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Teachers' Professional Development Programmes as Correlates of Students' Academic Performance in Public Secondary Schools in North Central Nigeria

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ABSTRACT
This study investigated teachers' professional development programmes as correlates of students' academic performance in public secondary schools in North Central, Nigeria. Two research questions guided the study and two hypotheses were tested at 0.05 level of significance. Correlational research design was adopted for the study. The population consisted 51,935 teachers from 2569 public secondary schools in North Central Nigeria. A sample of 397 teachers from 77 public secondary schools in North Central Nigeria were used for the study. Multistage sampling procedure; purposive, proportionate stratified and simple random sampling techniques were used to select the sample for the study. Two sets of questionnaires were used for data collection titled "Teachers' Professional Development Programmes Questionnaire (TPDPQ)" and "Students' Academic Performance Questionnaire (SAPQ) with a reliability coefficient of 0.87 and 0.89 respectively. Pearson Product Moment Correlation was used to answer the research questions and also test the null hypotheses at 0.05 level of significance. The findings of the study revealed that subject-specific training and conferences have significant strong positive relationship with students' academic performance in North Central Nigeria. It was concluded that teachers' professional development programmes have significant strong positive correlation with students' academic performance in public secondary schools in North Central Nigeria. It was therefore, recommended that subject teachers should participate in regular subject-specific training aligned with curriculum updates and examination requirements and also, professional development coordinators should systematically plan and sponsor teachers' attendance at relevant educational conferences through transparent selection and funding mechanisms.

Keywords: Teachers' professional development programmes, students' academic performance**,** subject-specific training, conferences

INTRODUCTION

Students' academic performance is regarded as a vital benchmark for measuring educational quality and preparing learners for meaningful participation in society. In many public secondary schools across North Central Nigeria, the story of students' academic performance is one of growing concern. In classrooms, teachers often encounter students who struggle to grasp key concepts, fail to recall lessons taught just days before and display little confidence when asked to participate in discussions. Assessment records reveal a worrying trend of low scores in core subjects such as English and Mathematics, while many learners appear disengaged and unmotivated to learn. These patterns according to Bua (2023) paint a picture of an education system where students' comprehension and retention remain below expectation, despite efforts by governments and stakeholders to enhance learning quality.

Across countries, challenges such as poor comprehension, limited engagement and inadequate instructional support continue to undermine learning outcomes (Organisation for Economic Co-operation and Development, 2020). For instance, even nations that have invested heavily in education, such as India and Kenya, still report below-grade-level performance in reading and mathematics, underscoring persistent instructional deficiencies (Annual Status of Education Report Centre, 2022). Similarly, in Nigeria and particularly within the North Central states public secondary schools continue to battle issues of students' weak knowledge retention, poor communication skills and low classroom participation (Ajayi, Olatunji, & Adegbesan, 2021). These observable weaknesses seem to highlight a pressing need for more effective teaching and learning approaches. Research increasingly indicates that the quality of teachers' professional development plays a pivotal role in shaping instructional effectiveness. According to Salihu and Adeola (2020), well-designed professional development programmes that equip teachers with modern pedagogical techniques, learner-centred strategies and assessment skills have been shown to enhance teaching quality and by extension, improve students' academic performance.

Students' academic performance typically reflects students learning abilities and experiences within the educational environment. Tadese, Yeshaneh and Mulu (2022) view students' academic performance as an outcome of experiences which students gain through exposure to education or other learning experiences. They noted that academic performance is the result of instruction or the degree to which a student, instructor or establishment has accomplished in their instructional objective. Academic performance refers to students learning progress in tasks that require them to be actively engaged in activities which include manipulation of materials, demonstration of practical skills, problem solving or participation in any practical or theoretical work. Understanding students' academic performance therefore requires a clear grasp of the educational setting in which learning takes place, particularly the structure and purpose of secondary schools where much of this development occurs.

Teachers' professional development refers to the continuous process through which teachers acquire new knowledge, skills and attitudes to improve their teaching practices and adapt to evolving educational demands. It is a lifelong learning process that enhances teachers' effectiveness, enabling them to respond to changing curricula, technologies and diverse student needs (Darling-Hammond, Hyler & Gardner, 2017). Professional development is crucial for fostering reflective practice, promoting collaboration among educators and bridging gaps between theoretical knowledge and classroom application. It encompasses a variety of formal and informal learning opportunities, such as workshops, seminars, mentoring and peer observations, designed to improve teachers' instructional practices and student outcomes (Desimone & Garet, 2018). The empowerment of teacher knowledge could be achieved through the efficacy of teachers' professional development programmes.

Teachers' professional development programmes are structured and organized initiatives aimed at enhancing teachers' professional competencies. These programmes typically focus on specific goals such as improving subject content knowledge, teaching methodologies or classroom management strategies (Avalos, 2018). Teachers' professional development programmes in secondary schools include structured training initiatives such as workshops, seminars and conferences aimed at improving teachers' pedagogical skills, subject matter expertise and classroom management techniques (Avalos, 2018). These programmes also encompass mentoring, peer coaching and online learning platforms designed to enhance

continuous learning, integrate technology into teaching and align instructional methods with evolving curriculum standards and educational policies (Bua & Ada, 2018). Efficacy of programmes are characterized by being research-based, contextually relevant, collaborative and sustained over time (Guskey, 2020). For instance, workshops on integrating technology into the classroom or addressing the needs of diverse learners can significantly impact teaching quality and student learning. Additionally, professional development programmes often involve follow-up activities, such as coaching or feedback sessions, to ensure sustained implementation and efficacy (Darling-Hammond, Hyler & Gardner, 2017). By prioritizing well-designed professional development programmes, educational systems could foster teacher growth and improve overall school performance. For the purpose of this study teachers' professional development programmes is discussed in the light of subject-specific training and conferences.

Subject-specific training refers to educational programmes designed to enhance an individual's knowledge and skills within a particular discipline, focusing on the unique content and pedagogical methods pertinent to that field (Bua & Ada, 20218). Subject-specific training prepare teachers' expertise in particular disciplines, equipping them with updated knowledge and innovative strategies tailored to their subject area. This training ensures that teachers can deliver content more effectively, address misconceptions and inspire student interest in the subject. For instance, subject-specific training in science might include hands-on experiments or real-world applications, which have been shown to improve student understanding and academic performance (Banilower, Heck & Weiss, 2018). Uche and Umeh (2020) found that students taught by teachers with advanced qualifications such as PGDE and Master's degrees performed better in standardized examinations. Similarly, Isaac and Thomas (2022) revealed that teachers who participated in advanced in-service certification programmes demonstrated greater classroom effectiveness, leading to improved student achievement in core subjects. In secondary schools, this can bridge knowledge gaps and foster higher academic performance. Complementary to subject-specific training is engagement of teachers through conferences.

Conferences are integral to teacher training, offering platforms for educators to engage in continuing professional development, foster a sense of community and enhance their professional identity (Rimmer & Floyd, 2020). Conferences provide a platform for educators to exchange ideas, share best practices and learn from experts in the field. By attending conferences, teachers gain exposure to innovative strategies and emerging trends in education. King (2017) posits that participation in educational conferences enhances teachers' professional development and indirectly benefits student academic performance through improved instructional quality. In public secondary schools, such engagement can introduce new perspectives and tools that address specific academic challenges faced by students (Guskey, 2020). Ohnson and Ekpo (2020) empirically established that teachers who underwent subject-specific training demonstrated higher instructional effectiveness, resulting in improved student performance in Mathematics, English Language, and Sciences. Similarly, Muhammad and Abdullahi (2022) found that students taught by teachers who received continuous subject-based professional development significantly outperformed those taught by teachers without recent training. Conferences offer opportunities for broader knowledge exchange and exposure to innovative ideas.

It is evident that teachers' professional development programmes in public secondary schools in North central, Nigeria such as subject-specific training and conferences could impact students' academic performance. Based on the above premises, the researcher was interested to investigate teachers' professional development programmes as correlates of students' academic performance in public secondary schools in North Central, Nigeria.

Statement of the Problem

Students' academic performance often serves as a crucial determinant for students' future opportunities. Students' academic performance opens doors to a wider range of opportunities and pathways. However, the prevalence of students' irregular attendance to school, distraction during lessons, weak classroom participation, poor attitude to completion of assignments and the prevalence in both oral and written communication among secondary school students appears to be indicative of poor academic performance

in Nigeria (Nwachukwu & Ijioma, 2020). The researcher has observed that students attending public secondary schools in North Central Nigeria seems to struggle with expressing themselves fluently, exhibit deficiencies in writing, such as frequent spelling errors and often resort to copying extensive notes instead of engaging in independent reading at home. Additionally, there is a noticeable lack of confidence in academic tasks, along with poor reading skills, low assessment scores, limited attention span and reluctance to participate in academic discussions which is likely to result to poor academic performance. These shortcomings in academic performance raise concerns regarding the efficacy of teachers' development programmes in public secondary schools in North Central Nigeria.

Efforts have been made by various concerned stakeholders such as the Ministry of Education, Teaching Service Boards and Teachers Registration Council of Nigeria by organizing trainings for teachers in order to improve on students' academic performance (Bua, 2023). Despite the efforts, challenges with students' academic performance such as poor comprehension still persist. The observed shortcomings in students' academic performance may largely be attributed to various teachers' development programmes, including the inclusive education training, blended learning training, advanced certificate programmes, subject-specific training, conferences, in-service training, workshops and seminars. It is against this background that this study investigated teachers' professional development programmes as correlates of students' academic performance in public secondary schools in North central, Nigeria.

Purpose of Study

The purpose of the study was to investigate teachers' professional development programmes as correlates of students' academic performance in public secondary schools in North central, Nigeria. Specifically, the study seeks to;

1. ascertain relationship between teachers' subject-specific training and students' academic performance in public secondary schools in North Central Nigeria.
2. determine relationship between teachers' attendance to conferences and students' academic performance in public secondary schools in North Central Nigeria.

Research Questions

The following research questions guided the study.

1. What is the relationship between teachers' subject-specific training and students' academic performance in public secondary schools in North Central Nigeria?
2. What is the relationship between teachers' attendance to conferences and students' academic performance in public secondary schools in North Central Nigeria?

Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance:

1. Teachers' subject-specific training has no significant relationship with students' academic performance in public secondary schools in North Central Nigeria.
2. Teachers' attendance to conferences has no significant relationship with students' academic performance in public secondary schools in North Central Nigeria.

RESEARCH METHODS

The study adopted a correlational research design. The population consisted 51,935 teachers from 2569 public secondary schools in North Central Nigeria. A sample of 397 teachers from 77 public secondary schools in North Central Nigeria were used for the study. Multistage sampling procedure; purposive, proportionate stratified and simple random sampling techniques were used to select the sample for the study. Two sets of questionnaires were used for data collection titled "Teachers' Professional Development Programmes Questionnaire (TPDPQ)" and "Students' Academic Performance Questionnaire (SAPQ) with a reliability coefficient of 0.87 and 0.89 respectively. Pearson Product Moment Correlation was used to answer the research questions and also test the null hypotheses at 0.05 level of significance.

The decision rule for rejecting or not rejecting the null hypothesis was based on the comparison between the p-value (the probability that the observed correlation occurred by chance) and the level of significance

(α). Where the p-value was ≤ α, the null hypothesis (H_0) was rejected. Meaning there was enough evidence to conclude that a significant correlation exists between the two variables. Where the p-value was > α, the null hypothesis (H_0) was not rejected. Meaning there was no enough evidence to conclude that a significant correlation exists between the two variables.

Research Question 1: *What is the relationship between teachers' subject-specific training and students' academic performance in public secondary schools in North Central Nigeria?*

Table 1: Relationship Between Teachers' Subject-Specific Training and Students' Academic Performance in Public Secondary Schools in North Central Nigeria

Variables	N	$\overline{X}$	*SD*	r	Decision
Teachers' Subject-Specific Training	389	3.10	0.69		
				0.88	Strong Positive Relationship
Students' Academic Performance in Public Secondary Schools	389	2.80	0.91		

* Relationship coefficient is strong at 0.5 to 1.0 (or -0.5 to -1.0)

The result in Table 4 shows relationship between teachers' subject-specific training and students' academic performance in public secondary schools in North Central Nigeria. The result revealed that the relationship coefficient of 0.88 falls within 0.70 to 0.99 which indicate a strong relationship. This implies that there is a strong positive relationship between teachers' subject-specific training and students' academic performance in public secondary schools in North Central Nigeria.

Research Question 2: *What is the relationship between teachers' attendance to conferences and students' academic performance in public secondary schools in North Central Nigeria?*

Table 2: Relationship Between Teachers' Attendance to Conferences and Students' Academic Performance in Public Secondary Schools in North Central Nigeria

Variables	N	$\overline{X}$	*SD*	r	Decision
Teachers' Attendance to Conferences	389	2.87	0.73		
				0.84	Strong Positive Relationship
Students' Academic Performance in Public Secondary Schools	389	2.80	0.91		

* Relationship coefficient is strong at 0.5 to 1.0 (or -0.5 to -1.0)

The result in Table 2 shows relationship between teachers' attendance to conferences and students' academic performance in public secondary schools in North Central Nigeria. The result revealed that the relationship coefficient of 0.84 falls within 0.70 to 0.99 which indicate a strong relationship. This implies that there was a strong positive relationship between teachers' attendance to conferences and students' academic performance in public secondary schools in North Central Nigeria.

Hypothesis 1: Teachers' subject-specific training has no significant relationship with students' academic performance in public secondary schools in North Central Nigeria.

Table 3: PPMC Analysis of the Relationship Between Teachers' Subject-Specific Training and Students' Academic Performance in Public Secondary Schools in North Central Nigeria

Variables	**N**	**r**	**Df**	***P***	**Decision**
Teachers' Subject-Specific Training	389				
		0.88	387	0.000	Significant Strong Positive Relationship
Students' Academic Performance in Public Secondary Schools	389				

The result in Table 3 shows significant relationship between teachers' subject-specific training and students' academic performance in public secondary schools in North Central Nigeria. The result revealed that r = 0.88; df = 387; p-value = 0.000 < 0.05. Since P-value was less than 0.05, the null hypothesis which states that teachers' subject-specific training has no significant relationship with students' academic performance in public secondary schools in North Central Nigeria was rejected. This implies that teachers' subject-specific training has significant strong positive relationship with students' academic performance in public secondary schools in North Central Nigeria.

Hypothesis 2: Teachers' attendance to conferences has no significant relationship with students' academic performance in public secondary schools in North Central Nigeria.

Table 4: PPMC Analysis of the Relationship Between Teachers' Attendance to Conferences and Students' Academic Performance in Public Secondary Schools in North Central Nigeria

Variables	**N**	**r**	**Df**	***P***	**Decision**
Teachers' Attendance to Conferences	389				
		0.84	387	0.000	Significant Strong Positive Relationship
Students' Academic Performance in Public Secondary Schools	389				

The result in Table 4 shows significant relationship between teachers' attendance to conferences and students' academic performance in public secondary schools in North Central Nigeria. The result revealed that r = 0.84; df = 387; p-value = 0.000 < 0.05. Since P-value was less than 0.05, the null hypothesis which states that teachers' attendance to conferences has no significant relationship with students' academic performance in public secondary schools in North Central Nigeria was rejected. This implies that teachers' attendance to conferences has significant strong positive relationship with students' academic performance in public secondary schools in North Central Nigeria.

DISCUSSION OF FINDINGS

The first finding of the study showed that teachers' advanced certificate programmes have significant strong positive relationship with students' academic performance in public secondary schools in North Central Nigeria. This finding is grounded on the premise that advanced training deepens teachers' content mastery, pedagogical competence, and professional commitment. This relationship is justifiable because teachers who engage in postgraduate and in-service certification programmes are more likely to employ effective instructional strategies and maintain high classroom standards. This finding is consistent with the empirical evidence provided by Uche and Umeh (2020), who found that students taught by teachers with advanced qualifications such as PGDE and Master's degrees performed better in standardized examinations. Similarly, Isaac and Thomas (2022) revealed that teachers who participated in advanced in-

service certification programmes demonstrated greater classroom effectiveness, leading to improved student achievement in core subjects. These studies relate to the present research by confirming that advanced teacher training directly influences instructional quality and student outcomes. This consistency underscores the value of advanced teacher education as a critical driver of improved academic performance. Within the framework of the study, it is found that teachers' advanced certificate programmes have significant strong positive relationship with students' academic performance in public secondary schools in North Central Nigeria.

The second finding of the study showed that teachers' subject-specific training has significant strong positive relationship with students' academic performance in public secondary schools in North Central Nigeria. This finding reflects the critical role of content-focused professional development in improving instructional effectiveness. This finding is justified because subject-specific training strengthens teachers' conceptual understanding, pedagogical clarity, and ability to simplify complex content for learners. The finding aligns with Ohnson and Ekpo (2020), who empirically established that teachers who underwent subject-specific training demonstrated higher instructional effectiveness, resulting in improved student performance in Mathematics, English Language, and Sciences. Similarly, Muhammad and Abdullahi (2022) found that students taught by teachers who received continuous subject-based professional development significantly outperformed those taught by teachers without recent training. These studies relate directly to the present study as they emphasize subject-specific training as a key determinant of student performance. While the reviewed studies were conducted in Akwa Ibom and Kano States with smaller samples and narrower scopes, the present study advances the literature by examining this relationship across multiple subjects and a larger teacher population in North Central Nigeria, thereby reinforcing the robustness and relevance of subject-specific training to student academic success. This alignment reinforces the importance of targeted professional development in driving improved performance in secondary education. Within the framework of the study, it is found that teachers' subject-specific training has a significant strong positive relationship with students' academic performance in public secondary schools in North Central Nigeria.

CONCLUSION

This study established that, teachers' professional development programmes have significant strong positive correlation with students' academic performance in public secondary schools in North Central Nigeria. This implies that teachers' professional development programmes in the areas of teachers' subject-specific training and teachers' attendance to conferences have significant strong positive relationship with students' academic performance in North Central Nigeria.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations were made:

1. Subject teachers should participate in regular subject-specific training aligned with curriculum updates and examination requirements. This can be achieved through discipline-based workshops and refresher courses, leading to improved subject mastery, effective pedagogy and enhanced students' academic outcomes.
2. Professional development coordinators should systematically plan and sponsor teachers' attendance at relevant educational conferences through transparent selection and funding mechanisms. This will enhance teachers' exposure to best practices and innovations, resulting in improved instructional quality and better student academic performance.

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