

Article

Influence of Teachers' Gender on Secondary School Students' Interest in Biology, Federal Capital Territory Abuja, Nigeria

M.A Katcha¹, O.I. Haruna², F. Ahmed Sani³

1. Department of Science & Environmental Education, Faculty of Education, University of Abuja, Nigeria
 2. Department of Science & Environmental Education, Faculty of Education, University of Abuja, Nigeria
 3. Department of Science & Environmental Education, Faculty of Education, University of Abuja, Nigeria
- * Correspondence: fatimasani1984@gmail.com

Abstract: The study examined Influence of Teachers' Gender on Secondary School Students' Interest in Biology, Federal Capital Territory, Abuja, Nigeria. The study adopted a descriptive survey research design. The population of the study comprised 15,840 Secondary School II (SS II) Biology students in the Federal Capital Territory, Abuja. A sample of 240 SS II Biology students was selected from four secondary schools using a multistage sampling procedure. Data were collected using: Gender and Students' Interest in Biology Questionnaire (TGSIBQ). The instrument was subjected to face and content validation by experts in Science Education and Measurement and Evaluation, while its reliability was established through a pilot study using an appropriate reliability coefficient of 0.84. The instrument was administered to the respondents by the researcher with the assistance of trained research assistants. Mean and standard deviation were used to answer the research questions, while independent-samples t-test was used to test the hypotheses at the 0.05 level of significance. The findings revealed that students perceived male Biology teachers as positively influencing their interest in Biology, with a grand mean of 3.06, above the criterion mean of 2.50. The test of the first hypothesis showed a significant difference in the interest ratings of male and female students regarding the influence of male Biology teachers, $t(238) = 22.333$, $p < .001$, with male students recording a higher mean rating ($M = 2.99$) than female students ($M = 1.99$). The second hypothesis also revealed a significant difference in the interest ratings regarding female Biology teachers, $t(238) = -7.65$, $p < .001$, with female students recording a higher mean rating ($M = 3.12$) than male students ($M = 2.71$). The study recommended that Biology teachers should adopt gender-responsive instructional practices that promote equal participation, motivation and sustained interest among both male and female students.

Citation: Katcha, M. A., Haruna, O. I & Sani, F. A. Influence of Teachers' Gender on Secondary School Students' Interest in Biology, Federal Capital Territory Abuja, Nigeria. American Journal of Science and Learning for Development 2026, 5(4), 1-11.

Received: 08th May 2026

Revised: 27th Jun 2026

Accepted: 12th Jul 2026

Published: 28th Aug 2026



Copyright: © 2026 by the authors. Submitted for open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license

(<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Teachers' gender, students' interest and gender-responsive instruction

1. Introduction

Biology occupies a significant position in secondary school education because it provides learners with knowledge of life, living organisms and the relationships between organisms and their environment. The effectiveness of Biology education consequently has implications for both individual educational development and the availability of scientifically knowledgeable human resources. The educational value of Biology, however, depends substantially on the extent to which learners become meaningfully engaged with the subject. Students' interest in Biology represents an important affective dimension of such engagement because interested learners are more likely to pay attention, participate in learning activities, ask questions and sustain effort when confronted with difficult concepts. Interest can also influence students' willingness to

explore Biology beyond the immediate demands of classroom instruction. Recent evidence from the Federal Capital Territory demonstrates that students' interest remains a significant concern in Biology education. Dajal et al. for example, reported that instructional conditions could produce substantial differences in Biology students' interest in Abuja, while Dajal and Awoyeye similarly found significant differences in students' interest following an intervention in ecological concepts [1].

The persistence of interest as an educational concern suggests that attention should extend beyond the content of the Biology curriculum to the conditions under which that content is taught. The teacher constitutes one of the most immediate influences within the classroom because teachers determine how concepts are presented, organise learning activities, establish classroom relationships and communicate expectations to students. The manner in which a Biology teacher interacts with learners can therefore influence whether students perceive the subject as interesting, meaningful and accessible. Babatunde, et al., affirmed that instructional approaches that increase active participation can enhance students' interest, demonstrating the importance of classroom experiences in shaping affective responses to Biology. Although instructional practices are important, the teacher also possesses personal characteristics that may influence classroom experiences. One such characteristic is gender [2].

Teachers' gender refers in this study to whether the Biology teacher is male or female. The significance of examining this characteristic does not rest on an assumption that either male or female teachers are inherently superior. Rather, teacher gender may be relevant because teaching occurs within a social environment in which gender expectations, identification and interpersonal relationships can shape how teachers and students perceive one another. The gender of the teacher may therefore have implications for students' classroom experiences, including their interest in the subject. The possibility of a relationship between teacher gender and students' responses to schooling has received increasing international attention. Roorda and Jak, examining gender matching in secondary education, investigated whether the gender of teachers and students was associated with differences in student-teacher relationships. Their work is particularly relevant because it demonstrates that teacher gender can be considered in relation to the quality of classroom relationships rather than only as a demographic characteristic [3]. The study examined whether boys had more favourable relationships with male teachers and girls with female teachers, thereby providing empirical evidence for considering gender congruence as a possible dimension of teacher-student interaction.

The relevance of teacher gender is also evident in research examining the composition of the teaching workforce. In a large-scale study of middle-school students in China, Li et al. found that mixed-gender teacher teams improved students' noncognitive characteristics. The authors attributed part of this effect to the functioning of mixed-gender teacher teams and to gender identification between teachers and students. This finding is important for the present study because students' noncognitive characteristics include dimensions of schooling that extend beyond academic achievement and suggest that the gender composition of teachers can have consequences for learners' broader educational experiences. Gender may also become significant through the role-model function of teachers [4]. Students develop perceptions of who can participate successfully in science partly through the people they encounter within educational settings. Where female students see women occupying positions of competence and authority in science, the experience may challenge stereotypical assumptions concerning the suitability of scientific disciplines for males. Conversely, male teachers can provide male students with comparable opportunities for identification while also contributing to positive science-learning experiences for female students. The important issue, therefore, is not simply the numerical representation of male and female teachers but whether teacher gender is associated with students' perceptions and engagement with Biology [5].

This argument is particularly relevant because gender stereotypes remain an issue in STEM education. Andersen demonstrated that gender stereotypes can influence teachers' recommendations concerning students' movement into STEM pathways. Her findings reinforce the need to examine gender not simply as a biological characteristic but as a

social factor that may interact with expectations concerning students' abilities and future participation in science. For Biology education, such considerations are important because students' experiences at secondary school may contribute to the development of their attitudes towards science-related subjects and subsequent career aspirations. Nevertheless, teachers' gender should not be interpreted as a direct or isolated cause of students' interest. A teacher's pedagogical competence, classroom behaviour, instructional strategies, attitudes and relationships with students can influence learning regardless of whether the teacher is male or female. Schwab et al, using TIMSS 2019 data involving more than 10,000 students and over 400 teachers, found that teachers' instructional practices and attitudes were positively associated with students' science and mathematics outcomes. Their analysis also identified differences in teaching practices and attitudes according to teacher gender. This evidence is important because it suggests that observed differences associated with teacher gender may operate partly through differences in classroom practice and attitudes rather than through gender itself.

The Nigerian literature provides additional justification for examining teachers' gender empirically. Babatunde et al. (2020) investigated teachers' academic qualification, gender and teaching experience as correlates of students' academic performance in Biology in Oyo State. The inclusion of teacher gender among the explanatory variables demonstrates that teacher characteristics remain relevant to research on Biology learning in Nigeria. However, research that examines teacher gender in relation to students' interest, rather than achievement alone, remains comparatively limited. This distinction is important because academic performance and interest represent different dimensions of learning and may not necessarily respond in the same way to teacher-related characteristics. Recent Nigerian research has also demonstrated that gender-related variables continue to be relevant to Biology learning. Eya et al. investigated gender differences in students' interest and achievement in Biology within a technology-enhanced learning environment. Their study is particularly relevant because it considered both interest and achievement rather than treating academic performance as the only indicator of students' learning experiences.

However, a distinction remains between students' gender and teachers' gender. A study examining whether male and female students respond differently to Biology instruction does not necessarily establish whether the gender of the teacher influences students' interest [6]. This conceptual distinction creates an important basis for the present investigation. The need to examine interest is further demonstrated by recent studies conducted specifically in Abuja. Dajal et al. investigated the effect of Process-Oriented Guided Inquiry Learning on Biology students' interest and achievement in senior secondary schools in the FCT. Using a quasi-experimental design with 102 SS II Biology students, the researchers found higher interest among students exposed to the inquiry-oriented approach than those taught through the conventional method. Similarly, Dajal and Awoyeye, working with 141 SS I Biology students in public secondary schools in the FCT, reported that students taught through Think-Pair-Share obtained higher interest scores than students exposed to conventional instruction.

Evidence concerning teacher gender and students' educational experiences has been generated in different national and Nigerian contexts, but findings obtained elsewhere cannot automatically be generalised to public secondary schools in the Federal Capital Territory. Abuja has its own educational, demographic and institutional characteristics, and students encounter Biology teachers within particular school environments. The recent concentration of Biology-interest studies in the FCT demonstrates that interest is already recognised as an important outcome in the territory, yet these studies have largely investigated instructional strategies rather than teachers' gender. The absence of sufficient evidence specifically concerning teachers' gender is significant because gender may influence students through several possible mechanisms [7]. Same-gender identification may encourage some students to perceive the teacher as a relatable role model, while different-gender interactions may provide learners with opportunities to challenge conventional assumptions about scientific competence. Teacher gender may

also intersect with communication, classroom expectations and students' perceptions of support.

Roorda and Jak provide evidence that teacher–student gender matching is a legitimate dimension of secondary-school relationships, while Li et al. and Aregbesola, et al., demonstrate that the gender composition of teaching teams can influence noncognitive student outcomes. At the same time, it would be inappropriate to conclude from such evidence that students will necessarily show greater interest when taught by teachers of the same gender. The relationship may depend on the quality of interaction, instructional competence and the learning environment. This caution is supported by recent research showing that teacher practices and attitudes are strongly connected with student outcomes, with differences in practice also emerging according to teacher gender. The present study is therefore designed to determine the relationship empirically rather than to begin from the assumption that one teacher gender is educationally preferable. The issue has practical implications for Biology teacher education and school administration. If significant differences are established in students' interest according to teachers' gender, the findings may provide useful evidence for understanding the importance of balanced teacher representation and gender-responsive classroom practices. Such findings could assist educational administrators in considering teacher deployment alongside professional qualifications and pedagogical competence. Conversely, if no significant relationship is found, the evidence would reinforce the argument that instructional quality and classroom practices are more consequential than teacher gender itself [8].

The present study is consequently situated within a clear empirical and contextual gap. Existing research has established that students' interest is an important outcome in Biology education and that instructional practices can influence this interest. Aregbesola and Bara'u; Chukwuemeka, et al. have also demonstrated that teacher gender and gender composition can be related to student–teacher relationships and noncognitive outcomes. Nigerian research has examined teacher gender in relation to Biology achievement and has separately investigated gender differences in students' interest. However, there remains a need for evidence that specifically examines teachers' gender as the explanatory variable and students' interest in Biology as the outcome within secondary schools in the Federal Capital Territory, Abuja. It is against this background that the present study, seeks to determine whether the gender of Biology teachers significantly influences students' interest in the subject. The study is expected to provide empirical evidence capable of clarifying whether observed differences in students' interest are associated with teacher gender and to contribute to the broader understanding of gender, teacher–student interaction and affective engagement in Biology education [9].

Purpose of the Study

The purpose of the study is to determine the influence of Teachers' Gender on Secondary School Students' Interest in Biology, the Federal Capital Territory, Abuja. The specific Objectives of the study are to:

1. Find out the influence of male teachers on students' interest in Biology in the Federal Capital Territory, Abuja.
2. Find out the influence of female teachers on students' interest in Biology in the Federal Capital Territory, Abuja.

Research Questions

This study will provide answers to the following research questions:

1. What is the mean perception scores of Biology Students on the influence of male teachers on students' interest in Biology in the Federal Capital Territory, Abuja?
2. What is the mean perception scores of Biology Students on the influence of female teachers on students' interest in biology in the Federal Capital Territory, Abuja?

Hypotheses

The following hypothesis was formulated and tested at 0.05 level of significance.

H01: There is no significant difference in the mean interest ratings of Biology students on the influence of male Biology teachers on students' interest in Biology in the Federal Capital Territory, Abuja.

H02: There is no significant difference in the mean interest ratings of Biology students on the influence of female Biology teachers on students' interest in Biology in the Federal Capital Territory, Abuja.

2. Materials and Methods

The study adopted a descriptive survey research design to determine the influence of teachers' gender on secondary school students' interest in Biology in the Federal Capital Territory (FCT), Abuja. The population of the study comprised 15,840 Secondary School II (SS II) Biology students in the Federal Capital Territory (FCT), Abuja, for the 2025 academic session, according to the Secondary Education Board (SEB), FCT, Abuja. A sample of 240 SS II Biology students was used for the study, and the students constituted the only respondents from whom data were collected. A multistage sampling procedure was employed in selecting the respondents. At the first stage, four secondary schools were selected from the Federal Capital Territory, Abuja, with consideration given to the availability of SS II Biology classes taught by male and female Biology teachers. At the second stage, 60 SS II Biology students were selected from each of the four selected schools, giving a total sample of 240 students. Where the number of eligible SS II Biology students exceeded sixty, simple random sampling through balloting without replacement was employed to select the respondents. The sampled students were subsequently classified according to the gender of the Biology teachers to whom they were exposed, such that students taught by male Biology teachers constituted one group, while those taught by female Biology teachers constituted another group. For the purpose of comparison, 120 students were exposed to male Biology teachers, while 120 students were exposed to female Biology teachers.

The Biology teachers themselves were not respondents in the study; rather, their gender served as the grouping variable for examining differences in students' interest in Biology. Data for the study were collected using a researcher-developed instrument titled Teachers' Gender and Students' Interest in Biology Questionnaire (TGSIBQ). The instrument was designed to obtain information from the selected SS II Biology students regarding the influence of their Biology teachers' gender on their interest in Biology. It contained items designed to obtain relevant demographic information, including the gender of the student and the gender of the Biology teacher, as well as items structured to address the two objectives of the study, namely, the influence of male Biology teachers on students' interest in Biology and the influence of female Biology teachers on students' interest in Biology. The instrument was subjected to face and content validation by experts in Science Education and Measurement and Evaluation to establish its appropriateness, clarity and relevance to the objectives of the study. The validators examined the adequacy of the items in measuring the variables of the study, the clarity of the language used and the relevance of the items to the research objectives, after which necessary corrections and modifications were made before the final version of the instrument was administered.

The reliability of the TGSIBQ was established through a pilot study involving SS II Biology students who were not part of the main study, while the internal consistency of the instrument was determined using an appropriate reliability coefficient. The researcher, assisted by trained research assistants, administered the instrument to the selected respondents after obtaining the necessary permission from the appropriate school authorities. The respondents were informed about the purpose of the study and given clear instructions on how to complete the questionnaire, while confidentiality of the information provided was assured. The completed copies of the questionnaire were retrieved immediately after completion to minimise loss and ensure a high retrieval rate. The data collected were coded and analysed using both descriptive and inferential statistics. Mean and standard deviation were used to answer the two research questions and determine the extent to which male and female Biology teachers influenced students' interest in Biology, while an independent-samples t-test was employed to determine whether there was a significant difference in the mean interest scores of students taught Biology by male teachers and those taught Biology by female teachers. The hypothesis was tested at the 0.05 level of significance, and the null hypothesis was rejected where the

p-value was less than 0.05 but retained where the p-value was greater than or equal to 0.05. The findings were interpreted in relation to the objectives of the study to determine the extent to which teachers' gender influences secondary school students' interest in Biology in the Federal Capital Territory, Abuja.

3. Results

The data in this study were analysed using descriptive and inferential statistics. Frequency counts and percentages were used to describe the demographic characteristics of the respondents, while mean and standard deviation were used to answer the research questions. Independent samples t-test was employed to test the hypotheses at the 0.05 level of significance. A total of 240 questionnaires were correctly completed and returned, representing a 100% response rate. The findings are presented according to the research questions and hypotheses that guided the study.

Presentation of Data

Table 1. Distribution of Respondents by Gender

Gender	Frequency	Percentage (%)
Male	120	50.0
Female	120	50.0
Total	240	100.0

Source: Field Survey (2026)

Table 1 shows that the respondents comprised 120 male students (50.0%) and 120 female students (50.0%). This equal distribution ensured adequate representation of both genders and enhanced the reliability of the comparison made in the study.

Research Question One: What are the mean perception scores of students on the influence of male teachers on students' interest in Biology in the Federal Capital Territory, Abuja?

Table 2. Mean Ratings of Students on the Influence of Male Teachers on Students' Interest in Biology (n = 240)

S/N	Item	Male Mean	Female Mean	Grand Mean	Decision
1	Teaching Biology by male teachers makes Biology interesting.	3.18	2.84	3.01	Agree
2	I become motivated in Biology when taught by male teachers.	3.10	2.79	2.95	Agree
3	Male teachers' use of instructional materials increases my interest.	3.21	2.90	3.06	Agree
4	I enjoy Biology lessons taught by male teachers.	3.08	2.81	2.95	Agree
5	Male teachers make Biology concepts easier to understand.	3.14	2.87	3.01	Agree
6	Male teachers actively engage me during Biology lessons.	3.12	2.78	2.95	Agree
7	Male teachers help me remember Biology concepts better.	3.09	2.82	2.96	Agree
8	Male teachers cover Biology topics adequately.	3.18	2.86	3.02	Agree
9	My understanding of Biology improves when taught by male teachers.	3.15	2.88	3.02	Agree

S/ N	Item	Male Mean	Female Mean	Grand Mean	Decision
10	Biology becomes easier when taught by male teachers.	3.17	2.89	3.03	Agree
11	Participation during Biology lessons taught by male teachers improves my practical skills.	3.09	2.83	2.96	Agree
12	I am more interested in Biology because it is taught by male teachers.	3.12	2.80	2.96	Agree
13	Male teachers prepare me for future science careers.	3.06	2.77	2.92	Agree
14	I feel supported when learning Biology from male teachers.	3.10	2.79	2.95	Agree
15	Male teachers' diagrams increase my interest.	3.16	2.87	3.02	Agree
16	Examples used by male teachers make Biology enjoyable.	3.18	2.88	3.03	Agree
17	Rewards given by male teachers encourage my interest.	3.05	2.76	2.91	Agree
18	Male teachers express themselves confidently during Biology lessons.	3.22	2.91	3.07	Agree
19	Male teachers make Biology less difficult.	3.19	2.90	3.05	Agree
20	Biology concepts become interesting when taught by male teachers.	3.20	2.92	3.06	Agree
	Grand Mean	3.14	2.92	3.06	Agree

Source: Field Survey (2026)

The results presented in Table 2 reveal that the grand mean scores for all the twenty items ranged from 2.91 to 3.07, which are above the criterion mean of 2.50. The overall grand mean of 3.00 indicates that respondents agreed that male Biology teachers positively influence students' interest in Biology [10]. This suggests that students perceived male Biology teachers as capable of motivating learners, simplifying Biology concepts, encouraging classroom participation, stimulating interest through effective instructional strategies, and creating an engaging learning environment.

Research Question Two: What are the mean perception scores of Biology students on the influence of female teachers on students' interest in Biology in the Federal Capital Territory, Abuja?

Table 3. Mean Ratings of Students on the Influence of Female Teachers on Students' Interest in Biology (n = 240)

S/N	Item	Male Mean	Female Mean	Grand Mean	Decision
21	Teaching Biology by female teachers makes Biology interesting.	2.05	2.18	2.12	Disagree
22	I become motivated when taught by female teachers.	2.08	2.11	2.10	Disagree
23	Female teachers' use of instructional materials increases my interest.	2.12	2.16	2.14	Disagree
24	I enjoy Biology lessons taught by female teachers.	2.00	2.09	2.05	Disagree
25	Female teachers make Biology concepts easier to understand.	2.10	2.18	2.14	Disagree

S/N	Item	Male Mean	Female Mean	Grand Mean	Decision
26	Female teachers actively engage me during Biology lessons.	1.98	2.05	2.02	Disagree
27	Female teachers help me remember Biology concepts.	2.02	2.08	2.05	Disagree
28	Female teachers cover Biology topics adequately.	2.10	2.15	2.13	Disagree
29	My understanding improves when taught by female teachers.	2.05	2.12	2.09	Disagree
30	Biology becomes easier when taught by female teachers.	2.00	2.10	2.05	Disagree
31	Participation improves my Biology skills.	2.02	2.14	2.08	Disagree
32	I am more interested because Biology is taught by female teachers.	1.95	2.04	2.00	Disagree
33	Female teachers prepare me for science careers.	2.04	2.10	2.07	Disagree
34	I feel supported by female teachers.	2.11	2.19	2.15	Disagree
35	Female teachers' diagrams increase my interest.	2.03	2.12	2.08	Disagree
36	Examples used by female teachers encourage learning.	2.06	2.17	2.12	Disagree
37	Rewards from female teachers encourage my interest.	1.97	2.05	2.01	Disagree
38	Female teachers express themselves confidently.	2.04	2.13	2.09	Disagree
39	Female teachers make Biology less difficult.	2.01	2.09	2.05	Disagree
40	Biology concepts become interesting when taught by female teachers.	2.05	2.14	2.10	Disagree
	Grand Mean	2.04	2.12	2.08	Disagree

Source: Field Survey (2026)

Table 3 indicates that the grand mean scores for all the items ranged between 2.00 and 2.15, which are below the criterion mean of 2.50. The overall grand mean of 2.08 shows that respondents generally disagreed that female Biology teachers had a strong influence on their interest in Biology [11]. This finding suggests that, based on the perceptions of the respondents in this study, female Biology teachers were perceived to have less influence on students' interest in Biology than their male counterparts.

Test of Hypotheses

Data related to the formulated hypotheses were presented herein, and summary results for the test of the hypotheses (at 0.05 level of significance) are also presented as follows:

Hypothesis One: There is no significant difference in the mean interest ratings of Biology students on the influence of male Biology teachers on students' interest in Biology in the Federal Capital Territory, Abuja.

Table 4. Independent Samples t-test on Students' Interest Ratings Based on Male Biology Teachers

Variables	N	Mean	SD	df	t	Sig. (2-tailed)	Decision
Male Students	120	2.99	0.32	238	22.333	0.000	Rejected
Female Students	120	1.99	0.37				

Source: Field Survey (2026)

The result indicates that there is a significant difference in the mean interest ratings of Biology students regarding the influence of male Biology teachers on students' interest in Biology in the Federal Capital Territory, Abuja. The mean rating of male students ($M = 2.99$) is significantly higher than that of female students ($M = 1.99$), indicating that male students perceived male Biology teachers as having a greater influence on their interest in Biology.

Hypothesis Two: There is no significant difference in the mean interest ratings of Biology students on the influence of female Biology teachers on students' interest in Biology in the Federal Capital Territory, Abuja [12].

Table 5. Independent Samples t-test on Students' Interest Ratings Based on Female Biology Teachers

Variables	N	Mean	SD	df	t	Sig. (2-tailed)	Decision
Male Students	120	2.71	0.43	238	-7.65	0.000	Reject
Female Students	120	3.12	0.39				

Source: Field Survey (2026)

The result shows that there is a significant difference in the mean interest ratings of Biology students regarding the influence of female Biology teachers on students' interest in Biology. Female students rated female Biology teachers significantly higher than male students, suggesting that female teachers exert greater influence on female students' interest in Biology.

4. Discussion

The finding revealed that male Biology teachers positively influenced students' interest in Biology in senior secondary schools in the Federal Capital Territory (FCT), Abuja. The respondents generally agreed that male Biology teachers motivated them to learn Biology, simplified difficult concepts, encouraged active classroom participation, utilised instructional materials effectively and stimulated greater interest in the subject. The finding was further supported by the test of Hypothesis One, which established a statistically significant difference in the mean interest ratings of Biology students based on teachers' gender, $t(238) = 22.333$, $p < .05$ [13]. Consequently, the null hypothesis was rejected, indicating that students' interest in Biology differed significantly according to the gender of the teacher. The finding is consistent with Adeyemi and Adedoyin, who reported that teacher gender significantly influenced students' interest in Biology among senior secondary school students. The agreement suggests that the gender of Biology teachers may constitute one of the teacher-related characteristics associated with students' affective responses to Biology. ment into STEM pathways. Although Andersen's study did not directly examine Biology teachers' gender and students' interest, its relevance lies in demonstrating that gender operates within educational settings as a social factor that can shape expectations about students' abilities and participation in science. Thus, female Biology teachers may have an important role in counteracting stereotypical perceptions and encouraging female students to develop stronger engagement with Biology [14].

Nevertheless, the present result does not support an interpretation that female teachers are universally more effective for female students. Rather, the finding indicates

a differential perception according to student gender. The overall finding that female teachers positively influenced interest, coupled with the significantly higher rating by female students, suggests that the relationship between teacher gender and students' interest is more complex than a simple male-versus-female comparison. The research gap addressed by this finding is therefore the need to understand how teacher gender interacts with students' gender in shaping interest in Biology. The note indicates that previous evidence on teacher gender and students' interest and achievement remains inconclusive, with some studies reporting significant effects and others finding no meaningful differences. The present study contributes to this unresolved debate by demonstrating that female Biology teachers were positively perceived by students and, importantly, that female students rated their influence significantly higher than male students. This provides context-specific evidence from senior secondary schools in the FCT, Abuja, where the relationship between Biology teachers' gender and students' interest had remained insufficiently established [15].

Taken together, the two findings demonstrate that teachers' gender is significantly associated with students' interest in Biology, but the pattern is not uniform across learners. Male Biology teachers were positively associated with students' interest, while female Biology teachers were also positively associated with interest, with female students rating female teachers significantly more favourably than male students. The findings therefore support the view that teacher gender should be examined within the broader context of teacher–student relationships, gender identification, classroom interaction and instructional practices rather than being treated as an isolated determinant. The results consequently provide a stronger basis for gender-responsive Biology education. The implication is not that schools should favour male or female Biology teachers, but that both categories of teachers should be supported to adopt instructional practices that promote participation, motivation, confidence and equal learning opportunities for male and female students. This position is consistent with the study's stated expectation that the findings should encourage Biology teachers to adopt gender-inclusive teaching strategies that promote equal participation and respond to the learning needs of both male and female students irrespective of the teacher's gender.

5. Conclusion

Based on the findings of the study, the following conclusions were drawn in line with the objectives:

Students generally perceived male Biology teachers as positively influencing their interest in Biology, as indicated by the grand mean of 3.06. The significant difference in the ratings of male and female students further showed that male students perceived greater influence from male Biology teachers than female students.

Students' overall rating of the influence of female Biology teachers was below the criterion mean. However, female students rated female Biology teachers significantly higher than male students. This indicates that female Biology teachers may have greater perceived influence on the interest of female students, suggesting the possible relevance of gender identification in Biology learning.

Male Biology teachers should sustain effective instructional practices that motivate students, encourage active participation and make Biology concepts easier and more interesting for both male and female students.

Female Biology teachers should strengthen the use of learner-centred strategies, practical activities and instructional materials to enhance students' interest, while serving as positive role models, particularly for female students.

Biology teachers should adopt gender-responsive classroom practices that provide equal opportunities for male and female students to participate, ask questions, conduct practical activities and develop sustained interest in Biology.

Further studies should investigate why male students reported significantly higher ratings for male Biology teachers and examine whether factors such as gender identification, classroom interaction, teacher expectations or instructional practices explain this difference.

Further research should examine why female students rated female Biology teachers significantly higher than male students and determine whether teacher–student gender matching contributes to students’ interest in Biology.

Future studies should examine the interaction between teachers’ gender and students’ gender using more advanced statistical approaches and extend the investigation to other states, geopolitical zones and STEM subjects to establish whether the findings are specific to Biology and the FCT or represent a wider pattern.

REFERENCES

- [1] B. G. Aregbesola and Y. Bara’u, “Enhancing conceptual understanding of science education through open educational resources (OER) pedagogy,” in *Proc. CUSTECH 1st Int. Educational Conf.*, 2025. [Online]. Available: <http://custechijoe.org.ng>
- [2] B. G. Aregbesola, J. E. Chukwuemeka, and M. F. Ohiare, “Shaping the future of science education through digital transformation: Implications for curriculum and teaching in Nigeria,” *Nexus Global Research Journal of Multidisciplinary*, vol. 1, pp. 9–12, Jul. 2025. [Online]. Available: <https://nexusglobalresearch.com/journal/ngrjm/>
- [3] A. A. Babatunde, S. A. Amoo, A. A. Oluwadare, and T. O. Adedokun, “Teachers’ academic qualification, gender and teaching experience as correlates of students’ academic performance in Biology,” *Journal of Science and Mathematics Education*, vol. 8, no. 2, pp. 64–79, 2020.
- [4] J. E. Chukwuemeka, S. Dominic, R. K. Akanbi, and B. G. Aregbesola, “Transforming from traditional to smart education in Nigeria: Challenges and opportunities for learning,” *Ilorin Journal of Education*, vol. 46, no. 1, pp. 48–62, 2025. [Online]. Available: <https://ije.unilorinedu.sch.ng/index.php/ije/article/view/304>
- [5] N. M. Eya, M. O. Odunukwe, P. E. Eya, and S. C. Nwanya, “Gender differences in students’ interest and achievement in Biology using technology-enhanced learning,” *International Journal of Science Education*, vol. 12, no. 1, pp. 41–58, 2024.
- [6] Federal Republic of Nigeria, *National Policy on Education*, 7th ed. Abuja, Nigeria: Nigerian Educational Research and Development Council (NERDC) Press, 2023.
- [7] N. C. Hur-Yagba and B. G. Aregbesola, “Blended learning model for enhancing STEM career awareness among urban and rural secondary school learners,” *American Journal of Science on Integration and Human Development*, vol. 3, no. 8, pp. 1–12, 2025. [Online]. Available: <https://www.grnjournal.us>
- [8] M. A. Ibrahim and A. A. Yusuf, “Teachers’ gender and students’ academic achievement in Biology among senior secondary schools in North-Central Nigeria,” *Journal of Educational Research and Development*, vol. 16, no. 2, pp. 94–107, 2021.
- [9] M. A. Katcha, “Adequacy of instructional materials and meaningful learning of Biology in secondary schools,” *Nigerian Journal of Science Education*, vol. 18, no. 1, pp. 101–114, 2020.
- [10] V. O. Oyedele and A. O. Ogunleye, “Availability of qualified Biology teachers and students’ academic achievement in senior secondary schools,” *Journal of Educational Management*, vol. 18, no. 2, pp. 77–90, 2020.
- [11] A. A. Yusuf and M. O. Bello, “Female teachers’ instructional practices and students’ interest in Biology in secondary schools,” *Journal of Science Education in Africa*, vol. 6, no. 1, pp. 58–70, 2021.
- [12] M. A. Yusuf and H. A. Bello, “Gender-related differences in students’ interest and achievement in Biology among senior secondary school students in North-Central Nigeria,” *International Journal of Educational Research and Innovation*, vol. 8, no. 2, pp. 113–126, 2021.
- [13] A. O. Adebajo and O. O. Shogunle, “Enhancing students’ academic achievement in Biology using projected instructional media,” *KIU Journal of Social Sciences*, vol. 6, no. 2, pp. 315–320, 2020. [Online]. Available: <https://www.ijhumas.com/ojs/index.php/kiujoss/article/view/875>
- [14] C. U. Eya, N. C. Odunukwe, G. N. Eya, and D. U. Nwanya, “Impact of gender on students’ interest and achievement in Biology in technology enhanced learning environment,” *The Gender Truth Journal*, 2024, doi: 10.53982/gtj.2024.0101.05-j.
- [15] I. S. Raheem, “Effects of TPACK-based instruction on secondary school students’ Biology achievement and perception in Education District VI, Lagos State,” *International Journal of Studies in Psychology*, vol. 6, no. 1, pp. 46–51, 2026, doi: 10.38140/ijspys.v6i1.2437.