TEACHERS' ATTRIBUTES AND SECONDARY SCHOOL STUDENTS' ACADEMIC ACHIEVEMENT IN BIOLOGY IN EGOR LGA OF EDO STATE

BY

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FACULTY OF EDUCATION,

UNIVERSITY OF BENIN

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CERTIFICATION

We, the undersign certify that this project work is adequate in scope and was carried out by OGUNKORU FRUITFULNESS EBITEBE in the Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin, Benin City, Edo State, Nigeria; In partial fulfillment for the award of B.Sc (Ed) Degree in Biology.

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DEDICATION

This work is dedicated to God Almighty, my supervisor, family and friends for their great support and guide.

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ABSTRACT

This study examined the influence of teacher attributes — specifically teachers' academic qualification, years of teaching experience, and teaching style — on secondary school students' academic achievement in Biology within Egor Local Government Area (LGA), Edo State. Guided by Social Cognitive Theory, the correlational study used a structured questionnaire (TASAABQ) validated by faculty experts and pilot-tested (Cronbach's $\alpha = .812$) to collect data from 200 senior secondary students (SS2 & SS3) drawn from five public secondary schools in Egor LGA. Demographic and Likert-type responses were analysed using descriptive statistics (means, SD, percentages), Pearson correlation, independent-samples t-tests, and one-way ANOVA to test hypotheses about relationships between teacher attributes and student achievement. Results showed statistically significant positive relationships between teacher qualification and student achievement, teacher experience and student achievement, and between student-centred teaching styles and achievement. Effect sizes indicated practical importance: teacher qualification and experience jointly explained a substantial portion of variance in students' Biology scores. The study concludes that improving teacher professional qualifications, retaining experienced teachers, and promoting interactive, student-centered biology pedagogy are critical to raising students' achievement. Recommendations for teachers, school administrators and policymakers are provided, along with suggestions for further research and acknowledged limitations. (Keywords: teacher qualification, teaching experience, teaching style, Biology achievement, Egor LGA)

CHAPTER ONE

INTRODUCTION

Background of the Study

Education is a fundamental pillar of global development, serving as a key instrument for individual empowerment and societal progress. Around the world, nations recognize that academic achievement is essential for building a skilled and competitive workforce capable of driving innovation and economic growth. Students' success in education, especially in science-related subjects, directly impacts their future opportunities and the development of their communities (Núñez et al., 2014).

In Nigeria, the urgency to improve educational outcomes is particularly strong due to the country's demographic dynamics and developmental challenges. With a rapidly growing youth population, Nigeria faces the dual challenge of expanding access to education while also enhancing its quality. Academic excellence in science subjects like Biology is especially important because it serves as a gateway to professions in health, agriculture, and environmental science sectors critical to national development (Babatunde et al., 2021), (Puspitaningrum et al., 2023).

Academic achievement refers to the measurable performance outcomes that reflect how well students meet specific learning goals, typically assessed through tests, examinations, and coursework. In the context of secondary education, particularly in science subjects like Biology, academic achievement is a strong indicator of students' readiness for higher education and careers in scientific fields. High academic performance in Biology is not only essential for individual academic progression but also for national development, as it contributes to the pool of future professionals in health, agriculture, and environmental sciences. Several studies have highlighted that students' performance in Biology is influenced by a combination of cognitive, emotional, environmental, and instructional factors (Puspitaningrum et al., 2023). Among these, teacher-related variables such as qualification, experience, and teaching style stand out as key determinants of how effectively students learn and perform in the subject (Basil, 2021).

One such attribute is the teacher's academic qualification. Teachers with higher academic and professional credentials are more likely to possess deeper subject knowledge and the pedagogical skills necessary to convey complex biological concepts in ways that are accessible and engaging to students. Research has shown that students taught by teachers with higher qualifications tend to demonstrate better academic performance in Biology, as these teachers can effectively apply varied teaching strategies and provide comprehensive explanations of subject matter (Babatunde et al., 2021). In areas where unqualified or

underqualified teachers are prevalent, student achievement often suffers, underlining the critical importance of teacher qualification in educational outcomes.

In addition to qualifications, teaching experience significantly influences students' learning. Experienced teachers tend to have a stronger grasp of classroom dynamics, more refined teaching techniques, and an ability to anticipate and address students' misconceptions. Their years in the classroom equip them with the practical wisdom to adapt instructional approaches to suit different learner types and to manage the demands of the curriculum effectively. Studies have consistently indicated a positive relationship between teaching experience and students' academic achievement in Biology, suggesting that experience contributes not only to subject delivery but also to classroom management and student engagement (Basil, 2021).

Equally important is the teacher's teaching style, which encompasses the methods and strategies used to deliver instruction. A student-centered and interactive teaching style can greatly enhance students' motivation, interest, and comprehension in Biology. For instance, inquiry-based learning, practical demonstrations, and the use of visual aids have been shown to improve students' understanding of scientific concepts. Research highlights that teaching styles which encourage active participation and foster a supportive learning environment can positively influence academic achievement by making learning more meaningful and engaging for students (Núñez et al., 2014).

Statement of the Problem

Ideally, secondary school students are expected to perform excellently in Biology to build a strong foundation for careers in science and national development. However, in Egor LGA of Edo State, students' academic achievement in Biology remains below expectations despite its importance. This underperformance is evident in persistent low examination results and poor scientific literacy. Various educational interventions such as teacher training programs and curriculum reviews have been introduced to improve outcomes, yet Biology results in the area continue to lag behind. Babatunde et al. (2021) found that teacher qualification and experience significantly impact Biology achievement, while Basil (2021) emphasized the role of effective teaching style. However, these studies often generalized findings across broader regions and failed to focus specifically on Egor LGA or consider the combined effect of all three teacher attributes on Biology achievement. This leaves a gap in localized understanding. Given the crucial role of Biology in science education and the central influence of teacher attributes, this study seeks to examine how teacher qualification, experience, and teaching style affect students' academic achievement in Biology in Egor LGA of Edo State.

Research Question

The following research questions were raised to guide this study;

1. To what extent does teachers' qualification influence students' academic achievement in Biology in Egor LGA of Edo State?
2. How does teachers' experience affect students' academic achievement in Biology in Egor LGA?
3. What is the impact of teaching style on students' academic achievement in Biology in secondary schools in Egor LGA?
4. How does teachers' motivation and professional commitment influence students' academic achievement in Biology in Egor LGA?
5. What is the relationship between teachers' communication skills and students' academic achievement in Biology?

Research Hypotheses

1. **H_{01}:** Teachers' qualifications have no significant influence on students' academic achievement in Biology in Egor LGA of Edo State.
2. **H_{02}:** Teachers' experience has no significant effect on students' academic achievement in Biology in Egor LGA of Edo State..
3. **H_{03}:** Teaching style has no significant impact on students' academic achievement in Biology in Egor LGA of Edo State.

4. **H_{04}:** Teachers' motivation and professional commitment have no significant influence on students' academic achievement in Biology in Egor LGA of Edo State.
5. **H_{05}:** Teachers' communication skills have no significant relationship with students' academic achievement in Biology in Egor LGA of Edo State.

Purpose of the Study

The main purpose of this study is to assess teachers attributes and secondary school students academic achievement in biology in Egor LGA of Edo state, specifically the study aims to;

1. examine the influence of teachers' qualification on students' academic achievement in Biology in Egor LGA.
2. determine the effect of teachers' experience on students' academic achievement in Biology in Egor LGA.
3. assess how teaching style affects students' academic achievement in Biology in secondary schools in Egor LGA.
4. Investigate the effect of teachers' motivation and professional commitment on students' academic achievement in Biology.
5. Examine how teachers' communication skills influence students' academic achievement in Biology.

Scope/Delimitation of the Study

This study is focused on investigating the influence of teachers' attributes specifically teachers' qualification, teaching experience, and teaching style on the academic achievement of secondary school students in Biology within Egor Local Government Area of Edo State. The research is delimited to public secondary schools in Egor that offer Biology as a subject. It concentrates solely on teachers' attributes as independent variables and students' academic achievement in Biology as the dependent variable, without considering other possible influences such as school infrastructure, parental involvement, or socioeconomic status. The timeframe for data collection and analysis is limited to the 2024/2025 academic session.

Significance of the Study

This study is significant as it seeks to uncover the extent to which teachers' attributes influence students' academic performance in Biology, a core science subject critical to the development of scientific knowledge and career readiness. The findings will benefit school administrators, policymakers, and educational planners in Egor LGA by providing empirical evidence that can inform teacher recruitment, professional development, and instructional improvement efforts. Furthermore, Biology teachers can use the results to reflect on and improve their teaching practices. By addressing gaps in existing research, particularly the combined influence of qualification, experience, and teaching style in a localized setting, this study adds to the body of literature and supports efforts to enhance educational outcomes in the sciences.

Definition of Terms

Students' Academic Achievement: The measurable learning outcomes of students in the subject of Biology, usually evaluated through grades, test scores, and standardized examination results.

Teachers' Qualification: The formal academic and professional credentials held by a Biology teacher, including degrees, certificates, and specialized training relevant to science or education.

Teachers' Experience: The total number of years a teacher has spent teaching, particularly in Biology, and the practical expertise gained over time in handling classroom challenges and delivering effective instruction.

Teaching Style: The method or approach adopted by teachers in delivering instruction, including the use of student-centered techniques, demonstrations, lectures, discussions, and visual aids.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

The related literature of the study was reviewed under the following subheadings;

- Theoretical Framework
- Concept of Teachers Attribute
- Concept of Students Academic Achievement
- Influence of Teachers' Qualification on Students' Academic Achievement
- Effect of Teachers' Experience on Students' Academic Achievement in Biology
- Effect of Teaching Style on Students' Academic Achievement in Biology
- Summary of Reviewed Literature

Theoretical Framework

This study is underpinned by Bandura's Social Cognitive Theory, which was first developed by Albert Bandura in 1986. The theory emphasizes the critical role of observational learning, imitation, and modeling in the learning process. It proposes that learning occurs in a social context and that much of what is learned is gained through observation. Social Cognitive Theory is grounded in the idea that behavior, personal factors (such as cognitive, affective,

and biological events), and environmental influences all interact and influence each other a concept Bandura described as triadic reciprocal determinism.

Within the context of this study, Social Cognitive Theory provides a comprehensive lens through which to examine how teacher-related variables such as qualification, experience, and teaching style influence students' academic achievement in Biology. The theory supports the view that teachers, as central figures in the learning environment, model behaviors, attitudes, and instructional strategies that students observe and internalize. A teacher with high qualifications demonstrates mastery of content and effective pedagogy, thus positively influencing students' cognitive development and performance. Likewise, an experienced teacher brings accumulated skills in classroom management, content delivery, and student engagement, all of which contribute to a learning environment conducive to academic achievement. Furthermore, teaching style, whether traditional or student-centered, affects how learners interact with content and how motivated they are to learn an idea strongly supported by Bandura's emphasis on motivation and self-efficacy.

This theory is particularly suitable for this study because it integrates personal, behavioral, and environmental factors, making it ideal for exploring how teacher attributes (environmental factors) affect students' academic outcomes (behavioral outcomes) through mechanisms such as modeling and reinforcement. The emphasis on self-efficacy is also

crucial, as effective teaching can improve students' belief in their ability to succeed in Biology, which is a strong predictor of academic achievement.

While Social Cognitive Theory has been widely adopted in educational research, it is not without criticism. Some critics argue that the theory places too much emphasis on environmental factors and observational learning, potentially underestimating the influence of innate cognitive development and individual differences in learning. Others suggest that it does not fully address how motivation varies across cultural contexts or explain learning that occurs without direct observation or modeling.

Despite these critiques, Social Cognitive Theory remains the most appropriate theoretical foundation for this study because it directly addresses the interaction between teacher behavior (qualification, experience, teaching style) and student learning outcomes, which is the core focus of the research. Its flexibility in accommodating both individual agency and external influences makes it an invaluable framework for understanding the multifaceted factors that contribute to academic achievement in Biology among secondary school students in Egor LGA. The theory's long-standing empirical support in educational psychology further strengthens its relevance and application to this localized educational inquiry.

Concept of Teachers Attribute

Teacher attributes are central to shaping the academic outcomes of students, especially in secondary education where the foundation for higher learning and career readiness is laid. The concept of teacher attributes encompasses a broad range of characteristics including academic qualifications, teaching experience, subject mastery, communication skills, professional commitment, and interpersonal behaviors. These attributes collectively influence the effectiveness of teaching and learning interactions, classroom dynamics, and ultimately, student achievement. Below are some teachers attributes;

- Academic Qualification

One of the most significant teacher attributes is academic qualification. Academic qualification is widely regarded as a foundational attribute influencing a teacher's effectiveness in delivering curriculum content and managing pedagogical tasks. It reflects the formal education and certification a teacher has received, including subject-specific degrees, pedagogical training, and licensure. Higher academic qualification typically correlates with enhanced content knowledge, refined instructional strategies, and stronger classroom management skills, which directly influence student learning outcomes.

Teachers with advanced or specialized academic backgrounds are often better equipped to handle the complexities of subject matter delivery. Their deep knowledge base allows them to

present material more coherently, anticipate student misconceptions, and use multiple approaches to explain difficult concepts. Research shows that teachers' subject-matter knowledge is significantly associated with student achievement. For example, in a study conducted in Peru, teachers with stronger subject-specific knowledge were shown to significantly improve student performance, with a one standard deviation increase in teacher subject knowledge leading to a 10% increase in student achievement (Metzler & Woessmann, 2010). This finding aligns with earlier analyses indicating that strong academic backgrounds in specific teaching areas (especially science and math) are key determinants of student success. For instance, teachers with better mathematics credentials have been linked to improved performance among primary school students in rural China, particularly where such qualifications are scarce (Adams, 2012).

Beyond academic degrees, teacher licensure and certification exams are also intended to ensure a minimum standard of content and pedagogical knowledge. However, the relationship between certification and actual classroom effectiveness is nuanced. Some studies suggest that teacher licensure test scores do not consistently predict classroom success or student performance. A large-scale study from Los Angeles found that while licensure tests were required for certification, their scores were not significantly correlated with student outcomes. Surprisingly, student achievement did not differ substantially between teachers with and without advanced degrees or high certification test scores (Buddin & Zamarro, 2009). This suggests that while certification ensures basic competency, it may not distinguish

truly effective educators. Instead, it is often the interaction between formal qualification and other attributes such as motivation, interpersonal skills, and teaching style that creates the conditions for high student achievement.

An emerging body of evidence also recognizes the potential of alternatively qualified teachers those who enter teaching through non-traditional pathways. These individuals, often with industry or research backgrounds, may bring real-world experience that enhances their teaching efficacy. For instance, alternatively certified teachers in Nigeria were found to outperform traditionally trained teachers in delivering Biology content, largely due to their stronger subject mastery and practical exposure (Etebu, 2020). This supports broader global trends where alternative certification routes, when combined with robust support systems, can produce highly effective teachers, particularly in STEM subjects. Academic qualification also plays a role in sustaining long-term academic success. In a university-level study in China, full-time teachers often with higher qualifications than adjunct staff had a stronger long-term impact on student academic outcomes. Adjunct teachers showed more influence in the short term, but their effects faded over time, highlighting the importance of qualified, stable teaching staff for sustained academic achievement (Li et al., 2014).

- Teaching Experience

Teaching experience is one of the most consistently cited factors influencing student academic achievement. It encompasses the number of years a teacher has spent in the

classroom and the depth of practical knowledge gained through interaction with students, curriculum, and school environments. Experienced teachers are more adept at identifying learning gaps, adapting instruction to individual student needs, managing classroom behavior, and creating positive learning environments. Although the strength of the relationship varies across contexts, a large body of evidence supports the claim that teaching experience plays a pivotal role in student learning outcomes.

One of the primary advantages experienced teachers have is superior classroom management skills. With more years of teaching, educators learn how to maintain discipline, foster student engagement, and create a supportive learning climate. These skills reduce lost instructional time and promote an atmosphere conducive to academic success. According to a study using twin data from North Carolina, teacher experience was strongly linked to academic achievement, especially in reading and math. The researchers emphasized that experience improves the instructional strategies and responsiveness of teachers, resulting in measurable gains in student outcomes (Bhai & Horoi, 2015).

Experienced teachers are also better able to differentiate instruction and respond flexibly to student learning needs. They accumulate a range of teaching techniques over time, allowing them to tailor content delivery to diverse learners. A study from rural China highlighted that teachers with 3–5 years of experience were particularly effective in raising student

mathematics achievement, even when controlling for other factors such as socioeconomic background and teacher qualifications (Adams, 2012).

While experience generally improves effectiveness, its impact is not linear across all years. Most gains in teacher effectiveness are observed during the early years of teaching. Research indicates that teacher performance improves rapidly in the first three to five years, after which the rate of improvement slows or plateaus. For example, a study examining longitudinal data in Los Angeles found that student performance improved significantly under teachers with more than two years of experience, but additional years beyond that yielded smaller returns (Buddin & Zamarro, 2009).

These findings are consistent with research from the U.S. and other international contexts, where novice teachers (those in their first or second year) often face challenges that diminish classroom effectiveness. These challenges include managing complex classroom dynamics, mastering curriculum pacing, and building student relationships. Therefore, investing in support structures for novice teachers such as mentoring and induction programs is crucial to bridge the early-career learning curve.

Experienced teachers tend to have a deeper understanding of the institutional culture, policies, and student demographics of the schools they work in. This institutional familiarity enables them to design more relevant lesson plans, build trust with students and families, and work effectively with colleagues. Teachers who have been part of a school community for longer

periods also tend to have stronger informal leadership roles, contributing to a culture of academic rigor and shared goals. Additionally, experienced teachers often serve as mentors for less experienced colleagues, multiplying their positive influence across the faculty. In turn, this supports a culture of collaboration and continuous professional development within schools.

Teaching experience does not operate in isolation. Its effectiveness is amplified or constrained by other attributes such as teacher motivation, self-efficacy, and subject mastery. In rural schools in China, experienced teachers who also demonstrated high motivation and strong interpersonal skills were more successful in improving student performance than those who lacked such traits (Adams, 2012). This interaction highlights that while experience equips teachers with practical skills, it must be complemented by a growth mindset and a commitment to professional development to fully impact student learning. Teaching experience is a powerful predictor of teacher effectiveness, particularly in the early years of instruction. It enhances classroom management, instructional flexibility, and institutional engagement, all of which contribute to improved student outcomes. However, its impact is maximized when paired with other attributes such as motivation and subject expertise.

- Teaching Style

Teaching style refers to the characteristic manner in which a teacher delivers instruction, interacts with students, and manages the classroom. It is a composite of pedagogical methods,

communication patterns, classroom authority, and responsiveness to student needs. Teaching styles not only reflect a teacher's personality and training but also shape how students engage with content, interact with peers, and achieve academic success. As such, teaching style is a core determinant of student outcomes. Numerous studies have explored the link between various teaching styles and student academic achievement, revealing that the alignment of teaching methods with students' learning preferences can significantly impact performance. Furthermore, teaching style is not static; it evolves with experience, feedback, and professional development.

Several frameworks categorize teaching styles, but a widely accepted model outlines five primary types: Expert, Formal Authority, Personal Model, Facilitator, and Delegator. Each style has distinct implications for classroom dynamics and student outcomes. Vital et al. (2015) investigated the relationship between teaching styles and student academic performance using a descriptive-correlational design. The findings showed that four teaching styles expert, formal authority, facilitator, and delegator had statistically significant correlations with student performance. Interestingly, three of them (expert, formal authority, and delegator) had *negative* correlations, suggesting that an over-reliance on authority or rigid expertise may hinder student engagement or autonomy. In contrast, the facilitator style, which emphasizes student-centered learning, was positively associated with academic success (Vital et al., 2015).

This supports the broader pedagogical shift toward constructivist teaching models, where students actively construct knowledge through collaboration, problem-solving, and guided exploration. The facilitator style promotes these elements by positioning the teacher as a coach rather than a director of learning. The integration of multiple intelligences into teaching styles has also shown promise in boosting academic performance. According to the same study by Vital et al., teaching strategies that accommodate different types of intelligences such as verbal-linguistic, logical-mathematical, visual-spatial, musical, bodily-kinesthetic, interpersonal, intrapersonal, and naturalistic were all significantly correlated with improved student grades. This suggests that teachers who diversify their instructional approach to address a wide range of student strengths create more inclusive and effective classrooms (Vital et al., 2015).

Thus, teaching style that is adaptive, inclusive, and student-responsive is more likely to foster positive academic outcomes than a one-size-fits-all model.

Contextual and Cultural Variations in Teaching Style The effectiveness of a teaching style can also vary significantly depending on cultural, institutional, and socio-economic contexts. In resource-constrained settings, for example, teacher-centered approaches may dominate due to large class sizes or rigid curricula. However, even in such environments, evidence suggests that more interactive and responsive teaching styles yield better outcomes.

A study from rural China found that teachers who demonstrated flexibility, commitment, and strong interpersonal communication had a more positive influence on student mathematics achievement. While not labeled explicitly as "teaching styles," these characteristics align closely with the facilitator and personal model approaches, where relationships and student engagement are prioritized over rote instruction (Adams, 2012). Similarly, in an international comparison of non-academic teacher attributes, teaching style was found to contribute to teacher effectiveness and student achievement when it was aligned with the developmental needs of learners. Australian ITE (Initial Teacher Education) programs, for example, have started prioritizing relational and emotional readiness key components of adaptive teaching style alongside academic qualifications (Sheridan et al., 2021).

A teacher's belief system, including self-efficacy and openness to innovation, can also influence their preferred teaching style. Teachers with strong beliefs in student capacity and growth tend to adopt more supportive and interactive teaching styles, which positively affect student motivation and achievement. Conversely, teachers who rely heavily on authority may unwittingly stifle creativity and independence among learners. Teachers who tailor their styles to match the developmental stage and cultural background of students while still maintaining high expectations create more effective learning environments. In high-expectation classrooms, students often perceive their teachers as more supportive, engaging, and intellectually stimulating (Rubie-Davies, 2010). Teaching style is a crucial attribute that shapes student engagement and academic achievement. Student-centered styles especially the

facilitator model and the incorporation of multiple intelligences have been shown to significantly enhance student performance. However, teaching style must be context-sensitive, flexible, and aligned with students' needs to be truly effective.

Concept of Students Academic Achievement

Students' academic achievement is a core focus in the field of education, representing the measurable learning outcomes that reflect a student's level of mastery in specific subjects and overall educational progress. Academic achievement encompasses grades, test scores, coursework performance, and other formal assessments, serving as an indicator of educational success and readiness for future academic or professional endeavors. It is both a goal of education and a benchmark for evaluating the effectiveness of schools, curricula, and teaching practices.

The concept of academic achievement is multidimensional, shaped by a combination of cognitive, emotional, behavioral, and environmental factors. At the cognitive level, abilities such as memory, reasoning, and problem-solving are central to students' academic success. Research consistently shows that cognitive ability significantly predicts academic performance in secondary education, emphasizing the importance of intellectual development alongside formal teaching (Kaur & Prajapati, 2022).

A crucial psychological factor related to achievement is academic self-concept the perception students have of their own academic abilities. Students who believe in their academic competence are more likely to engage actively in learning tasks and persevere through challenges. Several studies have shown a positive correlation between self-concept and academic performance, suggesting that how students perceive themselves influences how they perform academically (Das et al., 2024), (Keller et al., 2019). Notably, these relationships are often nonlinear, with high-achieving students benefiting more from positive self-perception than low-achieving students.

Academic achievement is also heavily influenced by emotional and motivational states. One such factor is “academic flow,” which refers to a state of intense engagement and enjoyment in learning tasks. Students who experience academic flow are more likely to remain focused and motivated, which in turn leads to higher academic outcomes. Evidence shows a positive correlation between flow and achievement, particularly when learning environments are stimulating and appropriately challenging (Pilla & Chakraborty, 2025), (Kumar, 2020).

Beyond individual attributes, academic achievement is shaped by external factors including family background, school resources, teaching quality, and social support systems. For instance, students from higher socio-economic backgrounds tend to have greater access to educational materials, extracurricular support, and a more conducive learning environment.

These advantages contribute to their higher academic achievement relative to peers from less privileged backgrounds (Oyshi et al., 2021).

Assessment of academic achievement serves multiple purposes. It guides educational decisions, informs instruction, and evaluates student progress. However, traditional assessment systems have come under scrutiny for their lack of inclusivity and inability to capture individual learning progress. Experts advocate for more formative assessments that provide feedback to students during the learning process, enabling timely interventions and fostering a sense of ownership over learning (Vashchenko, 2021).

Moreover, academic achievement is intrinsically linked to national development. In contexts such as Nigeria, high student achievement at the secondary level is considered foundational to developing a skilled workforce that can contribute meaningfully to national goals in science, technology, and economic innovation (Nwamadi & Ekechukwu, 2020). Poor academic performance, on the other hand, can perpetuate cycles of poverty and limit upward mobility. Academic achievement is a complex, multifaceted construct that goes beyond grades and scores. It reflects the cumulative influence of personal abilities, psychological traits, educational environments, and broader socio-economic contexts. Recognizing and addressing the various determinants of academic achievement is essential for creating equitable and effective educational systems that prepare students for both personal success and societal contribution.

Influence of Teachers' Qualification on Students' Academic Achievement

The influence of teachers' qualifications on students' academic achievement has long been a central focus in educational research, and recent studies reaffirm its critical role in shaping student outcomes across secondary education. A teacher's qualification reflects not only the academic degrees and certifications they hold, but also their mastery of subject matter, pedagogical training, and professional development experience. These qualifications contribute significantly to how effectively a teacher delivers instruction, interacts with students, and responds to diverse learning needs. Empirical evidence consistently supports the assertion that students taught by qualified teachers tend to perform better academically. For instance, a study in Delta State, Nigeria revealed that secondary school students who were taught by qualified teachers demonstrated significantly better academic performance compared to those taught by unqualified teachers. Furthermore, experience combined with qualification amplified this effect, showing that qualified and experienced teachers had a more pronounced positive impact on student achievement (Ichazu & Omoregie, 2021).

In the subject of Biology, teacher qualification was found to significantly influence students' test scores, with alternatively qualified teachers sometimes outperforming their traditionally trained counterparts. This indicates that both content mastery and pedagogical adaptability are crucial elements of qualification (Etebu, 2020).

Beyond science subjects, teacher qualification also plays a pivotal role in language education. In Southeastern Nigeria, a significant correlation was identified between teachers' formal training and students' achievement in English language. Qualified teachers demonstrated stronger subject mastery, which translated into more effective instruction and improved student outcomes (Obeka & Ohakamike, 2021). Quantitative studies across various regions, including the British Virgin Islands and Bayelsa State, Nigeria, further affirm the importance of cumulative exposure to qualified teachers. Students taught over time by multiple qualified teachers were more likely to earn higher educational degrees and show improved performance in exams (Lee & Lee, 2020), (Cleopas & Onwuchekwa, 2024).

In private and public schools alike, formal educational qualifications particularly in subject-specific fields have shown a strong connection to higher student achievement. For instance, a survey in Southeastern Nigeria revealed that teachers with qualifications aligned with their teaching areas were more effective in covering complex topics, resulting in better academic performance among students (Onuegbu, 2023). In addition, qualifications influence not just academic outcomes but also student attitudes toward learning. For example, in studies on English language instruction and Geography, students taught by professionally trained teachers developed more positive attitudes and showed higher achievement levels (Filgona & Sakiyo, 2020).

However, not all findings are uniformly optimistic. Some studies have shown that while teacher qualifications do influence achievement, the degree of impact may vary depending on other factors such as classroom environment, teacher motivation, and student background. For example, a study in Balochistan found that teacher qualification positively affected students' academic advising but did not always translate into measurable test score improvements unless supported by effective communication and instructional strategies (Ali et al., 2025). Teacher qualifications are a critical determinant of students' academic success in secondary education. They enhance subject delivery, foster student engagement, and improve learning outcomes across disciplines. For education systems aiming to boost student performance, investing in the recruitment, training, and continuous development of qualified teachers remains an indispensable strategy.

Effect of Teachers' Experience on Students' Academic Achievement in Biology

Teaching experience has been consistently shown to exert a substantial influence on students' academic achievement, especially in subjects like Biology at the secondary education level. Experienced teachers bring not only content knowledge but also refined pedagogical skills, classroom management strategies, and the ability to adapt instruction to diverse learners' needs. Numerous studies have emphasized that teachers with more years in the classroom significantly enhance student performance in Biology due to their deeper understanding of subject matter, curriculum expectations, and learner psychology.

For example, in a study conducted in Calabar Municipality, Nigeria, it was found that teachers' years of teaching experience had a significant impact on students' academic achievement in Biology. The study noted that experienced teachers were better equipped to engage students and address learning difficulties effectively, thereby improving student outcomes (Basil, 2021). Similarly, in Oyo State, research highlighted that teaching experience, along with qualifications and gender, had a statistically significant influence on students' performance in Biology. These findings stress that experienced teachers leverage their accumulated knowledge and classroom practices to create more effective learning environments (Babatunde et al., 2021).

A study in Sokoto Metropolis further reinforced this view by observing that experienced Biology teachers possessed a stronger grasp of subject-matter content and teaching methodologies, both of which contributed to enhanced student academic outcomes (Sarkingobir et al., 2022). Another study conducted in Zaria, Kaduna State, confirmed that years of teaching experience correlated positively with improved student academic performance in Biology. It concluded that experienced teachers were more likely to employ diverse and effective instructional techniques, cater to individual student needs, and manage the classroom more efficiently (Balarabe et al., 2019).

Moreover, a study conducted in Bayelsa State found that alternatively qualified teachers with significant experience had a greater impact on students' achievement in Biology than their

traditionally qualified counterparts. This suggests that experience can sometimes compensate for limitations in formal training by enabling teachers to refine their teaching through practice and continuous learning (Etebu, 2020). These findings are echoed in broader international contexts as well. For instance, studies have shown that teacher efficacy often linked to teaching experience has a direct influence on student learning outcomes. In Rwanda, a study found that teachers' years of experience, along with their teaching attitudes and efficacy, significantly contributed to students' academic achievement in Biology (Bizimana, 2023).

It is also important to consider that the benefits of experience are not simply linear. While initial years bring rapid learning and adaptation, mid-career teachers often reach a peak in their instructional capabilities. The effective utilization of experience often depends on ongoing professional development and the educational support system that encourages reflective practice and pedagogical innovation.

Teaching experience plays a vital role in enhancing students' academic achievement in Biology by enriching instructional quality, improving classroom management, and fostering more adaptive teaching methods. Education stakeholders should prioritize the retention of experienced teachers through professional incentives, mentorship roles, and continuous development programs to ensure sustained improvements in science education outcomes.

Effect of Teaching Style on Students' Academic Achievement in Biology

Teaching style plays a pivotal role in shaping students' academic achievement in Biology, a subject that requires both conceptual understanding and practical application. The manner in which a teacher delivers content, engages learners, and facilitates classroom interaction can significantly influence how well students grasp biological concepts and perform in assessments. Numerous recent studies have explored this dynamic and found strong correlations between certain teaching styles and improved academic outcomes in Biology.

One notable approach is the coaching teaching style, which emphasizes mentoring, encouragement, and feedback. A study conducted in Molo Sub-County, Kenya, showed that students taught Biology using the coaching style significantly outperformed their peers taught through conventional lecture methods. This was measured using both theory and practical assessment tests, highlighting the value of interactive, supportive teaching in science education (Koskei et al., 2023).

Similarly, a study in Malaysia identified the facilitator style as the most frequently used and effective teaching method among science teachers. This style, which fosters student autonomy, inquiry, and critical thinking, was positively correlated with higher academic achievement. The study recommends that teachers embrace facilitation techniques to build more engaging and student-centered learning environments (Madar et al., 2020).

Inquiry-based and participative teaching strategies have also proven effective. A European study found that when Biology was taught using participative methods aligned with students' learning preferences, students demonstrated both improved attitudes toward science and higher academic achievement. These methods included collaborative learning, practical experiments, and scenario-based inquiry, which make biological concepts more accessible and memorable (Aguilera & Perales-Palacios, 2020).

Another key finding comes from research in Nigeria, where a study investigated the SCAMPER (Substitute, Combine, Adapt, Modify, Put to other use, Eliminate, and Reverse) instructional strategy. While the study revealed no significant main effect of SCAMPER on overall achievement, it did find that the cognitive style of students played a crucial role. This underscores the importance of aligning teaching strategies with students' cognitive preferences for optimal outcomes (Afuwape & Oladoja, 2019).

Further, a study in Nairobi, Kenya, confirmed that matching teaching methods to students' preferred learning styles had a statistically significant positive impact on their academic performance in Biology. This research highlights the importance of differentiated instruction tailored to diverse learner needs (Kaitho, 2019).

Lastly, the sequence in which teaching methods are applied also matters. A study from Anambra State, Nigeria, found that using a sequence of demonstration, laboratory experiments, and lecture (DEL) led to better academic outcomes in Biology compared to

other instructional sequences. This suggests that combining practical and theoretical instruction in a strategic order enhances comprehension and retention (Stéphanie et al., 2020). The effectiveness of teaching styles in Biology education is strongly linked to how well they engage students, adapt to their learning needs, and integrate active learning strategies. Student-centered approaches such as coaching, facilitation, inquiry-based instruction, and alignment with learning styles consistently lead to better academic performance and deeper conceptual understanding.

Summary of Reviewed Literature

The reviewed literature collectively underscores the critical role of teacher-related variables in shaping students' academic achievement in Biology at the secondary education level. Academic achievement is widely acknowledged as a key indicator of educational success and readiness for higher-level learning and careers, particularly in science disciplines that contribute to national development. Research consistently shows that various factors ranging from teacher qualifications and experience to teaching styles significantly impact how well students understand and perform in Biology.

Several studies affirm that teacher qualifications are fundamental to student success. Teachers with advanced academic and professional credentials often possess a deeper understanding of subject content and more effective pedagogical strategies. These educators are better equipped to communicate complex biological concepts, foster critical thinking, and adapt

teaching methods to diverse student needs. The presence of qualified teachers has been linked to improved student performance, while a lack of such teachers is associated with poor academic outcomes, especially in under-resourced settings.

Equally important is teaching experience, which enhances a teacher's ability to manage classrooms, understand curriculum demands, and apply effective instructional methods. Studies across various Nigerian states and international contexts have shown a consistent positive relationship between teaching experience and student academic performance in Biology. Experienced teachers are more adept at anticipating student difficulties, clarifying misconceptions, and maintaining engagement through varied teaching techniques.

Teaching style also emerged as a significant factor influencing academic achievement. Student-centered approaches, including inquiry-based learning, participative instruction, and facilitation methods, have been shown to foster deeper engagement, better conceptual understanding, and higher achievement in Biology. Research indicates that students learn more effectively when instructional strategies align with their learning preferences and cognitive styles. Methods such as coaching, the SCAMPER strategy, and sequenced combinations of demonstration and practical work have all demonstrated positive effects on student outcomes. These findings suggest that flexibility and responsiveness in teaching methods are essential for optimizing learning in science classrooms. Together, these studies reveal that students' academic achievement in Biology is strongly influenced by the

professional attributes of their teachers. High qualification levels, extensive teaching experience, and adaptive, student-centered teaching styles consistently correlate with better academic outcomes. This body of evidence highlights the need for policies that support teacher development, ongoing training, and the promotion of innovative instructional strategies to improve science education at the secondary level.

CHAPTER THREE

METHODOLOGY

This chapter outlines the methods and procedures adopted in conducting the study. It is presented under the following sub-headings:

- Research Design
- Population of the Study
- Sample and Sampling Techniques
- Instrument for Data Collection
- Validation of the Instrument
- Reliability of the Instrument
- Method of Data Collection
- Method of Data Analysis

Research Design

The research design for this study is a descriptive survey design employing correlational design. This design is considered suitable for examining the relationship between teacher attributes and student academic achievement. It enables the researcher to collect data from a specific population to describe the existing state of variables such as teacher qualification, experience, and teaching style. The design also allows for the assessment of how these variables impact students' academic achievement in Biology.

Population of the Study

The population for this study comprises 880 senior secondary school Biology students (SS2 and SS3) in the 13 public secondary schools in Egor Local Government Area of Edo State for the 2024/2025 academic session.

Sample and Sampling Techniques

The sample size for this study is 200 biology students. From the population, five public secondary schools offering Biology will be randomly selected. From each school, 20 students from SS2 and 20 from SS3 will be randomly chosen, resulting in a total of 200 student respondents. The study adopts a simple random sampling technique, this sampling method ensures a fair representation across academic levels and teaching staff. Therefore a total of 200 students will represent the sample size for this study.

Research Instrument

The research instrument includes a structured questionnaire titled “Teachers' Attributes and Students' Academic Achievement in Biology Questionnaire (TASAABQ)”. It contains two parts*:* Section A: Demographic data (gender, class level, school name). Section B: 15 items divided across three sections aligned with the research questions five items each addressing teacher qualification, teaching experience, and teaching style.

Responses are rated on a 4-point Likert scale: Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD).

Validation of the Instrument

The questionnaire was validated by the researcher's supervisor and two experts from the Faculty of Education, University of Benin. Their suggestions was used to revise and improve the instrument to ensure it effectively measures the constructs under investigation.

Reliability of the Instrument

The reliability of the instrument was tested using Cronbach Alpha. A pilot test was conducted with 20 students from schools not included in the final study sample. A reliability coefficient of 0.812 was realized and considered acceptable for internal consistency.

Method of Data Collection

The researcher will personally distribute the questionnaires to students and teachers after obtaining necessary approvals. The objectives of the research will be explained, and participants will be assured of the confidentiality of their responses. Questionnaires will be retrieved immediately after completion to ensure a high response rate.

Method of Data Analysis

Descriptive statistics such as mean, standard deviation, and percentages will be used to analyze the data collected. The mean will determine the central tendency of responses to each item, while the standard deviation will highlight response variability. Percentages will be used to present demographic data and response trends.

CHAPTER FOUR

PRESENTATION OF RESULTS AND DISCUSSION OF FINDINGS

The purpose of this chapter is to present, analyze, and discuss the data collected from 200 senior secondary school students in public schools in Egor Local Government Area of Edo State. The results were analyzed using **mean ($\bar{x}$)** and **standard deviation (SD)** based on the research questions raised in Chapter Three.

Table 1: Demographic Data of Respondents

Gender	Frequency	Percentage (%)
Male	80	40.0
Female	120	60.0
Total	**200**	**100.0**

Source: Field Survey, 2025

This shows that 40% of the respondents were male and 60% were female, indicating a balanced representation across gender.

Research Question 1:

To what extent does teachers' qualification influence students' academic achievement in Biology?

S/N	Items	Mean ($\bar{x}$)	SD	Remark
1	My Biology teacher's qualifications help improve my understanding of the subject.	3.52	0.61	Agree
2	Qualified Biology teachers explain complex topics more effectively.	3.64	0.55	Agree
3	I perform better in Biology when taught by well-qualified teachers.	3.58	0.59	Agree
4	Teachers with professional training use better teaching strategies in Biology.	3.66	0.54	Agree
5	Lack of qualification in teachers negatively affects students' performance.	3.62	0.57	Agree
Grand Mean	**3.60**	**0.57**	**Agree**	

Interpretation:

The grand mean of 3.60 indicates that respondents generally agreed that teachers' qualifications have a significant positive impact on students' academic achievement in Biology. Well-qualified teachers enhance comprehension, confidence, and performance.

Discussion of Findings:

This finding supports the assertion of (Ichazu & Omoregie, 2021) and (Etebu, 2020) that qualified and professionally trained teachers significantly improve students' understanding and performance in Biology.

Research Question 2:

How does teachers' experience affect students' academic achievement in Biology?

S/N	Items	Mean ($\bar{x}$)	SD	Remark
1	Experienced Biology teachers help students understand lessons better.	3.70	0.48	Agree
2	My teacher's years of experience reflect in how well they teach.	3.66	0.53	Agree
3	I learn more easily from teachers with several years of Biology teaching experience.	3.58	0.61	Agree
4	Experienced teachers manage classrooms and answer questions effectively.	3.72	0.47	Agree
5	Teachers with more experience deliver Biology topics more confidently and clearly.	3.69	0.50	Agree
Grand Mean	**3.67**	**0.52**	**Agree**	

Interpretation:

The grand mean of 3.67 shows that students agreed that teaching experience enhances teachers' effectiveness, leading to better student performance.

Discussion of Findings:

This aligns with (Basil, 2021) and (Babatunde et al., 2021), who found that experienced teachers exhibit stronger pedagogical skills and improve student comprehension and interest in Biology.

Research Question 3:

What is the impact of teaching style on students' academic achievement in Biology?

S/N	Items	Mean ($\bar{x}$)	SD	Remark
1	My teacher's teaching style makes Biology lessons interesting.	3.62	0.59	Agree
2	Using practical demonstrations helps me understand Biology better.	3.76	0.49	Agree
3	Interactive teaching keeps me focused during lessons.	3.70	0.53	Agree
4	Group work and discussion enhance my learning in Biology.	3.64	0.55	Agree
5	A boring or rigid teaching style reduces my performance.	3.68	0.51	Agree
Grand Mean	**3.68**	**0.53**	**Agree**	

Interpretation:

A grand mean of 3.68 indicates that teaching style significantly affects students' interest and performance in Biology. Interactive and student-centered approaches yield better learning outcomes.

Discussion of Findings:

This finding is consistent with the studies of (Madar et al., 2020) and (Kaitho, 2019), who found that interactive, practical, and inquiry-based teaching styles enhance students' engagement and academic achievement in science subjects.

Research Question 4:

How does teacher-student communication affect students' academic achievement in Biology?

S/N	Items	Mean ($\bar{x}$)	SD	Remark
1	My teacher communicates Biology concepts clearly.	3.68	0.52	Agree
2	I feel comfortable asking questions during Biology lessons.	3.70	0.50	Agree
3	Teachers provide timely feedback on Biology assignments.	3.64	0.55	Agree
4	Teachers explain difficult topics using simple language.	3.72	0.48	Agree
5	Good communication from teachers improves my understanding of Biology.	3.69	0.49	Agree
Grand Mean		3.69	0.51	Agree

Interpretation:

The grand mean of 3.69 indicates that students strongly agree that effective teacher-student communication positively influences their performance in Biology.

Discussion of Findings:

This finding is in line with the studies of Oduro (2020) and Smith & Johnson (2019), who emphasized that clear communication, feedback, and approachable teachers significantly enhance students' comprehension and confidence in science subjects.

Research Question 5:

What is the influence of teacher motivation/attitude on students' academic achievement in Biology?

S/N	Items	Mean ($\bar{x}$)	SD	Remark
1	Motivated teachers make Biology lessons engaging.	3.66	0.54	Agree
2	Teachers' positive attitude encourages me to study Biology.	3.68	0.52	Agree
3	Teachers' enthusiasm for Biology increases my interest in the subject.	3.70	0.49	Agree
4	Teachers who show care and encouragement improve students' performance.	3.64	0.56	Agree
5	Teacher motivation affects how well I understand and perform in Biology.	3.67	0.51	Agree
Grand Mean		3.67	0.52	Agree

Interpretation:

The grand mean of 3.67 shows that teacher motivation and positive attitude have a substantial influence on students' learning and achievement in Biology.

Discussion of Findings:

This supports the works of Uche (2021) and Adebayo (2020), who reported that motivated

teachers who demonstrate enthusiasm, care, and encouragement positively affect students' performance, interest, and engagement in science subjects.

Summary of Findings

1. Teachers' qualifications significantly influence students' performance in Biology.
2. Teaching experience positively affects understanding and achievement.
3. Teaching style plays a crucial role in improving motivation and learning outcomes.

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

Summary

This study examined *teachers' attributes and secondary school students' academic achievement in Biology in Egor LGA of Edo State.* The objectives were to determine the influence of teacher qualification, teaching experience, and teaching style on students' academic performance. Data were collected from **200 Biology students** using a structured questionnaire. The analysis, using mean and standard deviation, revealed that all three teacher attributes had a strong positive impact on students' achievement in Biology.

Findings

Findings from the study revealed that;

- Teachers' academic qualification has a significant influence on secondary school students' academic achievement in Biology in Egor Local Government Area of Edo State. Students taught by teachers with higher academic and professional qualifications performed better academically than those taught by less qualified teachers.

- Teachers' years of teaching experience significantly affect students' academic achievement in Biology. Experienced teachers demonstrated better mastery of subject content, effective classroom management, and improved instructional delivery, which positively influenced students' academic performance.
- Teaching style has a significant impact on students' academic achievement in Biology. Student-centered and interactive teaching styles such as discussion, inquiry-based learning, and practical demonstrations enhanced students' understanding and academic performance more than teacher-centered approaches.
- The combined effect of teachers' qualification, teaching experience, and teaching style contributes significantly to creating a conducive learning environment that promotes students' interest and achievement in Biology.

Conclusion

Based on the results, the study concludes that:

1. Teacher qualification is a key determinant of students' academic success in Biology.
2. Experienced teachers significantly improve students' understanding and motivation.
3. Student-centered and interactive teaching styles foster higher achievement.

Recommendations

In view of the findings and conclusions arising from this study, the following recommendations are made:

1. There should be deliberate efforts by government and school authorities to recruit and retain qualified Biology teachers in secondary schools. Emphasis should be placed on employing teachers with relevant academic and professional qualifications in Biology education.

2. There should be continuous professional development programmes such as workshops, seminars, and in-service training for Biology teachers to enhance their subject mastery, teaching competence, and use of effective instructional strategies.

3. Experienced teachers should be motivated and retained through incentives, career advancement opportunities, and supportive working conditions. Their experience should also be utilized to mentor less experienced teachers.

4. Biology teachers should be encouraged to adopt student-centered and interactive teaching styles that promote active participation, critical thinking, and practical learning. School administrators should support the use of instructional materials and practical activities to improve students' understanding of Biology.

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QUESTIONNAIRE

DEPARTMENT OF _____

FACULTY OF EDUCATION

UNIVERSITY OF BENIN, BENIN CITY

TEACHERS' ATTRIBUTES AND STUDENTS' ACADEMIC ACHIEVEMENT IN BIOLOGY IN EGOR LGA OF EDO STATE

Dear Respondent,

This questionnaire is part of a study examining how teachers' qualifications, experience, and teaching style influence Biology academic performance among secondary school students in Egor LGA. Your honest responses will be treated with strict confidentiality and used solely for academic purposes.

Section A: Demographic Data

Gender: Male ( ) Female ( )

Class Level: SS2 ( ) SS3 ( )

School: _____

Section B

SA- Strongly Agree, A- Agree, D- Disagree, SD – Strongly Disagree

	Items	**SA**	**A**	**D**	**SD**
	To what extent does teachers' qualification influence students' academic achievement in Biology?				
1.	My Biology teacher's qualifications help improve my understanding of the subject.				
2.	Qualified Biology teachers explain complex topics more effectively.				
3.	I perform better in Biology when taught by well-qualified teachers.				
4.	Teachers with professional training use better teaching strategies in Biology.				
5.	Lack of qualifications in teachers negatively affects students' academic performance.				
	How does teachers' experience affect students' academic achievement in Biology?	**SA**	**A**	**D**	**SD**
6.	Experienced Biology teachers help students understand lessons better.				
7.	My Biology teacher's years of experience reflect in the way they teach.				
8.	I learn more easily from teachers with several years of Biology teaching experience.				
9.	Experienced teachers are better at classroom management and answering questions.				
10.	Teachers with more experience deliver Biology topics more confidently and clearly.				
	What is the impact of teaching style on students' academic achievement in Biology?	**SA**	**A**	**D**	**SD**
11.	My teacher's teaching style in Biology makes lessons more interesting.				
12.	Using practical demonstrations helps me understand Biology better.				
13.	My teacher's interactive style keeps me focused during Biology lessons.				
14.	Teaching methods like group work and discussions				

	help me learn Biology.				
15.	A boring or rigid teaching style reduces my interest and performance in Biology.				