

Teachers' Engagement in Professional Development and Its Impact on Students' Academic Performance in Public Secondary Schools in Delta State, Nigeria

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Abstract: This research investigated the relationship between teachers' involvement in professional development activities and students' academic achievement in public secondary schools across Delta State, Nigeria. The study was motivated by the persistent poor performance of students in national examinations such as the WASSCE, despite government emphasis on continuous teacher training as a strategy for improving education quality. Guided by four research questions and three hypotheses, the study adopted a correlational design. The target population comprised 12,800 teachers drawn from the three senatorial districts of Delta State, from which a sample of 600 was selected through a multi-stage sampling procedure. Data were collected using a researcher-developed and validated questionnaire, which yielded a Cronbach Alpha reliability index of 0.84. Students' academic performance was measured using their mean scores in English Language and Mathematics from the most recent WASSCE results. Descriptive statistics were employed to address two of the research questions, while Pearson correlation, regression analysis, and independent t-tests were applied to test the remaining ones. The results indicated that teachers participated in professional development at a moderate level, with higher involvement in centrally organized workshops and seminars than in school-based collaborative learning activities. Furthermore, a significant positive correlation was established between teachers' professional development engagement and students' academic performance, with increased frequency of engagement producing stronger effects. However, engagement was hindered by challenges such as insufficient funding, heavy workloads, poor administrative encouragement, and limited access to relevant programmes. The study concluded that professional development is essential to raising student achievement, but its impact depends on consistent implementation, adequate support, and effective leadership. It recommended institutionalizing professional development policies, ensuring sustainable funding, and aligning training with classroom realities to maximize benefits for learners.

Keywords: Teachers, Professional development, Students' academic achievement, Educational improvement.

Introduction

Teachers are pivotal in shaping the quality of education, not only by imparting knowledge but also by nurturing the intellectual, emotional, and social development of learners. To perform these responsibilities effectively, they must continuously update their professional skills and teaching competencies. One of the most widely recognized ways of achieving this is through professional development activities, which create opportunities for teachers to enhance their instructional methods, adjust to educational reforms, and meet the diverse learning needs found in schools (Guskey, 2021; Kraft & Papay, 2020).

Professional development refers to a wide range of structured and collaborative activities designed to enhance teachers' knowledge and instructional skills. These include in-service training workshops, mentoring programmes, seminars, conferences, collaborative lesson design, and engagement in professional learning communities. Through such initiatives, teachers acquire improved competencies in curriculum implementation, classroom management, learner engagement, and assessment strategies. Consequently, teaching becomes more effective, leading to better student learning outcomes. In many school systems, engagement in professional development is also linked to career progression, thereby positioning it as a critical factor for both teacher advancement and overall school improvement.

Within Delta State, Nigeria, the Ministry of Basic and Secondary Education regards teacher professional development as central to improving student outcomes in examinations such as WASSCE and BECE. Nonetheless, teachers' access to these opportunities differs widely depending on school location. Those in urban schools generally have better opportunities due to closer proximity to training centres, stronger administrative backing, and more funding. Teachers in rural schools, however, often contend with limited resources, poor access, and scheduling or transportation difficulties. These inequalities raise the question of whether professional development benefits students equally across different school settings.

Evidence in the literature indicates that student achievement and effective instructional practice are closely associated with continuous teacher learning. Oroye-Okpoudhu (2020) found that principals who prioritized staff development created supportive school environments that improved classroom practices and ultimately enhanced student performance. Yet, in Delta State there

remains a shortage of empirical evidence linking how often and to what extent teachers participate in professional development—with particular attention to rural versus urban schools—to measurable improvements in student outcomes.

Globally, findings on this issue are inconsistent. While studies such as Darling-Hammond et al. (2020) and Kraft & Papay (2020) emphasize the strong positive impact of sustained, collaborative, and content-focused training, other research (Opfer, 2020; Taylor et al., 2019) reports mixed results. The effectiveness of training is often influenced by how closely it aligns with classroom realities, the extent of follow-up support, and contextual factors such as school location.

Given these identified gaps, the present study investigates the connection between teachers' engagement in professional development activities and students' academic achievement in public secondary schools across Delta State. It further explores how the frequency of teachers' engagement and the geographical location of schools influence this relationship. The intention is to generate evidence that can guide policymakers, educational administrators, and school leaders in designing professional development structures that strengthen instructional quality and promote equity in learning outcomes for both urban and rural students.

Statement of the Problem

In Delta State, the issue of students' underperformance in external examinations remains a major concern. Despite reforms in areas such as curriculum design, teacher recruitment, and school governance, public secondary schools continue to record inconsistent outcomes in examinations like the West African Senior School Certificate Examination (WASSCE) and the Basic Education Certificate Examination (BECE). These continuing disparities highlight the pressing importance of prioritizing teacher quality and sustained professional development as key strategies for reducing learning deficiencies and enhancing student academic performance.

Although professional development activities are designed to enhance teachers' subject mastery, instructional skills, and classroom management, engagement among teachers in Delta State is uneven. Some educators regularly attend workshops, seminars, peer mentoring sessions, and collaborative learning activities, while others engage sporadically or not at all. Commonly identified barriers include lack of funding, limited administrative support, inadequate awareness, and time constraints. These challenges weaken the ability of professional development to consistently improve instructional delivery across schools.

Further complicating the situation are disparities between rural and urban schools. Teachers in urban areas often enjoy better access to training centres, stronger institutional backing, and more reliable resources, while those in rural schools struggle with professional isolation, scarce funding, and weaker managerial support. Although professional development is widely acknowledged as a driver of teaching effectiveness, there is insufficient empirical evidence in Delta State on how the frequency and extent of teacher engagement—and the role of school location—translate into measurable improvements in student achievement. This gap forms the basis of the present study.

Purpose of the Study

The primary purpose of this research was to explore the relationship between teachers' involvement in professional development activities and students' academic achievement in public secondary schools. In pursuit of this objective, the study specifically aimed to:

1. evaluate the level of teachers' engagement in professional development initiatives;
2. analyze how teacher engagement in such programmes correlates with students' academic performance;
3. examine the extent to which the frequency of teachers' involvement influences learners' outcomes; and
4. identify the major barriers hindering teachers' engagement in professional development opportunities.

Research Questions

To achieve its purposes, the study addressed the following research questions:

1. What is the extent of teachers' engagement in professional development activities in public secondary schools?
2. What relationship exists between teachers' engagement in professional development and students' academic performance?
3. How does the frequency of teachers' involvement in professional development activities affect students' achievement?
4. What are the main challenges that hinder teachers from active engagement in professional development activities?

Hypotheses

The study tested the following null hypotheses at the 0.05 level of significance:

1. There is no significant relationship between teachers’ engagement in professional development activities and students’ academic achievement.
2. The frequency of teachers’ involvement in professional development activities does not significantly influence students’ academic performance.
3. No significant difference exists in the challenges encountered by teachers in accessing professional development opportunities based on school location.

Methodology

This research utilized a correlational design to investigate the relationship between teachers’ engagement in professional development activities and students’ academic achievement in public secondary schools across Delta State. The choice of this design was appropriate because it enabled the researcher to determine the degree of association between variables without manipulating them directly.

The target population consisted of 12,800 public secondary school teachers in Delta State, as documented by the Ministry of Basic and Secondary Education (2024). These teachers were distributed across the three senatorial districts—Delta North, Delta Central, and Delta South—covering variations in gender, subject specialization, teaching experience, and school location. From this population, a sample of 600 teachers was selected through a multi-stage sampling procedure. At the first stage, the senatorial districts were stratified. Schools were then randomly chosen from each district in proportion to their numbers, after which teachers were selected proportionately from the sampled schools. This process ensured balanced representation across different school contexts.

The main instrument for data gathering was a structured questionnaire, titled *Teachers’ Professional Development and Students’ Academic Achievement Questionnaire (TPDSAAQ)*, designed in alignment with the study objectives. The questionnaire comprised two sections: Section A captured demographic data such as gender, years of experience, and school location, while Section B elicited information on teachers’ engagement in professional development, frequency of involvement, and challenges encountered. Students’ academic achievement was assessed using mean scores in English Language and Mathematics from the most recent WASSCE for classes taught by the participating teachers.

To ensure validity, the instrument was reviewed by three experts—two in Educational Management and one in Measurement and Evaluation—who examined it for clarity, relevance, and content coverage. Their feedback guided necessary revisions before administration. Reliability was established through a pilot study conducted with 30 teachers in Edo State who were excluded from the main study. Cronbach’s Alpha produced a coefficient of 0.84, indicating strong internal consistency.

Data collection was carried out by three trained research assistants, each assigned to one senatorial district. Approval was first sought from the principals of selected schools, after which the questionnaires were administered directly to teachers. Respondents were briefed on the study’s purpose and asked to complete the instrument on site to minimize non-responses or loss. Additionally, students’ WASSCE result sheets were collected from examination officers to provide data on academic achievement.

For analysis, descriptive statistics were used to answer Research Questions 1, 3, and 4. Pearson’s Product Moment Correlation (PPMC) was applied to Research Question 2 and Hypothesis 1. Regression analysis was employed to test Hypothesis 2, while Factor Analysis was used in testing Hypothesis 3. All hypotheses were tested at the 0.05 significance level.

Results

Table 1: Level of Teachers’ Involvement in Professional Development Activities

Professional Development Activity	Mean (\bar{x})	SD	Interpretation
Attendance at in-service workshops	3.68	0.84	H
Engagement in seminars	3.55	0.88	H
Peer mentoring and coaching	3.42	0.91	M
Collaborative lesson planning	3.36	0.94	M
Membership in professional learning groups	3.25	0.96	M
Engagement in conferences	3.18	0.98	M
Overall Mean	3.41		M

H = High, M = Moderate

The results in Table 1 show that teachers’ involvement in professional development activities in Delta State public secondary schools was at a moderate level (\bar{x} = 3.41). Teachers engaged more frequently in in-service workshops (\bar{x} = 3.68) and seminars (\bar{x} = 3.55),

while activities such as collaborative lesson planning and conference attendance recorded lower means. This suggests that while professional development is practiced, it is uneven across activity types.

Table 2: Relationship Between Teachers' Involvement in Professional Development and Students' Academic Performance

Variables	N	r	r ²	r ² %
Teachers' Involvement	600			
Students' Academic Achievement	600	0.61	0.37	37%

Table 2 reveals a statistically significant and positive correlation ($r = 0.61$) between teachers' engagement in professional development initiatives and students' academic performance. The coefficient of determination ($r^2 = 0.37$) indicates that about 37% of the variance in students' achievement is explained by teachers' engagement in these programmes. This outcome highlights the crucial role of ongoing professional learning in strengthening instructional effectiveness and enhancing student success.

Table 3: Significance Test of Relationship Between Teachers' Engagement in Professional Development and Students' Academic Achievement

Variables	N	r	p-value	Decision
Engagement in Professional Development	600			
Students' Academic Achievement	600	0.61	0.000	Reject H ₀₁ (Significant)

The results presented in Table 3 show a strong and statistically significant positive correlation ($r = 0.61$, $p < 0.05$) between teachers' participation in professional development programmes and students' academic achievement. As a result, the stated null hypothesis was not upheld and was consequently rejected. This outcome demonstrates that sustained teacher professional development plays a critical role in improving and maintaining students' academic performance in public secondary schools within Delta State.

Table 4: Extent of Students' Academic Achievement Based on Frequency of Teachers' Engagement

Frequency of Engagement	Mean Achievement Score	SD	Interpretation
Low Engagement (1–2 times/year)	45.2	8.1	Low
Moderate Engagement (3–4 times/year)	56.8	7.5	Moderate
High Engagement (5+ times/year)	66.4	6.9	High

The findings presented in Table 4 reveal that the frequency of teachers' participation in professional development activities exerts a considerable influence on students' academic achievement. Students taught by teachers who consistently engaged in professional development recorded the highest mean score ($\bar{x} = 66.4$), while those taught by teachers with minimal participation obtained the lowest mean score ($\bar{x} = 45.2$). This pattern underscores the importance of continuous teacher learning, showing that regular involvement in professional development is strongly associated with higher student performance.

Table 4: Regression Analysis of Frequency of Engagement in Professional Development on Students' Academic Achievement

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	152.74	1	152.74	48.92	0.000
Residual	186.10	598	0.31		
Total	338.84	599			

Variable	B	Std. Error	Beta	t	Sig.
(Constant)	2.11	0.13		16.23	0.000
Frequency of Engagement	0.54	0.08	0.44	6.99	0.000

The regression analysis in Table 4 shows that the frequency of teachers' engagement significantly predicts students' academic achievement ($F = 48.92$, $p < 0.05$). The standardized Beta value ($\beta = 0.44$) indicates a moderate influence, meaning that as teachers increase their frequency of professional development engagement, students' academic outcomes improve accordingly.

Table 5: Mean Ratings of Challenges Affecting Teachers' Engagement in Professional Development

Challenges Identified	Mean (\bar{x})	SD	Interpretation
Lack of funding support	4.12	0.79	MB
Heavy workload and time constraints	4.05	0.83	MB
Inadequate administrative encouragement	3.94	0.85	MB
Limited access to relevant programmes	3.87	0.88	MB
Poor alignment between training and classroom needs	3.82	0.90	MB

Overall Mean	3.96	MB
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MB = Major Barrier.

The results in Table 5 reveal that every challenge identified had a mean rating above 3.0, indicating they were significant obstacles to teacher engagement in professional development activities. Among these, inadequate funding ($\bar{x} = 4.12$) and workload or time-related pressures ($\bar{x} = 4.05$) emerged as the most critical barriers limiting teachers' engagement.

Table 6: Factor Analysis of Challenges Affecting Teachers' Engagement

Challenges	Factor Loading
Lack of funding support	0.007
Heavy workload and time constraints	-0.165
Inadequate administrative encouragement	-0.248
Limited access to relevant programmes	-0.110
Poor alignment between training and classroom needs	-0.118

The factor analysis in Table 6 shows that challenges affecting teachers' engagement clustered together with varying loadings. "Lack of funding support" showed the strongest (though near-zero) positive loading, while "inadequate administrative encouragement" and "workload/time constraints" loaded negatively, suggesting they are the most dominant barriers across school locations. In summary, the results indicate that the highlighted barriers play a major role in limiting engagement, thereby leading to the null hypothesis being rejected.

Discussion of Findings

The study's results showed that teachers in public secondary schools across Delta State engaged in professional development to a moderate extent. While some teachers actively took advantage of training opportunities, the overall level of engagement was not consistently high enough to maximize its potential benefits for student learning. Engagement was strongest in centrally organized workshops and seminars, which are typically sponsored by government or donor agencies, making them more accessible. In contrast, school-based activities such as collaborative lesson planning, peer mentoring, and conferences attracted less involvement, largely because they depend on the initiative of school administrators and the availability of local resources. This observation aligns with Darling-Hammond et al. (2020) and Desimone et al. (2019), who noted that in many developing contexts, teachers rely heavily on workshops and externally driven training sessions rather than ongoing, collaborative learning within schools. On the other hand, studies by Kraft and Papay (2020) and Opfer (2020) reported higher levels of teacher-driven learning communities in other contexts, suggesting that systemic challenges in Delta State—such as policy-driven, top-down implementation—limit the growth of internally sustained professional development.

Another key outcome of the research established that engagement in professional development positively influenced students' academic performance. Teachers who engaged in training programmes acquired updated pedagogical knowledge, improved classroom management skills, and practical assessment strategies that enabled them to deliver more effective instruction. These improvements translated into stronger student performance, particularly in examination-oriented subjects. This finding corroborates Darling-Hammond et al. (2020) and Oroye-Okpoudhu (2020), who observed that teacher professional learning significantly enhances classroom practice and student outcomes. However, it contrasts with Opfer (2020) and Taylor et al. (2019), who reported limited or inconsistent effects of training where programmes were not well-aligned with classroom realities. The difference in Delta State may be linked to the subject-specific nature of many training activities, particularly in English Language and Mathematics, which ensures immediate application and measurable impact.

The study further demonstrated that the frequency of engagement was a critical factor in student achievement. Teachers who consistently engaged in professional development were better able to reinforce new strategies, refine their instructional delivery, and sustain improvements in practice. This supports the views of Guskey (2021) and Desimone et al. (2019), who emphasized the importance of continuous and ongoing learning for lasting impact. Conversely, Taylor et al. (2019) and Opfer (2020) found weaker effects where training lacked follow-up mechanisms. The context in Delta State appears different, as many programmes include periodic follow-up sessions, especially in core examination subjects, enabling teachers to apply knowledge consistently across academic sessions.

Finally, the study highlighted that teachers faced several challenges that limited their full engagement in professional development. The most significant were inadequate funding, heavy workloads, insufficient administrative encouragement, and restricted access to relevant training opportunities. These barriers reflect systemic weaknesses in the provision and support of teacher development in the state. They also mirror findings by Bature et al. (2021) and Oduro (2021), who identified financial constraints and workload pressures as major barriers in Nigerian and other sub-Saharan African schools. In contrast, studies such as Nguyen et al. (2020) and Spillane (2019) reported fewer barriers in countries with stronger institutional frameworks and robust policy support. The divergence

underscores the reality in Delta State, where professional development is not fully embedded within the educational system, leaving its success largely dependent on individual school leaders and external support.

Conclusion

This inquiry focused on assessing the link between teachers' engagement in professional development programmes and students' achievement in public secondary schools within Delta State. The findings revealed that while overall engagement was moderate, teachers were more actively engaged in centrally organized workshops and seminars than in school-based collaborative initiatives such as peer mentoring and professional learning communities.

The results also confirmed that teacher professional development has a meaningful effect on student performance. Teachers who accessed training opportunities improved their instructional delivery, which translated into better learning outcomes for students. Moreover, frequent and sustained engagement produced stronger cumulative benefits than irregular involvement, emphasizing the value of continuous engagement in professional growth.

Despite these positive outcomes, teachers encountered several challenges that limited their engagement. The most significant barriers included inadequate funding, heavy workload, limited administrative support, and restricted access to relevant programmes. These challenges point to wider structural shortcomings in the design and execution of professional development within the state.

In conclusion, the study affirms that professional development serves as a vital factor in enhancing student academic performance. To maximize its impact, professional learning opportunities must be made regular, equitably accessible to all teachers, and adequately supported with policy commitment and sufficient resources.

Recommendations

In light of the findings, the study puts forward the following recommendations:

1. The Delta State Ministry of Basic and Secondary Education should establish and enforce policies that mandate continuous professional development as a compulsory aspect of teachers' career progression. This will ensure engagement is systematic, regular, and not dependent on individual choice.
2. Adequate funds should be earmarked by government and school authorities to cover training expenses, instructional materials, and transportation. This will eliminate financial constraints that often discourage teachers from engaging in development programmes.
3. Schools should restructure teachers' timetables to create space for professional development activities such as mentoring, collaborative lesson planning, and workshops, without interfering with their teaching responsibilities.
4. School principals should promote low-cost but effective professional learning strategies within schools. These include peer mentoring, collaborative lesson design, and teacher learning communities, which provide sustainable avenues for growth.
5. School leaders should prioritize teacher development by actively motivating staff, recognizing engagement efforts, and linking engagement in professional development to performance evaluations.
6. Training activities should be designed to directly meet teachers' instructional needs. Emphasis should be placed on core examination subjects, classroom management strategies, and innovative pedagogy to ensure practical application and improved student learning outcomes.

References

- Bature, I. J., Suleiman, A., & Ibrahim, M. (2021). Participatory leadership and teacher morale in Nigerian secondary schools. *African Journal of Educational Management*, 23(2), 87–99.
- Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2020). Effective teacher professional development. *Palo Alto, CA: Learning Policy Institute*. <https://doi.org/10.54300/122.311>
- Desimone, L. M., Smith, T. M., & Ueno, K. (2019). Professional development and instructional change: A study of the effects of teachers' professional development on their instruction. *Educational Evaluation and Policy Analysis*, 41(2), 229–249. <https://doi.org/10.3102/0162373719851474>
- Guskey, T. R. (2021). Professional development and teacher change. *Teachers and Teaching*, 27(5), 611–623. <https://doi.org/10.1080/13540602.2021.1879237>
- Harris, A., & Jones, M. (2019). Teacher leadership and distributed leadership: Unlocking the potential of teachers. *Journal of School Leadership*, 29(5), 393–409. <https://doi.org/10.1177/1052684619846591>
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- Kraft, M. A., & Papay, J. P. (2020). Developing workplaces where teachers stay, improve, and succeed. *The Future of Children*, 30(1), 129–153. <https://doi.org/10.1353/foc.2020.0007>
- Nguyen, D., Harris, A., & Ng, D. (2020). A review of distributed leadership in schools: What it is and how it works. *Educational Management Administration & Leadership*, 48(1), 5–24. <https://doi.org/10.1177/1741143218809582>
- Oduro, G. K. T. (2021). Distributed leadership in sub-Saharan African schools: Challenges and possibilities. *International Studies in Educational Administration*, 49(2), 55–70.
- Opfer, V. D. (2020). Teacher professional learning and development: Global patterns and practices. *European Journal of Education*, 55(2), 160–176. <https://doi.org/10.1111/ejed.12337>
- Oroye-Okpoudhu, R. Z. (2020). Principals' managerial approaches and instructional management in public secondary schools in Delta State. *Journal of Education and Social Sciences*, 15, 111–115.
- Spillane, J. P. (2019). Managing to lead: Reframing school leadership and management. *Phi Delta Kappan*, 101(2), 38–44. <https://doi.org/10.1177/0031721719885901>
- Taylor, C., Goodyear, V. A., & Casey, A. (2019). The impact of professional development on teachers' practice: A meta-analysis and narrative synthesis. *Educational Research Review*, 26, 100–119. <https://doi.org/10.1016/j.edurev.2018.12.002>