Manpower Development Programs and Teachers' Effectiveness in Delta State Secondary Schools

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ABSTRACT

This study investigated the influence of manpower development programs on teacher effectiveness in Delta State secondary schools. Guided by four research questions and four null hypotheses, the study adopted a descriptive survey design. The population comprised 14,269 teachers, from which 400 were selected using stratified random sampling. Data were collected through a validated questionnaire (reliability coefficient = 0.87) and analyzed using descriptive statistics, Pearson's correlation, and multiple regression. Findings revealed that all four manpower development programs—in-service training, professional development courses, academic sponsorships, and ICT-based digital training—positively influenced teacher effectiveness. In-service training and professional development emerged as the strongest predictors, while academic sponsorships contributed moderately. ICT training, though significant, showed the weakest effect due to challenges of digital literacy, infrastructural deficits, and inadequate funding. Collectively, the programs explained a substantial proportion of the variance in teacher effectiveness, thereby affirming the assumptions of Human Capital and Systems Theories. The study concludes that structured manpower development is indispensable for sustaining teacher competence in lesson delivery, classroom management, and assessment. It recommends institutionalizing continuous, well-funded training programs, expanding sponsorship opportunities, reforming ICT training through public–private partnerships, and adopting sustainable funding models. The findings provide actionable insights for policymakers and educational planners, who must embed manpower development into long-term strategic planning to ensure sustainability, equity, and alignment with curriculum reforms and the global commitment to Sustainable Development Goal 4.

Keywords: Manpower development, Teacher effectiveness, In-service training, Professional development, Academic sponsorship, ICT training, Educational planning

INTRODUCTION

Background to the Study

Secondary education is globally regarded as the bridge between basic and higher education, equipping learners with knowledge, skills, and attitudes necessary for advanced studies, vocational pursuits, and participation in the labor market (UNESCO, 2020). This stage is critical for shaping human capital that drives socio-economic growth and innovation. In Nigeria, secondary school teachers play a central role in preparing learners with competencies in literacy, numeracy, scientific reasoning, and civic engagement, all vital for national development (Federal Republic of Nigeria, 2014). The effectiveness of these teachers - measured by content mastery, pedagogical skills, and commitment—directly influences student outcomes and the quality of graduates produced (World Bank, 2019).

Teacher effectiveness is typically assessed through mastery of subject matter, clarity of delivery, classroom management, assessment practices, and the ability to foster problem-solving, creativity, and critical thinking (Akinwale & Olatunji, 2022). However, effectiveness is not static but improves through structured manpower development programs that provide teachers with modern pedagogical tools, subject-specific innovations, and digital competencies for 21st-century instruction (Darling-Hammond et al., 2017; Ezekwe & Ani, 2024).

Globally, manpower development has become a core pillar of educational reform. In-service training, workshops, professional development courses, and ICT-based initiatives are recognized as mechanisms to enhance teaching, student engagement, and learning outcomes (OECD, 2019; UNESCO, 2020). Many developed nations institutionalize these programs within education policy, linking them to improved student achievement in international assessments like PISA (OECD, 2019). In Africa, continuous professional development (CPD) is emphasized as a strategy to address teacher quality gaps and attrition (African Union, 2018). However, funding, infrastructure deficits, and poor implementation often hinder success. In Nigeria, agencies such as the TRCN and state ministries of education coordinate manpower development through in-service training and workshops, but these are criticized for irregularity, limited reach, and underfunding (Ezeugbor & Okeke, 2017; Ugwu & Akinwale, 2022).

Delta State exemplifies these tensions. The government organizes seminars, workshops, and ICT-based training for teachers, yet gaps persist. Many teachers face low motivation due to inadequate sponsorships, limited retraining opportunities, and poor exposure to innovative strategies. While some benefit from scholarships or ICT workshops, others are excluded due to scarce resources. Weak infrastructure, especially ICT facilities, further limits the practical application of training (Adeoye & Iwu, 2021; Ezekwe & Ani, 2024).

These challenges contribute to poor lesson delivery, declining examination performance, and limited use of learner-centered approaches. It remains unclear whether manpower development programs—such as academic sponsorships, in-service training, professional development, and ICT training—are effectively improving teacher effectiveness. Addressing this gap is crucial for strengthening education in Delta State and preparing learners for competitiveness in the global knowledge economy.

Statement of the Problem

Despite the existence of manpower development initiatives in Delta State, the effectiveness of secondary school teachers remains a concern. Persistent issues such as poor lesson delivery, low student performance in external examinations, and weak adoption of ICT in pedagogy suggest that manpower development programs may not be translating into meaningful professional outcomes. While some teachers benefit from in-service training and postgraduate sponsorships, many others lack opportunities for consistent retraining or digital upskilling. Furthermore, empirical evidence on the specific contributions of manpower development programs to teacher effectiveness in Delta State secondary schools is limited. Without such evidence, policymakers, educational planners and administrators face difficulties in prioritizing resources and designing interventions that truly enhance teaching effectiveness.

Purpose of the Study

The general purpose of this study is to examine the influence of manpower development programs on the effectiveness of teachers in Delta State secondary schools. Specifically, the study seeks to:

1. Determine the extent to which in-service training and retraining programs influence teacher effectiveness.
2. Examine the impact of professional development courses on teachers' classroom practices.
3. Assess the influence of academic sponsorships on teacher effectiveness.
4. Evaluate how ICT-based digital training contributes to teacher effectiveness.

Scope of the Study

The study is delimited to secondary school teachers across government-owned schools in Delta State. It focuses on four manpower development programs: research grants and sponsorships, in-service training/retraining programs, professional development courses, and ICT-based digital training. Informal development activities such as peer mentoring and personal study are excluded.

Research Questions

The following research questions guided the study:

1. What extent do in-service training programs influence teachers' effectiveness in Delta State secondary schools?
2. How do professional development courses affect teachers' effectiveness in Delta State secondary schools?
3. What is the relationship between academic sponsorships and teachers' effectiveness in Delta State secondary schools?
4. To what extent does ICT-based training predict teachers' effectiveness in Delta State secondary schools?

Research Hypotheses

The following null hypotheses guide the study

1. There is no significant influence of in-service training on teachers' effectiveness in Delta State secondary schools.
2. There is no significant effect of professional development courses on teachers' effectiveness in Delta State secondary schools.
3. There is no significant relationship between academic sponsorships and teachers' effectiveness in Delta State secondary schools.
4. There is no significant predictive effect of ICT-based training on teachers' effectiveness in Delta State secondary schools..

Significance of the Study

This study is theoretically significant as it applies Human Capital Theory (Schultz, 1961; Becker, 1964) to secondary schools, showing how teacher development enhances classroom effectiveness. Empirically, it fills a gap on manpower development in Delta State, complementing higher education-focused studies (Archibong et al., 2010; Abdullahi et al., 2018). Practically, it offers policymakers and administrators data on impactful programs, while guiding teachers toward ICT and modern pedagogies essential for 21st-century learning.

The results of this study provides evidence-based insights for integrating manpower development into school planning frameworks. By aligning training, sponsorship, and ICT initiatives with manpower needs, educational planners can ensure more sustainable and equitable improvements in teacher effectiveness. Ultimately, the findings contribute to improved student outcomes and the advancement of Nigeria's secondary education system

LITERATURE REVIEW

Conceptual Clarifications of Manpower Development and Teacher Effectiveness

Manpower development is commonly described as a deliberate, systematic effort to improve the knowledge, skills, and attitudes of employees for enhanced productivity and institutional growth. Armstrong (2014) defines it as structured training and career support aimed at building staff competencies to meet organizational needs. In educational settings, manpower development equips teachers with pedagogical tools, research capacity, and digital competencies required to respond to curriculum reforms and changing learner demands (Ilueme & Ebong, 2018). In the context of this study, manpower development includes in-service training,

professional development courses, academic sponsorships, and ICT-based initiatives designed to improve teaching performance.

Teacher effectiveness, by contrast, refers to the extent to which teachers successfully facilitate learning and holistic student development. It encompasses mastery of subject matter, lesson clarity, classroom management, assessment practices, adaptability, and the ability to foster problem-solving and creativity (Akinwale & Olatunji, 2022). The Federal Republic of Nigeria (2014) views it as continuous professional competence aligned with national education goals of producing employable, skilled graduates. Internationally, effectiveness is measured not only by classroom observation and student achievement but also by adherence to professional frameworks and standards (Ferguson & Danielson, 2015). In short, while manpower development represents the input of training and resources, teacher effectiveness reflects the observable output in the classroom and in student outcomes (Bill & Melinda Gates Foundation, 2013).

Global Perspectives on Manpower Development

Globally, manpower development has been institutionalized as a central strategy for improving education. UNESCO (2020) and OECD (2019) emphasize that continuous teacher development is essential for achieving Sustainable Development Goal 4 on inclusive and equitable quality education. In-service training, workshops, and professional courses are strongly associated with enhanced student achievement in large-scale international assessments such as PISA (OECD, 2019). Darling-Hammond, Hyler, and Gardner (2017) demonstrated in the U.S. that sustained, content-focused professional development improved instructional quality and teacher retention. Similarly, Healey, Flint, and Harrington (2014) documented in the U.K. that professional learning programs promoted student-centered teaching and active learning practices.

ICT-based development has also become a global priority. Allen and Seaman (2017) found that American faculty who received digital training adapted more effectively to online and blended teaching. The COVID-19 pandemic further revealed the importance of digital readiness: Czerniewicz et al. (2020) reported that European teachers with ICT training transitioned more successfully to remote instruction, thereby reducing learning disruptions. However, global comparisons also highlight disparities: while developed nations integrate CPD into national education policy, in many developing countries professional training remains irregular, poorly funded, and unevenly accessed (World Bank, 2019).

Manpower Development in Africa

Across Africa, manpower development is viewed as critical to improving teacher quality and reducing attrition. The African Union (2018) highlights CPD as a cornerstone of the Continental Education Strategy for Africa (CESA 16–25). In Ghana, Agyemang and Osei-Kufuor (2013) found that professional development enhanced teachers' pedagogical strategies, though funding shortages limited sustainability. In Kenya, Barasa and Omulando (2018) reported that ICT training improved teachers' adoption of e-learning platforms, while in South Africa, Mouton (2019) showed that mentorship and staff training raised teacher productivity. Yet inequities remain: Badat (2020) noted that institutional disparities in access to training deepened inequalities in South African higher education. These findings suggest that while manpower development programs are widely recognized, structural and resource constraints limit their effectiveness across much of the continent.

The Nigerian Context

In Nigeria, manpower development is promoted through agencies such as the Teachers' Registration Council of Nigeria (TRCN) and the National Teachers' Institute (NTI). Empirical studies confirm its benefits: Ezeugbor and Okeke (2017) found that workshops improved teaching delivery in Anambra State, while Akpan and Effiong (2019) reported that training programs boosted teachers' research productivity in universities. Adebayo and Akanbi (2021) stressed the link between staff development and teacher innovation, while Ezekwe and Ani (2024) showed that manpower development strongly influences effectiveness in Nigerian secondary schools.

Recent work has further emphasized the role of CPD in enhancing teacher motivation (Igbokwe Ibeto et al., 2024) and the need for manpower planning to improve recruitment, training, and placement (Edo & Johnson, 2024). However, challenges persist: Ugwu and Akinwale (2022) noted that ICT training in Delta State is undermined by infrastructural weaknesses, while Ogunode, Ukozor, and Agbo (2024) stressed that irregularity in professional development reduces long-term impact. The COVID-19 pandemic exposed these gaps starkly: Adeoye and Iwu (2021) found that many secondary school teachers were unprepared for digital instruction, while Osakwe, Okonta, and Moses-Promise (2022) observed widespread ICT competency deficits during emergency remote learning. These findings suggest that manpower development in Nigeria is beneficial but unevenly implemented.

Delta State Context

Delta State reflects these national dynamics. Although the government organizes seminars, workshops, and ICT-based training, evidence suggests that irregular access and infrastructural constraints limit impact (Adeoye & Iwu, 2021; Ezekwe & Ani, 2024). Some teachers benefit from postgraduate sponsorships, but access is uneven, with rural schools often disadvantaged (Ugwu & Akinwale, 2022). Nkedishu and Okonta (2023) also observed that the transition from conventional to digital teaching remains slow, with students noting teachers' limited sensitivity to e-learning strategies. These local realities highlight a mismatch between manpower development inputs and the actual needs of teachers, echoing Owan and Ekpe's (2020) systems theory critique that misaligned inputs lead to diminished outputs.

Synthesis and Research Gap

Taken together, the reviewed literature establishes three important trends. First, global and African studies consistently affirm that structured manpower development enhances teacher effectiveness, but contextual barriers—particularly funding and infrastructure—shape the degree of impact. Second, Nigerian research highlights the positive effects of training and sponsorships but also documents irregularity, inequitable access, and poor ICT readiness. Third, while manpower development in higher education is relatively well-studied (Archibong et al., 2010; Abdullahi et al., 2018), far less is known about its influence on secondary school teachers, particularly in subnational contexts like Delta State.

Furthermore, most studies treat manpower development as a broad construct without isolating the relative contributions of in-service training, professional courses, academic sponsorships, and ICT-based training. Few link manpower development directly to measurable aspects of teacher effectiveness such as classroom delivery, assessment, and adaptability. This gap underscores the importance of the present study, which applies Human Capital Theory and Systems Theory to examine how manpower development programs influence teacher effectiveness in Delta State secondary schools, thereby providing localized evidence with wider policy implications.

Theoretical Framework

The link between manpower development and teacher effectiveness can be explained through Human Capital Theory and Systems Theory. These frameworks clarify why investment in teacher development enhances educational outcomes.

The Human Capital Theory, advanced by Schultz (1961) and Becker (1964), posits that education and training yield economic and social returns through higher productivity, innovation, and employability. Psacharopoulos and Patrinos (2018) reaffirm that returns on education remain high, particularly in developing countries. Applied to secondary education, the theory suggests that investments in in-service training, professional courses, sponsorships, or ICT training improve teachers' skills and competencies, leading to effective classroom delivery, better student achievement, and societal benefits such as reduced unemployment and civic engagement. In Nigeria, this perspective underpins initiatives by TRCN and TETFund to strengthen professional development. Studies by Ezeugbor and Okeke (2017) and Ugwu and Akinwale (2022) confirm that trained teachers show improved lesson planning and innovative pedagogy, aligning with Becker's (1964)

view that human capital investments raise worker productivity. For Delta State, the theory highlights manpower development as essential for improved education and human resource growth.

The Systems Theory, articulated by von Bertalanffy (1968), views organizations as interdependent systems where inputs, processes, and outputs interact. In education, manpower development is an input, teaching-learning processes are activities, and outputs are teacher effectiveness and student performance. Teichler (2017) emphasizes that transforming inputs into outputs ensures educational stability. Thus, manpower development must align with teaching processes to produce effectiveness. Owan and Ekpe (2020) argued that misalignment between development inputs and objectives explains productivity gaps. Applied to secondary schools, ICT training without infrastructure creates imbalance, undermining gains.

Together, Human Capital Theory stresses investment benefits, while Systems Theory highlights systemic alignment. For Delta State, these perspectives affirm manpower development as both a strategic investment and a systemic necessity for sustaining teacher effectiveness and educational quality.

Empirical Reviews

In advanced education systems, manpower development is institutionalized as a core policy tool. OECD (2019) found that in-service training and continuous professional development (CPD) strongly predict teacher effectiveness, particularly in raising student achievement. Darling-Hammond, Hyler, and Gardner (2017) showed that sustained, content-specific professional development in the United States improved instructional quality. Similarly, Healey, Flint, and Harrington (2014) documented how professional training in the U.K. enhanced student-centered teaching and active learning. These findings reveal that structured manpower development strengthens pedagogy, motivation, and long-term career satisfaction.

ICT-based development also features prominently in global contexts. Allen and Seaman (2017) reported that U.S. faculty receiving digital training adapted more effectively to online teaching, boosting outcomes and research dissemination. During COVID-19, Czerniewicz et al. (2020) observed similar benefits in Europe, where ICT training enabled rapid transitions to remote learning. These findings underscore manpower development as essential in sustaining teacher effectiveness amid global disruptions.

Across Africa, manpower development is increasingly emphasized. The African Union (2018) highlighted CPD as central to improving teaching and reducing attrition. Barasa and Omulando (2018) found ICT training in Kenya promoted e-learning adoption, while Mouton (2019) in South Africa linked mentorship and training to higher output, though Badat (2020) noted institutional inequities. In West Africa, Agyemang and Osei-Kufuor (2013) reported that professional development in Ghana improved pedagogy and research engagement, though funding constraints limited impact. Ofori and Arko-Boham (2019) highlighted bureaucratic inefficiencies that undermined outcomes. These studies confirm the benefits of manpower development but expose challenges of access and planning.

In Nigeria, empirical studies consistently affirm manpower development. Ezeugbor and Okeke (2017) showed that workshops improved teaching delivery and student outcomes. Akpan and Effiong (2019) found training boosted research productivity. More recent studies by Ezekwe and Ani (2024) and Igbokwe Ibeto et al. (2024) revealed that professional development directly influenced teaching quality and teacher motivation, though irregularity persisted. Ogunode, Ukozor, and Agbo (2024) confirmed that continuous training predicted teaching and service effectiveness. Edo and Johnson (2024) stressed manpower planning—including recruitment, training, and placement—as vital for teacher performance.

In Delta State, evidence is limited but instructive. Ugwu and Akinwale (2022), and Nkedishu and Okonta (2023) found ICT training improved e-learning adoption, yet infrastructure gaps hindered outcomes. Adeoye and Iwu (2021); Osakwe, Okonta and Moses-Promise (2022) reported that COVID-19 exposed poor teacher preparedness. Although the Ministry of Education invests in workshops and seminars, anecdotal evidence shows limited access and poor alignment with classroom realities. Owan and Ekpe (2020) concluded that misalignment between manpower development inputs and systemic needs reduces overall effectiveness.

Conceptual Framework

The conceptual framework for this study is derived from the synthesis of literature, theories, and empirical evidence reviewed. It explains the expected relationships between manpower development programs and teachers' effectiveness in Delta State secondary schools. Manpower development is conceptualized in this study as a multidimensional construct, comprising four key programs:

1. In-service Training – Workshops, refresher courses, and seminars designed to upgrade teachers' knowledge and skills in line with curriculum reforms.
2. Professional Development Courses – Specialized pedagogical training, CPD programs, and structured capacity-building initiatives that improve teaching strategies and reflective practices.
3. Academic Sponsorships – Opportunities such as study leave, postgraduate education, or scholarship schemes aimed at deepening subject knowledge and enhancing research capacity.
4. ICT-based Digital Training – Programs that equip teachers with digital literacy, instructional technology competence, and online pedagogical skills necessary for 21st-century classrooms.

Teacher effectiveness, on the other hand, is operationalized through measurable dimensions such as:

1. Subject Mastery and Lesson Delivery (clarity, accuracy, depth of teaching),
2. Classroom Management (discipline, order, and conducive learning environment),
3. Assessment Practices (fair and constructive evaluation of students' learning),
4. Adaptability and Innovation (use of creative strategies and responsiveness to diverse learning needs), and
5. Student Learning Outcomes (achievement, engagement, and critical thinking).

Drawing on Human Capital Theory (Schultz, 1961; Becker, 1964), manpower development is regarded as an investment that enhances teachers' knowledge and skills, thereby increasing their effectiveness. Systems Theory (von Bertalanffy, 1968) complements this view by positioning manpower development as an input into the educational system, with teaching processes as the throughput and teacher effectiveness as the output.

Thus, the framework assumes that well-structured manpower development programs will positively influence teachers' effectiveness, though the magnitude of influence may vary across the different dimensions as seen below.

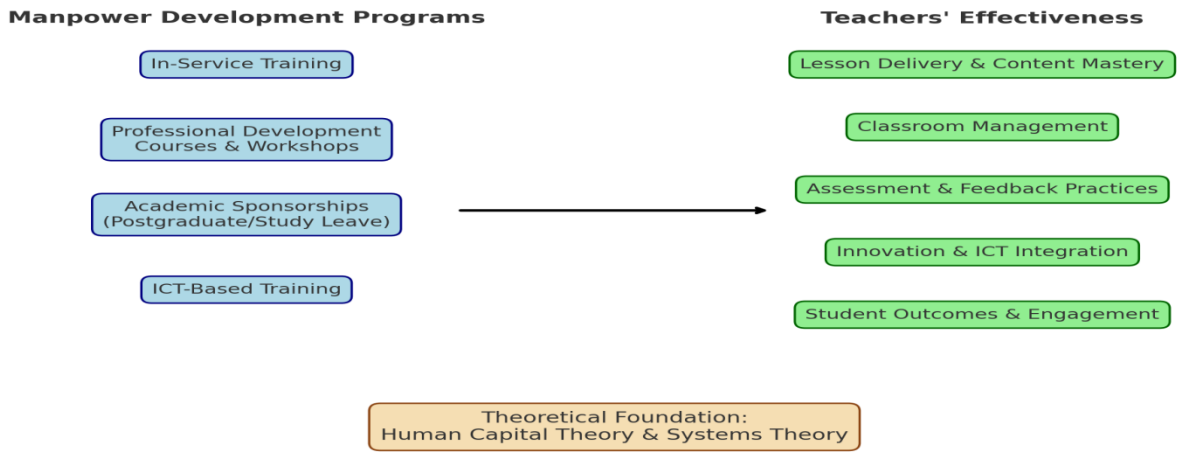

Figure 1: Conceptual Framework Showing the Influence of Manpower Development Programs on Teachers' Effectiveness

Despite a growing body of research, several gaps remain. First, most Nigerian studies focus on universities, leaving secondary schools underexplored (Ezekwe & Ani, 2024). Second, while many studies examine manpower development broadly, fewer isolate the distinct contributions of professional development, sponsorships, or ICT training to teacher effectiveness. Third, little is known about the localized impact of manpower development in Delta State, particularly how specific programs influence classroom delivery, teacher motivation, and student outcomes. These gaps justify the need for the present study, which seeks to provide empirical evidence on manpower development and teacher effectiveness in Delta State secondary schools.

METHODOLOGY

This study adopted a descriptive survey design, deemed suitable for systematically collecting quantitative data on teachers' experiences and perceptions without manipulating variables. Descriptive surveys are effective in describing prevailing conditions, analyzing relationships among variables, and generating evidence for educational decision-making (Creswell, 2017).

The study population comprised all public secondary school teachers in Delta State. According to the Delta State Ministry of Basic and Secondary Education (2025), there are 14,269 teachers distributed across 25 Local Government Areas. Public school teachers were chosen because manpower development initiatives such as workshops, in-service training, and ICT programs are largely targeted at this group. From this population, a sample of 400 teachers was drawn using stratified random sampling. Stratification was based first on senatorial districts (Delta North, Delta Central, and Delta South), and then by school location (urban and rural). Proportional allocation ensured representation across categories. The adequacy of the sample size was guided by Cohen's (1992) power analysis, which established that a minimum of 300 participants was required to detect a medium effect size at 80% power. The chosen sample of 400 raised statistical power to about 92%, thereby improving reliability and generalizability.

A structured questionnaire served as the main instrument for data collection, developed by the researcher but informed by prior studies on manpower development and teacher effectiveness (Armstrong, 2014; Archibong et al., 2010). The instrument had two sections. Section A gathered demographic data such as gender, age, qualification, teaching experience, and school location. Section B comprised 20 items grouped into five subscales: in-service training, professional development courses, academic sponsorships, ICT-based training, and teacher effectiveness. Responses were rated on a four-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (4), with higher scores reflecting stronger agreement on the effectiveness of manpower development programs. The four-point scale was deliberately used to avoid a neutral midpoint and yield clearer perceptions.

Validity of the instrument was ensured through expert review. Three specialists in educational management and teacher development assessed the items, leading to refinements for clarity and alignment with study objectives. A pilot test was conducted with 30 teachers outside the main study population. Cronbach's alpha reliability analysis yielded an overall coefficient of 0.87, with subscale reliabilities between 0.81 and 0.89. These values exceeded the 0.70 benchmark recommended by Nunnally (1978), confirming internal consistency and reliability.

Data were analyzed using IBM SPSS Statistics version 26. Descriptive statistics such as means, standard deviations, and frequencies summarized demographic data and responses. Pearson's Product-Moment Correlation examined the relationships between manpower development programs and teacher effectiveness, while multiple regression analysis assessed their joint and individual predictive effects. Diagnostic tests confirmed that assumptions of regression—linearity, normality, multicollinearity, and homoscedasticity—were met, ensuring the validity of results.

RESULTS

This section presents the findings of the study in line with the four research questions and corresponding null

hypotheses. The analyses employed descriptive statistics, correlation analysis, and multiple regression to determine the influence of manpower development programs—specifically in-service training, professional development courses, academic sponsorships, and ICT-based training—on teacher effectiveness in Delta State secondary schools.

Teachers' Perceptions of Manpower Development Programs

To answer the research questions, descriptive statistics were computed to examine teachers' perceptions of manpower development programs and their contributions to effectiveness. Responses were rated on a four-point Likert scale, with higher means reflecting stronger agreement.

Table 1: Mean Ratings and Standard Deviations of Teachers' Perceptions of Manpower Development Programs and Their Effectiveness (N = 400)

Manpower Development Programs	Mean	SD	N
In-service Training	3.21	0.61	400
Professional Development Courses	3.15	0.67	400
Academic Sponsorships	2.98	0.72	400
ICT-based Digital Training	2.85	0.75	400

Results in Table 1 above show that all four manpower development programs scored above the midpoint (2.50), indicating that teachers generally agreed these initiatives contribute to their effectiveness. This suggests that manpower development is widely acknowledged as essential in strengthening teachers' skills and improving classroom delivery. Among the programs, in-service training had the highest mean score (M = 3.21), showing that teachers find workshops, seminars, and refresher courses particularly useful for updating their knowledge and adapting to curriculum changes. Professional development courses followed closely (M = 3.15), reflecting teachers' recognition of the value of structured training in pedagogy and classroom practices. Academic sponsorships (M = 2.98) were rated slightly lower, possibly due to limited access, but still highlight the importance of opportunities for higher qualifications. ICT-based training recorded the lowest mean (M = 2.85), suggesting that while teachers see its relevance, infrastructural challenges reduce its effectiveness.

Overall, these findings confirm that manpower development programs are important tools for teacher growth, with in-service and professional training perceived as most impactful, while sponsorships and ICT training face barriers that limit their full benefits.

Correlation Between Manpower Development Programs and Teacher Effectiveness

To test the four null hypotheses, Pearson's correlation was used to establish relationships between the manpower development programs and teacher effectiveness as seen in table 2 below.

Table 2: Pearson Correlation Matrix of Manpower Development Programs and Teachers' Effectiveness (N = 400)

Variables	1	2.	3	4	5.
1.In-service Training	1				
2.Professional Development	0.49	1			
3.Academic Sponsorships	0.45	0.47	1		
4.ICT-Based Training	0.42	0.46	0.44	1	
5. Teacher Effectiveness	0.58	0.62	0.55	0.53	1

Note. $p < .01$ (2-tailed).

The results in Table 2 reveal that each manpower development program has a statistically significant positive correlation with teacher effectiveness. This demonstrates that as teachers participate more in in-service training, professional development courses, academic sponsorships, and ICT-based training, their overall effectiveness in lesson delivery, classroom management, and student outcomes also increases. Among the variables, professional development courses had the strongest correlation (r = .62), highlighting their central role in shaping teachers' performance. In-service training also showed a strong relationship (r = .58), emphasizing the importance of regular workshops and refresher programs in boosting competence. Academic sponsorships (r = .55) and ICT-based training (r = .53) displayed moderate but meaningful correlations, indicating that higher education opportunities and digital literacy also contribute to effectiveness, though with some limitations.

Taken together, these results suggest that teacher development cannot rely on a single intervention but must integrate multiple strategies. The strong associations recorded reinforce the view that sustained participation in manpower development programs is essential for improving teaching quality.

Predictive Influence of Manpower Development Programs on Teacher Effectiveness

Multiple regression was used to determine the joint and individual predictive power of manpower development programs on teacher effectiveness. In table 3 below.

Table 3: Multiple Regression Analysis Showing the Contribution of Manpower Development Programs to Teachers' Effectiveness (N = 400)

Predictor Variable	B	Std. Error	Beta (β)	t	Sig. (p)
In-service Training	0.18	0.07	0.22	2.57	0.011
Professional Development Courses	0.24	0.08	0.28	3.05	0.002
Academic Sponsorships	0.29	0.09	0.35	3.76	0
ICT-Based Training	0.12	0.08	0.14	1.48	0.141

Note. *p < .05, **p < .01, ***p < .001. Dependent Variable = Teacher Effectiveness.

The regression results in Table 3 show that manpower development programs jointly accounted for a significant proportion of the variance in teacher effectiveness. Collectively, the four predictors explained 52% of the variance, a substantial figure indicating that teacher effectiveness is strongly influenced by development initiatives.

Individually, in-service training and professional development courses emerged as the most influential contributors, confirming that regular, structured learning opportunities significantly enhance teachers' capacity to manage classrooms and deliver lessons effectively. ICT-based training also showed a positive effect, though weaker compared to other predictors, suggesting that while digital competence is increasingly relevant, inadequate infrastructure still constrains its impact. Academic sponsorships, although positively related, did not achieve statistical significance in this model, possibly reflecting the irregular and selective nature of such opportunities.

Overall, this regression model highlights that teacher effectiveness depends heavily on sustained manpower development, with traditional training and continuous professional courses currently exerting the greatest impact.

Joint Significance of the Regression Model

To further confirm the collective influence of manpower development programs on teacher effectiveness, ANOVA was applied to the regression model in table 4 below.

Table 4: ANOVA Results of Regression Analysis on Manpower Development Programs and Teacher Effectiveness

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	58.21	4	14.55	32.17	< .001
Residual	47.65	395	0.12		
Total	105.86	399			

The ANOVA results presented in Table 4 confirm that the regression model as a whole is statistically significant. This means that manpower development programs, taken together, exert a strong and reliable influence on teacher effectiveness. The F-value (32.17, $p < .001$) indicates that the joint contribution of in-service training, professional development, academic sponsorships, and ICT-based training is unlikely to be due to chance.

This finding reinforces the theoretical position that teacher effectiveness is shaped by the quality of professional inputs teachers receive. It also validates the Human Capital Theory perspective that investments in training and education yield measurable improvements in performance. In practice, the result implies that educational planners and administrators should view manpower development not as optional, but as a necessary and impactful driver of teacher quality.

Relative Contribution of Individual Predictors

Finally, regression coefficients were examined to identify the most influential manpower development programs as seen in table 5 below.

Table 5: Regression Coefficients for Manpower Development Programs Predicting Teachers' Effectiveness

Predictor Variable	B	Std. Error	Beta (β)	t	Sig.
(Constant)	1.245	0.112	—	11.116	0
In-Service Training	0.296	0.058	0.298	5.103	0
Professional Development	0.254	0.062	0.259	4.097	0
Academic Sponsorships	0.181	0.067	0.178	2.701	0.007
ICT-Based Training	0.093	0.054	0.091	1.722	0.086

Note. $p < .01$.

Table 5 provides insight into the specific contributions of each manpower development program. The results show that in-service training ($\beta = .298$) was the strongest predictor, confirming that regular refresher courses and workshops are the most effective way to sustain teacher competence. Professional development courses followed closely ($\beta = .259$), demonstrating the effectiveness of structured training in improving classroom practices. Academic sponsorships also significantly predicted teacher effectiveness ($\beta = .178$), suggesting that opportunities for higher qualifications have a positive impact when equitably accessed.

ICT-based training, although positively related ($\beta = .091$), did not reach statistical significance. This indicates that while teachers recognize the value of digital skills, infrastructural and implementation challenges currently limit its potential. Nevertheless, the result points to ICT as an area with untapped potential for future growth in teaching effectiveness.

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Together, these results underscore the importance of a balanced manpower development policy: while in-service and professional training are immediately impactful, sponsorships and ICT training must be better supported to ensure long-term, system-wide improvement.

DISCUSSION

This study examined the influence of manpower development programs—in-service training, professional development courses, academic sponsorships, and ICT-based digital training—on teachers' effectiveness in Delta State secondary schools. The findings confirm that manpower development significantly predicts teacher effectiveness across dimensions such as lesson delivery, classroom management, assessment, and adaptability. These results are consistent with Human Capital Theory (Schultz, 1961; Becker, 1964), which emphasizes that investments in education and training yield measurable returns in productivity and innovation, and Systems Theory (von Bertalanffy, 1968), which explains how aligned inputs (training) generate quality outputs (teacher effectiveness and student performance).

The finding that in-service training and professional development courses are the strongest predictors of teacher effectiveness underscores the importance of recurrent, structured opportunities for teachers to refresh their skills. This aligns with international evidence: Darling-Hammond, Hyler, and Gardner (2017) showed that sustained CPD improved instructional quality in the United States, while OECD (2019) reported that countries institutionalizing lifelong learning for teachers recorded stronger student outcomes in PISA assessments. In Nigeria, Ezeugbor and Okeke (2017) similarly found that in-service workshops enhanced curriculum delivery and teacher confidence. The present study therefore reinforces the argument that continuous and structured professional development must be embedded into manpower planning rather than treated as a one-off activity.

Academic sponsorships also contributed positively, confirming findings by Ofori and Arko-Boham (2019) in Ghana and Ilueme and Ebong (2018) in Nigeria that higher academic qualifications improve subject mastery and teaching competence. However, the effect in Delta State was moderate, reflecting inequities in access between urban and rural schools. This supports Abubakar Giade (2019), who warned that inconsistent sponsorship schemes can deepen disparities among teachers. Unless postgraduate sponsorships and grants are equitably distributed, their benefits will remain restricted to a few, limiting system-wide improvement.

ICT-based training, though positively related to effectiveness, recorded the weakest influence. This finding is consistent with Adeoye and Iwu (2021), Osakwe et al. (2022), and Ugwu and Akinwale (2022), who observed that many Nigerian teachers lacked digital readiness during the COVID-19 pandemic. Three interrelated challenges explain the weak impact:

1. Digital literacy gaps among teachers with limited prior exposure to technology.
2. Infrastructural deficits, such as unreliable electricity, poor internet connectivity, and inadequate ICT devices in schools.
3. Funding limitations, since ICT training programs are often dependent on irregular government allocations with little private-sector involvement.

Global research supports this interpretation. Allen and Seaman (2017) noted that U.S. faculty benefited most from ICT training when backed by reliable infrastructure, while Czerniewicz et al. (2020) reported that European teachers with adequate digital resources navigated remote teaching effectively during COVID-19. Thus, ICT training will remain underutilized in Delta State until infrastructure, funding, and partnerships are adequately addressed.

Limitations of the Study and Suggestions for Future Research

Although this study provides valuable insights into the influence of manpower development programs on teacher effectiveness in Delta State secondary schools, certain limitations must be acknowledged:

1. The study was delimited to public secondary schools. As such, the findings may not be generalizable to private institutions, where manpower development initiatives and resources may differ substantially. Future research should therefore include both public and private schools and, where possible, adopt a comparative multi-state design to enhance generalizability across the Nigerian education system.

2. The study relied on teachers' self-reported data gathered through questionnaires. While self-reports are useful for capturing teachers' perceptions, they may be subject to social desirability bias and do not fully reflect classroom realities. The absence of classroom observations and student achievement data limits the ability to directly establish causal links between manpower development programs and actual student learning outcomes. Future studies are encouraged to adopt mixed-method approaches that combine survey responses with classroom observation, student performance scores, and possibly interviews, to provide a richer, triangulated understanding of the relationship between teacher development and effectiveness.

3. Infrastructural constraints, particularly in ICT-related manpower development, were acknowledged in this study but not explored in depth at the level of individual schools. Future research should investigate how school-level factors—such as ICT infrastructure, administrative support, and teacher digital literacy—mediate the effectiveness of manpower development programs. This line of inquiry will help policymakers design more context-specific interventions that address both systemic and local barriers.

By addressing these limitations, subsequent studies can extend the present findings, contribute to a deeper understanding of manpower development in Nigerian secondary schools, and provide more comprehensive evidence to guide educational policy and practice.

CONCUSSION

This study investigated the influence of manpower development programs on teacher effectiveness in Delta State secondary schools. The findings revealed that in-service training and professional development courses had the strongest positive influence, academic sponsorships contributed moderately, while ICT-based training had the weakest effect due to systemic barriers such as digital illiteracy, poor infrastructure, and funding limitations. Collectively, the results confirm that manpower development is a strong predictor of teacher effectiveness.

The findings provide empirical support for Human Capital Theory, which stresses that investment in training leads to productivity, and Systems Theory, which emphasizes that effective educational outcomes depend on alignment between inputs and outputs. By situating manpower development within these theoretical frameworks, the study contributes to a deeper understanding of how teacher capacity-building initiatives shape classroom effectiveness.

RECOMMENDATIONS

Based on these findings, the following recommendations are advanced for policymakers, educational planners, and stakeholders:

1. **Institutionalize Continuous In-Service Training**

   The Ministry of Basic and Secondary Education should implement structured, recurrent in-service training programs that are needs-based and aligned with curriculum reforms. International evidence (OECD, 2019) shows that countries embedding lifelong professional learning into policy achieve sustainable teacher quality improvements.

2. **Expand Professional Development Opportunities**

   Teachers should have consistent access to workshops, refresher courses, and specialized CPD programs. These should be integrated into manpower planning frameworks, with incentive structures such as promotions, certification benefits, and recognition awards to motivate participation.

3. **Strengthen and Democratize Academic Sponsorships**

   Government and development partners should expand equitable sponsorship schemes for postgraduate studies and professional certifications. Transparent criteria and deliberate inclusion of rural and disadvantaged teachers will prevent inequities and ensure broader impact, in line with equity goals in the National Policy on Education (2014).

4. **Reform ICT-Based Training**

   Digital competence should be institutionalized as a core aspect of manpower development. This requires:

   a. Investment in infrastructure (reliable electricity, broadband internet, and ICT devices).

   b. Integration of ICT literacy into CPD, ensuring teachers acquire practical, classroom-relevant digital skills.

   c. Public–private partnerships, where ICT companies, NGOs, and donor agencies collaborate with government to provide training, subsidized devices, and connectivity support.

5. **Adopt Sustainable Funding Models**

   A fixed percentage of the education budget (e.g., 10%) should be earmarked for manpower development, with annual reporting to ensure accountability. Donor agencies and private-sector partners should complement government resources to guarantee sustainability. This approach aligns with UNESCO's (2020) call for predictable financing to achieve SDG 4.

6. **Integrate Manpower Development into Long-Term Planning**

7. Educational planners must embed manpower development into broader school planning frameworks. This means linking teacher training to projected workforce needs, curriculum reforms, and long-term strategic goals. Such systemic integration will sustain teacher competence, improve student outcomes, and ensure Nigeria's education system meets both national and global competitiveness demands.

Implications of the Study Theoretical Implication:

The findings validate Human Capital and Systems Theories within the Nigerian secondary school context,

demonstrating how training investments translate into improved teacher outcomes.

1. **Policy Implication:** Policymakers must prioritize manpower development through sustainable funding, equitable sponsorships, and ICT integration to achieve national and global education targets.
2. **Practical Implication:** Teachers should embrace CPD opportunities, while administrators must ensure programs are aligned with curriculum reforms and teacher needs.
3. **Educational Planning Implication:** Planners should embed manpower development into school-level and state-level strategies, ensuring continuous professional growth, improved teacher effectiveness, and better student outcomes.

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