, to foster sustainable professional learning communities essential for curriculum improvements. Simultaneously, integrating reflective practice into TPD promotes ongoing instructional improvement, empowering tutors to efficiently translate curriculum objectives into classroom practice. Effective TPD necessitates a comprehensive approach: it must be ongoing, collaborative, and reflective. Institutional policies should prioritize regular scheduling, resource allocation, and motivational incentives to maintain tutor engagement and accountability. The study's findings reveal current TPD activities are inconsistent and lack external involvement, diminishing efficacy. Utilizing these theoretical insights assists CoEs in formulating cohesive TPD frameworks, promoting tutor proficiency, ensuring curriculum adherence, and ultimately elevating teaching quality and student outcomes. This alignment with Adult Learning Theory, Social Constructivism, and Reflective Practice directly influences TPD design, execution, and maintenance for effective curriculum implementation and educational transformation.

2.2 Teacher Professional Development (TPD) activities in the College

Teacher Professional Development (TPD) is crucial for enhancing teaching quality and student performance, as tutors' engagement in TPD activities improves pedagogical skills and innovation (Darling-Hammond & Hyler, 2020; Guskey & Yoon, 2009). Essential TPD activities include workshops, collaborative learning communities, seminars, and self-directed learning, all vital for professional growth and curricular integrity. Collaborative activities like peer observations and team teaching are particularly effective in fostering reflective practices and improving instruction (Kennedy & Clarke, 2023; Schleicher, 2023), enabling knowledge exchange and creating learner-centred environments (Singh, 2023). Self-directed learning complements collaboration by allowing tutors to tailor their development through further studies and literature engagement, fostering continuous improvement in competency-based curricula (Samundeeswari et al., 2024; Saleem, 2021). Despite the importance of formal workshops, international studies show varied tutor participation, with conferences often hindered by logistical and budgetary challenges, limiting access to broader academic discussions (Fullan, 2021; UNESCO, 2022, 2023). Therefore, institutions must provide access to external opportunities like virtual seminars and funded conferences to enrich skills and prevent superficial curriculum implementation (Darling-Hammond et al., 2009).

Professional Learning Communities (PLCs) are a vital part of teacher professional development (TPD), supporting reforms and collaborative inquiry among educators (Kennedy & Clarke, 2023; Samundeeswari et al., 2024). PLCs offer structured platforms for lesson planning, action research, and reflective discourse, enhancing curriculum understanding and instructional consistency. However, sustaining effective PLCs is challenging due to inadequate institutional support (Fullan, 2021; UNESCO, 2022), with limited time, facilitation experience, and administrative backing impeding tutor engagement and community longevity. Mentoring and coaching are also essential TPD elements, offering individualized support for curriculum adaptation and instructional advancements (Faulkner, 2019). Experienced mentors help translate objectives into practice, promote reflective teaching, and boost professional confidence. Donnelly and McSweeney (2011) highlight that mentoring enhances individual skills and fosters a supportive institutional culture. These strategies are crucial for reducing curriculum implementation gaps, particularly in developing countries facing resource inequalities (Akyeampong et al., 2022).

Technology integration in Teacher Professional Development (TPD) offers blended and online learning, overcoming geographical and temporal barriers (Song, 2023). Digital platforms facilitate asynchronous learning, virtual communities, and access to educational resources, enhancing participation and customized learning paths. However, successful technological implementation requires infrastructure investment, digital literacy, and institutional commitment, which can be challenging in developing countries (UNESCO, 2023).

Tutor involvement in TPD is significantly influenced by institutional incentives and accountability frameworks. Policies that integrate TPD participation into performance ratings, provide concrete incentives, and offer professional recognition generally increase tutors' dedication to ongoing learning (Saleem, 2021). Conversely, a lack of consistent incentives and clear accountability measures can result

in erratic attendance, reduced enthusiasm, and fragmented professional development (Ashun, 2023; Akyeampong et al., 2022). Proactive leadership from college management is crucial for creating a supportive TPD environment through resource allocation, scheduling assistance, and fostering a culture of professional excellence (Schleicher, 2023).

Empirical research emphasizes the necessity of aligning TPD activities with institutional objectives and curriculum frameworks to enhance their efficacy (Babah & Mac-Hubert, 2017; Okon, 2020). This alignment ensures TPD is a fundamental component of curriculum implementation, empowering educators to achieve learning objectives and adopt learner-centred pedagogies. TPD initiatives emphasizing the National Teachers' Standards (NTS) train educators in professional knowledge, values, and practices essential for curriculum fidelity (MoE/NTC, 2017), thereby promoting pedagogical consistency and improving instructional quality. In Ghana, the shift to a four-year Bachelor of Education (B.Ed.) curriculum, prioritizing competency-based and interactive pedagogy, makes tutor participation in TPD increasingly essential (T-TEL, 2018). While in-house and collaborative TPD drive instructional changes, external involvement via conferences and professional networks broadens perspectives (Darling-Hammond et al., 2009; Samundeeswari et al., 2024). A balanced strategy combining internal collaboration with external exposure is recommended for effective tutor support.

2.3 Support systems and administrative measures are in place to promote tutor participation in TPD activities

Support systems and administrative measures are pivotal for tutor engagement in Teacher Professional Development (TPD), crucial for instructional quality and curriculum adherence. Successful TPD requires robust institutional structures offering time, resources, policies, and incentives for consistent involvement. Administrative support begins by creating favorable institutional conditions for ongoing professional development. Time allocation is a universally acknowledged, essential support mechanism for sustained TPD (OECD, 2023). Without it, instructors face workload challenges that restrict participation (Kennedy & Clarke, 2023). Therefore, allocating adequate time within the academic timetable is vital, demonstrating institutional dedication and empowering educators to innovate.

Infrastructure and resource availability, including training rooms, technical equipment, instructional materials, and internet access, are critical support components for TPD. Faulkner (2019) asserts that both physical and digital infrastructures should facilitate diverse professional development forms. Infrastructural inadequacies, particularly in developing contexts, significantly hinder TPD participation (Moon, 2021), making addressing these deficiencies an administrative priority. A well-defined, consistent professional development policy is crucial for directing institutional efforts and ensuring TPD continuity. Such policies delineate objectives, methods, and accountability, aligning PD with curricular reforms and national standards (Darling-Hammond et al., 2017). They institutionalize professional learning as an essential teacher responsibility, mitigating fragmentation (Fullan, 2021). Mentoring and coaching are effective administrative strategies, offering tailored support for reflection and skill enhancement (Darling-Hammond & Hyler, 2020). Successful mentoring requires institutional frameworks to recognize,

train, and incentivize mentors assisting peers in lesson design and classroom management (Saleem, 2021). Coaching provides immediate feedback, fostering collaboration and professional inquiry (Samundeeswari et al., 2024). Financial assistance, including travel and tuition for external workshops or advanced studies, significantly impacts tutors' development capacity. External exposure broadens perspectives, but persistent underfunding in low-income nations restricts engagement (UNESCO, 2023). Administrative efforts to provide allowances and subsidies are crucial, requiring clear communication for fair access.

Professional Learning Communities (PLCs) offer a systematic framework for educators to collaborate, exchange experiences, and reflect on pedagogy (Song, 2023). Sustained PLCs require administrative leadership for allocating time, providing tools, and acknowledging contributions (Akyeampong et al., 2022) to boost tutor motivation and curriculum ownership. Accountability and motivational incentives are crucial for enhancing tutor engagement in TPD. Integrating professional development outcomes into performance appraisals ensures tutors understand its career significance (DeMonte, 2013). Rewards, public recognition, or preferential treatment for leadership roles promote continued involvement (Roberts & Weston, 2013). Research indicates positive motivation with supportive leadership fosters a more enduring commitment than punitive methods (Darling-Hammond et al., 2017).

Collaboration with external entities (government agencies, NGOs, funders) often enhances TPD administration, offering financial resources, technical knowledge, and training facilitators that institutions may lack (T-TEL, 2018). However, administrative leadership is crucial to synchronize external assistance with long-term institutional objectives, preventing fragmented, misaligned donor programs (Moon, 2021) and securely integrating professional growth. Clear communication of TPD policies, schedules, resources, and expectations fosters transparency and tutor engagement. Principals and department heads are vital in cultivating a pro-PD culture by involving tutors in planning and feedback (Saleem, 2021), ensuring professional growth is a collective institutional priority. Sustainable TPD support requires continuous institutional commitment, specific funding, consistent outcome assessment, and tutor input (UNESCO, 2023). Employing frameworks like CIPP evaluates relevance and efficiency (Samundeeswari et al., 2024), demonstrating strong support for instructor development.

2.4 TPD activities and College support influence the fidelity of B.Ed curriculum implementation

Teacher Professional Development (TPD) activities and institutional support are critical for faithfully implementing curricula, such as Ghana's B.Ed. program, in Colleges of Education (CoEs). Curriculum fidelity ensures instruction aligns with established objectives and standards, guaranteeing consistency and quality. Methodically structured and supported TPD is a vital vehicle for classroom curriculum improvements. The theoretical basis asserts educators require ongoing learning to acquire new pedagogical skills, deepen content understanding, and align instructional methods with evolving curricula (Darling-Hammond et al., 2009; Guskey & Yoon, 2009). TPD is a continuous, collaborative, and contextually integrated process, not just occasional workshops (Fullan, 2021; OECD, 2023). Activities like

workshops, seminars, peer observations, Professional Learning Communities (PLCs), mentoring, and reflective practice enhance curriculum fidelity by connecting policy intentions with classroom implementations (Darling-Hammond & Hyler, 2020; Schleicher, 2023).

Collaborative professional learning, via Professional Learning Communities (PLCs) or peer networks, is crucial in Teacher Professional Development (TPD), fostering collective accountability and mutual understanding of curriculum objectives among educators (Kennedy & Clarke, 2023). These interactions facilitate knowledge co-creation, reflective practice, and the alignment of teaching judgments with curriculum standards. PLCs are vital for implementing competence-based curricula, ensuring integrity in lesson objectives, content, and assessment (Samundeeswari et al., 2024). However, their success depends significantly on institutional commitment, trust, and shared leadership (Darling-Hammond & Hyler, 2020).

Alongside TPD activities, collegiate institutional support is foundational for effective professional development. This includes administrative policies, resource allocation, mentoring, infrastructure, and monitoring frameworks (UNESCO, 2023). Without adequate structural support, TPD initiatives are inconsistently implemented, hindering curriculum fidelity (Fullan, 2021). Dedicated time for development sessions and collaborative planning is essential (OECD, 2023), as are financial and material resources like instructional materials and technology (Okon, 2020). Mentoring and coaching are critical institutional supports, individualizing development and aligning teachers with curriculum objectives through structured reflection and feedback (Darling-Hammond et al., 2009). Systematic administrative monitoring, including attendance tracking and lesson observation, enhances accountability and curriculum adherence (Ashun, 2023). Fostering a culture of collective responsibility and intrinsic motivation is key to sustained engagement, rather than relying on punitive measures (Kennedy & Clarke, 2023).

Curriculum fidelity hinges on aligning Teacher Professional Development (TPD) with clear institutional policies, standardizing procedures and fostering ongoing learning (Akyeampong et al., 2022). Without these, TPD becomes disjointed, especially with sporadic external support (UNESCO, 2022). Integrating TPD outcomes into evaluations enhances tutor motivation and dedication (Guskey & Yoon, 2009). The B.Ed. curriculum's learner-centred, competence-based shift requires tutors to gain theoretical and practical skills for National Teachers' Standards (MoE/NTC, 2017; T-TEL, 2018). TPD is crucial for this. Collaborative planning, reflective discourse, and coaching initiatives enhance pedagogical consistency and assessment integrity, directly aligning with B.Ed. objectives (Darling-Hammond & Hyler, 2020).

Sporadic, unsupported Teacher Professional Development (TPD) leads to ineffective curriculum implementation and superficial innovation (UNESCO, 2023; Okon, 2020). However, organized, ongoing TPD with robust infrastructure enhances teacher competence, curriculum compliance, and student engagement (Schleicher, 2023). The literature advocates for internalizing and institutionalizing TPD for long-term sustainability and to mitigate inter-college disparities in curriculum fidelity (Ashun, 2023). Technology and digital resources are essential for modern TPD, requiring universities to provide

sufficient technological infrastructure, including internet access and instructional materials (OECD, 2023; Okon, 2020). Lack of these resources compromises professional growth and curriculum integrity. Tutor motivation is critical; burnout and inadequate incentives hinder participation (Fullan, 2021). Institutional measures like acknowledging contributions and fostering communities of practice promote dedication (Darling-Hammond et al., 2009). Ultimately, B.Ed. curriculum fidelity profoundly depends on TPD quality and institutional support. Institutions must invest thoroughly in structured, cooperative TPD and its supportive environment.

3. Materials and methods

3.1 Research approach and design

This study employed a pragmatic research paradigm, facilitating the utilisation of several methodologies to tackle the research issue effectively. Pragmatism prioritises practical solutions and advocates integrating both objective and subjective perspectives. The study employed a mixed-methods approach, integrating quantitative and qualitative data to provide a comprehensive picture of curriculum implementation in Ghana's Colleges of Education. A concurrent embedded research design was utilised. In this design, quantitative data constituted the principal element, whilst qualitative data served a supplementary function. The simultaneous collection of both data types enabled the qualitative findings to elucidate and enhance the statistical results.

3.2 Participants

The population consisted of principals, department heads, Social Studies tutors, and Level 200 and 300 teacher trainees. From a total population of 1,547, a sample of 407 respondents was selected. This included 360 teacher trainees selected through proportional random sampling, while all 27 tutors, 10 HoDs, and 10 principals were involved through census sampling. Three main data collection instruments were used:

- a Likert-scale questionnaire for quantitative data from trainees and tutors
- a classroom observation guide to gather real-time instructional practices and the use of resources.
- a semi-structured interview guide for principals to support and explain questionnaire findings.

To ensure reliability and validity, the questionnaire underwent pilot testing, and its internal consistency was assessed using Cronbach's Alpha. To prevent researchers' bias, qualitative trustworthiness was ensured through member verification, transparent procedures, and meticulous reflection. There were ethical sanctions, informed consent, and assurances of confidentiality for data collection.

3.3 Data Analysis

SPSS was used to analyse quantitative data, employing descriptive and inferential statistical methods, including structural equation modelling, factor analysis, and means and standard deviations. To identify patterns, explanations, and insights, qualitative data were transcribed and thematically analysed.

3.4 Ethical Considerations

Ethical procedures comply with the guidelines established by the colleges of education and the University's Ethical Review Board. Informed consent is secured from college authorities, tutors, and students, highlighting voluntary participation, confidentiality, and the right to withdraw without repercussions. Data are securely stored, ensuring anonymity is preserved during analysis and reporting. The intervention is designed to be non-harmful to participants while enhancing their learning experiences. The study's ethical considerations encompassed informed consent, confidentiality, and voluntary participation to alleviate psychological risks and safeguard participants' well-being. It does not directly confront societal bias but adheres to established norms to maintain ethical research practices.

4. Results

Quantitative

This section presents key findings on Teacher Professional Development (TPD) activities and their role in implementing the B.Ed. curriculum, drawing from teacher candidates, tutors, and HoDs. Responses were evaluated, with mean scores above 3.0 indicating agreement and below 3.0 indicating disagreement. Standard deviation values denoted response homogeneity (< 1) or heterogeneity (> 1). Overall, respondents largely agreed that TPD activities significantly facilitate the effective implementation of the B.Ed. curriculum, with most indicators receiving favorable evaluations (mean > 3.0). These activities encompassed Collaborative Lesson Planning, Classroom-Based Coaching, Peer Observation, Weekly Professional Development Sessions, Pro-Forma lesson notes compilation, Reflective Practice, and Mentoring. Student teachers generally concurred (MM = 3.85, ASd = 1.14) that tutors use various TPD activities. However, disagreements were noted regarding the organization of professional development sessions (M = 2.82, Sd = 1.12), with 87.3% of respondents indicating inadequate organization. Additionally, 84.4% (M = 2.11, Sd = 0.99) disagreed that pro-forma notes were developed for lesson delivery.

To what extent do tutors participate in key Teacher Professional Development activities in the College?

Table 1
Teacher Trainees' Perceived Tutors Participation in TPD Activities

Statement	Teacher Trainees					
	M(Sd)	SA	A	U	D	SD
		F(%)	F(%)	F(%)	F(%)	F(%)
1. Tutors regularly attend professional development workshops or seminars related to my subject area or teaching methods.	3.49(1.26)	66(18.3)	178(49.4)	25(6.9)	49(13.6)	42(11.7)
2. Tutors collaborate with colleagues (for example, through peer classroom observations or team teaching) to improve their teaching practice.	4.11(1.02)	142(39.4)	165(45.8)	16(4.4)	23(6.4)	14(3.9)
3. Tutors participate in professional learning communities or study networks with other tutors to enhance their teaching skills.	2.82(1.00)	42(11.7)	114(31.7)	21(5.8)	102(28.3)	81(22.5)
4. Tutors attend educational conferences or seminars to stay current in teaching strategies and subject knowledge.	2.11(0.99)	21(5.8)	12(3.3)	23(6.4)	139(38.6)	165(45.8)
5. Tutors engage in continuous learning activities (e.g. further studies, independent reading of pedagogy) to improve their teaching effectiveness.	3.98(1.04)	120(33.3)	163(45.3)	41(11.4)	20(5.6)	16(4.4)
Source: Field survey, 2022						
Key: M = Mean, Sd = Standard Deviation, F = frequency, SA = Strongly Agree A = Agree U = Undecided D = Disagree SD = Strongly Disagree						

Table 1 shows that teacher trainees report tutor strong engagement in certain TPD activities – notably peer collaboration (mean = 4.11) and self-directed learning (continuous learning, mean = 3.98) – while their participation in formal conferences (mean = 2.11) and professional learning communities (PLC,

mean = 2.82) is low. In concrete terms, nearly 85–88% of trainees agree or strongly agree that tutors engage collaboratively with colleagues and pursue independent study, but most disagree that tutors regularly attend conferences or PLCs. This aligns with literature emphasising the power of collaborative learning communities: such communities "offer a platform for teachers to connect, exchange knowledge, and enhance their professional practice". From a curriculum implementation perspective, this is promising: the respondents "strongly felt that TPD activities facilitated the effective implementation of the B.Ed curriculum". Their reported engagement (mean scores > 3.0) indicates agreement that tutors' use of diverse PD activities supports alignment of lessons with curriculum goals. However, the very low agreement on PLC participation runs counter to international evidence that sustained professional learning communities are key to successful reforms.

Table 2
Teacher Professional Development Activities

Statement	Tutors					
		SA	A	U	D	SD
	M(SD)	N(%)	N(%)	N(%)	N(%)	N(%)
1 I regularly attend professional development workshops or seminars related to my subject area or teaching methods.	3.20(1.32)	2(7.4)	14(51.9)	1(3.7)	5(18.5)	5(18.5)
2 I collaborate with colleagues (for example, through peer classroom observations or team teaching) to improve my teaching practice.	3.75(1.16)	6(22.2)	15(55.6)	1(3.7)	1(3.7)	4(14.8)
3 I participate in professional learning communities or study networks with other tutors to enhance my teaching skills.	2.89(.89)	5(18.5)	7(30)	-	10(37)	5(18.5)
4 I attend educational conferences or seminars to stay current in teaching strategies and subject knowledge.	2.93(.91)	6(22.2)	3(11.1)	1(3.7)	17(63)	-
5 I engage in continuous learning activities (e.g. further studies, independent reading of pedagogy) to improve my teaching effectiveness.	4.15(1.04)	13(48.2)	10(37.0)	-	4(14.8)	-
Source: Field survey, 2022						
Key: M = Mean, Sd = Standard Deviation, F = frequency, SA = Strongly Agree A = Agree U = Undecided D = Disagree SD = Strongly Disagree						

The data from Table 2 indicates that tutors mirror the trainees' pattern. Tutors show the highest mean for ongoing self-improvement (continuous learning, $M = 4.15$) and relatively low means for attending conferences ($M = 2.93$) and PLCs ($M = 2.89$), but healthy scores for peer collaboration ($M = 3.75$). In practice, most tutors agreed they collaborate with colleagues and pursue independent studies, but few engage regularly in formal, external professional networks. This suggests that tutors integrate PD into their routine practice but may lack access or motivation for off-site workshops.

This finding again resonates with the literature on effective PD: collaborative, job-embedded activities foster meaningful teacher development. It also echoes calls for sustained, active learning models in PD (Samundeeswari et al., 2024), which often occur through local collaboration rather than one-off events. Importantly, the tutors' high self-reports on self-directed learning are consistent with a culture of continuous improvement encouraged by the new B.Ed. curriculum. However, the low involvement in conferences may indicate a gap: global research warns that without broader networks and external expertise, curriculum reforms risk "superficial adoption". Policymakers should note that tutors rely on internal collegiality for PD but might benefit from targeted opportunities (e.g. funded travel to conferences or virtual seminars) to ensure they stay current with pedagogical innovations. In sum, these findings suggest institutional policies should continue to support collaborative PD while also addressing the barriers that make formal PD events less frequent.

Table 3
Teacher Professional Development Activities by Tutors

Statement	HoDs					
		SA	A	U	D	SD
M(Sd)	N(%)	N(%)	N(%)	N(%)	N(%)	
1 Tutors regularly attend professional development workshops or seminars related to my subject area or teaching methods.	3.60(1.43)	3(30)	4(40)	-	2(20)	1(10)
2 Tutors collaborate with colleagues (for example, through peer classroom observations or team teaching) to improve their teaching practice.	4.10(1.20)	4(40)	5(50)	-	-	1(10)
3 Tutors participate in professional learning communities or study networks with other tutors to enhance their teaching skills.	2.80(.43)		4(40)	-	6(60)	-
4 Tutors attend educational conferences or seminars to stay current in teaching strategies and subject knowledge.	2.80(.43)		4(40)	-	6(60)	-
5 Tutors engage in continuous learning activities (e.g. further studies, independent reading of pedagogy) to improve their teaching effectiveness.	4.60(.52)	6(60)	4(40)	-	-	-
Source: Field survey, 2022						
Key: M = Mean, Sd = Standard Deviation, F = frequency, SA = Strongly Agree A = Agree U = Undecided D = Disagree SD = Strongly Disagree						

Table 3 revealed that the Heads of Departments (HoDs) report the strongest PD engagement among all groups. They endorse peer collaboration (M = 4.10) and continuous learning (M = 4.60) very strongly, and they also have moderately positive scores for tutors' workshop attendance (M = 3.60). Like other groups, HoDs indicated that tutors participate least in conferences and PLCs (means = 2.80 each, with 60% disagreeing on these items). This suggests that even senior leaders prefer in-house development: most HoDs are actively learning and coaching but institutionalise little formal networking.

The alignment across stakeholder groups is notable: in every category, internal collaboration and self-study are more valued than external seminars. That said, the HoDs' very high mean scores (above 4.0) on collaboration and learning indicate they see tutors as champions of PD. This is significant for institutional practice: the study's introduction emphasises that collaborative TPD design predicts greater curriculum fidelity. However, HoDs, like others, report minimal participation in PLCs and conferences – a gap that literature suggests could weaken reform sustainability. If policy aims for systemic change, it should address this gap by formalising PLCs at the departmental level or by incentivising tutors to attend national PD events.

What administrative support measures are in place to promote tutors' participation in TPD activities?

Table 4
Perceived Support Measures in Place to Promote Tutors Participation in TPD Activities

	Teacher Trainee					
		SA	A	U	D	SD
	M(Sd)	N(%)	N(%)	N(%)	N(%)	N(%)
1 The college administration provides sufficient time for tutors to participate in professional development activities.	3.94(1.07)	121(33.6)	158(43.9)	33(9.2)	34(9.4)	14(3.9)
2 The college administration encourages tutors to engage in professional development and provides mentoring and coaching to support their growth.	3.63(1.24)	89(24.7)	163(45.3)	25(6.9)	52(14.4)	31(8.6)
3 The College provides adequate funding and resources (e.g. travel allowances, tuition support) for tutors to attend external training or conferences.	3.58(1.29)	98(27.2)	134(37.2)	39(10.8)	55(15.3)	34(9.4)
4 The College has a clear professional development policy or plan guiding tutors' continuous learning.	3.46(1.39)	93(25.8)	135(37.5)	27(7.5)	53(14.7)	52(14.4)
5 The College provides necessary infrastructure (e.g. training facilities, internet access, teaching materials) to support tutors' professional development.	3.89(1.15)	126(35)	147(40.8)	27(7.5)	43(11.9)	17(4.7)

Table 4 reports trainees' perceptions of administrative support for tutors' PD. The highest mean item is "sufficient time" (M = 3.94) and "necessary infrastructure" (M = 3.89), indicating that trainees generally agree that colleges allocate sufficient time and necessary facilities for PD. Moderately lower means for funding (M = 3.58), encouragement/mentoring (M = 3.63), and clear PD policy (M = 3.46) suggest more mixed views on these supports. In percentages, around 70–80% of trainees agreed or strongly agreed that time and infrastructure are provided, but only about 62% felt there was a clear policy or mentoring

support. This pattern implies that institutions do create basic conditions for PD but may fall short in proactive measures. It is supported by principals' interviews, which report allocating resources and even receiving external support from partners. However, trainees' lukewarm response to funding and formal policies hints at implementation lags. In Ghanaian CoEs, this means policymakers should not only set PD policies but also ensure tutors clearly understand and support them. For example, administrators might need to communicate PD plans more effectively and provide dedicated budgets or incentives to translate policy into practice. From a curriculum standpoint, trainees' agreement that time is allotted is encouraging: it signals that PD is valued in scheduling, which is essential for maintaining curriculum integrity. However, the moderate support for mentoring suggests an opportunity to strengthen leadership roles in PD.

Table 5
Support Measures in Place to Promote Tutors Participation in TPD Activities

	Tutors					
		SA	A	U	D	SD
	M(Sd)	N(%)	N(%)	N(%)	N(%)	N(%)
1. The college administration provides sufficient time for tutors to participate in professional development activities.	3.85(.075)	4(14.8)	20(74.1)	1(3.7)	2(7.4)	-
2. The college administration encourages tutors to engage in professional development and provides mentoring and coaching to support their growth.	3.85(.75)	4(14.8)	20(74.1)	1(3.7)	2(7.4)	-
3. The College provides adequate funding and resources (e.g. travel allowances, tuition support) for tutors to attend external training or conferences.	3.75(1.07)	8(29.6)	12(44.4)	2(7.40)	5(18.5)	-
4. The College has a clear professional development policy or plan guiding tutors' continuous learning.	4.35(.81)	14(51.9)	11(40.7)	1(3.7)	1(3.7)	-
5. The College provides necessary infrastructure (e.g. training facilities, internet access, teaching materials) to support tutors' professional development.	3.20(1.24)	4(14.8)	10(37.0)	6(22.2)	2(7.4)	5(15.5)

Tutors' own reports (Table 5) paint a somewhat different picture. Most strikingly, they give the highest score to the presence of a clear professional development policy (M = 4.35): over 90% agree or strongly agree that such a plan exists. They also rate time allocation and encouragement/mentoring relatively high (M = 3.85 for both). Conversely, infrastructure support scores lowest (M = 3.20) and funding is moderately (M = 3.75). Thus, tutors are confident that formal PD policies are in place and that leadership encourages PD, but they report gaps in physical resources and financial support. This divergence mirrors a common finding in organisational studies: leaders may promulgate policies, but frontline staff experience the tangible support differently. Tutors' strong belief in a PD policy suggests that policy design in Ghana's Colleges of Education has been formalised. However, their concern about infrastructure (inadequate training facilities or internet access) highlights implementation challenges.

For curriculum implementation, this split matters. The tutors' trust in clear policies is a good sign that it aligns with calls to institutionalise TPD as a structured framework to enhance competence. However, the lower scores on resources risk undermining these policies: effective PD "requires sustained duration" and supportive infrastructure. If tutors lack funds to attend off-campus training or adequate technology on-site, even a solid PD plan may not be translated into practice. The implication is that professional learning initiatives in CoEs should allocate sufficient budgets and improve facilities (e.g., reliable internet for online courses or high-quality teaching materials) to operationalise the PD policies that tutors fully endorse.

Table 6
Support Measures in Place to Promote Tutors Participation in TPD Activities

	HoDs					
		SA	A	U	D	SD
	M(Sd)	N(%)	N(%)	N(%)	N(%)	N(%)
1. The college administration provides sufficient time for tutors to participate in professional development activities.	4.60(.52)	6(60)	4(40)	-	-	-
2. The college administration encourages tutors to engage in professional development and provides mentoring and coaching to support their growth.	4.30(.67)	4(40)	5(50)	1(10)	-	-
3. The College provides adequate funding and resources (e.g. travel allowances, tuition support) for tutors to attend external training or conferences.	4.30(.95)	5(50)	4(40)	1(10)	-	-
4. The College has a clear professional development policy or plan guiding tutors' continuous learning.	4.40(.52)	4(40)	6(60)	-	-	-
5. The College provides necessary infrastructure (e.g. training facilities, internet access, teaching materials) to support tutors' professional development.	3.60(1.35)	3(30)	3(30)	2(20)	1(10)	1(10)

Table 6 reports that HoDs have the strongest institutional support across all measures: means are 4.60 for time, 4.30 for mentoring, 4.30 for funding, 4.40 for PD policy, and 3.60 for infrastructure. In fact, 100% of HoDs agree or strongly agree that time and mentoring are provided, and the great majority affirm funding and clear policies. These near-unanimous ratings indicate that departmental leaders perceive support mechanisms as robust. The only slight concern is infrastructure (M = 3.60), though it is still positive relative to other groups.

The fact that HoDs see administrative backing so positively has two implications. First, it suggests alignment at the top: college management is indeed investing effort into time, mentoring, budgets, and plans. This aligns with interview evidence that principals systematically monitor and support PD (even conducting lesson observations themselves). Second, the contrast between trainees and tutors points to a perceptual gap between management and staff. Literature on school change emphasises that without institutional support for teachers, even well-designed curricula may flounder. In Ghanaian CoEs, the heads' optimism should be channelled into clearly communicating these supports down the chain.

Findings on Qualitative

The following themes were extracted from the interviews conducted with the principals of the colleges. This section provides a summary of findings from interviews with Principals of Colleges of Education

regarding the role of Teacher Professional Development (TPD) activities in facilitating the implementation of the B.Ed curriculum. The perspectives illustrate institutional processes, resource distribution, oversight frameworks, incentive systems, and adherence to the curriculum. The report is structured around five main categories based on the interview guide.

Provision of Resources to Support TPD Activities

The principals have stated that each College allocates resources to the planning and organisation of Teacher Professional Development activities. These resources include collaborative workspaces, facilitation support, and instructional materials. Some principals observed that the activities were more structured and regular because of the support from external partners, particularly organisations engaged in teacher education reforms, which complemented internal funding. Nevertheless, they recognised that resource adequacy may vary from semester to semester and may be contingent upon budgetary priorities. However, there was a resolute commitment to maintaining TPD as an institutional requirement for delivering high-quality curricula. For example, the principal declared that.

"The support from T-TEL in terms of the PDS manual from Theme 1–10 really helped in the facilitation of the content of the new B. Ed curriculum resulting in effective Professional Development sessions and effective lesson delivery" (P4)

Monitoring and Supervisory Support by College Management

The principals revealed that the College Management and Heads of Departments conduct a systematic monitoring of TPD activities. Monitoring methodologies encompass evaluating attendance, observing session outcomes, and verifying that lesson planning formats are consistent with curriculum standards. This oversight was intended to ensure that departments-maintained consistency in their implementation. Principals underscored that monitoring is not only evaluative but also supportive, helping tutors pursue improved instructional practices rather than merely enforcing compliance. Based on the principles, the surveillance or observation was conducted by either themselves or their vice principals. In one instance, the principal responded:

"As a principal, part of my responsibilities includes conducting unannounced lesson observations of tutors while they are actively engaged in teaching and learning. Additionally, I ensure that the necessary learning resources are acquired and provided to the tutors as required." (P3)

Additionally, the principals mentioned that they monitor instructors' attendance at professional development sessions to ensure they participate in TPD activities. To them, professional development sessions help instructors understand the fundamental objectives of the subjects they teach. As a result, instructors were prepared to implement the curriculum's objectives through professional development sessions.

Staff Motivation and Participation in TPD

The staff is encouraged to engage in TPD activities, according to principals. Motivation is often driven by integrating TPD outcomes into performance appraisal processes, professional development opportunities, and recognition. In some cases, colleges associated participation with leadership responsibilities or involvement in curriculum review committees. Although the majority of instructors reportedly participated voluntarily, the Principals recognised that engagement must be sustained through motivation, particularly in situations where workload pressures are high. For example, one of the participants expressed that:

"Tutors are strongly encouraged to participate in workshops designed to explore and discuss the specific objectives outlined in the new B.Ed curriculum. In addition to these workshops, there are regular departmental meetings where tutors can actively engage in sharing and exchanging ideas related to the curriculum and teaching strategies." (P8).

The principals expressed their satisfaction with the effectiveness of the professional development sessions in helping instructors implement the B.Ed curriculum objectives. The majority of principals responded that professional development sessions are held monthly when asked about the frequency of these sessions in their respective colleges. Nevertheless, one of the College's principals stated that the session is conducted on a semesterly basis:

"Professional development sessions used to be held intermittently as the need arose, specifically once a semester. These sessions were scheduled based on the identified needs of the faculty and staff, and they aimed to provide ongoing support and training to enhance skills and knowledge in the education field." (P3)

The majority of the principals reported that the teachers' attendance and interest in the professional development session were extremely high and encouraging from the outset of the program. Nevertheless, they were quick to point out that the interest has diminished, as the majority of tutors do not presently participate in professional development sessions. One of the participants expressed the following:

"The professional development (PD) sessions were scheduled to take place every week at the College. At the beginning, the tutors displayed a strong enthusiasm and interest in the PD sessions. However, over time, this initial enthusiasm gradually diminished, and their participation and engagement in the sessions began to decline." (P6).

Accountability and Sanctions for Non-Participation

The Principals affirmed that institutional processes are in place to address non-participation in TPD activities. Sanctions may encompass formal admonitions, disqualification from specific academic positions, or records of non-compliance in performance assessments. The Principals underscored that punishments are typically a final recourse. The favoured method is discourse and professional affirmation. Their view is that the purpose of accountability measures is to maintain a culture of collective responsibility for good curriculum implementation, rather than to penalise personnel. A principal addressed the matter of punishments and stated

"The enthusiasm of the staff in embracing the new B. The Ed programme was so strong that there was no motivation to sanction any staff who did not participate. Most absentee cases from the TPD activities were genuine, unavoidable reasons" (P3)

Ensuring Fidelity in the Implementation of the B.Ed Curriculum

Ultimately, all the Principals concluded that TPD activities have helped maintain fidelity in the execution of the B.Ed program. Through organised partnerships, introspective pedagogical conversations, and ongoing departmental support, tutors were better equipped to align their instructional methods with the learner-centred, competency-based philosophy of the curriculum. Principals said that TPD clarified curriculum expectations, ensured uniform teaching standards, and enhanced coherence in course delivery. They emphasised the need for ongoing capacity building and regular review sessions to sustain these advancements as the program progresses.

5. Discussion on Quantitative results

Tutors participate in key Teacher Professional Development activities in the College

Respondents largely agree that Teacher Professional Development (TPD) activities significantly improve B.Ed. curriculum implementation in Ghana's Colleges of Education (CoEs). Key TPD activities cited are collaborative lesson planning, coaching, peer observation, workshops, reflective practice, and mentoring. This aligns with Adult Learning Theory, Social Constructivism, and Reflective Practice Theory, validating continuous, collaborative, reflective learning for teaching effectiveness and curriculum integrity (Ngozwana, 2020; Syah, Sukmana, & Yumitro, 2026; Morsy, 2025). Adult Learning Theory shows tutors favor pertinent, self-directed TPD integrated into daily practice. Their active participation in autonomous, practical activities like peer mentoring and collaborative lesson planning exemplifies this, favoring internal collaboration for relevance. Social Constructivism underscores collaboration for professional knowledge. Collaborative lesson preparation and professional learning communities (PLCs) foster knowledge exchange, critical assessment, and joint problem-solving, ensuring curriculum coherence. This improves implementation fidelity by aligning teaching strategies and fostering shared understanding.

The Reflective Practice Theory elucidates TPD's impact on professional development through self-assessment and instructional modification. While the study noted some reflective practice shortcomings, positive feedback on reflective sessions and mentorship indicates they enhance instructional quality and National Teachers' Standards (NTS) compliance. These interactions help tutors connect course objectives with assessments and adapt instruction, ultimately improving curriculum integrity. International literature corroborates that structured, continuous, and cooperative TPD activities, supported by institutional resources and regulations, yield more uniform and effective curriculum implementation. Regular participation in well-structured TPD improves alignment between teaching practices and curricular standards, including NTS-outlined competency-based pedagogies. However, the study identified problems like inconsistent pro forma lesson notes and irregular TPD scheduling,

diminishing benefits. Institutional support frameworks, resource accessibility, administrative policies, mentorship, and ongoing evaluation are crucial for TPD's enduring effectiveness, curriculum adherence, and tangible classroom transformations.

Instructors in Ghana's Colleges of Education show significant involvement in self-directed learning ($M = 4.15$) and peer collaboration ($M = 3.75$). These findings align with Adult Learning Theory, which posits adult learners favor self-directed, job-relevant professional growth rooted in prior experiences (Knowles, as referenced in). Tutors prefer practical, job-embedded, collaborative, and reflective activities, enhancing curriculum fidelity by refining teaching methods. However, engagement in formal Professional Learning Communities (PLCs) ($M = 2.89$) and educational conferences ($M = 2.93$) is low. This indicates a deficiency in exposure to pedagogical innovations and networking vital for curriculum reforms (Fullan, 2021; UNESCO, 2023), often due to logistical/financial constraints. From Social Constructivism and Reflective Practice Theory perspectives, moderate collegial collaboration suggests progress towards social learning environments for knowledge construction (Vygotsky, as cited in). PLCs are vital platforms for critical reflection, collaborative instructional design, and shared accountability (Kennedy & Clarke, 2023; Darling-Hammond & Hyler, 2020). Limited PLC engagement is a missed opportunity to institutionalize these practices, which enhance B.Ed. curriculum adherence. Reflective Practice Theory also advocates structured mentoring and feedback for professional comprehension. Institutional policies and resources must prioritize expanding access to formal networking, mentoring, and sustained PLCs to enhance collaboration and reflection, improving TPD outcomes and curriculum implementation (Samundeeswari et al., 2024; UNESCO, 2023).

Heads of Departments (HoDs) strongly endorse tutors' continuous self-directed learning ($M = 4.60$) and peer collaboration ($M = 4.10$). This aligns with Adult Learning Theory (Knowles, as referenced in), where HoDs perceive tutors as highly committed to job-embedded activities like collaborative lesson planning and independent study. Internal workshop attendance is also moderately valued ($M = 3.60$). However, HoDs report limited participation in professional learning communities (PLCs) and external conferences (both $M = 2.80$). This highlights a systemic underutilization of social learning structures critical for sustained dialogue and pedagogical innovation, consistent with Social Constructivism. This gap may stem from insufficient institutional support or resource allocation. The observations reveal a tension between valuing internal, autonomous learning and the weak institutionalization of formal collaborative frameworks. Social Constructivism emphasizes interaction and co-construction of knowledge for curriculum fidelity, while Schön's Reflective Practice Theory advocates mentoring and systematic reflection for teaching efficacy. Limited engagement suggests institutional policies may not adequately support these vital activities, impeding growth. Priorities should include structured mentoring, incentivizing PLC participation, and facilitating broader educational networks to strengthen collaborative and reflective TPD.

Support systems and administrative measures are in place to promote tutor participation in TPD activities

Tutors reported favorable administrative support for Teacher Professional Development (TPD), acknowledging sufficient time (M = 4.11) and promotion of mentoring/coaching (M = 3.90). This aligns with Adult Learning Theory (supported, independent learning) and Schön's Reflective Practice Theory (feedback, reflective dialogue for quality and alignment), indicating a supportive learning culture crucial for learner-centered curricula. However, tutors showed weaker consensus on resource (M = 3.52) and infrastructure (M = 3.45) sufficiency, signaling implementation difficulties. Robust technology and material resources are vital for TPD, especially for digital access and external development. Social Constructivism emphasizes that effective collaboration within professional learning communities requires supportive settings and institutional investment. Inadequate infrastructure hinders broader collaborative/reflective activities. Thus, Colleges of Education must enhance infrastructure and resource allocation to bolster existing support, creating a comprehensive TPD ecosystem aligned with theoretical principles.

Tutors provided mixed feedback on administrative support for Teacher Professional Development (TPD). Clear PD policies were highly rated (M = 4.35), reflecting robust frameworks aligning with Adult Learning Theory's emphasis on autonomy and relevance for continuous learning. Tutors also gave elevated ratings for time allocation and mentoring (both M = 3.85), which foster a collaborative culture essential for knowledge construction, as per Social Constructivism, and reflective practice. However, significant concerns arose regarding infrastructural support (M = 3.20) and funding for external training (M = 3.75). These deficiencies hinder comprehensive TPD by limiting access to varied learning tools and ongoing feedback, crucial for Reflective Practice. Inadequate infrastructure restricts engagement in broader professional learning communities, collaborative lesson planning, and peer coaching, vital for pedagogical development and curriculum integrity. Funding limitations also reduce opportunities for external conferences and networking, stifling innovation. Therefore, Colleges of Education must enhance infrastructural and financial support to convert strong policies and mentoring into effective, collaborative, and reflective TPD practices.

TPD activities and College support influence the fidelity of B.Ed curriculum implementation

Heads of Departments (HoDs) reported strong administrative support for Teacher Professional Development (TPD). They highly rated time allocation (M = 4.60), mentorship (M = 4.30), financing (M = 4.30), and professional development policies (M = 4.40). These perceptions align with proactive leadership fostering continuous professional development, emphasizing autonomy and relevant learning as per Adult Learning Theory, and supporting Professional Learning Communities (PLCs) crucial for Social Constructivism. Despite overall favorable evaluations, HoDs noted somewhat lower, though still reasonable, satisfaction with infrastructural support (M = 3.60). This indicates persistent difficulties with facilities and technology, which can restrict participation in resource-intensive activities like peer observations and coaching. Reflective Practice Theory underscores that insufficient infrastructure hinders ongoing feedback and access to varied resources. Therefore, enhancing physical and technological surroundings is essential to fully leverage leadership's dedication, facilitate collaborative, reflective TPD activities, and improve curriculum fidelity.

6. Qualitative findings

Provision of Resources to Support Teacher Professional Development (TPD)

Qualitative findings highlight that resource allocation is essential for effective Teacher Professional Development (TPD) and curriculum implementation. Principals reported that Colleges of Education provide resources such as collaborative workspaces, facilitation support, and instructional materials, often supplemented by external partners, to enhance TPD activities. This aligns with Adult Learning Theory, which posits that adult learners require relevant, accessible environments for self-directed and collaborative learning. However, insufficient infrastructure can impede tutors' engagement in reflective, innovative teaching. Fluctuating resource availability due to budgetary priorities also indicates instability without sustained institutional commitment

Monitoring and Supervisory Support by College Management

College administration and Heads of Departments provide essential oversight and supervisory assistance for Teacher Professional Development (TPD) activities. Principals report consistent monitoring, including attendance assessments, session outcome evaluations, and verification of lesson plan conformity to curriculum standards. This supervisory role, aligning with Social Constructivism, emphasizes collaborative reflection and systematic feedback to enhance professional development and teaching methodologies. Effective monitoring is supportive, not punitive, encouraging tutors' active involvement in instructional improvements. These methods foster a culture of reflective practice, vital for integrating the B.Ed. curriculum's learner-centred pedagogies

Staff Motivation and Participation

Staff motivation and engagement in TPD are profoundly affected by institutional incentives, acknowledgement, and leadership endorsement, as demonstrated by the qualitative data. Although materials are essential, it is equally crucial to inspire tutors to maintain their engagement and enthusiasm for ongoing professional development. The literature emphasises that positive motivators, including opportunities for leadership, professional development incentives, and public recognition, promote sustained commitment more effectively than punitive measures. The Theory of Reflective Practice emphasises the significance of intrinsic motivation, fostered by opportunities for substantive conversation, self-enhancement, and peer collaboration.

Accountability and Sanctions for Non-Participation

Principals sustain TPD as an institutional mandate, fostering a professional culture valuing lifelong learning and collective accountability for student success. Accountability for TPD participation is crucial for instructor engagement and curriculum integrity. While formal sanctions exist, cultivating collective responsibility and intrinsic motivation is more effective than punitive measures alone. This aligns with Adult Learning Theory, emphasizing adult learners' autonomy and relevance. Social Constructivism and Reflective Practice Theory also promote accountability within collaborative, reflective communities.

Thus, enduring tutor engagement depends on institutional policies integrating motivation, recognition, and participatory responsibility, using sanctions as a final measure.

Ensuring Fidelity in the Implementation of the B.Ed Curriculum

B.Ed curriculum implementation fidelity hinges on TPD activities aligning with curricular objectives and institutional support. TPD, via collaborative lesson preparation, coaching, and reflective discussions, improves pedagogical consistency and assessment integrity. Connecting TPD with national teaching standards and institutional policies prevents fragmentation and ensures instructional transformation. Social Constructivism highlights professional learning communities for knowledge co-construction and problem-solving, essential for fidelity. Enduring institutional support, systematic oversight, and a professional culture are fundamental for effective curriculum improvements.

7. Conclusion

This study assessed the effectiveness of TPD activities in Ghana's colleges of education and the availability of institutional support for TPD. According to the results, the majority of colleges were using departmental monitoring, classroom-based coaching, mentorship, and collaborative lesson planning. These activities enhanced both teaching practice and curricular fidelity. Nevertheless, the findings also raised issues. Pro-forma lecture notes were not prepared consistently, reflective practice was lacking, and professional development sessions (PDS) were irregular. Over time, participation in TPD activity also decreased, with some tutors showing a drop in interest. Even with the availability of resources and monitoring systems, accountability and motivational systems were occasionally insufficient to guarantee steady participation. The study concludes that TPD activities are essential to the successful execution of the B.Ed. curriculum, but that sustained support from the institution, organised reflective practice, and more robust incentives for instructor engagement are necessary for their sustainability. Colleges can support learner-centred teaching methods and uphold curriculum standards by bolstering these areas.

8. Recommendations

To improve B.Ed. curriculum implementation, Professional Development Sessions (PDS) in Colleges of Education must be more organized and consistent. Regular scheduling, clear communication, and close supervision are crucial to sustain collaborative lesson planning, classroom-based coaching, and reflective conversations. Reviving pro-forma lesson notes will also uphold consistent teaching standards and curriculum outcomes. Maintaining motivation to tutor is critical. Colleges should implement positive tactics like leadership opportunities, professional development incentives, and recognition to foster sustained enthusiasm and active participation. Incorporating professional accountability into performance evaluations ensures tutors uphold curriculum alignment and teaching quality. Finally, enhancing ongoing support and knowledge-sharing systems is imperative. Colleges must provide materials, facilitation guides, and collaborative learning spaces through internal resource allocation and

external partnerships. Fostering a professional learning culture via departmental dialogue and mini-research presentations encourages sharing innovative ideas, promoting long-term curriculum quality.

9. Limitations Of the Study

The study on Teacher Professional Development (TPD) in Ghana's Colleges of Education has limitations. Self-reported data from tutors and principals introduced response biases and perceptual discrepancies. Its qualitative methodology restricted objective evaluation of TPD's impact on student outcomes or teaching quality. Resource and infrastructural constraints narrowed TPD implementation, while sporadic scheduling affected participation and data reliability. The generalisability of the findings is limited to Ghana's CoEs.

Declarations

Author contributions: All authors prepared and reviewed the manuscript.

Data availability: The data sets generated during and/or analysed during the current study are available from the corresponding author on reasonable request

Ethics approval and consent to participate. The University of Education, Winneba Research Ethics Committee waived ethical review and approval for the study, as the anonymity of the interviewees ensured that no sensitive data was collected. All data collection procedures were conducted in accordance with the UEW Declaration on Ethics. Informed consent was sought from all participants (respondents) in the study. They were informed that the survey was anonymous and that participation was voluntary.

Consent to publish: Additional informed consent was obtained from all individual participants for whom identifying information is included in this article.

Funding: No funding was received to assist with preparing this manuscript.

Competing interests: The authors declare that they have no competing interests

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