

Teachers' Continuing Professional Development Programmes and Students' Academic Performance in Public Senior Secondary Schools in Nasarawa State, Nigeria

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Abstract

This study investigated teachers' continuing professional development Programmes and students' academic performance in public senior secondary schools in Nasarawa State, Nigeria. Six research questions and one null hypothesis guided the study. From a population of 312 public senior secondary schools and 9,295 teachers; a sample size of 62 schools and 368 teachers was selected using the multistage sampling procedure. Two researcher-developed instruments titled "Teachers' Continuing Professional Development Questionnaire (TCPDQ)", and "Students' Academic Performance Profoma (SAPP)" were used for data collection. The instruments were face and content validated, thereafter a pilot test was conducted which yielded reliability index of 0.88 for the TCPDQ using the Spilt Half method and Pearson Product Moment Correlation Coefficient. Mean Scores, Standard Deviation and percentages were used to answer the research questions; while multiple regression was used to test the null hypothesis at 0.05 alpha level. The findings revealed that there is a high extent to which continuing professional development programme are provided for teaching staff; and there were fluctuations in the SSCE results from 2014 to 2023. In conclusion,

the study established that Teachers' Continuing Professional Development Programmes are significant predictors of students' academic performance in public senior secondary schools in Nasarawa State. Based on the findings, it was recommended among others that school principals in public senior secondary schools in Nasarawa State should provide teaching staff with training opportunities targeted towards further enhancement of their level of effectiveness in lesson planning and delivery, classroom management, students' assessment, and the use of teaching methods; and school principals should constantly analyze students' performance data, and provide targeted support to students with learning difficulties in order to foster a culture of academic excellence in public senior secondary schools in Nasarawa State.

Introduction

Teachers constitute one of the most critical stakeholders in the Nigerian education system, particularly at the secondary school level where foundational academic competencies for higher education and the labour market are developed. In public senior secondary schools, teachers are entrusted with diverse instructional responsibilities that require continuous updating of knowledge,

skills, and pedagogical competencies. As such, reliance on pre-service training alone is increasingly inadequate in addressing the evolving demands of contemporary teaching and learning. Empirical evidence has consistently demonstrated that teachers significantly influence students' educational development and learning outcomes (Kotherja, 2013). Similarly, international education reports have identified teachers as a central determinant of education quality and students' academic achievement (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2018). Consequently, there is a growing expectation that teachers engage in continuous learning processes that enhance their professional capacity to positively influence students' academic performance (Bourn, Hunt, & Bamber, 2017).

In response to these expectations, teachers' continuing professional development (CPD) has emerged as a vital component of educational reform and school improvement initiatives worldwide. Continuing professional development refers to structured and sustained learning activities that support teachers' professional growth beyond initial teacher education. It enables teachers to respond effectively to curricular innovations, pedagogical advancements, and changing learner needs. Ivanova (2017) emphasized that CPD is an integral aspect of teachers' professional life and a prerequisite for achieving quality and sustainable development in education systems. At the secondary school level, CPD is particularly essential, as teachers are required to prepare students for high-stakes external examinations and national educational benchmarks.

Continuing professional development encompasses a wide range of formal, non-formal, and informal learning programmes designed to enhance teachers' cognitive, affective, and psychomotor competencies. According to Srinivasacharlu (2019), CPD programmes aim to strengthen teachers' intellectual capacities, professional attitudes, values, confidence, and instructional skills in order to improve classroom practices and meet the changing demands of society. Within the context of this study, emphasis is placed on

selected CPD programmes commonly available to secondary school teachers, including educational workshops, mentoring activities, collaborative professional practices, and educational conferences.

Educational workshops provide interactive platforms where teachers engage in structured activities aimed at improving instructional strategies and solving classroom-related challenges (Wirtz, 2022). Mentoring programmes facilitate professional learning through supportive relationships in which experienced educators share knowledge, skills, and practical insights with less experienced colleagues (Odu-Ajayi, 2016). Collaborative professional activities promote shared learning, peer interaction, and collective problem-solving among teachers, thereby fostering instructional improvement and professional coherence. Conferences, on the other hand, serve as formal gatherings that enable educators to exchange ideas, discuss emerging educational issues, and gain exposure to current research and innovations in teaching and learning (Serrat, 2017). Collectively, these CPD programmes are expected to enhance teachers' instructional effectiveness and, by extension, contribute to improved student academic outcomes.

The relevance of teachers' continuing professional development to students' academic performance has been underscored by regulatory and professional bodies. The Teachers' Registration Council of Nigeria (TRCN, 2012) noted that CPD equips teachers with relevant professional tools, ensures currency of knowledge, and strengthens commitment to effective teaching practice. In Nigeria, improving students' academic performance in public secondary schools, particularly in external examinations, remains a persistent challenge. Teachers' engagement in relevant CPD programmes is therefore considered a strategic approach to strengthening instructional quality and enhancing students' learning outcomes.

From practical observation, particularly in public senior secondary schools, it appears that while CPD opportunities exist, some teachers continue to rely predominantly on pre-service training and accumulated classroom experience. This tendency may limit their capacity to adapt to emerging instructional demands and

examination requirements, thereby affecting students' academic performance. Standardized examinations such as the West African Senior School Certificate Examination (WASSCE) continue to reveal patterns of unsatisfactory performance among secondary school students, raising concerns about instructional quality and teacher preparedness.

At the secondary school level, students' academic performance remains a major concern for policymakers, educators, and researchers. Academic performance is commonly measured through students' outcomes in internal school assessments and external examinations such as the WASSCE and Senior School Certificate Examination (SSCE) (Olowo & Fashiku, 2019). Reports from the West African Examinations Council (WAEC Records, 2012–2021) indicate that a substantial proportion of candidates fail to obtain the minimum requirements for progression into higher education, suggesting systemic challenges within the secondary education sector.

Specifically, in Nasarawa State, WAEC result statistics between 2014 and 2021 reveal persistently low performance levels among public senior secondary school students, with less than half of the candidates achieving the benchmark of five credit passes including English Language and Mathematics. This sustained trend of poor academic performance has heightened concern among education stakeholders and underscores the need for empirical investigation into teacher-related factors that may influence students' outcomes.

Against this backdrop, this study examines teachers' continuing professional development programmes in relation to students' academic performance in public senior secondary schools in Nasarawa State, Nigeria. By focusing exclusively on CPD programmes, the study seeks to provide empirical evidence on how teachers' participation in structured professional development activities relates to students' academic achievement, thereby contributing to policy formulation and practice aimed at improving secondary education outcomes.

Statement of the Problem

Students' academic performance in public senior secondary schools in Nigeria has continued to

attract considerable concern from education stakeholders, particularly due to persistent poor outcomes in external examinations. In Nasarawa State, reports from the West African Examinations Council (WAEC) indicate a sustained pattern of low academic achievement among secondary school students. Specifically, the Chief Examiner's reports on Senior School Certificate Examination (SSCE) results from 2014 to 2021 revealed that only 38.62% of candidates attained the minimum requirement of five credit passes, including English Language and Mathematics, while a substantial 61.38% failed to meet this benchmark (WAEC Result Statistics, SSCE 2014–2021). Furthermore, performance rankings during this period consistently placed Nasarawa State outside the top ten performing states among the thirty-six states of the federation, underscoring the severity of the academic performance challenge. Despite ongoing efforts by government and education agencies to improve instructional quality, students' academic performance in the state has remained below expected standards. This persistent underperformance raises critical questions regarding the adequacy of instructional support systems available to teachers, particularly in relation to their access to structured and sustained continuing professional development programmes. Teachers are expected to continually update their subject knowledge, pedagogical skills, and instructional strategies in order to effectively prepare students for increasingly competitive and standardized assessments. However, observations within public senior secondary schools in Nasarawa State suggest that opportunities for systematic participation in relevant continuing professional development programmes may be limited or inconsistently implemented.

There is a growing concern among education stakeholders that the unsatisfactory academic performance of students in public senior secondary schools may be linked to the extent, quality, and regularity of continuing professional development programmes available to teachers. Inadequate exposure to professional learning opportunities such as workshops, mentoring, collaborative learning activities, and educational conferences may constrain teachers' ability to adapt to curricular changes, employ innovative

teaching strategies, and effectively support students' learning needs. Consequently, students may be insufficiently prepared to meet the academic demands of external examinations such as the SSCE.

Although several studies have examined factors influencing students' academic performance, empirical evidence focusing specifically on the relationship between teachers' continuing professional development programmes and students' academic performance in public senior secondary schools in Nasarawa State remains limited. This gap in the literature necessitates a systematic investigation into how teachers' participation in continuing professional development programmes relates to students' academic outcomes. Therefore, the problem addressed in this study is the need to empirically examine the relationship between teachers' continuing professional development programmes and students' academic performance in public senior secondary schools in Nasarawa State, Nigeria.

Objectives of the Study

The specific objectives were to:

- i. Identify the Continuing Professional Development Programmes that are provided for teaching staff in public senior secondary schools in Nasarawa State, Nigeria.
- ii. Establish the trend in students' academic performance in SSCE results in public senior secondary schools in Nasarawa State, Nigeria from 2014 to 2023.
- iii. Determine the relationship between teachers' continuing professional development programme and students' academic performance in public senior secondary schools in Nasarawa State, Nigeria.

Research Questions

The following research questions were answered in the study:

1. What are the Continuing Professional Development Programmes that are provided for teaching staff in public senior secondary schools in Nasarawa State, Nigeria?
2. What is the extent to which education workshops are organized for teachers' CPD in

public senior secondary schools in Nasarawa State, Nigeria?

3. To what extent is mentoring provided for teachers' CPD in public senior secondary schools in Nasarawa State, Nigeria?
4. What is the extent to which collaborative activities are initiated for teachers' CPD in public senior secondary schools in Nasarawa State, Nigeria?
5. To what extent are educational conferences organized for teachers' CPD in public senior secondary schools in Nasarawa State, Nigeria?
6. What is the trend in students' academic performance in SSCE results in public senior secondary schools in Nasarawa State, Nigeria from 2014 to 2023?

Hypotheses

The following null hypothesis was tested at 0.05 level of significance:

H_0 : There is no significant relationship between teachers' continuing professional development Programmes and students' academic performance in public senior secondary schools in Nasarawa State, Nigeria.

Literature Review

Teachers' Continuing Professional Development

The teaching profession requires continuous learning beyond initial teacher education, as pre-service training alone is insufficient for equipping teachers with the evolving pedagogical knowledge and skills demanded by contemporary educational systems. Rapid advancements in knowledge production, technology, and the global knowledge-based economy have intensified the need for teachers to engage in systematic and sustained professional learning throughout their careers. Consequently, teachers' continuing professional development (CPD) has become a central mechanism for strengthening instructional capacity and improving teaching and learning outcomes.

Teachers' continuing professional development is commonly conceptualized as a continuous and lifelong process through which teachers manage their professional growth and learning (Yang, 2021). Day and Sachs (2004, cited in Yang,

2021) described CPD as the range of professional activities teachers engage in throughout their careers with the aim of enhancing their work. Similarly, professional development has been defined as the acquisition of knowledge and skills that support both personal development and career advancement (Amadi, 2014). Ekoh, Edet, and Nkama (2013) further emphasized that continuing professional development programmes reinforce the core dimensions of effective teaching across a teacher's career, thereby increasing teachers' competence and strengthening the professional knowledge base of teaching.

Extending this perspective, CPD has been described as encompassing structured and unstructured professional learning activities that enhance teachers' knowledge, skills, attitudes, and instructional approaches with the goal of improving the quality of teaching and learning (Bolam, 2013). According to Bolam (2013), CPD extends beyond traditional in-service training to include professional training through workshops and short courses, professional education through longer programmes, and professional support mechanisms such as mentoring and coaching. In a similar vein, CPD comprises both naturally occurring learning experiences and deliberately planned activities that directly or indirectly benefit teachers, schools, and classroom practice, thereby contributing to educational quality (Day, 2000, cited in Adagiri, 2014).

Institutional definitions further underscore the importance of CPD in sustaining teaching effectiveness. The Teachers' Registration Council of Nigeria (TRCN, 2012) defined CPD as lifelong learning undertaken by teachers to remain current with developments in education. Adagiri (2014) viewed CPD as a reflective and developmental process through which teachers review, renew, and extend their professional commitments while acquiring and refining pedagogical knowledge, skills, and practices. In support of this position, Adebayo (2014) described CPD as any activity or programme that enhances teachers' attitudes, knowledge, skills, and professional relevance, improves their effectiveness in influencing students' learning and achievement, and promotes job satisfaction.

The centrality of CPD to teacher quality and educational improvement has been widely acknowledged. Borg (2018) argued that enhancing teacher quality is fundamental to improving the overall quality of an educational system. Similarly, Derakhshan, Coombe, Arbabmofrad, and Taghizadeh (2020a) observed that participation in CPD signals professional quality and guides teachers' career development. Derakhshan et al. (2020b) further noted that in-service learning experiences foster teachers' personal and professional identity development, promote autonomy, and support sustained professional growth.

Within the context of this study, teachers' continuing professional development refers to structured professional practices and learning programmes designed to equip teachers with relevant pedagogical knowledge, skills, values, and attitudes necessary for achieving secondary education goals. These CPD programmes include educational workshops, mentoring activities, collaborative professional practices, and educational conferences implemented in public senior secondary schools in Nasarawa State, Nigeria.

Students' Academic Performance

Students' academic performance is a central objective of secondary education and a key indicator of educational effectiveness, as emphasized in Nigeria's National Policy on Education. Consequently, researchers and education stakeholders have consistently expressed concern about students' academic outcomes, particularly as reflected in performance in internal assessments and external examinations. In educational contexts, academic performance refers to the extent to which educational goals are achieved by students, teachers, or institutions within a given period and is commonly measured through examinations and continuous assessment procedures (Narad & Abdullahi, 2016).

Academic performance has been conceptualized as the measurable outcomes of students' engagement in academic tasks, including scores obtained in class exercises, tests, mock examinations, and terminal examinations (Noyelum, Ogugua, & Abah, 2022). Similarly, Dimkpa (2015) described academic performance

as the outcome of education in terms of the degree to which intended educational goals are realized. Extending this view, academic performance encompasses the acquisition of knowledge, skills, and competencies, attainment of grades, and sustained commitment to educational progression (Kumar, Agarwal, & Agarwal, 2021).

Beyond examination scores, academic performance also reflects students' observable academic behaviours and persistence over time. Yusuf, Onifade, and Bello (2016) defined academic performance as the aggregate of scores obtained by students across various assessment platforms within a specified period. York, Gibson, and Rankin (2015) further emphasized persistence as an important dimension of academic performance, describing it as students' sustained progression toward educational completion despite contextual challenges. In a similar vein, Omokhua and Agi (2021) conceptualized academic performance as mastery of curriculum content that underpins critical thinking, lifelong learning skills, and success in both internal and external examinations.

Within the context of this study, students' academic performance is operationalized as students' achievement in the Senior School Certificate Examination (SSCE), measured through the number of credit passes obtained, including English Language and Mathematics, in public senior secondary schools in Nasarawa State, Nigeria

Theoretical Framework

This study is anchored on two theoretical perspectives: Human Capital Theory (Becker, 1962) and Human Performance Improvement Theory (Mager, 1975), which are directly related to the independent and dependent variables of the study.

Human Capital Theory (Becker, 1962)

Human Capital Theory posits that knowledge and skills acquired through education and training constitute a form of capital, and investments in such human capital enhance productivity (Becker, 1994). In the educational context, the theory highlights how professional development increases teachers' cognitive and

pedagogical capabilities, thereby improving instructional effectiveness and student outcomes. This theory is relevant to the present study as it underlines the importance of investing in teachers' continuing professional development (CPD) through activities such as workshops, mentoring, collaborative practices, and educational conferences, which collectively strengthen teachers' skills, attitudes, and professional knowledge, ultimately promoting improved academic performance among students.

Human Performance Improvement Theory (Mager, 1975)

Mager's Human Performance Improvement Theory emphasizes three key elements: performance, conditions, and criterion. Performance defines what the learner is expected to do, conditions specify the context under which performance occurs, and criterion establishes the standards of acceptable performance (Mager, 1975). This framework shifts focus from instructional delivery to observable outcomes and measurable performance, providing a structured approach to designing instructional objectives and assessment.

The theory is pertinent to this study as it links students' academic performance in examinations such as the WASSCE to the quality of instructional activities and learning environments provided. Clear and measurable learning objectives, aligned with appropriate teaching conditions and performance criteria, ensure that students understand expectations and achieve desired learning outcomes. In the context of secondary education in Nasarawa State, the minimum benchmark of five credit passes, including English Language and Mathematics, exemplifies the performance criterion. By adopting Mager's framework, the study emphasizes the role of structured instructional support in enhancing students' academic performance, thereby reinforcing the significance of teachers' CPD programmes in promoting effective learning outcomes.

Table 1: Mager's Theory for Instructional Objective and Performance Problems

Performance	What the learner is able to do.
Conditions	Important conditions under which performance occurs.
Criterion	Quality or level of performance considered acceptable.

Source: Mager (1975)

Methodology

This study adopted a correlational survey design in combination with an ex-post facto research design. The correlational survey design was employed to establish the predictive relationship between teachers' continuing professional development (CPD) programmes (independent variable) and students' academic performance (dependent variable) (Filgona & Sakiyo, 2020). This design was considered appropriate because it enabled the collection of data from a representative sample of teachers using questionnaires and allowed for generalization of findings. The ex-post facto design was also adopted since the study relied on already existing data on students' academic performance, specifically Senior School Certificate Examination (SSCE) results, over which the researcher had no control (Owan, Bassey, & Ekpe, 2020).

The population of the study comprised 312 public senior secondary schools and 9,295 teachers across the three education zones (Keffi, Lafia, and Akwanga) in Nasarawa State, Nigeria. The sample consisted of 368 teachers drawn from 62 public senior secondary schools. The sample size of teachers was determined using the Krejcie and Morgan (1970) table for finite populations, while 20% of the total number of schools was selected to ensure a manageable yet representative sample, consistent with the recommendation of Lakens (2022).

A multistage sampling procedure was employed. First, Nasarawa State was selected from the North Central geopolitical zone using simple random sampling. Second, the three education zones in the state were purposively selected. Third, 62 public senior secondary schools were selected using simple random sampling. Fourth, 368 teachers were randomly selected from the sampled schools. Finally, proportionate sampling was used to ensure fair representation

of schools and teachers across the three education zones.

Two instruments were used for data collection: the Teachers' Continuing Professional Development Questionnaire (TCPDQ) and the Students' Academic Performance Proforma (SAPP). The TCPDQ is a four-point Likert-type instrument comprising 21 items designed to measure teachers' participation in CPD programmes, including educational workshops, mentoring, collaborative professional activities, and educational conferences. The response options ranged from Strongly Agree (4) to Strongly Disagree (1) and Very High Extent (4) to Low Extent (1).

The SAPP was designed to collect secondary data on students' academic performance in the SSCE from 2014 to 2023 from the sampled schools. Academic performance was rated using a four-point scale based on the number of credit passes obtained, including English Language and Mathematics.

Both instruments were subjected to face and content validation by experts in Test and Measurement and Educational Management at the University of Abuja. The reliability of the TCPDQ was determined through a pilot study involving teachers outside the study area, using the split-half method and Pearson Product Moment Correlation, which yielded a reliability coefficient of 0.88, indicating a high level of reliability (Ursachi, Horodnic, & Zait, 2015). The SAPP was not subjected to reliability testing because it was used to collect authenticated SSCE results obtained from WAEC records.

Data were analysed using descriptive and inferential statistics. Mean scores, standard deviation, and percentages were used to answer the research questions. Mean score benchmarks were applied to interpret the extent of teachers' CPD and students' academic performance. The null hypothesis was tested using multiple regression analysis at the 0.05 level of significance to determine the predictive relationship between teachers' CPD programmes and students' academic performance. The null

hypothesis was accepted when the p-value exceeded 0.05 and rejected when it was less than 0.05.

Data Analysis and Results

Research Question One

What are the continuing professional development programmes that are provided for

teaching staff in public senior secondary schools in Nasarawa State, Nigeria?

Table 2:Analysis of CPD Programmes that are provided for Teaching Staff in Public Senior Secondary Schools in Nasarawa State, Nigeria

n = 368								
S/N	Items	SA	A	D	SD	\bar{x}	S.D	Decision
1	Educational workshops are organized for teachers to improve their instructional skills in various schools subjects through intensive study, research, practice and discussion.	135	122	59	52	2.92	.63	Agreed
2	Mentoring sessions are initiated to enable more experienced teaching personnel act as professional guide to new and inexperienced teachers towards promote effectiveness in teaching and learning.	119	125	67	57	2.83	.69	Agreed
3	Post qualification educational programmes are provided for teachers to acquire knowledge, skills and certificates in their areas of specialization.	114	130	55	69	2.78	.75	Agreed
4	Educational conferences are organized for teachers to present research findings, exchange ideas and debate issues amongst academics and practitioners.	121	118	53	76	2.77	.73	Agreed
5	Collaborative activities are initiated to promote interaction amongst teachers and other related professionals for the purpose improving teachers' competences.	128	120	62	58	2.86	.66	Agreed
Section Mean/Standard Deviation						2.83	.69	Agreed

The result of the analysis in Table 2 shows that all the items (1 – 5) had positive mean values which were above the midpoint of 2.50. The section mean of 2.83 which falls within the mean values range of 2.50 to 3.24 implies that education workshops, mentoring sessions, post qualification educational programmes, educational conferences and collaborative activities are the continuing professional development programmes that are provided for teaching staff in public senior secondary schools in Nasarawa State, Nigeria.

Research Question Two

What is the extent to which education workshops are organized for teachers' CPD in public senior secondary schools in Nasarawa State, Nigeria?

Table 3: Analysis of Extent to which Education Workshops are Organized for Teachers' CPD in Public Senior Secondary Schools in Nasarawa State, Nigeria

n-368								
S/N	Items	VHE	HE	ME	LE	\bar{x}	S.D	Decision
6	Teachers work together with other colleagues towards improving their teaching skills, techniques and methods to suit the school curriculum.	116	117	63	72	2.75	.80	High Extent
7	Teachers are placed in subgroups to articulate new ideas and innovation aimed at finding solutions to instructional challenges.	125	115	61	67	2.81	.72	High Extent
8	Teachers are introduced to new and diverse methods of integrating instructional resources into the teaching-learning process with students.	140	100	52	76	2.82	.70	High Extent

9	Teachers attend training forums where they acquire skills and knowledge to improve their performance of instructional duties.	121	112	60	75	2.76	.78	High Extent
	Section Mean/Standard Deviation					2.79	.75	High Extent

In Table 3, the result of the analysis shows that all the items 6 to 9 had positive mean values ranging from 2.75 to 2.82. The section mean of 2.79 is greater than the criterion mean of 2.50 and falls within the mean values range of 2.50 to 3.24. This implies that there is a high extent to which education workshops are organized for teachers' continuing professional development in public senior secondary schools in Nasarawa State, Nigeria.

Table 4:**Research Question Three**

To what extent is mentoring provided for teachers' CPD in public senior secondary schools in Nasarawa State, Nigeria?

Analysis of Extent is Mentoring provided for Teachers' CPD in Public Senior Secondary Schools in Nasarawa State, Nigeria n = 368

S/N	Items	VHE	HE	ME	LE	\bar{x}	S.D	Decision
10	Experienced teachers share ideas and knowledge through interaction to facilitate improvements in teaching and learning.	130	115	65	58	2.63	.84	High Extent
11	Experienced teachers provides with professional guidance to inexperienced teachers to enable them grow into dedicated professionals in the school organization.	143	95	57	73	2.83	.69	High Extent
12	Opportunities are created for teachers to see and learn new methods of teaching from senior colleagues and practitioners.	119	113	60	74	2.75	.80	High Extent
13	Experienced teachers prioritize inculcation of professional ethics by teachers to enable inexperienced teachers develop into core professionals.	107	104	68	89	2.62	.84	High Extent
	Section Mean/Standard Deviation					2.72	.79	High Extent

In Table 4, the result of the analysis shows that items 10 to 13 had positive mean values ranging from 2.62 to 2.83. The section mean of 2.72 is greater than the 2.50 midpoint and within the mean values range of 2.50 to 3.24. This indicates that the extent to which mentoring is provided for teachers' continuing professional development is high in public senior secondary schools in Nasarawa State, Nigeria.

Research Question Four

What is the extent to which collaborative activities are initiated for teachers' CPD in public senior secondary schools in Nasarawa State, Nigeria?

Table 5: Analysis of Extent to which Collaborative Activities are Initiated for Teachers' CPD in Public Senior Secondary Schools in Nasarawa State, Nigeria**n=368**

S/N	Items	VHE	HE	ME	LE	\bar{x}	S.D	Decision
14	Teachers engage in professional partnership with other teachers in order to achieve instructional objectives.	129	95	70	74	2.76	.72	High Extent
15	Teachers are provided with opportunities to interact with other professionals.	120	109	76	63	2.77	.74	High Extent
16	Teachers are encouraged to collaborate with their colleagues towards providing ideas to solve instructional challenges.	114	115	68	71	2.74	.78	High Extent
17	Teachers participate with their colleagues in implementing instructional activities that improve students' performance.	116	112	65	75	2.73	.80	High Extent
	Section Mean/Standard Deviation					2.75	.76	High Extent

The result in Table 5 shows that the items (14 to 17) had positive mean values ranging from 2.73 to 2.77. The section mean of 2.75 is greater than the criterion mean of 2.50 and falls within the mean values range of 2.50 to 3.24. This implies that there is a high extent to which collaborative activities are initiated for teachers' continuing professional development in public senior secondary schools in Nasarawa State, Nigeria

n = 368

S/N	Items	VHE	HE	ME	LE	\bar{x}	S.D	Decision
18	Academic forums where research findings are presented are organized for teachers.	115	102	92	59	2.74	.77	High Extent
19	Intellectual forums for cross fertilization of ideas and experiences to improve teachers' professional competence are organized.	117	110	76	65	2.76	.75	High Extent
20	The school management facilitates interactions amongst resource persons, experts in education and teachers to enhance the quality of teaching professional development.	126	95	66	81	2.72	.79	High Extent
21	Teachers are encouraged to participate in the discussion of works of researchers in order to generate and exchange ideas to improve teaching and learning.	104	111	92	64	2.68	.85	High Extent
	Section Mean/Standard Deviation					2.73	.79	High Extent

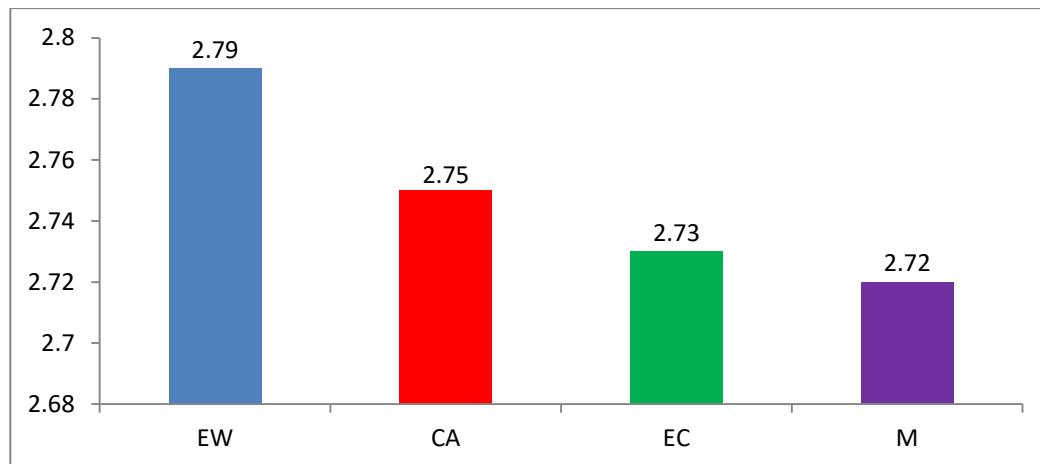
The result of the analysis in Table 6 shows that all the items (18 to 21) had positive mean values ranging from 2.68 to 2.76. The section mean of 2.73 is higher than the criterion mean and within the mean values range of 2.50 to 3.24. This

Research Question Five

To what extent are educational conferences organized for teachers' CPD in public senior secondary schools in Nasarawa State, Nigeria?

Table 6: Analysis of Extent to which Educational Conferences Organized for Teachers' CPD in Public Senior Secondary Schools in Nasarawa State, Nigeria

indicates that there is a high extent to which educational conferences are organized for teachers' continuing professional development in public senior secondary schools in Nasarawa State, Nigeria.



Key: EW  Education workshop

CA		Collaborative Activities
EC		Education Conferences
M		Mentoring

Figure 1:Mean Rank Order Distribution of Teachers' CPD Programmes in Public Senior Secondary Schools in Nasarawa State, Nigeria.

Research Question Six

What is the trend in students' academic performance in SSCE results in public senior

secondary schools in Nasarawa State, Nigeria from 2014 to 2023?

Table 8:Analysis of Trend of Students' Academic Performance in SSCE Results in Public Senior Secondary Schools in Nasarawa State, Nigeria from 2014 to 2023

Year	No. of Candidates	4	3	2	1	\bar{x}	S.D	Decision
2014	16,759	4,867	1,619	6,478	3,795	2.45	.94	Poor performance
2015	17,542	5,356	2,993	5,387	3,806	2.56	.83	Good performance
2016	19,879	5,864	4,296	3,915	5,804	2.51	.86	Good performance
2017	21,295	6,753	5,382	4,826	4,334	2.68	.75	Good performance
2018	23,541	7,125	5,603	8,246	2,567	2.73	.72	Good performance
2019	25,673	7,736	6,974	5,886	5,077	2.67	.77	Good performance
2020	27,565	9,654	5,895	5,594	6,422	2.68	.75	Good performance
2021	28,456	11,863	7,176	5,423	3,994	2.95	.68	Good performance
2022	31,347	13,967	6,429	5,962	4,989	2.94	.69	Good performance
2023	34,238	15,759	7,580	6,481	4,418	3.01	.65	Good performance
Total	246,295	88,944	53,947	58,198	45,206	2.72	.76	Good performance
	(100.0%)	(36.1%)	(21.9%)	(23.6%)	(18.4%)			

In Table 7, the result of the analysis shows that a total of 246,295 students sat for the SSCE in the sampled public secondary schools from 2014 to 2023. Out of this number, 88,944 students (36.1%) had 5 credits and above including Mathematics and English Language; 53,947 students (21.9%) had 5 credits with either Mathematics or English Language; while 58,198 students (23.6%) had 5 credits with neither Mathematics nor English Language; while 45,206 students (18.4%) had less than 5 credits or no credit.

In addition, the results show that the highest mean academic performance of 3.01 was recorded in 2023; while the lowest mean academic performance of 2.45 was recorded in 2014. Cumulatively, from 2014 to 2023, the average mean academic performance of students was 2.72. This implies that there was a good performance in the SSCE results from 2014 to 2023 in public senior secondary schools in Nasarawa State, and there were fluctuations in the trend in students' academic performance over the 10 year period.

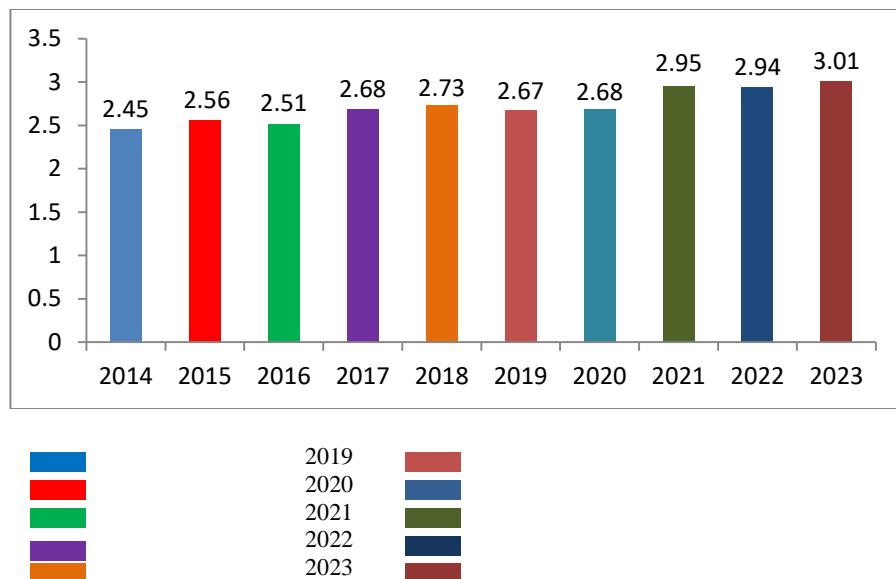


Figure 2:Mean Score Distribution of Trend in Students' Academic Performance in SSCE Results from 2014 to 2023.

The Bar chart in Figure 2 shows that there was an initial improvement in students' academic performance from 2014 to 2015. This was followed by a decline in the mean academic performance of students from 2.56 to 2.51 from 2015 to 2016. From 2016 to 2018, there was

recovery as performance improved over the 2 years period showing a positive trend ranging from 2.51 to 2.73. From 2018 to 2019, another decline occurred, marking a setback in academic performance. From 2019 to 2021, there was a notable improvement in the academic performance of student ranging from 2.67 to 2.95. From 2021 to 2022, there was a slight drop in performance from 2.95.

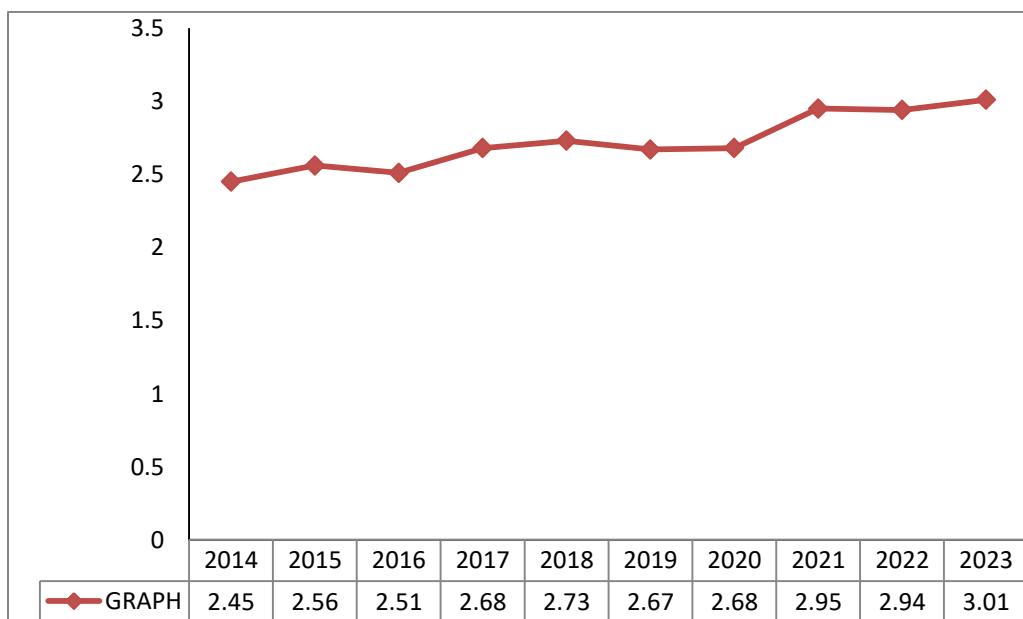


Figure 5:Graphical Representation of Trend in Students' Academic Performance in SSCE Results in Public Senior Secondary Schools in Nasarawa State, Nigeria from 2014 to 2023.

The Bar graph in Figure 5 shows that over a 10 year period (2014 to 2023), the trend in students' mean academic performance in the SSCE results is fluctuating with alternating periods of improvement and decline.

H_0 : There is no significant relationship between teachers' continuing professional development Programmes and students' academic performance in public senior secondary schools in Nasarawa State, Nigeria.

Table 9:Multiple Regression Analysis of Significant Relationship between Teachers' Continuing Professional Development Programmes and Students' Academic Performance in Nasarawa State, Nigeria

Variable	Unstandardized Coefficients	Std. Error	Standardized Coefficients	T	Sig.	Rank
	B	SE	(B)			
(Constant)	2.629	1.782		2.314	.035	
Education Workshops	.241	.089	.387	5.339	.000	1 st
Mentoring	.219	.120	.323	4.847	.013	3 rd
Collaborative Activities	.235	.096	.351	5.181	.008	2 nd
Educational Conferences	.203	.134	.319	4.693	.017	4 th
Dependent Variable: Students' Academic Performance						

* $p < 0.05$ = Significant relationship

Table 8 presents the multiple regression analysis of significant relationship among teachers' continuing professional development and students' academic performance in public senior secondary schools in Nasarawa State, Nigeria. The Beta weight (β), t-values, and p-values of the multiple regression test were used to interpret the results of the analysis.

The result shows that out of the four measures of teachers' continuing professional development, education workshop was the strongest predictor of students' academic performance ($=.387$, $t=5.339$, $p=.000 < 0.05$), followed by collaborative activities ($=.351$, $t=5.181$, $p=.008 < 0.05$), mentoring ($=.323$, $t=4.847$, $p=.013 < 0.05$), and educational conferences ($=.319$, $t=4.693$, $p=.017 < 0.05$) respectively in public senior secondary schools in Nasarawa State, Nigeria.

The probability values (p) of the measures of teachers' CPD were observed to be less than the alpha level of 0.05, thus, the null hypothesis was rejected. This indicates that there is a significant relationship between teachers' continuing professional development programmes and

students' academic performance in public senior secondary schools in Nasarawa State, Nigeria.

Discussion of Findings

The study revealed that a variety of Continuing Professional Development (CPD) programmes are provided for teachers in public senior secondary schools in Nasarawa State, including educational workshops, mentoring sessions, post-qualification education programmes, collaborative activities, and educational conferences. These findings are consistent with prior studies in Nigeria, which reported the provision of CPD programmes such as workshops, seminars, mentoring, and collaborative initiatives in secondary schools across Lagos, Rivers, Adamawa, and South-South states (Akpan & Ita, 2015; Ollor, 2021; Okwuagu, 2024; Musa, 2016).

Specifically, the study found that educational workshops are organized to a high extent for teachers' professional development. This aligns with findings from Imo, Plateau, and South-South states, where workshops were identified as a primary CPD strategy (Mezieobi, Chukwuma-Nwankwo, Ajaegbo, & Agulanna et

al., 2023; Okwuagu, 2024; Izang & Jelman, 2024). Similarly, mentoring for teachers' CPD was provided to a high extent, corroborating research from South-East Nigeria, where mentoring practices by school principals enhanced instructional effectiveness (Obiekwe et al., 2023; Opara, 2023).

The study further revealed that collaborative activities and educational conferences are organized to a high extent for teachers' CPD. These findings are consistent with reports from Abuja, South-South, and Plateau states, where such activities were integral to teachers' professional growth (Ilori, 2021; Okwuagu, 2024; Izang & Jelman, 2024; Ollor, 2021). Overall, the findings suggest that CPD programmes in Nasarawa State encompass multiple structured initiatives aimed at enhancing teachers' pedagogical competence.

Regarding students' academic performance, the study found a good performance trend in SSCE results from 2014 to 2023. This is consistent with findings from other regions in Nigeria, which reported positive trends in secondary school students' academic outcomes over similar periods (Amokeye, 2025; Aniekop, 2023).

Importantly, the study established a significant relationship between teachers' CPD programmes and students' academic performance. This finding aligns with previous empirical evidence indicating that teacher professional development positively influences students' learning outcomes and academic achievement across Nigerian states (Ogunbakin et al., 2016; Oluwole et al., 2017; Olawoyin & Isuku, 2019; Oyebanji & Faremi, 2016; Amadi & Amadi, 2019). The results underscore the critical role of well-structured CPD initiatives—such as workshops, mentoring, collaborative practices, and educational conferences—in enhancing teaching quality and, consequently, students' academic success in public senior secondary schools.

Conclusion

The study established that public senior secondary schools in Nasarawa State implement a range of Continuing Professional Development (CPD) programmes for teachers, including educational workshops, mentoring sessions, post-qualification education programmes, collaborative activities, and educational

conferences. These CPD programmes are provided to a high extent, reflecting a strong institutional commitment to teachers' professional growth.

Analysis of students' academic performance in the SSCE from 2014 to 2023 indicated some fluctuations over the years. Importantly, the study confirmed that teachers' CPD significantly predicts students' academic performance, highlighting the critical role of structured professional development in enhancing teaching quality and improving student outcomes in public senior secondary schools in Nasarawa State, Nigeria.

Recommendations

The following recommendations were made based on the findings of the study:

1. School principals and the Secondary Education Board in Nasarawa State should strengthen and expand Continuing Professional Development (CPD) programmes by providing professional development opportunities that are tailored to the specific needs and interests of teachers, particularly in areas where existing CPD provisions are currently lacking, in order to support sustained teacher development and growth.
2. School principals in public senior secondary schools in Nasarawa State should regularly monitor and assess the effectiveness of mentoring programmes in order to provide the requisite professional guidance and support to teachers by sharing expertise and experience.
3. School principals in public senior secondary schools in Nasarawa State should continuously encourage teachers to participate in peer mentoring, team coaching and professional learning communities by providing the necessary resources and time for teachers to engage in collaborative activities as a key component of teachers' CPD.
4. School principals in public senior secondary schools in Nasarawa State should provide opportunities for teachers to attend education conferences and equally support teachers to

apply new knowledge and skills gained from conferences to teaching practice.

5. School principals should constantly analyze students' performance data, and provide targeted support to students with learning difficulties in order to foster a culture of academic excellence in public senior secondary schools in Nasarawa State.

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