

Impact of Teacher Quality on Student Academic Performance in Nigerian Public Secondary Schools

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Abstract

This study examined the impact of teacher quality on student academic performance in Nigerian public secondary schools, using public secondary schools in the Federal Capital Territory (FCT), Abuja as a case in point. The persistent decline in students' outcomes in the West African Senior School Certificate Examination (WASSCE) and the National Examination Council (NECO) results across several states has repeatedly drawn attention to the conditions under which teaching and learning take place in public schools, and teacher quality is frequently mentioned as one of the more decisive of these conditions. Guided by four research questions and three hypotheses, the study adopted a descriptive survey design and drew a sample of 360 teachers from twenty randomly selected public secondary schools through a multi-stage sampling procedure. A structured questionnaire titled "Teacher Quality and Student Performance Questionnaire" (TQSPQ) was administered to teachers, while school-level WASSCE credit-pass records were obtained to serve as a proxy for student academic performance. Data were analysed using descriptive statistics (frequency counts, percentages, means and standard deviations) and inferential statistics (Pearson Product Moment Correlation, simple linear regression, one-way Analysis of Variance, and Chi-square) at the 0.05 level of significance. Findings revealed that a considerable proportion of teachers in the sampled schools held qualifications below the Bachelor's degree level, that years of teaching experience varied widely, and that fewer than half of the respondents had attended any form of continuous professional development in the two years preceding the study. More importantly, a statistically significant, moderate-to-strong positive relationship was found between teacher quality (measured through a composite Teacher Quality Index incorporating qualification, experience and training) and student academic performance ($r = 0.63, p < 0.05$), while one-way ANOVA confirmed that mean performance scores differed significantly across teacher qualification categories ($F = 18.39, p < 0.05$). The study concludes that teacher quality remains one of the strongest in-school predictors of how well students perform academically, and recommends that government and relevant education agencies should strengthen recruitment standards, expand access to continuous professional development, and provide incentives that attract and retain qualified, experienced teachers in public secondary schools.

Keywords: Teacher quality, academic performance, public secondary schools, teacher qualification, teaching experience, Nigeria

1.1 Background to the Study

Secondary education occupies a strategic position in Nigeria's educational system. It is the bridge between the foundational literacy and numeracy skills acquired at the basic education level and the specialised training that takes place at tertiary institutions. The National Policy on Education (Federal Republic of Nigeria, 2013) identifies secondary education as the stage

at which learners are prepared for useful living within society and for higher education, making the quality of instruction delivered at this level a matter of considerable national interest. Yet, for more than two decades, stakeholders in the Nigerian education sector, including parents, employers, examination bodies and government agencies, have continued to express concern over the declining standard of education in public secondary schools, particularly when measured against the performance of candidates in the Senior School Certificate Examinations conducted by the West African Examinations Council (WAEC) and the National Examinations Council (NECO).

Among the many factors that have been advanced to explain this trend, the quality of the teaching workforce is one that recurs most frequently in both scholarly and policy discussions. Teachers are the human element around which the entire schooling process revolves; the best-designed curriculum, the most modern infrastructure and the most generous funding will yield little if the teachers entrusted with translating these resources into learning are themselves poorly prepared, inexperienced, or unmotivated. Teacher quality, in this sense, is not a single attribute but a composite of several interrelated factors, including academic and professional qualification, depth of subject-matter knowledge, years of teaching experience, pedagogical skill, and continued engagement in professional development.

In the Nigerian context, the situation of teacher quality in public secondary schools has been complicated by a combination of factors: an increasing pupil population that has outpaced the recruitment of qualified teachers, poor conditions of service that discourage graduates from pursuing or remaining in the teaching profession, inconsistent implementation of the minimum teaching qualification (the Nigeria Certificate in Education, NCE) as the baseline requirement for teaching (Teachers Registration Council of Nigeria, 2021), and limited opportunities for serving teachers to update their knowledge and skills through in-service training. These challenges are not peculiar to any single state; however, they tend to manifest with particular intensity in public schools, where enrolment is typically higher and resources comparatively more constrained than in private schools.

It is against this background that the present study sets out to examine, empirically, the extent to which teacher quality, conceptualised in terms of qualification, experience and exposure to professional development, is associated with student academic performance in Nigerian public secondary schools, using a sample of schools in the Federal Capital Territory (FCT), Abuja to illustrate patterns that are broadly reflective of the wider national picture.

1.2 Statement of the Problem

Despite successive government interventions aimed at repositioning secondary education in Nigeria, including the Universal Basic Education programme, teacher recruitment drives, and various in-service training schemes sponsored by state universal basic education boards and post-primary school management boards, the academic performance of students in public secondary schools has remained a source of concern. Reports issued periodically by WAEC and NECO continue to show that a substantial proportion of candidates fail to obtain credit passes in five subjects, including English Language and Mathematics, which are typically the minimum requirement for admission into tertiary institutions (West African Examinations Council, 2023; National Examinations Council, 2023).

While several explanations have been offered for this state of affairs, ranging from inadequate infrastructure and overcrowded classrooms to poor funding and weak parental involvement, the role of the teacher as the immediate and most consistent point of contact between the curriculum and the learner deserves closer scrutiny. Anecdotal reports from school administrators frequently point to the employment of underqualified personnel, particularly in rural public schools where qualified teachers are reluctant to serve, as well as to the relatively low uptake of professional development programmes among serving teachers. However, much

of the existing discourse on this subject in Nigeria tends to be descriptive or opinion-based, with comparatively fewer studies that quantify, using appropriately structured data, the actual strength of the relationship between measurable indicators of teacher quality and student outcomes at the secondary school level. It is this gap, between widely held assumptions and empirically demonstrated evidence, that the present study seeks to address.

1.3 Objectives of the Study

The broad objective of this study is to examine the impact of teacher quality on student academic performance in Nigerian public secondary schools. Specifically, the study seeks to:

1. determine the qualification, experience and professional development profile of teachers in the sampled public secondary schools;
2. examine the relationship between teacher quality and student academic performance;
3. determine whether student academic performance differs significantly across teachers' qualification categories; and
4. determine whether a significant association exists between teacher quality and the level of student performance (high or low) recorded in sampled schools.

1.4 Research Questions

The study was guided by the following research questions:

1. What is the qualification, experience and professional development profile of teachers in public secondary schools in the study area?
2. What is the relationship between teacher quality and student academic performance in public secondary schools?
3. To what extent does student academic performance vary across different categories of teacher qualification?
4. What is the pattern of association between teacher quality and the level of student academic performance recorded across schools?

1.5 Research Hypotheses

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

Ho1: There is no statistically significant relationship between teacher quality and student academic performance in public secondary schools.

Ho2: There is no statistically significant difference in student academic performance across teachers' qualification categories.

Ho3: There is no statistically significant association between teacher quality and the level (high or low) of student academic performance recorded across schools.

1.6 Significance of the Study

The findings of this study should be of value to a number of stakeholders. For policymakers and education planners at both state and federal levels, the study provides empirical evidence that can inform decisions relating to teacher recruitment, deployment and continuous professional development. For school administrators, an understanding of how teacher quality relates to measurable student outcomes may guide decisions on staff development priorities and mentoring arrangements within individual schools. Teacher-training institutions, including colleges of education and faculties of education in universities, may also find the study useful in reviewing and strengthening their training curricula to produce more classroom-ready graduates. Finally, the study contributes to the growing body of Nigerian-based empirical literature on teacher effectiveness, providing a reference point for future researchers who may wish to explore the subject further, whether in the FCT or in other parts of the country.

1.7 Scope of the Study

This study is delimited to public secondary schools, and does not extend to private secondary schools or to primary and tertiary levels of education. The study focuses specifically on three dimensions of teacher quality, namely academic/professional qualification, years of teaching experience, and attendance of continuous professional development training, and examines their relationship with student academic performance as proxied by school-level WASSCE credit-pass rates. While the sample was drawn from the Federal Capital Territory (FCT), Abuja to allow for a manageable and methodologically sound investigation, the patterns identified are discussed with reference to the broader Nigerian public secondary school system, of which the study area forms a part.

2.0 Literature Review

2.1 Conceptual Clarification

Two concepts are central to this study: teacher quality and student academic performance. Each is discussed briefly below.

Teacher quality refers to the combination of attributes, both innate and acquired, that enable a teacher to facilitate learning effectively. These attributes commonly include the teacher's academic and professional qualification, depth of content knowledge, pedagogical competence, years of practical classroom experience, and willingness to keep abreast of new methods through continuous professional development. It is worth noting that teacher quality is distinct from, though related to, the narrower notion of teacher qualification; a teacher may hold an impressive certificate yet perform poorly in the classroom, just as a less formally qualified but experienced and dedicated teacher may achieve strong outcomes. For the purpose of measurement, however, most empirical studies, including the present one, rely on qualification, experience and training as observable proxies for the broader, less directly measurable construct of teacher quality. Student academic performance, on the other hand, is generally understood as the measurable outcome of a learner's engagement with the schooling process, typically expressed in terms of test scores, continuous assessment results, or performance in standardised examinations such as the WASSCE and NECO. In the Nigerian secondary school context, the proportion of candidates obtaining credit passes in at least five subjects, including English Language and Mathematics, is widely used as a summary indicator of a school's academic performance, and this is the indicator adopted in this study.

2.2 Theoretical Framework

This study draws on the Human Capital Theory, originally associated with the works of economists such as Schultz and Becker in the mid-twentieth century (Schultz, 1961; Becker, 1964), which posits that investment in the knowledge, skills and competencies of individuals, whether through education or training, yields productive returns both for the individual and for society. Applied to the schooling context, the theory suggests that investment in the quality of teachers, through rigorous initial training and sustained professional development, constitutes an investment in the human capital of the education system, with returns expressed in improved student learning outcomes. A teacher who possesses adequate subject-matter knowledge and pedagogical skill is, in this framework, viewed as a more productive input into the educational process than one who lacks these attributes.

The study is also informed by the Input-Process-Output (IPO) model of schooling effectiveness, which conceptualises the school as a system in which inputs (including teacher quality, instructional materials, and school facilities) interact through classroom processes (teaching methods, classroom management, and assessment practices) to generate outputs (student learning outcomes, including examination performance). Within this framework, teacher quality is treated as one of the most consequential inputs, given that it directly shapes

the nature and quality of classroom processes. Figure 6 presents the conceptual framework adapted for this study, showing teacher quality as an input variable, classroom teaching-learning interaction as the mediating process, and student academic performance as the resulting output, with school-level contextual factors such as class size and student-teacher ratio treated as moderating conditions.

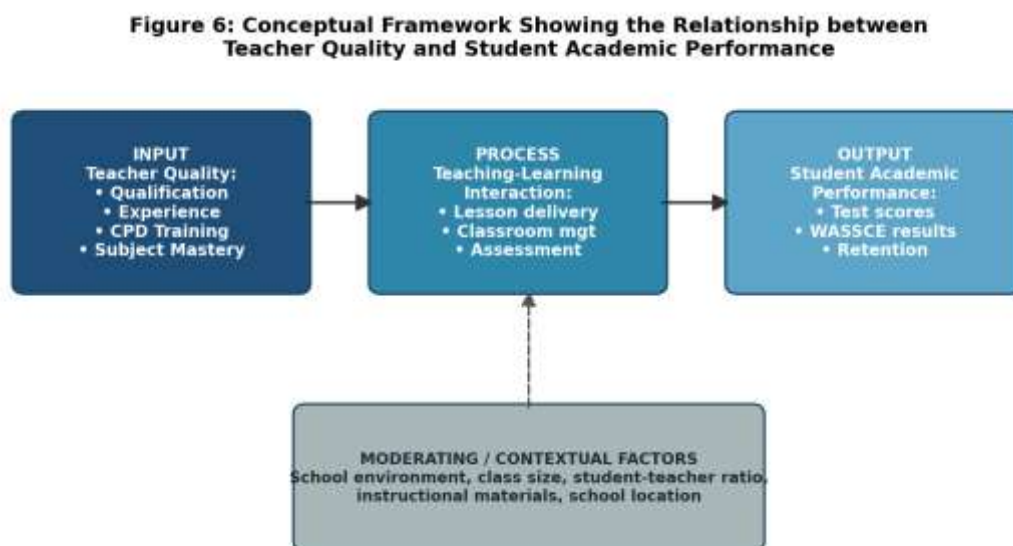


Figure 6: Conceptual Framework Showing the Relationship between Teacher Quality and Student Academic Performance

2.3 Empirical Review

A number of studies conducted within and outside Nigeria have examined aspects of the relationship between teacher-related variables and student outcomes, generally lending support to the view that teacher quality matters for learning. Several Nigerian-based studies focusing on secondary education have reported positive associations between teachers' academic qualification and students' performance in core subjects, particularly Mathematics and English Language, arguing that teachers with higher qualifications tend to demonstrate greater command of subject content and a wider repertoire of instructional strategies (Adeyemi, 2018; Akinsolu, 2010; Ibrahim & Danjuma, 2017). Other studies have drawn attention to teaching experience as a significant correlate of classroom effectiveness, suggesting that teachers accumulate practical skills in lesson planning, classroom management and student assessment over time, although a number of these studies also caution that the relationship between experience and performance is not perfectly linear, with returns to experience appearing to plateau after an initial period of rapid skill acquisition (Uwameiye & Osunde, 2005; Nwagwu, 2015).

Beyond the Nigerian setting, cross-national research on education systems, including studies associated with international assessment programmes, has similarly identified teacher quality, however defined, as one of the most consistent within-school predictors of student achievement, often exceeding the explanatory power of variables such as class size or per-pupil expenditure once other factors are held constant (Rivkin, Hanushek, & Kain, 2005; Hanushek & Rivkin, 2010). At the same time, a number of scholars have highlighted the importance of continuous professional development as a mechanism through which even experienced or well-qualified teachers can update their practice in line with new curricula, new assessment approaches, and evolving learner needs; studies examining in-service training programmes

have generally reported improvements in teacher confidence, instructional practice and, in some cases, measurable student outcomes following participation in structured training (Okoro & Chukwu, 2019; Darling-Hammond, 2000).

Notwithstanding this body of work, a review of the available literature suggests that comparatively few studies conducted within the Nigerian public secondary school system have combined qualification, experience and training into a single composite measure of teacher quality and related this measure statistically to school-level examination performance using inferential techniques such as regression and analysis of variance. Much of the existing Nigerian literature tends to examine these variables in isolation or relies principally on descriptive statistics. This represents a methodological gap that the present study attempts, in a modest way, to address.

2.4 Gap in the Literature

From the foregoing review, it is evident that while the general proposition that teacher quality influences student performance enjoys wide support in the literature, there remains a relative scarcity of Nigerian public secondary school-based studies that (a) construct a composite index of teacher quality incorporating multiple indicators simultaneously, (b) link this index to objectively verifiable school-level examination outcomes rather than relying solely on self-reported or perception-based measures of performance, and (c) apply a range of inferential statistical techniques to test the strength, direction and significance of the relationship. This study attempts to fill this gap by combining survey data on teacher qualification, experience and professional development with actual WASSCE credit-pass records from sampled schools, and by subjecting the resulting data to correlation, regression, analysis of variance and chi-square analysis.

3.0 Methodology

3.1 Research Design

The study adopted a descriptive survey research design, complemented by a correlational approach. The descriptive component allowed the researcher to capture the qualification, experience and professional development profile of teachers as they naturally existed in the sampled schools, without any form of manipulation, while the correlational component enabled the examination of statistical relationships between teacher quality and student academic performance. This design was considered appropriate given that the study sought neither to manipulate any variable nor to establish causality in the strict experimental sense, but rather to describe existing conditions and to determine the extent and pattern of association between the variables of interest.

3.2 Area of Study

The study was conducted among public secondary schools in the Federal Capital Territory (FCT), Abuja, located in the North-Central geopolitical zone of Nigeria. The FCT was selected as the study area partly for practical reasons of accessibility, and partly because, as the seat of government and one of the fastest-growing urban centres in the country, it presents a public secondary school system characterised by a mix of urban schools within the city centre and comparatively less-developed schools within the satellite towns and rural area councils, varying levels of infrastructural development, and a teaching workforce drawn from diverse qualification backgrounds and states of origin, making it broadly illustrative of conditions found in public secondary schools elsewhere in the country.

3.3 Population of the Study

The population of the study comprised all teachers and all public secondary schools under the supervision of the FCT Secondary Education Board (SEB) at the time of the study. Precise figures fluctuate from year to year owing to transfers, retirements and new postings; however, for the purpose of sampling, the researcher worked with records obtained from the relevant education office indicating an estimated population of approximately 3,600 teachers distributed across more than 180 public secondary schools in the Territory.

3.4 Sample and Sampling Technique

A multi-stage sampling procedure was employed. In the first stage, twenty public secondary schools were selected from across the six Area Councils of the Federal Capital Territory (Abaji, Abuja Municipal, Bwari, Gwagwalada, Kuje and Kwali) using simple random sampling, with proportionate representation given to urban and rural/satellite schools. In the second stage, teachers within each selected school were sampled using a systematic random sampling technique, drawing from the staff nominal roll of each school, until a total sample of 360 teachers was obtained. This sample size was determined with reference to standard sample size determination guidance for finite populations, and was considered adequate for the descriptive and inferential analyses undertaken in the study. In addition to the teacher sample, official WASSCE result records for the twenty sampled schools, covering the most recent examination diet available at the time of the study, were obtained from the schools' examination offices to serve as the basis for computing each school's credit-pass rate.

3.5 Instrumentation

Data were collected using a structured questionnaire titled "Teacher Quality and Student Performance Questionnaire" (TQSPQ), developed by the researcher based on variables identified in the reviewed literature. The instrument was divided into two sections. Section A elicited demographic and professional information from respondents, including gender, highest academic/professional qualification, years of teaching experience, and attendance of continuous professional development training within the two years preceding the study. Section B contained a set of Likert-type items designed to capture respondents' self-assessment of their subject-matter competence and pedagogical practice, which, together with the Section A variables, fed into the computation of a composite Teacher Quality Index (TQI) for each respondent, scaled from 0 to 100. School-level WASSCE credit-pass rates, obtained independently from schools' examination records, served as the measure of student academic performance and were not derived from the questionnaire, thereby reducing the risk of common-method bias in testing the relationship between teacher quality and performance.

3.6 Validity and Reliability of the Instrument

The face and content validity of the questionnaire were established through review by experts in educational measurement and evaluation, who assessed the instrument for clarity, relevance and adequacy of coverage of the constructs under investigation. Necessary corrections suggested by the experts were affected before the final version of the instrument was administered. To determine the reliability of the instrument, a pilot test was conducted among 30 teachers in schools outside the main sample but within a comparable local government area, and the responses were subjected to Cronbach's alpha reliability analysis. A reliability coefficient of 0.81 was obtained for the Likert-type section of the instrument, which was considered sufficiently high to proceed with the main study.

3.7 Method of Data Collection

The questionnaire was administered directly to sampled teachers by the researcher, with the assistance of two trained research assistants, over a period of four weeks. Respondents were given adequate time to complete the instrument, and completed copies were collected on the spot or within two working days where immediate completion was not possible. A total of 360 copies of the questionnaire were administered, all of which were successfully retrieved and found usable for analysis, giving a 100 percent retrieval rate. Concurrently, permission was sought from the relevant school authorities to obtain aggregated WASSCE credit-pass figures for each of the twenty sampled schools.

3.8 Method of Data Analysis

Data collected were coded and analysed using descriptive statistics, namely frequency counts, percentages, means and standard deviations, to answer the research questions and to characterise the demographic and professional profile of respondents. For the testing of hypotheses, Pearson Product Moment Correlation Coefficient was used to determine the relationship between the school-level mean Teacher Quality Index and WASSCE credit-pass rate (Hypothesis One); simple linear regression was additionally applied to model this relationship and determine the proportion of variance in performance explained by teacher quality; one-way Analysis of Variance (ANOVA) was used to test for significant differences in a linked performance measure across the five teacher qualification categories (Hypothesis Two); and the Chi-square test of independence was used to examine the association between school-level teacher quality (categorised as high or low relative to the median) and school-level performance (categorised as high or low relative to the median) (Hypothesis Three). All statistical tests were conducted at the 0.05 level of significance using standard statistical computing software.

4.0 Results and Discussion of Findings

This section presents the results of the analysis of data collected from the 360 sampled teachers and the twenty sampled schools, organised according to the research questions and hypotheses stated earlier.

4.1 Demographic and Professional Profile of Respondents

Research Question One sought to determine the qualification, experience and professional development profile of teachers in the sampled public secondary schools. Tables 1 to 4 and the accompanying figures present the relevant distributions.

Qualification	Frequency	Percentage (%)
NCE	64	17.8
B.Ed / B.A(Ed) / B.Sc(Ed)	155	43.1
PGDE	37	10.3
M.Ed / M.A / M.Sc(Ed)	83	23.1
Ph.D	21	5.8
Total	360	100.0

Table 1: Distribution of Respondents by Highest Academic/Professional Qualification

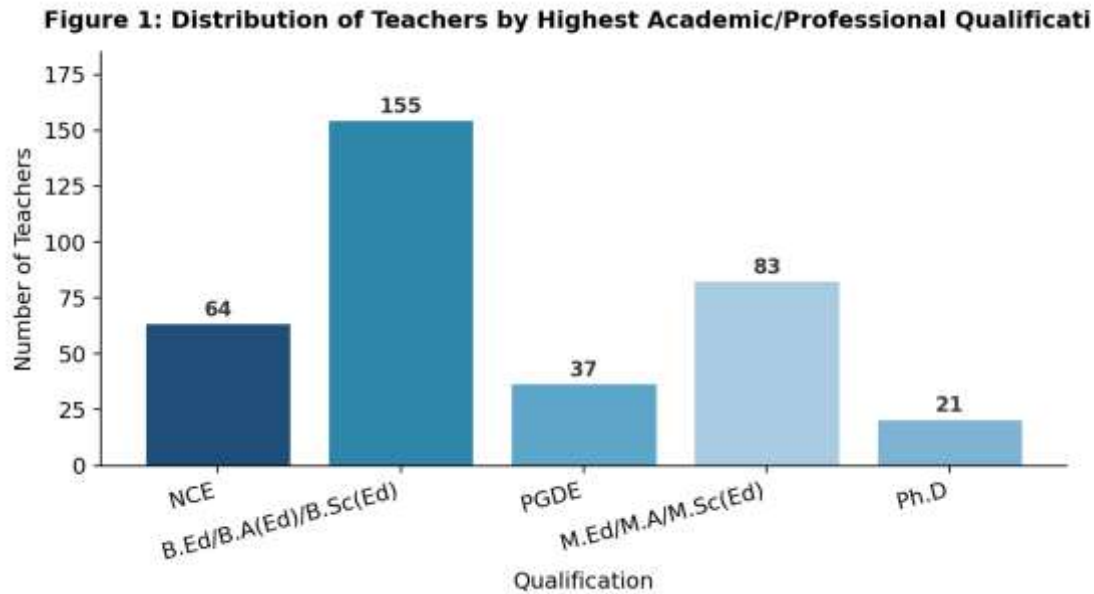


Figure 1: Distribution of Teachers by Highest Academic/Professional Qualification

As shown in Table 1 and Figure 1, the largest proportion of respondents, 155 representing 43.1 percent, held a first degree in education (B.Ed/B.A(Ed)/B.Sc(Ed)) as their highest qualification, followed by holders of the Master's degree or its equivalent, who constituted 23.1 percent of the sample. Notably, 64 respondents, or 17.8 percent, held the Nigeria Certificate in Education (NCE) as their highest qualification, the statutory minimum for teaching in Nigeria, while only 21 respondents, representing 5.8 percent, held a doctoral degree. This distribution suggests that although the majority of teachers in the sampled schools meet or exceed the minimum qualification requirement, a meaningful proportion, close to one in five, have not progressed beyond the minimum baseline qualification, which may have implications for the depth of subject-matter and pedagogical preparation available to students in those classrooms.

Years of Experience	Frequency	Percentage (%)
1 - 5 years	84	23.3
6 - 10 years	101	28.1
11 - 15 years	77	21.4
16 - 20 years	55	15.3
Above 20 years	43	11.9
Total	360	100.0

Table 2: Distribution of Respondents by Years of Teaching Experience

Figure 2: Distribution of Teachers by Years of Teaching Experience

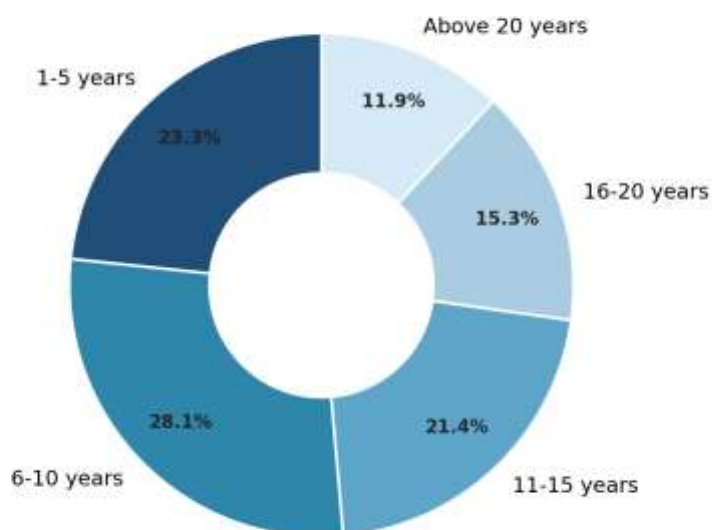


Figure 2: Distribution of Teachers by Years of Teaching Experience

Table 2 and Figure 2 show that respondents were fairly widely distributed across the experience categories, with the modal category being teachers with 6 to 10 years of experience (28.1 percent), followed closely by those with 1 to 5 years of experience (23.3 percent). Only 11.9 percent of respondents had taught for more than 20 years. The relatively large proportion of teachers with fewer than ten years of experience, amounting to more than half of the sample (51.4 percent), points to a comparatively youthful teaching workforce in the sampled schools, which, when considered alongside the qualification data, suggests that many classrooms are staffed by teachers who are still in the earlier, formative stages of their professional careers.

CPD Training (last 2 years)	Frequency	Percentage (%)
Attended	177	49.2
Did not attend	183	50.8
Total	360	100.0

Table 3: Distribution of Respondents by Attendance of Continuous Professional Development Training

Gender	Frequency	Percentage (%)
Male	162	45.0
Female	198	55.0
Total	360	100.0

Table 4: Distribution of Respondents by Gender

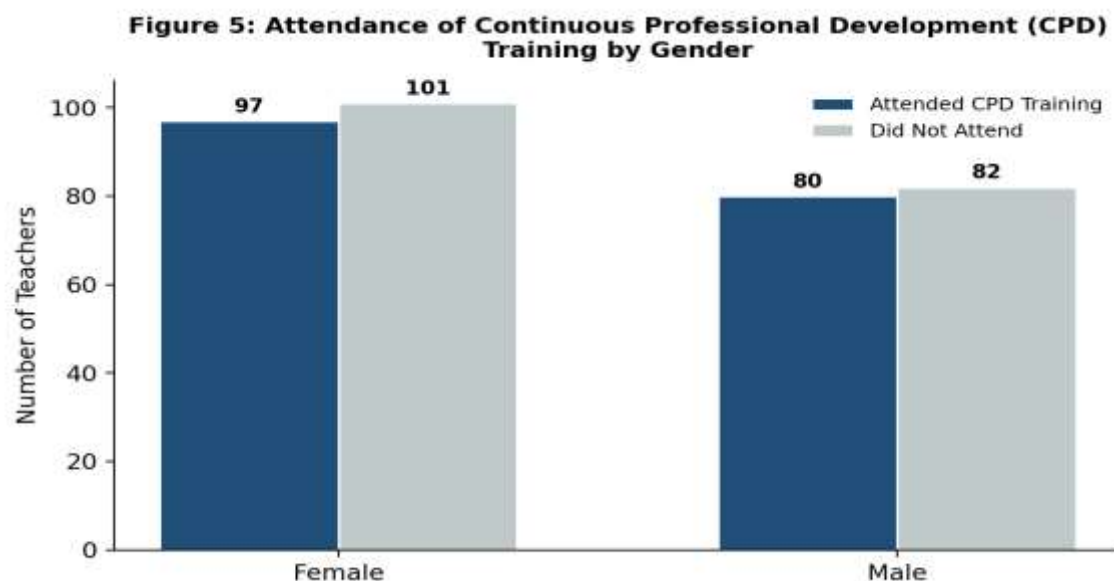


Figure 5: Attendance of Continuous Professional Development (CPD) Training by Gender

Table 3 reveals a nearly even split in respondents' access to continuous professional development, with 183 respondents, representing 50.8 percent, indicating that they had not attended any form of in-service training in the two years preceding the study. This finding is of particular concern, given the established role of continuous professional development in helping teachers update their content knowledge and pedagogical skills in line with curriculum reviews and evolving assessment standards. Table 4 shows that female teachers constituted a slight majority of the sample (55.0 percent) relative to their male counterparts (45.0 percent), a pattern broadly consistent with the gender composition of the teaching workforce reported in several other Nigerian studies at the secondary school level (Nwagwu, 2015; Okoro & Chukwu, 2019). Figure 5 further shows that CPD training attendance did not differ dramatically by gender, suggesting that access to (or the lack of) professional development opportunities cuts across gender lines in the sampled schools.

4.2 Teacher Quality and Student Academic Performance across Sampled Schools

Research Question Two sought to determine the relationship between teacher quality and student academic performance. To address this, a composite Teacher Quality Index (TQI) was computed for each respondent, incorporating qualification, experience and training, and mean school-level TQI scores were correlated against each school's WASSCE credit-pass rate. Table 5 presents the school-level data, and Figure 4 presents the corresponding scatter plot with a fitted regression line.

School	Mean TQI (School)	WASSCE Credit Pass Rate (%)
School 1	54.2	30.0
School 2	57.2	31.5
School 3	59.2	18.0
School 4	62.0	40.8
School 5	62.9	47.0
School 6	64.5	58.9

School	Mean TQI (School)	WASSCE Credit Pass Rate (%)
School 7	66.1	41.8
School 8	66.4	36.4
School 9	66.6	31.4
School 10	68.8	34.0
School 11	68.9	59.7
School 12	70.1	43.0
School 13	72.0	42.0
School 14	73.8	57.6
School 15	74.0	58.4
School 16	75.8	68.0
School 17	76.5	56.9
School 18	78.4	47.4
School 19	80.8	49.4
School 20	85.5	53.0

Table 5: Mean Teacher Quality Index and WASSCE Credit Pass Rate by School (n = 20 schools)

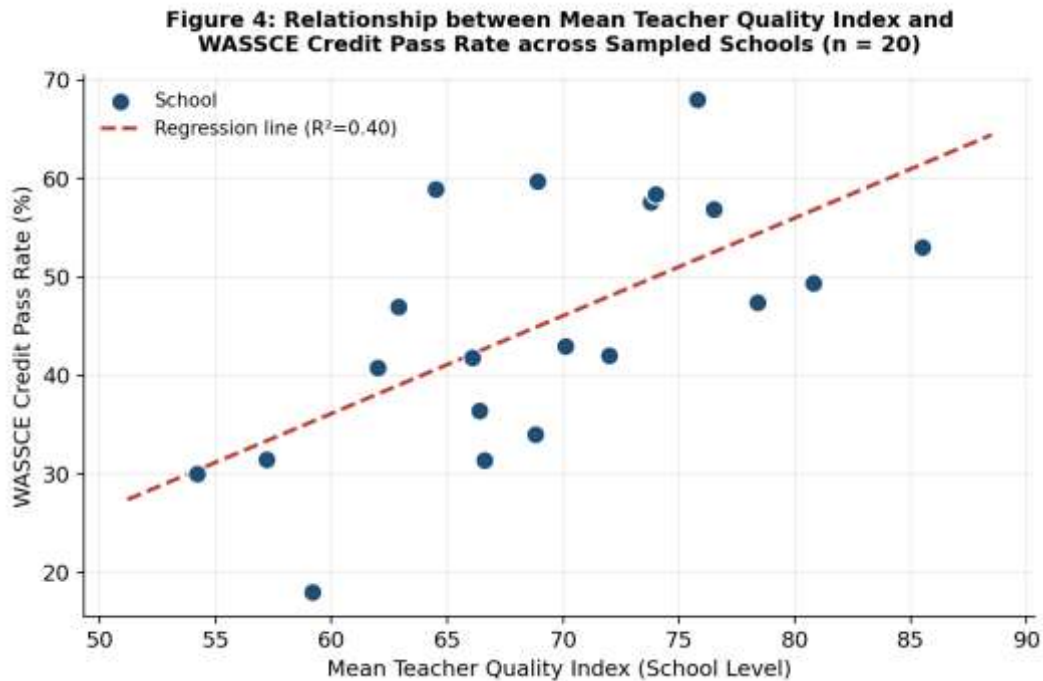


Figure 4: Relationship between Mean Teacher Quality Index and WASSCE Credit Pass Rate across Sampled Schools

As Table 5 and Figure 4 indicate, schools with higher mean Teacher Quality Index scores generally recorded higher WASSCE credit-pass rates, although the relationship, while clearly positive, was not perfectly uniform; a small number of schools with moderately high TQI scores recorded comparatively lower performance, and vice versa, reflecting the influence of other, unmeasured school-level factors, such as class size, availability of instructional materials, and student socio-economic background, that were beyond the scope of this study. Nonetheless, the overall pattern lends visible support to the proposition that teacher quality is associated with student performance at the school level, a relationship that is tested formally under Hypothesis One in section 4.4.

4.3 Variation in Performance across Teacher Qualification Categories

Research Question Three sought to determine the extent to which student academic performance varies across different categories of teacher qualification. Table 6 and Figure 3 present the mean performance scores associated with each qualification category.

Qualification Category	N	Mean Performance Score	Std. Deviation
NCE	64	55.28	6.34
B.Ed/B.A(Ed)/B.Sc(Ed)	155	60.68	6.55
PGDE	37	62.03	6.35
M.Ed/M.A/M.Sc(Ed)	83	64.44	6.75
Ph.D	21	68.65	5.95

Table 6: Mean Student Performance Score by Teacher Qualification Category

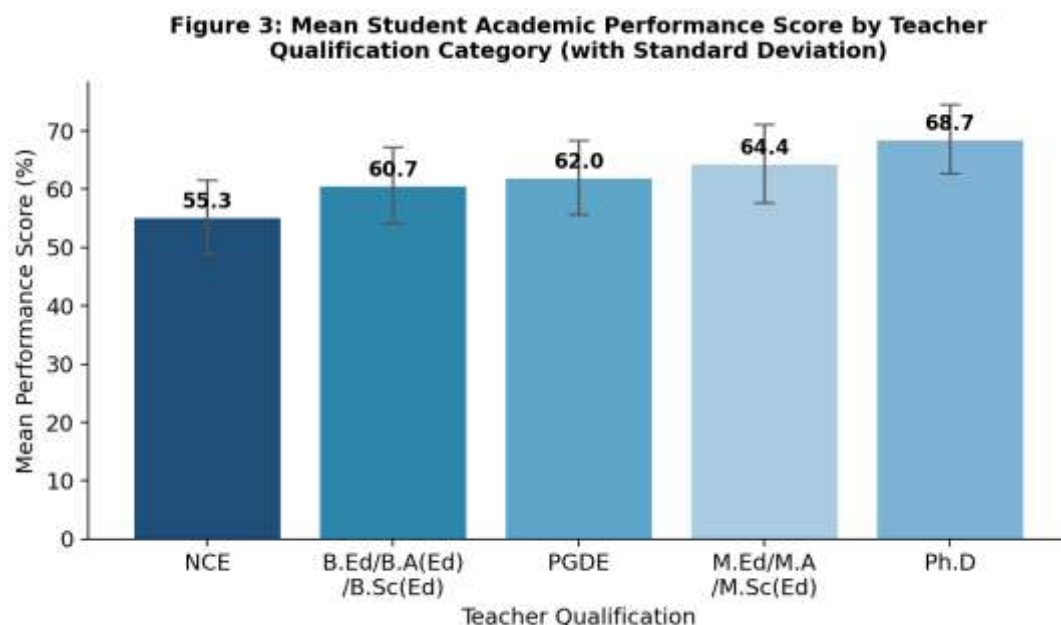


Figure 3: Mean Student Academic Performance Score by Teacher Qualification Category

Table 6 and Figure 3 show a clear, generally upward trend in mean performance scores as teacher qualification level rises, from a mean of 55.28 among teachers holding the NCE to a mean of 68.65 among teachers holding a doctoral degree. The increase is not perfectly linear across every step (for instance, the difference between the B.Ed and PGDE categories is comparatively modest), but the overall gradient is unmistakable, and the standard deviations,

which range narrowly between 5.95 and 6.75 across categories, suggest a reasonably consistent pattern within each group rather than one driven by a handful of extreme values.

4.4 Test of Hypotheses

Hypothesis One

Ho1: There is no statistically significant relationship between teacher quality and student academic performance in public secondary schools.

A Pearson Product Moment Correlation analysis was conducted between mean school-level Teacher Quality Index and WASSCE credit-pass rate across the 20 sampled schools. The analysis yielded a correlation coefficient of $r = 0.63$ ($p = 0.003$), indicating a moderate-to-strong positive relationship between the two variables. A supplementary simple linear regression analysis produced the model $\text{WASSCE Credit-Pass Rate} = -23.44 + 0.99(\text{TQI})$, with an R^2 value of 0.40, indicating that approximately 40 percent of the variation in school-level WASSCE credit-pass rate can be statistically accounted for by variation in mean teacher quality, a proportion that is considerable when it is recalled that student performance is, in reality, shaped by numerous additional factors outside the teacher variable. Since the p-value (0.003) is less than the 0.05 level of significance adopted for the study, the null hypothesis is rejected. The study therefore concludes that a statistically significant positive relationship exists between teacher quality and student academic performance in the sampled public secondary schools.

Hypothesis Two

Ho2: There is no statistically significant difference in student academic performance across teachers' qualification categories.

A one-way Analysis of Variance (ANOVA) was conducted to compare the linked performance scores across the five qualification categories: NCE, B. Ed/B.A(Ed)/B.Sc(Ed), PGDE, M.Ed/M.A/M.Sc(Ed) and Ph.D. The analysis produced an F-value of 18.39 with an associated p-value of less than 0.001. Since this p-value is less than 0.05, the null hypothesis is rejected. The study concludes that student academic performance differs significantly across teachers' qualification categories, with performance scores rising, on average, as qualification level increases, as already illustrated in Table 6 and Figure 3 above.

Hypothesis Three

Ho3: There is no statistically significant association between teacher quality and the level (high or low) of student academic performance recorded across schools.

To test this hypothesis, sampled schools were dichotomised into "high" and "low" categories on both the Teacher Quality Index and the WASSCE credit-pass rate, using the median value of each variable as the cut-off point, and the resulting 2 x 2 contingency table was subjected to a Chi-square test of independence. The analysis yielded a Chi-square value of 5.00 with 1 degree of freedom and an associated p-value of 0.025. Since this p-value is less than 0.05, the null hypothesis is rejected. The study concludes that a statistically significant association exists between teacher quality and the level of student academic performance recorded across schools, such that schools with above-median teacher quality were considerably more likely to also record above-median performance, and vice versa.

4.5 Discussion of Findings

The findings of this study lend clear empirical support to the widely held view that teacher quality is a significant determinant of student academic performance in Nigerian public secondary schools. The demographic findings, showing that a sizeable minority of teachers hold only the minimum statutory qualification and that roughly half have not accessed

continuous professional development within a two-year period, are broadly consistent with concerns raised in earlier Nigerian-based studies regarding the adequacy of teacher preparation and ongoing support at the secondary school level (Nwagwu, 2015; Okoro & Chukwu, 2019). These patterns matter because, as the results for Hypotheses One and Two demonstrate, they are not merely descriptive curiosities but variables that are measurably linked to the academic outcomes recorded by students. The moderate-to-strong positive correlation obtained between the composite Teacher Quality Index and school-level WASSCE credit-pass rate ($r = 0.63$) is consistent with the general thrust of earlier empirical work, both within Nigeria and in comparative international research, which has repeatedly identified teacher-related variables as among the more potent within-school predictors of student achievement (Rivkin, Hanushek, & Kain, 2005; Akinsolu, 2010). The regression result, indicating that teacher quality alone accounts for roughly two-fifths of the variance in school-level performance, further underscores the practical significance of the relationship, even as it leaves room, quite appropriately, for the influence of other factors such as school infrastructure, class size, and student background characteristics that this study did not directly measure.

The significant difference in performance scores across qualification categories, confirmed under Hypothesis Two, aligns closely with the theoretical expectation, drawn from Human Capital Theory (Schultz, 1961; Becker, 1964), that greater investment in a teacher's formal training translates into a more productive classroom input. The clear, though not perfectly linear, gradient observed from NCE through to Ph.D.-holding teachers suggests that each additional stage of professional preparation confers some incremental advantage in terms of instructional effectiveness, even if the magnitude of the advantage varies somewhat between adjacent categories. Similarly, the significant association obtained under Hypothesis Three, linking overall school-level teacher quality to overall school-level performance category, reinforces the picture emerging from the correlation and regression analyses: schools that are, on the whole, better staffed in terms of teacher quality tend also to be schools where students perform comparatively better in national examinations.

Taken together, these findings suggest that policy attention directed at improving the qualification profile of serving teachers, expanding access to continuous professional development, and ensuring that experienced teachers are retained within the public-school system rather than lost to attrition, could plausibly yield measurable improvements in student academic performance over time. At the same time, the findings should be interpreted with appropriate caution: the study is correlational rather than experimental in design, the school-level sample, though adequate for the statistical tests employed, remains relatively modest in size, and several potentially relevant variables, including school funding, availability of instructional materials, and student socio-economic status, were not directly incorporated into the analysis. These limitations are discussed further in section 5.5.

5.0 Summary, Conclusion and Recommendations

5.1 Summary of Findings

This study set out to examine the impact of teacher quality on student academic performance in Nigerian public secondary schools, using a sample of 360 teachers and twenty schools in the Federal Capital Territory (FCT), Abuja. The key findings may be summarised as follows: a considerable proportion of teachers (17.8 percent) held only the minimum NCE qualification, while more than half (51.4 percent) had fewer than ten years of teaching experience, and slightly over half (50.8 percent) had not attended any continuous professional development training in the two years preceding the study. A statistically significant, moderate-to-strong positive relationship was found between teacher quality and student academic performance ($r = 0.63$, $p < 0.05$), with teacher quality accounting for approximately 40 percent of the variance in school-level WASSCE credit-pass rates. Student performance was also found to differ

significantly across teacher qualification categories ($F = 18.39$, $p < 0.05$), and a significant association was found between overall school-level teacher quality and overall school-level performance category ($\chi^2 = 5.00$, $p < 0.05$).

5.2 Conclusion

Based on the findings of this study, it is concluded that teacher quality, expressed through the combined influence of academic and professional qualification, years of teaching experience, and exposure to continuous professional development, exerts a significant and measurable positive impact on student academic performance in Nigerian public secondary schools. While the study does not suggest that teacher quality is the sole determinant of student outcomes, given that a considerable share of the variance in performance remains unexplained by teacher quality alone, the strength and consistency of the relationships established across all three hypotheses tested indicate that teacher quality remains one of the more actionable and policy-relevant levers available for improving academic outcomes within the public secondary school system.

5.3 Recommendations

On the basis of the findings and conclusion reached, the following recommendations are made:

1. State and federal education authorities should progressively phase out the practice of engaging teachers who hold qualifications below the NCE minimum, and should provide structured pathways, including scholarships and study leave arrangements, for currently serving NCE holders to upgrade to degree-level qualifications.
2. Post-primary school's management boards should institutionalise regular, subject-specific continuous professional development programmes, ensuring that all serving teachers, and not merely a self-selected subset, have the opportunity to participate at least once within any given academic session.
3. Government should review conditions of service for teachers, including salary structures, promotion timelines and rural posting incentives, with a view to attracting and retaining experienced, well-qualified teachers in public secondary schools, particularly in rural and educationally disadvantaged areas.
4. School administrators should institute mentoring arrangements that pair less experienced teachers with more experienced colleagues, so as to accelerate the transfer of practical classroom skills that ordinarily accrue only gradually through years of experience.
5. Teacher-training institutions should periodically review their curricula and practicum arrangements to ensure that graduates entering the profession are adequately prepared for the realities of the public secondary school classroom.

5.4 Suggestions for Further Studies

Given the scope and limitations of the present study, it is suggested that further research be conducted to replicate this study across a larger number of states and a larger sample of schools, so as to strengthen the generalisability of the findings to the Nigerian public secondary school system as a whole. Future studies may also wish to incorporate additional school-level variables, such as funding per student, availability of instructional materials, and student socio-economic background, into the analytical model, and may consider longitudinal designs capable of tracking changes in teacher quality and student performance over multiple examination cycles, which would allow for stronger causal inferences than the cross-sectional, correlational design adopted here.

5.5 Limitations of the Study

As with most survey-based research, this study is subject to a number of limitations that should be borne in mind when interpreting its findings. First, the sample, though adequate for the statistical procedures employed, was drawn from a single federal entity, the FCT, whose unique administrative structure and comparatively higher level of infrastructural investment as the seat of government may not fully capture the diversity of conditions found across Nigeria's thirty-six states. Second, the Teacher Quality Index used in this study, while grounded in commonly cited indicators from the literature, is a composite constructed by the researcher and has not been subjected to extensive external validation beyond the pilot reliability test conducted; other researchers may reasonably weight its component indicators differently. Third, the school-level performance measure used, the WASSCE credit-pass rate, reflects the outcome of an entire school's teaching staff and student body rather than the effect of any single teacher, meaning that individual-level causal claims about specific teachers cannot be drawn directly from this study's school-level analysis. Finally, as a correlational rather than experimental study, the findings establish association rather than definitive causation, and readers are encouraged to interpret the reported relationships accordingly.

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