INFLUENCE OF TEACHERS' CHARACTERISTICS ON SECONDARY SCHOOL STUDENTS' LEARNING OF BIOLOGY IN EGOR LOCAL GOVERNMENT AREA OF EDO STATE

BY

Scholarstica Dumebi MOLOKWU

DEPARTMENT OF CURRICULUM AND INSTRUCTIONAL TECHNOLOGY

UNIVERSITY OF BENIN

BENIN CITY, NIGERIA

FEBRUARY 2025

INFLUENCE OF TEACHERS' CHARACTERISTICS ON SECONDARY SCHOOL STUDENTS' LEARNING OF BIOLOGY IN EGOR LOCAL GOVERNMENT AREA OF EDO STATE

BY

Scholarstica Dumebi MOLOKWU

EDU2001384

A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF CURRICULUM AND INSTRUCTIONAL TECHNOLOGY, FACULTY OF EDUCATION, UNIVERSITY OF BENIN, BENIN CITY IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE BACHELOR OF EDUCATION B.SC (ED) DEGREE IN BIOLOGY EDUCATION

FEBRUARY 2025

CERTIFICATION

We, the undersigned, hereby certify that this research work was carried out by Scholarstica Dumebi MOLOKWU of the Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin, Benin City.

_____ _____

DR. INIOBONG J. UMOH **DATE**
(Project Supervisor)

_____ _____

DR. (MRS.) A. H. OYAKHIROME **DATE**
(Project Coordinator)

_____ _____

DR. F.O. IDEHEN **DATE**
(Head of Department)

DEDICATION

This project work is dedicated to Almighty God and my parents, Mr. and Mrs. Christopher Molokwu.

ACKNOWLEDGEMENTS

The researcher's deepest gratitude goes to God Almighty for giving her the strength to complete this project work. She wishes to express her sincere gratitude to her project supervisor, Dr. Iniobong J. Umoh whose guidance and timely correction contributed to the completion of this project work.

She also wish to express her sincere gratitude to the Head of Department of Curriculum and Instructional technology, Dr. Festus O. Idehen and some of her lecturers, Dr. (Mrs.) E.O Eromosele, Dr. (Mrs.) N. V. David Egbenusi, Mr. F. O Idiage for their contribution to her studies in this prestigious institution.

The researcher wishes to convey her profound gratitude to her parents, Mr. and Mrs. Christopher for their unfailing support materially, mentally and spiritually. She wish to thank them for always being there for her. She prays that God continue to bless them and grant them good health and long life, Amen!

She wishes to appreciate her lovely siblings, Ndubuisi, Aunty Chi, Maureen, Cynthia and Chiedozie for their care, support and prayers throughout her stay in this great institutions, she thank them for being there for her.

The researcher wishes to thank her wonderful friends, Favour, Sonia, Gift, Precious, Glory, Fali and Faith, Nonso, Stephen, Sele, Ehimen, Obose for their love and cooperation while in school. She appreciate all the CIT course mates of hers for being part of the wonderful experience she had during my stay in the University of Benin.

TABLE OF CONTENTS

	PAGE
TITLE PAGE	I
CERTIFICATION	II
DEDICATION	III
ACKNOWLEDGMENT	IV
TABLE OF CONTENTS	V
LIST OF TABLES	VII
ABSTRACT	VIII
CHAPTER ONE: INTRODUCTION	
Background to the Study	1
Statement of the Problem	5
Research Questions	6
Purpose of the Study	6
Significance of the Study	7
Scope and Delimitation of the Study	8
Definition of Terms	8
CHAPTER TWO: REVIEW OF RELATED LITERATURE	
Concept of Biology	9
Influence of Teachers' Qualification on Students' Learning of Biology	14
Influence of Teachers' Professionalism on Students' Learning of Biology	17
Influence of Teachers' Sex on Students' Learning of Biology	22
Influence of Teachers' Experience on Students' Learning of Biology	26
Summary of Literature Reviewed	29

PAGE

CHAPTER THREE: METHODOLOGY

Research Design 31

Population of the Study 32

Sample and Sampling Technique 32

Research Instrument 32

Validity of the Research Instrument 33

Reliability of the instrument 33

Method of Data Collection 33

Method of Data Analysis 33

CHAPTER FOUR: PRESENTATION OF RESULT AND DISCUSSION OF FINDINGS

Presentation 34

Discussion of Findings 38

CHAPTER FIVE: SUMMARY, CONCLUSION, AND RECOMMENDATIONS

Summary 41

Findings 42

Conclusion 42

Recommendations 43

REFERENCES **44**

APPENDIX **47**

LIST OF TABLES

PAGE

Table 1: Descriptive Statistics of the Mean on Teachers' Characteristics that Influence Secondary School Students' Learning of Biology 34

Table 2 Influence of Teachers' Characteristics on Secondary School Students' Learning of Biology Based on School Ownership 36

Table 3: Difference in the Influence of Teachers' Characteristics on Secondary School Students' Learning of Biology Based on School Location 37

Table 4: Influence of Teachers' Characteristics on Secondary School Students' Learning of Biology between Large School and Small School 38

ABSTRACT

This study investigated the influence of teachers' characteristics on secondary school students' learning of Biology in Egor Local Government Area of Edo State. To achieve the purpose of the study, four research questions were raised and answered.

The descriptive survey research method was adopted for the study. The population of this study comprised all the 201 teachers in the 20 senior secondary schools in Egor Local Government Area of Edo State. The sample size for the study was made up of 100 teachers representing 50% of the population.

The findings from the study include that there is a significant difference in the influence of teachers' characteristics on secondary school students' learning of Biology between large school and small school. It was concluded that teachers' characteristics such as qualification, professionalism, experience and teachers' sex significantly influence secondary school students' learning of Biology in Egor Local Government Area of Edo State. The study recommended among others that the Ministry of Education and school authorities in Egor Local Government Area should prioritize continuous professional development and training programmes for Biology teachers.

CHAPTER ONE

INTRODUCTION

Background to the Study

The influence of teachers' characteristics on secondary school students' learning of biology is a critical area of educational research, as it encompasses various factors that significantly impact students' academic performance and interest in the subject. Teachers' characteristics, including their qualifications, teaching experience and personal attributes such as enthusiasm, communication abilities, and approachability, play a pivotal role in shaping students' understanding and appreciation of biology (Aliyu, 2021). Effective Biology teachers not only possess a deep knowledge of the subject matter but also the ability to engage students through interactive and innovative teaching methods. Some of teachers' characteristics which may influence secondary school students' learning of Biology include teachers' qualification, professionalism, teachers' sex and experience.

Biology, as a subject represents the scientific study of life and living organisms, encompassing an extensive range of sub-disciplines that focus on various aspects of the biological world. Biology aims to understand the intricate details of the structure, function, growth, origin, evolution, and distribution of living entities (Okorie, 2020). This field of science delves into the complexity of life on Earth, ranging from the smallest microorganisms, such as bacteria and viruses, to the largest mammals, including humans and whales. The study of Biology is fundamental in uncovering the mechanisms that

sustain life, driving biological diversity, and maintaining ecosystems. By exploring the myriad forms of life, biologists can gain insights into how different organisms interact with each other and their environments, ultimately contributing to a more comprehensive understanding of the natural world. This understanding is crucial for developing strategies to address ecological challenges, conserve biodiversity, and improve the quality of life.

The influence of teachers' characteristics such as teachers' qualification on students' learning of Biology cannot be overemphasized. The influence of teachers' qualifications on students' learning of Biology in secondary schools is a critical area of education, with far-reaching implications for academic success and interest in the sciences. Highly qualified teachers bring a wealth of knowledge and expertise to the classroom, which directly impacts students' understanding and engagement with the subject (Ikwuni, 2022). For instance, teachers with advanced degrees in Biology or related fields possess a deep understanding of the subject matter, enabling them to explain complex biological concepts more clearly and accurately. They are well-versed in the intricacies of topics such as genetics, ecology, and cellular biology, which allows them to present the material in a more comprehensive manner. This level of expertise enables them to create more effective lesson plans tailored to the learning needs of their students, employing a variety of teaching methods such as hands-on experiments, interactive discussions, and multimedia resources. As a result, students gain a richer,

more detailed understanding of biological processes and principles, which can lead to higher academic achievement and a stronger foundation for future studies in the sciences.

Teachers' professionalism constitute another integral part of teachers' characteristics that may influence secondary school students' learning of Biology. Professionalism in this context refers to the comprehensive development that teachers undergo, including ongoing training, adherence to ethical standards, and commitment to reflective practices that enhance their instructional effectiveness (Bagudu, 2020). Professionally developed teachers bring more than just subject matter expertise to the classroom; they embody a dedication to continuous improvement and excellence in teaching. This commitment manifests in their ability to create dynamic and engaging learning experiences that foster deep understanding and critical thinking skills in students (Sadoh, 2022). Through regular participation in professional development programmes, these teachers stay updated on the latest pedagogical strategies, technological advancements, and scientific discoveries, which they then integrate into their teaching. This continual learning ensures that their instructional methods are both current and effective, thereby significantly enhancing students' learning outcomes in Biology.

Teachers' sex is another component of teachers' characteristics that may influence secondary school students' learning of Biology. The sex of a teacher can significantly influence students' learning experiences and outcomes in Biology. This influence stems from the differing teaching styles, perspectives, and approaches that male and female

teachers typically bring to the classroom (Iweala, 2023). Male teachers often emphasize competition, assertiveness, and independence, which can foster an environment where students are encouraged to challenge themselves and their peers. In a subject like Biology, which requires critical thinking and problem-solving skills, this competitive atmosphere can drive students to engage more deeply with the material and strive for excellence. Male teachers might also incorporate more hands-on experiments and practical applications of biological concepts, which can make the subject matter more tangible and exciting for students. However, this approach can sometimes be intimidating for students who are less confident or who do not thrive in competitive settings.

Teachers' experience constitute another integral part of teachers' characteristics that may influence secondary school students' learning of Biology. The experience of teachers plays a pivotal role in shaping the learning outcomes of students, particularly in subjects as intricate and dynamic as Biology. Experienced teachers often bring a wealth of knowledge and a deep understanding of the subject matter that goes beyond textbooks (Adewoye, 2020). Over the years, they have not only mastered the curriculum but have also developed the ability to make complex biological concepts more digestible and relatable for students. For example, while teaching topics like cellular processes or genetic mutations, an experienced Biology teacher can draw upon a repertoire of real-life examples, anecdotes, and analogies that make these abstract concepts more tangible and engaging. They might use current events, such as advancements in medical research or environmental issues, to illustrate how biology is relevant to students' lives. Additionally,

experienced teachers can anticipate common misconceptions and address them proactively, thereby preventing misunderstandings that can hinder learning. This ability to connect theoretical knowledge with practical, everyday experiences helps to engage students more deeply, fostering a better understanding and retention of the material (Udom, 2019). Furthermore, experienced teachers often have well-developed classroom management skills, which ensure a conducive learning environment where students can focus on and enjoy the subject matter.

Statement of the Problem

In contemporary time, preliminary observation has shown that secondary school students seems to face significant problems in learning Biology, perhaps due to the inadequacy of educational resources and the lack of engaging instructional methods. Biology, being a subject that requires both theoretical understanding and practical application, appears to suffer from the shortage of well-equipped laboratories and up-to-date textbooks. Common observation has shown that many schools seems to lack the necessary facilities for conducting experiments, which are crucial for students to grasp complex biological concepts. This deficiency not only hampers their practical knowledge but also diminishes their interest and motivation to learn the subject. Moreover, the theoretical nature of Biology becomes even more daunting without the aid of visual and hands-on learning experiences, leading to a superficial understanding of the subject matter.

In addition to the aforementioned problems, common observation has shown that there appears to be lack of effective teacher characteristics in secondary schools in recent time. It seems that many Biology teachers in some secondary schools are inadequately trained and lack the passion and commitment needed to inspire students. Moreover, the poor communication skills of some teachers may hinder their ability to convey complex biological concepts in an understandable manner to students. The researcher is worried by these phenomenon and so wishes to investigate on the influence of teachers' characteristics on secondary school students' learning of Biology in Egor Local Government Area of Edo State.

Research Questions

The following questions will guide the study;

1. What are the teachers' characteristics that influence secondary school students' learning of Biology in Egor Local Government Area of Edo State?
2. Is there a difference in the influence of teachers' characteristics on secondary school students' learning of Biology based on school ownership?
3. Is there a difference in the influence of teachers' characteristics on secondary school students' learning of Biology based on school location?
4. Is there a difference in the influence of teachers' characteristics on secondary school students' learning of Biology between large school and small school?

Purpose of the Study

The main purpose of the study is to investigate on the influence of teachers' characteristics on secondary school students' learning of Biology in Egor Local Government Area of Edo State. However, the specific objectives of the study are to:

1. Find out the teachers' characteristics that influence secondary school students' learning of Biology in Egor Local Government Area of Edo State;
2. Examine if there is a difference in the influence of teachers' characteristics on secondary school students' learning of Biology based on school ownership;
3. Determine if there is a difference in the influence of teachers' characteristics on secondary school students' learning of Biology based on school location;
4. Ascertain if there is a difference in the influence of teachers' characteristics on secondary school students' learning of Biology between large school and small school.

Significance of the Study

The study will be of utmost significance to students, teachers, policy makers, Ministry of Education and prospective researchers. The study will benefit students as it will help them understand the influence of teachers' characteristics on their learning of Biology.

The study will benefit teachers as it will help provides valuable insights for them by highlighting the specific characteristics that positively influence student learning in Biology. Teachers can use these findings to reflect on and enhance their teaching

practices, ensuring that they are effectively meeting the educational needs of their students.

The study will benefit policy makers and the Ministry of Education as it will help them see the relationship between teachers' characteristics and students' learning of Biology. This will put them in a better position to formulate policies that can be designed to attract and retain high-quality teachers, ultimately leading to better educational outcomes in Biology.

The study will benefit prospective researchers as it will serve as a source of reference point to them. The study will help provide a foundational framework that can be built upon in future research, enabling further investigation into the complex dynamics between teacher characteristics and student learning outcomes.

Scope and Delimitation of the Study

The study focuses on the influence of teachers' characteristics on secondary school students' learning of Biology in Egor Local Government Area of Edo State. The study will be delimited to all public senior secondary schools in Egor Local Government Area of Edo State.

Definition of Terms

The following terms were operationally defined in the study:

Biology: Biology examines the structure, function, growth, origin, evolution, and distribution of living things.

Learning: Learning is the process of acquiring new knowledge, skills, attitudes, or behaviors through study, experience, or teaching.

Teachers' Characteristics: Teachers' characteristics, including their qualifications, teaching experience, pedagogical skills, and personal attributes such as enthusiasm, communication abilities, and approachability.

CHAPTER TWO

LITERATURE REVIEW

This chapter contained the reviewed of relevant literature on the influence of teachers' characteristics on secondary school students' learning of Biology. The review was organized along the following subheadings:

- Concept of Biology
- Influence of Teachers' Qualification on Students' Learning of Biology
- Influence of Teachers' Professionalism on Students' Learning of Biology
- Influence of Teachers' Sex on Students' Learning of Biology
- Influence of Teachers' Experience on Students' Learning of Biology
- Summary of Literature Reviewed

Concept of Biology

Biology, as a subject represents the scientific study of life and living organisms, encompassing an extensive range of sub-disciplines that focus on various aspects of the biological world. Biology aims to understand the intricate details of the structure, function, growth, origin, evolution, and distribution of living entities (Okorie, 2020). This field of science delves into the complexity of life on Earth, ranging from the smallest microorganisms, such as bacteria and viruses, to the largest mammals, including humans and whales. The study of Biology is fundamental in uncovering the mechanisms that sustain life, driving biological diversity, and maintaining ecosystems. By exploring the myriad forms of life, biologists can gain insights into how different organisms interact with each other and their environments, ultimately contributing to a more comprehensive understanding of the natural world. This understanding is crucial for developing strategies to address ecological challenges, conserve biodiversity, and improve the quality of life.

The concept of Biology is deeply rooted in the principles of observation and experimentation, which are hallmarks of the scientific method. Biologists employ a wide range of techniques and tools, from advanced microscopy and molecular genetics to extensive field studies and ecological surveys, to collect data and develop robust theories about living organisms. The study of Biology extends beyond the present, reaching into the past to examine fossil records and evolutionary history (Udoka, 2022). By tracing the lineage and development of life over billions of years, biologists can piece together the evolutionary processes that have shaped current biodiversity and predict future biological

trends. This historical perspective is invaluable in understanding how life on Earth has evolved and adapted to changing environments over time. Furthermore, it helps scientists identify patterns and mechanisms that have contributed to the survival and extinction of species, offering insights into the resilience and vulnerability of life.

Biology is a vast field divided into various branches, each focusing on specific aspects of life. For instance, botany is dedicated to the study of plants, exploring their physiology, structure, genetics, ecology, distribution, and classification (Zaku, 2019). Zoology, on the other hand, focuses on animals, investigating their anatomy, physiology, behavior, and interactions with ecosystems. Microbiology examines microscopic organisms, such as bacteria, viruses, fungi, and protozoa, which play crucial roles in processes like decomposition, disease, and symbiosis. Genetics delves into heredity and variation in organisms, studying how traits are passed from one generation to the next and how genetic information is expressed and regulated. Physiology investigates the physical and chemical functions of living systems, from cellular processes to the functioning of entire organisms. Ecology looks at the relationships between organisms and their environments, examining how living beings interact with each other and with their physical surroundings. These branches often overlap and integrate with other scientific disciplines, such as chemistry and physics, highlighting the interdisciplinary nature of Biology and its relevance to understanding the complexities of the natural world.

The applications of Biology are vast and impactful, influencing numerous fields such as medicine, agriculture, environmental conservation, and biotechnology. Advances in Biology have led to the development of medical treatments, vaccines, and diagnostic tools, improving healthcare outcomes and extending human life expectancy. In agriculture, biological research has contributed to the development of high-yield, disease-resistant crops, sustainable farming practices, and improved livestock management techniques (Dahiru, 2021). Environmental conservation efforts rely heavily on biological insights to develop strategies for protecting endangered species, preserving habitats, and mitigating the impacts of climate change. Biotechnology, a rapidly growing field, harnesses biological processes for industrial and other purposes, revolutionizing areas like genetic engineering, pharmaceuticals, and bioinformatics. The integration of Biology with technology has enabled scientists to manipulate genetic material, create genetically modified organisms, and develop innovative solutions to global challenges. As our understanding of Biology continues to grow, it holds the promise of addressing some of the most pressing issues facing humanity, from combating infectious diseases and managing natural resources to ensuring food security and promoting environmental sustainability.

Biology plays a critical role in advancing our understanding of human health and disease. Through the study of cellular and molecular biology, researchers have uncovered the fundamental processes that underpin human physiology and pathology. This knowledge has been instrumental in the development of new medical treatments and

technologies that improve patient care (Udehi, 2019). For example, understanding the mechanisms of cellular signaling pathways has led to the creation of targeted therapies for cancer, while insights into genetic mutations have paved the way for personalized medicine, where treatments are tailored to an individual's genetic makeup. Furthermore, the study of microbiology has been crucial in the development of antibiotics, vaccines, and other interventions that combat infectious diseases. By exploring the interactions between humans and microorganisms, biologists can develop strategies to prevent and treat infections, thereby enhancing public health outcomes. The Human Genome Project, a landmark scientific endeavor, has further underscored the importance of Biology by mapping the entire human genome, providing a comprehensive blueprint of our genetic material and opening new avenues for research and innovation.

Biology is also essential in addressing environmental sustainability and conservation efforts. As human activities continue to impact the planet's ecosystems, the study of Biology provides critical insights into the relationships between organisms and their environments. Ecologists and conservation biologists work to understand the dynamics of ecosystems, the effects of habitat loss and fragmentation, and the impact of climate change on biodiversity. By studying these interactions, biologists can develop strategies to mitigate environmental degradation and promote the conservation of natural resources (Salami, 2020). For instance, research on keystone species and their roles in maintaining ecosystem balance has informed conservation practices aimed at preserving biodiversity. Additionally, understanding the genetic diversity within species is vital for

developing conservation strategies that enhance the resilience of populations to environmental changes. Biotechnology also contributes to sustainability efforts through the development of biofuels, biodegradable materials, and sustainable agricultural practices. As global challenges such as climate change, pollution, and resource depletion become increasingly urgent, the role of Biology in providing solutions to these issues becomes ever more critical. Through the application of biological knowledge, we can work towards a more sustainable future, where human activities coexist harmoniously with the natural world.

Influence of Teachers' Qualification on Students' Learning of Biology

The influence of teachers' qualifications on students' learning of Biology in secondary schools is a critical area of education, with far-reaching implications for academic success and interest in the sciences. Highly qualified teachers bring a wealth of knowledge and expertise to the classroom, which directly impacts students' understanding and engagement with the subject (Ikwuni, 2022). For instance, teachers with advanced degrees in Biology or related fields possess a deep understanding of the subject matter, enabling them to explain complex biological concepts more clearly and accurately. They are well-versed in the intricacies of topics such as genetics, ecology, and cellular biology, which allows them to present the material in a more comprehensive manner. This level of expertise enables them to create more effective lesson plans tailored to the learning needs of their students, employing a variety of teaching methods such as hands-on experiments, interactive discussions, and multimedia resources. As a result, students gain a richer,

more detailed understanding of biological processes and principles, which can lead to higher academic achievement and a stronger foundation for future studies in the sciences.

Teachers with higher qualifications often have more experience in both teaching and in the field of Biology itself. This experience is invaluable as it equips them with a range of strategies to address different learning styles and student needs. Experienced teachers are adept at identifying students who may be struggling and can offer targeted support to help them catch up. They can modify their teaching approaches to accommodate diverse learners, using differentiated instruction techniques to ensure that all students have the opportunity to succeed (Tamuno, 2022).

Furthermore, experienced teachers are skilled at creating an inclusive classroom environment where all students feel valued and are encouraged to participate. They understand the importance of fostering a supportive and engaging atmosphere that promotes active learning and critical thinking (Nabofa, 2023). The confidence and competence that come with experience can significantly enhance the learning atmosphere, making Biology more accessible and interesting to students. By drawing on their extensive knowledge and pedagogical skills, experienced teachers can inspire a love for Biology and motivate students to pursue further studies in the field.

Teachers' qualifications often reflect their commitment to ongoing professional development. Teachers who pursue advanced degrees or additional certifications demonstrate a dedication to staying current with the latest advancements in Biology and

pedagogical strategies. This commitment to professional growth means that these teachers are more likely to incorporate new scientific discoveries and innovative teaching techniques into their curriculum (Kolawole, 2020). For example, they might integrate recent research findings into their lessons, use cutting-edge technology and software to enhance learning, or adopt inquiry-based learning methods that encourage students to think critically and solve problems independently.

By staying abreast of current trends and research in Biology, qualified teachers can provide students with a contemporary and relevant education, preparing them for higher education and careers in the sciences. This proactive approach to teaching ensures that students are not only learning fundamental biological concepts but also understanding their real-world applications and implications (Orji, 2019). The ability to connect classroom learning to real-life scenarios makes the subject more engaging and meaningful, fostering a deeper appreciation for the importance of Biology in everyday life.

The qualifications of Biology teachers can also impact students' perceptions and attitudes toward the subject. Students tend to respect and trust teachers who are highly qualified, which can enhance their motivation and interest in Biology. When students see their teachers as knowledgeable and passionate about the subject, they are more likely to develop a similar enthusiasm (Ititigbe, 2022). This positive attitude can lead to increased engagement, better retention of information, and a greater willingness to pursue further

studies in Biology. In essence, the influence of teachers' qualifications extends beyond academic achievement, fostering a lifelong interest and curiosity in the biological sciences.

Highly qualified teachers can serve as role models and mentors, inspiring students to explore careers in science, technology, engineering, and mathematics (STEM) fields (Ugbo, 2021). By sharing their own experiences and achievements, these teachers can help students envision themselves as future scientists, researchers, and innovators. This aspirational influence is particularly important for underrepresented groups in STEM, as it can help bridge the gap and promote diversity within the field. The impact of teachers' qualifications on students' learning of Biology is multifaceted, affecting not only academic performance but also shaping students' attitudes, aspirations, and future career paths.

Okonji (2020) carried out a study on influence of teachers' qualification on students' learning of Biology in public secondary schools in Rivers State, Nigeria. The purpose of the study was to ascertain the influence of teachers' qualification on students' learning of Biology. Four research questions and a null hypothesis guided the study. The study employed a descriptive survey design. A sample size of 150 respondents constituted the sample for the study. A 20 item questionnaire designed by the researchers was the major instrument used. Mean scores were used to answer the research questions and the t-test was used to test the hypothesis at 0.05 level of significance were used for

the data analysis. The results of the study among others revealed that there is a significant influence of teachers' qualification on students' learning of Biology in public secondary schools in Rivers State.

Influence of Teachers' Professionalism on Students' Learning of Biology

Professionally developed teachers bring more than just subject matter expertise to the classroom; they embody a dedication to continuous improvement and excellence in teaching. This commitment manifests in their ability to create dynamic and engaging learning experiences that foster deep understanding and critical thinking skills in students (Sadoh, 2022). Through regular participation in professional development programmes, these teachers stay updated on the latest pedagogical strategies, technological advancements, and scientific discoveries, which they then integrate into their teaching. This continual learning ensures that their instructional methods are both current and effective, thereby significantly enhancing students' learning outcomes in Biology.

Professional development enhances teachers' pedagogical skills, which are crucial for fostering an engaging and supportive learning environment. Teachers who engage in ongoing professional development are more likely to adopt innovative teaching techniques, such as inquiry-based learning, collaborative projects, and the use of digital tools, which cater to diverse learning styles and needs (Kalu, 2022). These methods not only make Biology lessons more interactive and enjoyable but also help to bridge the gap between theoretical knowledge and practical application. By incorporating hands-on

experiments and real-world examples, professionally developed teachers can make abstract biological concepts more tangible and relevant to students' lives. This approach not only boosts students' understanding and retention of the material but also sparks their curiosity and interest in the subject, leading to increased motivation and academic achievement.

Teachers' professionalism also has a significant impact on the classroom climate and students' emotional and social well-being. Professional development programs often emphasize the importance of creating an inclusive and respectful classroom environment where all students feel valued and supported (Binani, 2020). Teachers who are trained in these aspects are better equipped to manage classroom dynamics, address behavioral issues constructively, and provide individualized support to students who may be struggling. This nurturing atmosphere is essential for students' overall learning experience, as it allows them to feel safe and confident in expressing their ideas, asking questions, and taking intellectual risks. In a supportive classroom environment, students are more likely to engage actively in the learning process, collaborate effectively with their peers, and develop a positive attitude towards learning. Furthermore, professionally developed teachers are more adept at recognizing and addressing the diverse needs of their students, including those with special educational needs or language barriers, ensuring that all students have equal opportunities to succeed in Biology.

The influence of teachers' professionalism extends beyond the classroom, as professionally developed teachers are more likely to engage in collaborative practices with their colleagues, parents, and the wider school community. This collaboration can lead to a more cohesive and supportive educational environment, where best practices and resources are shared, and students receive consistent messages and support across different settings (Okonkwo, 2021). Teachers who continuously seek to improve their professional skills and knowledge also serve as positive role models for their students, demonstrating the value of lifelong learning and intellectual curiosity. By participating in professional learning communities, attending workshops and conferences, and engaging in reflective practices, teachers can stay abreast of new developments in Biology education and refine their teaching practices accordingly. This commitment to professional growth not only enhances their own effectiveness as educators but also contributes to the overall improvement of the school's academic culture. In summary, the level of training and professional development acquired by Biology teachers significantly impacts students' learning outcomes, shaping their understanding, engagement, and enthusiasm for the subject, and ultimately contributing to their overall academic success and personal growth.

The impact of teachers' professionalism on students' learning of Biology is also evident in the way it influences assessment and feedback practices. Professionally developed teachers are skilled in designing diverse and effective assessment strategies that go beyond traditional exams and quizzes. They employ formative assessments such

as concept maps, peer assessments, and reflective journals, which provide ongoing insights into students' understanding and progress (Fasasi, 2021). These strategies allow teachers to identify areas where students are struggling and to provide timely and targeted interventions. Moreover, professionally trained teachers are adept at giving constructive feedback that is specific, actionable, and encouraging. This feedback helps students to understand their mistakes, recognize their strengths, and develop a growth mindset. When students receive regular and meaningful feedback, they are more likely to take ownership of their learning, engage in self-assessment, and strive for continuous improvement. Consequently, the professional competence of teachers in the realm of assessment and feedback directly contributes to enhancing students' learning experiences and academic outcomes in Biology.

Furthermore, teachers' professionalism significantly influences the integration of technology in the Biology classroom. As technology becomes increasingly integral to education, teachers who engage in ongoing professional development are better equipped to incorporate digital tools and resources into their teaching. These teachers can effectively use technology to create interactive and multimedia-rich lessons that enhance students' understanding of complex biological processes (Ukeje, 2023). For instance, they might use virtual labs to simulate experiments that are not feasible in a traditional classroom setting, or utilize educational software to visualize cellular structures and functions in 3D. Additionally, professionally developed teachers are more likely to leverage online platforms for collaborative learning, where students can engage in

discussions, share resources, and work on group projects. By integrating technology seamlessly into their teaching, these teachers can cater to different learning preferences, promote digital literacy, and prepare students for the technologically advanced world. The ability to effectively use technology in teaching not only makes Biology more accessible and engaging for students but also fosters critical thinking and problem-solving skills that are essential for their future academic and career success (Edegbe, 2020).

Omoko (2021) conducted a study on the influence of teachers' professionalism on students' learning of Biology in public in secondary schools in Yenogoa, Bayelsa state, Nigeria. The study sought to examine the influence of teachers' professionalism on students' learning of Biology. Five research questions and three null hypotheses guided the study. The study employed a descriptive survey design. A sample of 110 respondents were used for the study. A structured questionnaire on influence of teachers' professionalism on students' learning of Biology was used to collect data for the study. Mean and standard deviation were used to answer the five research questions, while t-test statistic was adopted to test the three null hypotheses at 0.05 level of significance. The results of the study, among others revealed that teachers' professionalism constitute a significant factor influencing students' learning of Biology in public in secondary schools in Yenogoa, Bayelsa state.

Influence of Teachers' Sex on Students' Learning of Biology

The sex of a teacher can significantly influence students' learning experiences and outcomes in Biology. This influence stems from the differing teaching styles, perspectives, and approaches that male and female teachers typically bring to the classroom (Iweala, 2023). Male teachers often emphasize competition, assertiveness, and independence, which can foster an environment where students are encouraged to challenge themselves and their peers. In a subject like Biology, which requires critical thinking and problem-solving skills, this competitive atmosphere can drive students to engage more deeply with the material and strive for excellence. Male teachers might also incorporate more hands-on experiments and practical applications of biological concepts, which can make the subject matter more tangible and exciting for students. However, this approach can sometimes be intimidating for students who are less confident or who do not thrive in competitive settings.

Conversely, female teachers might prioritize collaboration, empathy, and support, creating a nurturing atmosphere that helps students feel more comfortable and confident in their learning. This approach can be especially beneficial for students who need a supportive environment to thrive academically. Female teachers might use more inclusive and interactive teaching methods, such as group discussions, collaborative projects, and personalized feedback, which can help all students feel valued and engaged (Fashanu, 2019). Additionally, female teachers may be more likely to address and support the social and emotional needs of their students, recognizing that a positive classroom environment is crucial for effective learning. This nurturing approach can help students develop a love

for Biology and a deeper understanding of the subject. However, some students might perceive this style as less rigorous, which could affect their motivation to push themselves academically.

The presence of female Biology teachers can be particularly influential for female students. In many educational settings, female students look up to female teachers as role models, especially in subjects traditionally dominated by males, such as the sciences. Seeing a female teacher succeed in and teach Biology can inspire female students to pursue further studies and careers in scientific fields, thereby breaking down gender stereotypes and encouraging greater gender diversity (Idigun, 2021). Female teachers can also be more attuned to the specific challenges that female students face, such as societal expectations, lack of confidence, and underrepresentation in science fields. They can provide targeted support and encouragement, helping female students to overcome these barriers and succeed in Biology. Moreover, female teachers might incorporate discussions about gender and science, fostering an awareness of the contributions of female scientists and promoting an inclusive view of the scientific community.

On the other hand, male teachers can have a unique impact on students' learning of Biology, particularly for male students. Male teachers may bring a different energy and perspective to the classroom, which can motivate students to engage more deeply with the subject. Male students, in particular, might see male teachers as role models, demonstrating that Biology is a field where men can excel and make significant

contributions (Lawal, 2020). This representation can be crucial in encouraging male students who might otherwise be disinterested in the subject to develop a passion for Biology. Male teachers' emphasis on practical, hands-on learning experiences can appeal to students' curiosity and drive to explore the natural world, making the study of Biology more dynamic and engaging. Furthermore, male teachers might use more straightforward, direct teaching methods, which can be effective for students who prefer a clear and structured approach to learning. However, this style might not cater to all learning preferences, potentially leaving some students feeling disengaged.

The sex of a Biology teacher plays a crucial role in shaping students' learning experiences and outcomes in secondary school. Both male and female teachers bring valuable qualities to the classroom that can enhance students' understanding and appreciation of Biology. By recognizing and leveraging the strengths of both male and female teachers, educational institutions can create a more inclusive and effective learning environment that caters to the diverse needs of students (Salau, 2021). Encouraging a balanced representation of male and female Biology teachers can help students of all genders see themselves as capable and successful learners in the sciences. This balanced representation can also foster a more equitable and diverse scientific community, where students feel empowered to pursue their interests in Biology and contribute to the field. Ultimately, the goal is to provide a supportive and dynamic learning environment that prepares students for future academic and career success in the sciences.

Abdulaziz (2020) in a study investigated the influence of teachers' sex on students' learning of Biology in secondary schools in Kaduna state, Nigeria. The descriptive research design of survey type was employed by the researcher for the study. The sample consisted of 90 respondents randomly selected from 12 secondary schools in the state. The structured questionnaire tagged "influence of teachers' sex on students' learning of Biology" was used by the researcher as the main instrument for data collection. Expert judgments were used to ensure face and content validity. Test-retest method was used to determine the reliability and a reliability coefficient of 0.72 was obtained. Data collected were analyzed by using t-test. The result revealed that there is no significant influence of teachers' sex on students' learning of Biology in secondary schools in Kaduna state.

Omokri (2019) conducted a study on the impact of teachers' gender on students' learning of Biology in secondary schools in Umuahia, Abia State, Nigeria. The purpose of the study was to examine the impact of teachers' gender on students' learning of Biology. Six research questions was raised by the researcher to guide the study. The researcher made use of the descriptive survey research design while a 15 items structured questionnaire was used by the researcher as the major instruments used for data collection. The analysis of data for the study was done using frequency count, mean score and standard deviation. The results of the study among others indicated that there is a significant impact of teachers' gender on students' learning of Biology in secondary schools in Umuahia, Abia State.

Influence of Teachers' Experience on Students' Learning of Biology

The experience of teachers plays a pivotal role in shaping the learning outcomes of students, particularly in subjects as intricate and dynamic as Biology. Experienced teachers often bring a wealth of knowledge and a deep understanding of the subject matter that goes beyond textbooks (Adewoye, 2020). Over the years, they have not only mastered the curriculum but have also developed the ability to make complex biological concepts more digestible and relatable for students. For example, while teaching topics like cellular processes or genetic mutations, an experienced Biology teacher can draw upon a repertoire of real-life examples, anecdotes, and analogies that make these abstract concepts more tangible and engaging. They might use current events, such as advancements in medical research or environmental issues, to illustrate how biology is relevant to students' lives.

Moreover, seasoned teachers are adept at identifying and addressing the diverse learning needs of their students. Over the course of their careers, they have encountered a wide array of learning styles and difficulties, and have developed a diverse toolkit of strategies to cater to these varied needs (Ogundele, 2022). For instance, an experienced Biology teacher can quickly recognize when a student is struggling with a particular concept and can employ multiple teaching methods to help them grasp the material. This might include using visual aids like diagrams and charts for visual learners, hands-on experiments and activities for kinesthetic learners, or detailed explanations and discussions for auditory learners. Such adaptability ensures that all students, regardless of

their preferred learning style, have the opportunity to succeed in understanding the complexities of Biology. In addition to catering to different learning styles, experienced teachers are skilled at differentiating instruction to meet the varied academic levels within a classroom. They can provide additional challenges for advanced students while offering extra support for those who need it, ensuring that every student can progress at their own pace (Nwagwu, 2019). This individualized approach not only improves comprehension but also helps to build students' confidence and interest in the subject.

Experienced teachers also play a crucial role in creating a supportive and motivating learning environment. Their years in the classroom have provided them with a deep understanding of the psychological and emotional factors that affect student learning. They know how to build rapport with students, create an atmosphere of trust, and encourage a positive attitude towards learning (Okeke, 2021). In the context of Biology, which can sometimes be perceived as a challenging and daunting subject, this supportive environment is essential. An experienced teacher can inspire confidence in students, helping them to overcome any fear or apprehension they may have towards the subject. This encouragement can significantly boost students' motivation and willingness to engage with the material, ultimately leading to better learning outcomes. Additionally, experienced teachers are often skilled at fostering a sense of curiosity and wonder about the natural world, which is particularly important in a subject like Biology. They can ignite students' interest by sharing their own passion for the subject and by encouraging students to explore topics that fascinate them (Babatunde, 2020). This intrinsic

motivation can lead to a deeper and more sustained engagement with the material, as students are more likely to pursue their own inquiries and seek out additional information beyond the classroom.

The influence of teachers' experience extends to the development of critical thinking and problem-solving skills among students. Biology is not just about memorizing facts; it requires analytical thinking and the ability to apply knowledge to new situations. Experienced teachers are well-versed in fostering these skills through various pedagogical techniques (Yakubu, 2021). They are skilled at posing thought-provoking questions, encouraging scientific inquiry, and guiding students through the process of hypothesis formation and experimentation. By challenging students to think critically and solve problems, experienced Biology teachers help to cultivate a deeper understanding of the subject and prepare students for further studies and careers in science. They can create opportunities for students to engage in hands-on investigations, participate in debates on scientific issues, and conduct research projects that require them to synthesize information from multiple sources. This emphasis on critical thinking and problem-solving not only enhances students' understanding of Biology but also equips them with essential skills that are valuable in many aspects of life (Ugochukwu, 2020).

Uchendu (2020) conducted a research on the influence of teachers' experience on students' learning of Biology in secondary schools in Enugu state, Nigeria. The study was carried out in order to ascertain the influence of teachers' experience on students'

learning of Biology. Five research questions guided the study while the descriptive survey method was adopted by the researcher as the design for the study. The simple random sampling technique was used to draw out 300 respondents which constituted the sample size for the study. The questionnaire which was titled "influence of teachers' experience on students' learning of Biology" was used by the researcher as instrument for data collection. Analysis of data gotten from the study was done using frequency count and percentage. The result of the study among others revealed that there is a significant influence of teachers' experience on students' learning of Biology in secondary schools in Enugu state, Nigeria.

Summary of Literature Reviewed

The literature reviewed critically examined the concept of Biology. As seen from the reviewed of literature, Biology, as a subject represents the scientific study of life and living organisms, encompassing an extensive range of sub-disciplines that focus on various aspects of the biological world.

The literature reviewed further examined the influence of teachers' qualification and professionalism on students' learning of Biology. It could be seen from the reviewed of literature that there is a significant influence of teachers' qualification on students' learning of Biology in secondary schools. The reviewed of empirical studies also shows that teachers' professionalism constitute a significant factor influencing students' learning of Biology in secondary schools.

The literature reviewed was concluded with an examination on the influence of teachers' sex and experience on students' learning of Biology. The reviewed of literature shows a mixed results. While some found out a correlation between teachers' sex and students' learning of Biology, other found none. The reviewed of empirical studies however revealed that there is a significant influence of teachers' experience on students' learning of Biology in secondary schools.

CHAPTER THREE

METHODOLOGY

This chapter described the methods that was used in conducting this research. This was done along the following sub-headings:

- Research Design
- Population of the Study
- Sample and Sampling Technique
- Research Instrument
- Validity of the Instrument
- Reliability of the Instrument
- Method of Data Collection
- Method of Data Analysis

Research Design

The research design adopted for this study is the descriptive survey research design. The descriptive survey design involves observing and collecting data on a given topic without manipulating variables. This design is considered suitable for this study as it helped to collect data to investigate on the influence of teachers' characteristics on secondary school students' learning of Biology in Egor Local Government Area of Edo State.

Population of the Study

The population of this study comprised all the 201 teachers in the 20 senior secondary schools in Egor Local Government Area of Edo State (Source: Ministry of Education, Edo State, 2024).

Sample and Sampling Technique

The sample size for the study was made up of 100 teachers representing 50% of the population. With the aid of the simple random sampling technique, 5 teachers each were drawn from the 20 senior secondary schools in the local government, thus making a total sample size of 100 respondents. The simple random sampling was used to draw out the respondents.

Research Instrument

The instrument for the data collection was a structured questionnaire titled: "Influence of Teachers' Characteristics on Students' Learning of Biology Questionnaire (ITCSLBQ)". The questionnaire was divided into two section A and B. Section "A" comprised of personal data of respondents such as age, sex while section B contained items that elicited information bothering on the influence of teachers' characteristics on secondary school students' learning of Biology. The questionnaire consisted of 4-point Likert scale response of Strongly agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD).

Validity of the Instrument

The constructed questionnaire for the study was presented to the project supervisor to confirm for content validity. Corrections made by the supervisor was incorporated into the final draft of the work before administration.

Reliability of the Instrument

The Cronbanch Alpha was used to determine the reliability of the instrument. The questionnaire was administered to a group of 20 respondents who were not part of the study. The result of their responses were correlated and a Cronbach coefficient of .813 was obtained. This shows that the instrument is reliable.

Method of Data Collection

The copies of the questionnaire was distributed by the researcher to the respondents. All the questionnaire that were administered were collected on the spot to ensure high return rate.

Method of Data Analysis

The researcher made use of descriptive statistics such as mean score and standard deviation as the method of data analysis. The scores above mean of 2.50 was considered high, while scores below mean of 2.50 was considered low.

CHAPTER FOUR

PRESENTATION OF RESULTS AND DISCUSSION OF FINDINGS

This chapter presents the results obtained from the analysis of data using the statistical procedures discussed earlier in chapter three. The analysis of the data is presented in two section, the first section deals with the presentation of results and the second section presents the discussion of the findings.

Presentation of Results

Research Question 1: What are the teachers' characteristics that influence secondary school students' learning of Biology in Egor Local Government Area of Edo State?

Table 1: Descriptive Statistics of the Mean on Teachers' Characteristics that Influence Secondary School Students' Learning of Biology

Variables	N	Mean	Standard Deviation
Teachers' Qualification	44	15.7	2.01
Teachers' Experience	31	17.1	3.07
Teachers' Professionalism	16	12.9	1.66
Teachers' Sex	9	11.4	1.54

Table 1 shows that the mean score for teachers' qualification is 15.7 and the standard deviation is 2.01, that of teachers' experience is 17.1 and the standard deviation is 3.07, the one for teachers' professionalism is 12.9 and the standard deviation is 1.66, while that of teachers' sex is 11.4 and the standard is 1.54. Teachers' experience has the highest

mean score, followed by teacher's qualification, teachers' professionalism and lastly, teachers' sex. These results suggest thatteachers' experience is the most influential characteristic affecting secondary school students' learning of Biology in Egor Local Government Area of Edo State, as it has the highest mean score (17.1). This indicates that students benefit significantly from teachers with more years of teaching experience. Teachers' qualification also plays a crucial role, with a mean score of 15.7, suggesting that higher academic and professional qualifications positively impact students' learning. Teachers' professionalism, with a mean score of 12.9, also contributes to students' learning, although to a lesser extent than experience and qualification. Teachers' sex has the lowest mean score (11.4), indicating that it has the least influence on students' learning outcomes in Biology

Research Question 2: Is there a difference in the influence of teachers' characteristics on secondary school students' learning of Biology based on school ownership?

Table 2: Descriptive Statistics of the Mean on Difference in the Influence of Teachers' Characteristics on Secondary School Students' Learning of Biology Based on School Ownership

Variables	N	Mean	Standard Deviation
Public Schools	59	16.03	1.77
Private Schools	41	12.07	1.53

From table 2, the mean difference for public schools is 16.03 and the standard deviation is 1.77, while that of private schools 12.07 and the standard deviation is 1.53. Public school has a higher mean score than private school by a mean difference of 3.96. These results suggest that teachers' characteristics have a greater influence on secondary school students' learning of Biology in public schools compared to private schools. The higher mean score for public schools (16.03) indicates that students in these schools may benefit more from their teachers' characteristics, such as qualifications, teaching experience, and instructional methods, than students in private schools, who have a lower mean score (12.07). This difference of 3.96 in mean scores implies that the ownership of the school plays a role in how teachers' characteristics impact students' learning outcomes in Biology.

Research Question 3: Is there a difference in the influence of teachers' characteristics on secondary school students' learning of Biology based on school location?

Table 3: Descriptive Statistics of the Mean on Difference in the Influence of Teachers' Characteristics on Secondary School Students' Learning of Biology Based on School Location

Variables	N	Mean	Standard Deviation
Urban	61	14.9	2.09
Rural	39	9.22	1.48

From table 3, the mean difference for urban schools is 14.9 and the standard deviation is 2.09, while that of rural schools 9.22 and the standard deviation is 1.48. Urban schools has a higher mean score than rural schools by a mean difference of 5.68. These results suggest that teachers' characteristics have a greater influence on secondary school students' learning of Biology in urban schools compared to rural schools. The mean difference of 5.68 implies that school location plays a significant role in how teachers' characteristics impact students' learning outcomes in Biology, with urban schools showing a stronger positive effect.

Research Question 4: Is there a difference in the influence of teachers' characteristics on secondary school students' learning of Biology between large school and small school?

Table 4: Descriptive Statistics of the Mean on Difference in the Influence of Teachers' Characteristics on Secondary School Students' Learning of Biology between Large School and Small School

Variables	N	Mean	Standard Deviation
Large School	67	13.29	2.11
Small School	33	8.74	1.39

From table 4, the mean difference for large school is 13.29 and the standard deviation is 2.11, while that of small school 8.74 and the standard deviation is 1.39. Large school has a higher mean score than small school by a mean difference of 4.55. These results suggest that teachers' characteristics have a greater influence on secondary school students' learning of Biology in large schools compared to small schools. The mean difference of 4.55 implies that school size plays a significant role in how teachers' characteristics impact students' learning outcomes in Biology, with large schools showing a stronger positive effect.

Discussion of Findings

Findings from the study in research question one revealed that the teachers' characteristics that influence secondary school students' learning of Biology in Egor Local Government Area of Edo State include teachers' qualification, teachers'

professionalism, teachers' sex and experience. In support of the findings, Ikwuni (2022) asserted that highly qualified teachers bring a wealth of knowledge and expertise to the classroom, which directly impacts students' understanding and engagement with Biology as a subject. Similarly, Sadoh (2022) asserted that professionally developed teachers bring more than just subject matter expertise to the classroom; they embody a dedication to continuous improvement and excellence in teaching. In same vein, Iweala (2023) found out in his study that the sex of a teacher can significantly influence students' learning experiences and outcomes in Biology.

Findings from the study in research question two also revealed that teachers' characteristics have a greater influence on secondary school students' learning of Biology in public schools compared to private schools. This finding can be attributed to differences in teacher recruitment, training, and motivation between public and private schools. Public school teachers often have higher qualifications and more years of experience due to government employment standards, whereas private schools may employ less experienced or unqualified teachers to cut costs. Additionally, public school teachers typically receive continuous professional development and have more structured teaching methodologies, which can enhance students' learning of Biology. Conversely, private schools may lack the same level of teacher support and resources, leading to a lesser impact on students' learning outcomes.

Findings from the study in research question three further revealed that teachers' characteristics have a greater influence on secondary school students' learning of Biology in urban schools compared to rural schools. This finding can be due to the availability of more qualified and experienced teachers in urban schools compared to rural schools. Urban areas generally attract teachers with higher qualifications due to better salaries, access to professional development opportunities, and improved working conditions. In contrast, rural schools often struggle with teacher shortages, lack of resources, and inadequate infrastructure, which can negatively impact the quality of instruction and students' learning of Biology. Additionally, urban schools may have better laboratory facilities and teaching aids that enhance learning, whereas rural schools often face limitations in these areas.

Findings from the study in research question four indicated that teachers' characteristics have a greater influence on secondary school students' learning of Biology in large schools compared to small schools. This finding may be due to the diverse expertise and specialization of teachers in large schools compared to small schools. Large schools often have a higher number of qualified teachers, enabling subject specialization and improved instructional delivery. Additionally, these schools tend to provide better professional development opportunities, mentorship programs, and access to teaching resources, all of which enhance the quality of Biology instruction. In contrast, small schools may have fewer teachers, leading to workload challenges, limited specialization,

and less exposure to advanced teaching methods, which can reduce their influence on students' learning outcomes.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter contained the summary of the study, the conclusions drawn, results obtained and recommendations proffered.

Summary

This study investigated the influence of teachers' characteristics on secondary school students' learning of Biology in Egor Local Government Area of Edo State. To achieve the purpose of the study, four research questions were raised and answered. The population of this study comprised all the 201 teachers in the 20 senior secondary schools in Egor Local Government Area of Edo State. The sample size for the study was made up of 100 teachers representing 50% of the population. With the aid of the simple random sampling technique, 5 teachers each were drawn from the 20 senior secondary schools in the local government, thus making a total sample size of 100 respondents.

The instrument that was used for the data collection was a structured questionnaire titled "Influence of Teachers' Characteristics on Students' Learning of Biology Questionnaire (ITCSLBQ)". The constructed questionnaire for the study was presented to the project supervisor and two other experts to confirm for content validity.

Necessary corrections were made and after which it was re-written before it was administered by the researcher. The questionnaire was the instrument for data collection. The descriptive survey research design was adopted for the study. An analysis of data was done mean score and standard deviation.

Findings of the research

Findings from the study include:

- That the teachers' characteristics that influence secondary school students' learning of Biology in Egor Local Government Area of Edo State include teachers' qualification, teachers' professionalism, teachers' sex and experience.
- That teachers' characteristics have a greater influence on secondary school students' learning of Biology in public schools compared to private schools.
- That teachers' characteristics have a greater influence on secondary school students' learning of Biology in urban schools compared to rural schools.
- That teachers' characteristics have a greater influence on secondary school students' learning of Biology in large schools compared to small schools.

Conclusion

The study investigated the influence of teachers' characteristics on secondary school students' learning of Biology in Egor Local Government Area of Edo State. Based on the findings of the study, the researcher concluded that teachers' characteristics such as qualification, professionalism, experience and teachers' sex significantly influence

secondary school students' learning of Biology in Egor Local Government Area of Edo State. It was also concluded that there is a significant difference in the influence of teachers' characteristics on secondary school students' learning of Biology between large school and small school.

Recommendations

Based on the findings and conclusion drawn, the following recommendations were put forward:

1. The Ministry of Education and school authorities in Egor Local Government Area should prioritize continuous professional development and training programmes for Biology teachers.
2. The Ministry of Education should ensure that experienced Biology teachers are deployed across both to large and small schools. The government and educational bodies should consider assigning seasoned teachers to smaller schools to ensure that students in these schools benefit from their wealth of knowledge and teaching experience.
3. Gender considerations should be balanced in the recruitment of Biology teachers. Encouraging both male and female teachers to engage with students could help create a more inclusive and varied learning environment.

4. Teachers should be encouraged to incorporate modern teaching techniques, such as the use of multimedia resources, hands-on activities, and inquiry-based learning, to make Biology lessons more engaging and practical for students.

REFERENCES

Abdulaziz, A. (2020). Influence of teachers' sex on students' learning of Biology in secondary schools in Kaduna state, Nigeria. *Journal of Educational Research, 29*(3), 213-225.

Adewoye, O. (2020). The role of experienced teachers in enhancing student engagement and understanding in Biology. Lagos: Star Publishing.

Babatunde, A. (2020). Motivating students to explore Biology: The role of passionate and experienced teachers. *Journal of Science Education, 18*(5), 234-245.

Binani, S. I. (2020). Professional Development and Its Impact on Creating a Supportive Classroom Climate. Lagos: Insights Press.

Dahiru, I. M. (2021). Agricultural advancements through biological research. *Journal of Agricultural Science, 14*(2), 56-63.

Edegbe, G. E. (2020). Integrating Technology in the Teaching of Biology: Benefits for Students' Understanding and Engagement. Ibadan: University Press.

Fasasi, M. A. (2021). Assessment Strategies in Secondary School Biology: Impact on Student Outcomes. Abuja: MacBan Publications.

Fashanu, O. (2019). Gender Perspectives in the Teaching of Biology: A Comparison of Male and Female Teachers' Approaches. Enugu: Rikert Press.

Ikwuni, E. O. (2022). Teachers' qualifications and their influence on students' academic performance in biology. *Journal of Educational Research, 8*(3), 112-120.

Iweala, P. C. (2023). The Role of Teachers' Gender in Shaping Students' Learning of Biology. Port Harcourt: Elite Publications.

Ititigbe, O. N. (2022). The role of qualified teachers in enhancing student interest in biology. *Education Today, 15*(1), 34-41.

Kalu, R. S. (2022). Professional development and its effect on Biology teachers' use of innovative teaching methods. *Journal of Pedagogical Studies, 27*(2), 75-81.

Kolawole, A. O. (2020). Professional development for biology teachers: Impact on student outcomes. *Journal of Science Education, 11*(4), 50-58.

Lawal, T. O. (2020). The influence of male teachers on students' engagement in Biology. *Journal of Educational Psychology, 19*(4), 210-217.

Nabofa, M. A. (2023). Effective teaching strategies in biology for inclusive classrooms. *Educational Practice Review, 9*(2), 88-95.

Nwagwu, M. (2019). Differentiated instruction in Biology education: Tailoring teaching methods for diverse learners. Abuja: Academic Publications.

Okeke, O. (2021). Building supportive learning environments: The influence of experienced teachers in fostering motivation in Biology students. Port Harcourt: Oak Publications.

Okonji, A. J. (2020). Influence of teachers' qualifications on students' learning of Biology in Rivers State, Nigeria. *Journal of Education and Social Science, 5*(3), 74-80.

Okonkwo, U. J. (2021). The importance of collaboration among teachers and its impact on students' academic success. *Collaborative Education Journal, 9*(3), 112-119.

Omoko, I. (2021). Teachers' professionalism and its influence on students' learning outcomes in Biology: A study in Bayelsa State, Nigeria. *Journal of Educational Research, 19*(1), 101-108.

Omokri, P. F. (2019). Impact of teachers' gender on students' learning of Biology in secondary schools in Umuahia, Abia State, Nigeria. *Journal of Educational Studies, 23*(5), 88-95.

Orji, F. C. (2019). Integrating contemporary research into biology education: A strategy for effective teaching. *Journal of Biological Education, 13*(4), 102-108.

Salami, T. A. (2020). Conservation biology and environmental sustainability in Nigeria. *Environmental Research Journal, 18*(2), 115-122.

Salau, A. I. (2021). Gender representation in Biology teaching: Enhancing student engagement and learning outcomes. *International Journal of Educational Science, 13*(2), 51-58.

Sadoh, A. M. (2022). Professional development in teaching: Impact on student learning in Biology. *Science and Teaching Journal, 15*(1), 123-130.

Tamuno, J. D. (2022). Strategies for addressing diverse learning needs in biology classrooms. *Educational Science Journal, 7*(3), 79-86.

Udehi, O. I. (2019). Molecular biology and its impact on medical treatments. *Journal of Medical Science, 6*(3), 45-51.

Udoka, M. C. (2022). The historical perspective of biology: Evolution and environmental interactions. *History of Biological Sciences, 10*(1), 21-29.

Ugochukwu, C. (2020). Fostering problem-solving skills in Biology education: The impact of experienced teachers. *Educational Leadership Journal, 33*(3), 98-110.

Ugbo, O. E. (2021). Inspiring future scientists: The role of qualified teachers in biology education. *Science Education Journal, 13*(2), 77-83.

Ukeje, I. A. (2023). Technology integration in Biology classrooms: Enhancing student learning through digital tools. *Journal of Educational Technology, 14*(3), 76-82.

Yakubu, S. (2021). Enhancing critical thinking in Biology students through effective pedagogical approaches. *Journal of Educational Research and Practice, 22*(2), 101-115.

Zaku, S. R. (2019). Advances in botany: Current trends in plant biology research. *Plant Science Review, 17*(1), 22-28.

DEPARTMENT OF CURRICULUM AND INSTRUCTIONAL TECHNOLOGY

FACULTY OF EDUCATION

UNIVERSITY OF BENIN

Dear Respondent,

The questionnaire is for the purpose of investigating the "**Influence of Teachers' Characteristics on Secondary School Students' Learning of Biology in Egor Local Government Area of Edo State**". Kindly fill it as appropriate. Your information will be treated confidentially. Thank you for your time.

Section A: Demographic Data

Qualification: B.Sc. (ED) ( ) B.Ed. ( ) M.Ed. ( ) M.Sc. Ed ( ) PhD ( ) others specify ( )

School Ownership: Public ( ) Private ( )

School Size: 50-300 ( ) 500 and above ( )

School Location: Rural ( ) Urban ( )

SECTION B: Data on Questionnaire

Indicate the extent to which you agree or disagree with the following statements.

Key: Strongly Agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD)

S/N	ITEMS	SA	A	D	SD

	Influence of Teachers' Qualification on Students' Learning of Biology				
1.	Highly qualified teachers often find it easy to explain Biology topics more clearly and accurately to students				
2.	Teachers with advanced qualifications are often more efficient in lesson planning, which can affect students' learning of Biology				
3.	Qualified teachers often find it more easy to engage students and cater to different learning styles				
4.	Qualified Biology teachers often find it easy to enhance comprehension and retention among students				
5.	Biology teachers with higher qualifications are more capable of implementing a curriculum that meets educational standards				
	Influence of Teachers' Professionalism on Students' Learning of Biology				
6.	Professional teachers often find it more easy to maintain a well-organized and disciplined classroom environment				
7.	Professional teachers are often more efficient in maximizing time for instruction and learning activities				
8.	Professional teachers often find it easy to identify students' areas of strength and weaknesses				
9.	Professional teachers often exhibit a passion for Biology and teaching, which can inspire and motivate students to develop a similar interest				
10.	Professional teachers provide academic and emotional support, helping students overcome learning challenges				
	Influence of Teachers' Sex on Students' Learning of Biology				
11.	Students may see teachers of their own sex as role models, influencing their interest and engagement in Biology				

12.	Differences in communication styles between male and female teachers may affect how information is presented and understood by students				
13.	Male and female teachers might employ different classroom management strategies, which can impact the learning of Biology				
14.	The sex of the teacher can influence students' perceptions of Biology as a subject				
15.	Students might find it easier to relate to teachers of their own sex, which can enhance their learning experience in Biology				
	Influence of Teachers' Experience on Students' Learning of Biology				
16.	Teachers with more experience tend to be better at motivating students by connecting biological concepts to real-world applications				
17.	Experienced teachers often find it easy to provide targeted support to students who struggle with certain biological concepts				
18.	Experienced teachers are more equip at helping students understand their strengths and areas for improvement				
19.	Experienced teachers often adapt their methods to meet the diverse learning needs of students				
20.	Experienced teachers are often more adept at utilizing various educational resources to enhance learning among students				