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Relationship Between Community-Based Teacher Professional Development and Learning Outcomes of Public Senior Secondary School Students in Federal Capital Territory, Abuja, Nigeria

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Abstract

This study examined the relationship between community-based teacher professional development and learning outcomes of public senior secondary school students in the Federal Capital Territory, Abuja, Nigeria. The study was guided by five objectives, three research questions, and two hypotheses. The study adopted a correlational survey research design. The population comprised 85,584 students and 4,171 teachers across 88 public senior secondary schools in the FCT. The sample consisted of 375 students and 151 teachers drawn from 12 selected schools using purposive and simple random sampling techniques. Three instruments were used for data collection: two researcher-structured questionnaires titled Extent of Community-based Teacher Professional Development of Public Senior Secondary Schools in FCT (ECTPDSSSQ) and Extent of Academic Engagement of Public Senior Secondary School Students in FCT (EAESSSQ), and academic records from the West African Examination Council (WAEC). The questionnaires were validated by experts in measurement and evaluation and subjected to Cronbach's alpha reliability analysis, yielding coefficients of 0.71 and 0.74, respectively. Data were analysed using mean and standard deviation for research questions, while Pearson Product Moment Correlation (PPMC) was used to test the hypotheses at the 0.05 level of significance. To obtain paired observations for correlational analysis, the scores of 375 students were aggregated into class means based on their respective teachers, yielding 151 paired cases. The findings revealed a high extent of community-based teacher professional development among teachers (M=2.86) and a high extent of academic engagement among students (M=2.89) in the FCT. Furthermore, there was a significant moderate positive relationship between community-based teacher professional development and academic achievement (r =.381, N=151, p<.001, r^2=.145) and a significant weak positive relationship between community-based teacher professional development and academic engagement (r =.264, N=151, p<.002, r^2=.07). Based on the findings, it was recommended among others that administrators provide regular in-service training, seminars and workshops to enhance teachers' instructional efficiency and student learning outcomes.

Keywords:- Community-based, Teacher, Professional Development, Learning Outcomes, Students

I. INTRODUCTION

The quality of education is a key determinant of technological advancement, economic growth and global competitiveness. The immediate community where a school is located can impact teacher professionalism, especially when there is a professional group of educators who collaborate to enhance productivity. Kankpog et al. (2024) highlighted that collaboration among teachers in Professional Learning Communities (PLCs) is beneficial in amplifying the impact of professional development activities, which are recognised as critical to improving educational quality. The teacher subsystem is a very important and strategic subsystem within the entire educational system since it is crucial in almost every aspect of educational planning, including curriculum development down to implementation. The African Union (AU) Agenda 2063 for education, through the Continental Education Strategy for Africa (CESA), includes objectives among which is revitalisation of the teaching profession with a view to ensure and sustain quality and relevance at all levels (African Union, 2023). This obviously demonstrates how imperative teacher quality, especially professional development, could be strategic in determining

effectiveness. Darling-Hammond and Oakes (2019) once asserted that we can have all kinds of educational reforms underway in the US - curriculum reform, governance reforms and so on; but at the end of the day, if you don't have a strong, qualified teacher in the classroom, nothing else in education can work. This can also be echoed in the Nigerian context, which highlights the importance of teacher quality. Since teacher quality largely depends on professional development, the community can play a strategic role. As schools are largely products of the communities in which they are located, the environment where a school is located may actually impact the quality of its teachers.

The complexity of the 21st century has given recourse in identifying suitable modern development strategies that could improve different aspects of our educational sub-systems, particularly the teacher component, which could have a tremendous impact on students' learning outcomes. As the societal landscape rapidly changes, there is an increasing emphasis on school improvement to meet the evolving demands of the twenty-first century (Antinluoma et al., 2021). Teacher professional development in any educational modification process could be an essential factor for teacher effectiveness and productivity, since such a process can enhance and improve the professional knowledge, critical skills and behavioural patterns of teachers to meet the complex demands of students' educational needs. The concept of teachers' professional development represents a paradigm shift in how we perceive the role of teachers in the 21st century (Huusela, 2020). It acknowledges the multifaceted nature of teaching, requiring a blend of pedagogical expertise, ethical values, and a commitment to lifelong learning (Abakah et al., 2022). The significance of teacher professional development in our technology-driven society could be strategic in producing creative and innovative students who could advance Nigerian society for greater exploitation and development, since teacher professional development is meant to enrich the knowledge, skills and competence of teachers. Teacher professional development stands as a dynamic and intricate concept within the realm of education, emphasising a continual process where teachers participate in structured learning experiences to enrich their knowledge, skills, and overall effectiveness in the classroom (Mensah & Jonathan, 2016).

Teachers can investigate cutting-edge teaching methods, pick up new instructional methodologies, and expand their subject matter expertise through workshops, seminars, and cooperative learning experiences (Kilag et al., 2024). These could enhance teachers' wealth of knowledge and make them more efficient, pragmatic and resourceful in 21st-century pedagogical practice in Nigeria. Helen et al. (2025) emphasised that teachers in public schools are more likely to participate in professional development training, often sponsored by the government, compared to teachers in private schools. They further asserted that public senior secondary schools are generally subject to stricter state and federal regulations regarding teacher qualifications and training. The success and effectiveness of any educational system is dependent on the quality of the teachers in the system and the training they acquired (Yakubu, 2023). He further reiterated that it follows, therefore, that acquisition of relevant skills and expertise is necessary for teachers to carry out their duties effectively.

Many Western countries such as the USA, Germany, the UK, Canada, Switzerland, amongst others, with quality educational systems and high level of teacher professional development, are advancing in all spheres of development, including Science and Technology, which cannot be equated with the Nigerian context. Some of these countries have designed their educational systems in such a way that collaborative teacher professional development is encouraged. For instance, flipped classroom learning kicked off in a small community in Colorado due to the collaboration between Jonathan Bergmann and Aaron Sams, who started using flipped classroom technique in 2006 in a remote community of Woodland Park before it became a global pedagogical strategy for learning. In Nigeria, a heterogeneous society with its uniqueness in cultural diversity, overwhelmed with diverse educational challenges, which seems to be a stumbling block to the growth of teacher development programmes. Challenges such as poor policy implementation, lack of continuity in commitment to policy implementation, and institutional corruption affect the effectiveness of professional development programs (Usman, 2020). Some of these challenges also include a shortage of professional manpower and funding which are key factors in teacher professional development. There is shortage of professional academic staff, which further hinders the implementation of effective professional development initiatives (Ogunode & Edokhamhen, 2020). Couple with the fact that funds have always been a problem in promoting professional development programmes in Nigeria which could enhance teacher's productivity. On factors impending teacher professional development programmes in Nigeria, Ajani (2021) pointed out that one of the main factors is the lack of funding for professional development programmes. Some of these have negatively influenced teacher professional development in Nigeria.

The demands for continuous professional development get stronger along with the presence of current change dynamics, in which teachers are faced with a rapid change, demands for high standard, and requirements for education quality improvements (Kasmayadi et al., 2018). In some quota, traditional approaches to teacher development which often focus on one-off workshops or seminar training sessions, have been criticized for being ineffective in promoting sustainable teacher learning and improvement. Teachers' professional development has traditionally been limited to short activities such as workshops and seminars aimed at providing new knowledge to teachers about certain aspects of their work (Mohamed et al., 2024; Gidado et al., 2023). Such an approach to professional development among teachers is not only unproductive in improving teaching and learning outcomes, but it also fails to influence teacher attitudes and practices in most cases (Darling-Hammond, 2021). In recent times, community-based approaches to teacher professional development have been gaining momentum, acceptance and popularity in different parts of the globe due to their fundamental nature in recognising the importance of the immediate communities in augmenting teacher productivity, improvement and professional development. Professional development programs, which are designed to improve instructors' abilities, expertise, and efficacy, have become vital elements of the educational environment (Kilag et al., 2023). Community-based teacher professional development encourages collaboration and cooperation among professional education experts. To build a culture of cooperation and inquiry among educators, individualistic techniques must give way to collaborative goals, which PLCs encourage (Younker, 2021). Professional development programs function as structured in-service training avenues, providing a platform for teachers to learn from one another and share best practices (Kankpog et al., 2024).

Community-based teacher professional development involves synergy and community engagement among teachers, professional volunteers such as school administrators, subject method experts, education officers, NGOs amongst other educational professionals within the local community where the school is positioned which is directed at enhancing teachers' professional capacity and effectiveness which could positively affect students learning outcomes. Professional Learning Communities (PLCs) are collaborative groups of educators that work together to enhance teaching practices, develop professional skills, and ultimately improve student learning outcomes (Williams in Kankpog et al., 2024). In this collaborative learning environment, teachers are not just recipients of knowledge but valuable resources for each other, fostering a culture of mutual support and continuous learning (Kankpog et al., 2024). Community-based teacher professional development could utilise varied strategies such as practical demonstration, goal design, peer teaching, amongst others to actualise their objectives. This is in agreement with Huusela (2020), who highlighted that PLCs employ diverse approaches and strategies to fulfil their objectives, including demonstration lessons, peer teaching, teaching and learning materials preparation, and class management. These strategies not only make the teaching and learning process innovative but also improve teachers' effectiveness. These activities enhance teachers' competence by promoting collegiality and exchanging effective teaching practices (Kankpog et al., 2024). In a community-based teacher professional development programme, teachers could equally use data analysis and other education-related design. This is corroborated by Carey (2022) who posited that effective PLCs use data analysis, goal design, and individual and collaborative learning to achieve their objectives, demonstrating a commitment to continuous improvement and student success. He further asserted that the success of PLCs lies in their ability to create a unified vision and set of principles, fostering a culture centred on mutual respect, cooperation, shared accountability, and an inquiry-based approach.

Studies have shown how Community-based teacher professional development could be associated with students' learning outcomes such as academic achievement and engagement. Alemayehu (2021) highlighted the importance of investing in teacher professional development for improved educational outcomes. In a study on the effects of teacher professional development on student academic achievement by Olubunmi (2023), it was revealed that there was improvement in the pupils' performance who were taught by those teachers who took part in the workshop compared to pupils of the teachers who didn't attend the workshop. Similarly, Thuo (2019) indicated a relationship between teacher professional development and student academic achievement, establishing that there was a relationship between the two variables. Melkamu et al. (2023) equally pointed out that teacher development plays an important role in enhancing students' achievement and in maximising their learning. They further emphasised that teachers' development helps to innovate new ideas, nurture students' brains, and develop their thinking ability. Research conducted in European countries such as the United Kingdom and Germany has also indicated that well-designed teacher development programs can lead to better student outcomes and higher levels of student engagement in the classroom (Melkamu, 2023).

While there is a surge in research literature on Professional development programmes and community-based approaches to teacher professional development in different parts of the globe, there seems to be a scarcity of such research literature, particularly on the effectiveness in improving students' learning outcomes such as academic achievement and engagement in Nigeria, particularly the FCT. This study addressed this research gap by assessing the relationship between Community-Based Teacher Professional Development and Learning Outcomes of Senior Secondary School Students in the Federal Capital Territory.

II. STATEMENT OF THE PROBLEM

The community could be significant in advancing education especially in enhancing teacher professional capacity. The teacher is the arbiter in the successful actualisation of any specific instructional objectives. Teacher professional development is indispensable in enhancing efficiency and professional competence, which could be instrumental in learning outcomes of students. In recent times, community-based teacher professional development seems to be effective, since it recognises the importance of the immediate environment in supporting teacher professional development, which could be critical to student learning outcomes.

In spite of the fundamental role teachers play in determining the quality of educational output of students in any educational setting. Observation among public senior secondary school teachers in the Federal Capital Territory of Nigeria indicates that the lack of professional training and financial resources to efficiently teach and engage their students, which could be essential in their learning outcomes, is inadequate. Hence, some of these teachers find it difficult to attend educational conferences, symposiums, and seminars, which ought to be basic to their professional development. Talk more about a community-based approach which encourages a collaborative educational atmosphere where diverse strategies could be employed to fulfil their objectives, which equally involves training and retraining on demonstration lessons, usage of data analysis, goal design, peer teaching, teaching and learning materials preparation, class management, amongst others. These could all enhance students' academic achievement and engagement.

Traditional approaches to teacher professional development, which often entail one-off workshops which some teachers hardly attend, possibly have been disparaged for being ineffective in promoting efficiency and sustainable teacher professional development. Hence, many secondary schools in FCT continue to grapple with low student academic achievement, lack of students' engagement in learning. Statistical data from the West African Examination Council (WAEC) has highlighted the rate of failure encountered by most students in the aforementioned examination, and a downward spiral not only in the overall performance of the students, but also in core subjects like English language and Mathematics (Gidado & Diffang, 2024). For example, the first series of WAEC results released, which was conducted in 262 centres across Nigeria from January/February 2023, showed that only 23.99% of those who sat for the exam had credit and above, including English language and mathematics (the Guardian Newspaper in Gidado & Diffang, 2024). The percentage of those who sat for the same exam in 2021 and 2022 was 30.11% and 26.32%, respectively, which includes the FCT (the Guardian Newspaper in Gidado & Diffang,

2024). This depicts a serious implication on students' learning outcomes, as well as may impact the ability to compete on the global stage.

In view of the above-mentioned, this study addressed the relationship between Community-Based Teacher Professional Development and Learning Outcomes of Senior Secondary School Students in the Federal Capital Territory.

III. OBJECTIVES

- To find out the extent of community-based teacher professional development among teachers in senior secondary schools in FCT.
- To ascertain the academic achievement of senior secondary school students in FCT.
- To ascertain the extent of academic engagement of senior secondary school students in FCT.
- To examine the relationship between community-based teacher professional development and academic achievement of senior secondary school students in FCT.
- To determine the relationship between community-based teacher professional development and academic engagement of senior secondary school students in FCT.

IV. RESEARCH QUESTIONS

- What is the extent of community-based teacher professional development among teachers in senior secondary schools in FCT?
- What is the academic achievement of senior secondary school students in FCT?
- What is the extent of academic engagement of senior secondary school students in FCT?

V. HYPOTHESES

- H^{o1} There is no significant relationship between community-based teacher professional development and academic achievement of senior secondary school students in FCT.
- H^{o2} There is no significant relationship between community-based teacher professional development and academic engagement of senior secondary school students in FCT.

VI. METHODOLOGY

6.1. Design

A correlational survey research design was employed for this study. According to Oviawe and Omoh (2021), a correlational study is a type of research design where a researcher seeks to understand the relationship naturally occurring between two or more variables. This design was important to the study as it guided the collection of relevant data from respondents. This enabled the researcher to ascertain the relationship between the independent and dependent variables as they occur naturally, without any manipulation.

6.2. Population

The population of the study comprised 85,584 students and 4,171 teachers spread across 88 public senior secondary schools in the six Area Councils in FCT, Abuja. (FCT, Secondary Education Board, 2023).

6.3. Sample Size and Procedure

The sample size of this study was 375 students and 151 teachers drawn from 12 selected public senior secondary schools across the six area councils in the FCT. For students, the sample size was drawn from a selected population of 19,619 using the Krejcie and Morgan (1970) table for determining sample size for a specific population. For teachers, the sample size was drawn from a selected population of 757 in line with Glenn (2012), who specified that a sample size of 10% is appropriate for any given population below 1000 (one thousand).

A purposive sampling technique was used to select twelve (12) public senior secondary schools from the 88: two (2) from each of the area councils. This was aimed at ensuring equal representation of all educational zones and the six area councils in the FCT. Simple random sampling technique was equally employed to determine the sample size of teachers and students from the twelve (12) selected public senior secondary schools using a proportionate procedure.

6.4. Instrumentation

The instruments employed for data collection were two researcher-structured questionnaires and academic records from the West African Examination Council (WAEC).

The first researcher-structured questionnaire titled: Extent of Community-based Teacher Professional Development of Public Senior Secondary Schools in FCT (ECTPDSSSQ) was a 10-item questionnaire used to elicit responses from teachers. The questionnaire was based on a four-point modified Likert-like scale of Very low extent (1); Low extent (2); High extent (3) and very high extent (4).

The second researcher-structured questionnaire titled: Extent of Academic Engagement of Public Senior Secondary School Students in FCT (EAESSSQ), was a 10 items questionnaire used to elicit responses from students. The questionnaire was based on a four-point modified Likert-like scale of Very low extent (1); Low extent (2); High extent (3) and very high extent (4).

The third instrument was the academic records of Public Senior Secondary School students in the FCT in English Language and Mathematics obtained from the West African Examination Council (WAEC). English and Mathematics were

selected because they are core subjects, foundational to learning across all senior secondary schools in Nigeria, and are strong predictors of academic achievement of senior secondary school students.

6.5. Validity and Reliability of the Instrument

The two questionnaires were validated for face, construct and content validity by three experts in measurement and evaluation at the University of Abuja. The instruments were further subjected to a pilot study, which was carried out in Government Day Secondary school Gwagwalada which was not part of the main study but share similar characteristics with other senior secondary schools in FCT. Twenty copies of the first questionnaire were administered to teachers, while forty copies of the second questionnaire were administered to students. The data collected were subjected to Cronbach's alpha statistics in order to determine the internal consistency of the items in the questionnaires, since the items were placed on a four-point modified Likert scale. The coefficient of reliability of the analysis of the questionnaires yielded reliability indexes of 0.71 and 0.74 for the first and second questionnaires, respectively.

6.6. Method of Data Analysis

The analysis of data was carried out using both descriptive and inferential statistical tools. Descriptive statistics such as mean and standard deviation were used to answer research questions one and three, while minimum, maximum and average scores were used for research question two. Inferential statistics such as Pearson Product Moment Correlation Coefficients (PPMCC) were used to test hypotheses 1 and 2. The two null hypotheses were tested at the 0.05 level of significance.

VII. RESULTS

7.1. Research Question One:

What is the extent of community-based teacher professional development among teachers in senior secondary schools in FCT?

Table 1. Extent of community-based teacher professional development among teachers in senior secondary schools in FCT

S/N	Statements	Mean	Std. Dev	Decision
1.	Synergy and community engagement among teachers within the school community	2.28	.631	Low Extent
2.	Synergy between professional volunteers such as school administrators	2.20	.602	Low Extent
3.	Collaboration between education officers, NGOs amongst other educational professionals within the school community	3.10	.720	High Extent
4.	Expertise in data analysis	2.46	.638	Low Extent
5.	Effectiveness in goal design	2.94	.693	High Extent
6.	Ability of individual and collaborative learning within the school community	3.21	.757	High Extent
7.	Ability of utilizing inquiry-based approach	2.99	.698	High Extent
8.	Preparation of teaching and learning materials in the school community	2.97	.695	High Extent
9.	Utilization of peer teaching	3.42	.734	High Extent
10.	Effectiveness in peer teaching	3.09	.719	High Extent
	Sectional Mean/Std. Dev.	**2.86**	**0.68**	**High Extent**

Note. N=151

As shown in Table 1, the extent of community-based teacher professional development among teachers in senior secondary schools in FCT was presented. The Table shows a sectional mean of 2.86, which indicates that over average of the respondents except for items 1, 2 and 4 which recorded low extent, all other items indicated high extent of community-based teacher professional development among teachers in senior secondary schools in FCT. This is in line with the decision rule that any value within 2.50 and above be adjudged as high extent and below be considered as low extent. This implies high extent of community-based teacher professional development among teachers in senior secondary schools in FCT, Abuja, Nigeria.

7.2. Research Question Two:

What is the academic achievement of senior secondary school students in FCT?

Table 2. Academic achievement of senior secondary school students in Mathematics and English Language in FCT

	Minimum	Maximum	Average Score
English Language	29.02	80.08	54.55
Mathematics Academic Achievement	30.06 29.54	83.09 81.59	56.58 55.57

Note. N=375

As shown in Table 2, the academic achievement of public senior secondary school students in FCT, Abuja was presented. The Table reveals a minimum score of 29.02, a maximum score of 80.08, and an average score of 54.55 for English Language. The Table further indicates a minimum score of 30.06, a maximum score of 83.09 and an average score of 56.58 for Mathematics. The Table also reveals an overall minimum academic achievement of 29.54, with a maximum of 81.59 and an average score of 55.57. The highest average mean scores of 55.57 is above the 50 midpoints, which indicates that the overall academic achievement of public senior secondary school students in English Language and Mathematics is above average in FCT, Abuja.

7.3. Research Question Three:

What is the extent of academic engagement of senior secondary school students in FCT?

Table 3. Extent of academic engagement of senior secondary school students in FCT

S/N	Statements	Mean	Std. Dev	Decision
1.	Attentiveness to class-related activities	3.28	.701	High extent
2.	Engaging teachers with questions for clarity	3.00	.692	High extent
3.	Keeping to school and class rules and regulations	3.30	.709	High extent
4.	Participating actively in classroom-related discussions	3.36	.721	High extent
5.	Always prepared for class tests and other classroom-related activities	2.84	.683	High extent
6.	Proper academic guidance by teachers	2.51	.657	High extent
7.	Feeling happy going to school due to the receptive attitude of teachers	2.90	.688	High extent
8.	Understanding classroom lessons due to simplification and clarity by teachers	2.97	.690	High extent
9.	Appreciating teachers' method of teaching	2.69	.680	High extent
10	School is so engaging, and I feel calm	2.07	.606	Low extent
	Sectional Mean/Std. Dev.	**2.89**	**0.68**	**High extent**

Note. N=375

As shown in Table 3, the extent of academic engagement of senior secondary school students in FCT was presented. The Table shows a sectional mean of 2.89, which indicates that, on average of the respondents except for item 10, which recorded low extent, all other items indicated high extent of academic engagement of senior secondary school students in FCT. This is in line with the decision rule that any value within 2.50 and above be adjudged as high extent and below be considered as low extent. This implies high extent of academic engagement of senior secondary schools in FCT, Abuja, Nigeria.

VIII. HYPOTHESES

H^{o1} There is no significant relationship between community-based teacher professional development and academic achievement of senior secondary school students in FCT.

Table 4. Pearson Product Moment Correlation (PPMC) on the relationship between community-based teacher professional development and academic achievement of senior secondary school students in FCT

Variables	N	X	SD	r-cal	p-value	Decision
Community-based Teacher Professional Development and Academic Achievement	151	2.29	.27	.381	.001	Significant (Rejected ^{H01})

Correlation is significant at 0.05 level (2-tailed) PPMC

As shown in Table 4, a Pearson Product Moment Correlation analysis between community-based teacher professional development and academic achievement of senior secondary school students in FCT was presented. The Table reveals a mean academic achievement score of 2.29 (.SD=0.27) per teacher. The Table further revealed a moderate positive correlation (r =.381, N=151, P<.001), indicating a statistically significant relationship between community-based teacher professional development and academic achievement of senior secondary school students in FCT. The coefficient of determination (r^2 = .145) suggest that 14.5% of the variance in students' academic achievement is accounted for by community-based teacher professional development.

H^{o2} There is no significant relationship between community-based teacher professional development and academic engagement of senior secondary school students in FCT.

Table 5. Pearson Product Moment Correlation (PPMC) on relationship between community-based teacher professional development and academic engagement of senior secondary school students in FCT

Variables	N	$\bar{X}$	SD	r-cal	p-value	Decision
Community-based Teacher Professional Development and Academic Achievement	151	2.63	.24	.264	.002	Significant (Rejected ^{H02})

Correlation is significant at 0.05 level (2-tailed) PPMC

As shown in Table 5, a Pearson Product Moment Correlation analysis between community-based teacher professional development and academic engagement of senior secondary school students in FCT was presented. The Table reveals a mean academic engagement score of 2.63 (.SD=0.24) per teacher. The Table further revealed a significant weak positive correlation (r =.263, N=151, P<.002), indicating a statistically significant relationship between community-based teacher professional development and academic engagement of senior secondary school students in FCT. The coefficient of determination ($r^2 = 7.0$) suggests that 7% of the variance in students' academic engagement is accounted for by community-based teacher professional development.

IX. DISCUSSIONS

The study revealed high extent of community-based teacher professional development among teachers in senior secondary schools in FCT, Abuja. This is corroborated by Helen et al. (2025), who posited that teachers in public schools are more likely to participate in professional development training, often sponsored by the government, compared to teachers in private schools. They further asserted that public senior secondary schools are generally subject to stricter state and federal regulations regarding teacher qualifications and training. Similarly, Kilag et al. (2024) opined that teachers can investigate cutting-edge teaching methods, pick up new instructional methodologies, and expand their subject matter expertise through workshops, seminars, and cooperative learning experiences. The success and effectiveness of any educational system is dependent on the quality of the teachers in the system and the training they acquired (Yakubu, 2023). He further reiterated that it follows, therefore, that acquisition of relevant skills and expertise is necessary for teachers to carry out their duties effectively.

The findings further revealed that the overall academic achievement of public senior secondary school students in English Language and Mathematics is above average in FCT, Abuja. This is in line with Gidado and Diffang (2024), who revealed that the overall academic achievement of students in the FCT was slightly above average. Correspondingly, Mohammed et al. (2024) highlighted that the mean academic performance scores of senior secondary school students were average, including English and Mathematics. However, in contrast, the Guardian Newspaper in Gidado and Diffang (2024) highlighted the rate of failure encountered by most students in the West African Examination Council (WAEC) examination, and a downward spiral not only in the overall performance of the students, but also in core subjects like English language and Mathematics.

The study also showed high extent of academic engagement of senior secondary school students in FCT, Abuja, Nigeria. The finding contradicts Bendejo and Gempes (2019), who revealed that student engagement in any school-related activity is at its lowest level. However, the finding is in accordance with Reynaldo et al. (2023), who revealed that intellectual engagement gained an overall mean score of 3.97, described as high. Enerio (2021) highlighted that student engagement is the most significant factor in the learning process. Tomovic (2021) stated that when students are intellectually committed and absorbed in their academic work, they are more likely to go above and beyond what is required and to appreciate the challenges of learning.

The findings also revealed that there is a significant moderate relationship between community-based teacher professional development and academic achievement of senior secondary school students in FCT.

This is directly echoed in the findings of Thuo (2019), who indicated a significant relationship between teacher professional development and student academic achievement. Also, Melkamu et al. (2023) pointed out that teacher development plays an important role in enhancing students' achievement and in maximising their learning. They further emphasised that teachers' development helps to innovate new ideas, nurture students' brain and develop their thinking ability. Similarly, Olubunmi (2023) revealed that there was improvement in the pupils' performance who were taught by teachers who took part in the workshop than pupils of the teachers who didn't attend the workshop.

The findings also discovered that there is a significant weak positive relationship between community-based teacher professional development and academic engagement of senior secondary school students in FCT. This is corroborated by research conducted in European countries such as the United Kingdom and Germany, which revealed that well-designed teacher development programs can lead to better student outcomes and higher levels of student engagement in the classroom (Melkamu, 2023). Similarly, Carey (2022) posited that effective PLCs use data analysis, goal design, and individual and collaborative learning to achieve their objectives, demonstrating a commitment to continuous improvement and student success. Williams in Kankpog et al. (2024) highlighted that Professional Learning Communities (PLCs) are collaborative groups of educators that work together to enhance teaching practices, develop professional skills, and ultimately improve student learning outcomes. This finding implies that when teachers in the FCT participate in community-based training within their cluster alongside other teachers, using community-based resources and improvising instructional resources to enhance learning, it could go a long way in improving students' participation and engagement in class.

X. CONCLUSION

The study has shown that community-based teacher professional development is associated with students' learning outcomes: The higher the extent of community-based teacher professional development, the higher the academic achievement

of senior secondary school students in FCT. The higher the extent of community-based teacher professional development, the higher the academic engagement of senior secondary school students in FCT.

XI. RECOMMENDATIONS

- The FCT Secondary Education Board and administrators of public senior secondary schools should encourage and strengthen collaborative structures such as team teaching, self-directed professional development and community resource utilisation among teachers.
- Administrators of public senior secondary schools in FCT should provide regular in-service training, seminars, symposiums and workshops to teachers to maintain their instructional efficiency and enhance overall academic achievement of students in English Language and Mathematics.
- The FCT Education Board, in collaboration with other stakeholders, should provide adequate financial support, 21st-century digital tools for education, and training on data analysis and goal design, which could enhance academic engagement of students in FCT.
- Administrators of public senior secondary schools in FCT should encourage teachers to undergo professional development programmes that emphasise active learning, technological integration in the teaching and learning process, and collaborative instruction to enhance students' academic engagement.

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