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Inclusive Pedagogical Practices in Basic Science Education: Students' and Teachers' Perspectives

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ABSTRACT

Inclusive education is about equality of access to learning and full participation of learners with a range of learning needs. But the disparities in students' learning experiences and participation are concerns in the classroom of the Nigerian secondary schools. This study focused on the perceptions of students and teachers on inclusive pedagogical practices in Basic Science education. Descriptive survey research design was used. A total of 490 students in junior secondary schools and 35 Basic Science teachers in seven schools (4 public and 3 private) in Ojo Zone of Education District V, Lagos State were selected using simple random sampling technique for the study. The total number of samples were 70 students and 5 teachers of each school. The data were obtained from two structured questionnaires that were validated and had a Cronbach's alpha reliability coefficient of 0.87 and 0.83, respectively. Descriptive statistics, one-sample t-test and independent-samples t-test were used to analyse the data. Results indicated that students' mean ratings of their engagement and learning experiences were significantly higher than the midpoint of the rating scale ($M = 3.29$, $SD = 0.58$, $t(489) = 30.14$, $p < .001$). There was also a significant difference between public school teachers and private school teachers' reported inclusive pedagogical practices and institutional supports ($t(33) = 2.57$, $p = .015$). Likewise, the students' perceptions of inclusive pedagogical practices were also significantly different for public and private schools ($t(488) = 6.11$, $p < .001$). Overall, the study found that the students and teachers had positive perceptions of inclusive pedagogical practices. It has called for ongoing professional learning for Basic Science teachers and enhanced teacher access to instructional materials, especially in public schools, to support inclusive instructional practices.

Keywords: Basic Science education, Inclusive pedagogies, Students' engagement, Perceptions, Teachers' perceptions.

INTRODUCTION

Basic Science plays a significant role in the curriculum of the junior secondary schools in Nigeria as it offers basic scientific knowledge and skills to the learners to solve problems in their immediate environment. The subject encourages curiosity, critical thinking, problem solving and the use of scientific information in everyday life as well as the acquisition of scientific facts and principles. In order to achieve these objectives, instructional practices that recognise learners' different backgrounds, abilities, interests and experiences must be used. With this, effective Basic Science education is not only about the content that is taught, but also about the way learning opportunities are organised to ensure equitable access and meaningful participation (Fränkel et al., 2026). Inclusive pedagogy offers a way of thinking about how to respond to learner diversity, through organising teaching and learning so that all learners can fully engage in common classroom activities. According to Florian and Black-Hawkins (2011) inclusive pedagogy is not about offering different learning opportunities for targeted groups, but it is about providing more of what is usually offered to all learners. This focus moves from an emphasis on what is wrong with the student to what teachers do to structure instruction, classroom interaction and learning experiences. It thus needs pedagogical practices in Basic Science classrooms that can cater for the differences in the abilities of the learners, their cultural backgrounds, interests and learning needs.

For inclusive pedagogy to be implemented, instructional strategies must be used that encourage learners' active involvement, interaction and recognition of their different experiences. These include culturally responsive, collaborative and inquiry-based teaching. Inquiry-based teaching involves students in questioning, investigating scientific phenomena, interpreting evidence and developing explanations. Morris (2025) notes that good science teaching based on inquiry should not only involve practical investigations but also reasoning, explanation and scientific argumentation. Collaborative teaching also promotes students to share ideas and engage in group discussions and to contribute to group learning. Peer interaction and teacher support can enable learners of varying prior knowledge, confidence and ability to engage in the process of knowledge construction. But, for effective collaboration to happen, there needs to be purposeful organisation so that all students contribute.

Culturally responsive teaching sees the usefulness of students' cultural backgrounds, everyday experiences and local knowledge in science learning. It invites teachers to relate science content with real-life experiences in learners'

communities. This is especially pertinent in Nigeria where the students are exposed to scientific phenomena in their social, cultural and environmental contexts. Adama et al. (2025) in their study on Culturo-Techno-Contextual Approach in biology education, shows how scientific learning can be related to the learners' cultural and contextual experiences. Likewise, recent research on culturally responsive STEM education in Ghana indicates that a learner's culture and language should be considered in the planning and evaluation of STEM education (Ntumi et al., 2026).

The potential of these approaches notwithstanding, implementation of inclusive pedagogical practices in secondary schools might be hindered by poor teacher preparation, inadequate instructional materials, large class sizes and lack of institutional support. These challenges can limit teachers' capacity to cater for learner differences and to offer meaningful participation. Ukala and Adieme (2024) investigated the implementation of inclusive education policy in junior secondary schools in Rivers State, Nigeria and found the human, material and financial resources for inclusive education in the schools are inadequate. In a similar way, Fränkel et al. (2026) in their systematic review of inclusive science education, found that the evidence base on teaching approaches to diverse learners is limited, especially in terms of opportunities to engage in scientific practices. Ownership of the school may also be an issue relating to inclusive learning opportunities. There may be differences in the availability of instructional materials, teacher professional development, classroom facilities and institutional support between public and private schools. These differences can influence teachers' understandings of inclusive teaching and students' classroom experiences. Teachers' descriptions of practice, however, do not always reflect students' experiences, so it is important to take both of these into account.

Despite the growing interest in inclusive education in the literature, there is still a need for context specific evidence on the understanding and experience of inclusive pedagogical practices in Nigerian Basic Science classrooms. Although there is research on inclusive education policy and resource availability in Nigeria (Ukala & Adieme, 2024) and international research on approaches to supporting diverse learners in science education (Fränkel et al., 2026), more research is needed to explore the perspectives of students and teachers in the context of Nigeria's junior secondary school. Specifically, the need to further explore students' engagement and learning experiences, teachers' perceptions and differences between public and private schools. In line with this, the present study focused on the perception of students and Basic Science teachers on inclusive pedagogical practices in selected public and private secondary schools of Ojo Zone of Education District V Lagos State, Nigeria. In particular, it explored students' perceptions of their involvement and learning experiences, teacher's perceptions of inclusive pedagogies and differences between students' and teachers' perceptions in public and private schools. The study will help to offer context-specific evidence for teacher professional development, school-level support and strengthening efforts towards inclusive Basic Science education.

THEORETICAL REVIEW

Social Constructivist Theory: This study is grounded in Vygotsky's (1978) Social Constructivist Theory which views learning as a process that is socially mediated and individuals acquire knowledge and understanding through interaction with others and the environment. The theory emphasises the importance of social interaction, language, cultural experiences and appropriate guidance in the development of knowledge. One of the key ideas of the theory is the Zone of Proximal Development (ZPD), which refers to the gap between what a learner can do on his own and what he can do with help or support from someone else. This theory is a valuable underpinning of inclusive pedagogical practice as the students in the same classroom will have varying prior knowledge, abilities, cultural experiences and learning needs. Teachers can instead plan learning activities that allow for participation, interaction and mutual support to be fostered in response to these differences. Through collaborative activities, guided investigations and meaningful classroom discussions, students have opportunities to share ideas, learn from their peers and develop their understanding of scientific concepts. This is especially true in the field of Basic Science education where meaningful learning may be accompanied by questioning, investigation, discussion and interpretation of scientific phenomena.

The three pedagogical approaches in this study are an expression of the principles of social constructivism. Inquiry-based teaching provides opportunities for students to investigate scientific phenomena, ask questions and construct explanations with guidance from the teacher. Collaborative teaching is focused on interaction and joint problem-solving and idea sharing between students. Culturally responsive teaching, however, acknowledges that students' cultural experiences and backgrounds are assets in the building of knowledge. These approaches offer opportunities for students to be involved in learning activities in various ways of interaction and engagement. The relevance of the theory is also extended to the role of the teacher in the establishment of supportive learning environment. The social constructivist approach views teachers as not just as a transmitter of information, but as facilitators who guide the learning and offer the right kind of support and encouragement for interaction between learners. This aligns with the inclusive pedagogical stance of Florian and Black-Hawkins (2011) that focuses on providing learning opportunities for all learners, as opposed to provision for selected learners. Inclusive science education has also been a recent topic of discussion, where

the focus is on the science education arrangements that allow diverse learners to access scientific knowledge and engage in scientific activities (Fränkel et al., 2026). Therefore, the theory of Social Constructivism is relevant as a base to discuss the engagement and perceptions of the students as well as the teachers' perception of inclusive pedagogical practices in the Basic Science classrooms. It contributes to the understanding of the importance of classroom interaction, teacher support, collaborative learning and the recognition of students' experiences in the creation of inclusive learning environments.

The general aim of this research was to investigate the perceptions of inclusive pedagogical practices as reported by students and Basic Science teachers in some public and private secondary schools in Ojo Zone of Education District V in Lagos State, Nigeria.

Research Questions

The following research questions guided the study:

1. What are students' perceptions of their engagement and learning experiences in Basic Science classrooms where inclusive pedagogical practices are employed?
2. What are the differences in Basic Science teachers' perceptions of inclusive pedagogical practices between public and private secondary schools?
3. What differences are there in students' ratings of inclusive pedagogical practices between public and private secondary schools?

Hypotheses

The following null hypotheses were formulated and tested at the 0.05 level of significance:

H_{01}: There is no significant difference between students' mean rating of their engagement and learning experiences in Basic Science classrooms and the neutral scale midpoint.

H_{02}: There is no significant difference in teachers' mean perceptions of inclusive pedagogical practices between public and private secondary schools.

H_{03}: There is no significant difference in students' mean ratings of inclusive pedagogical practices between public and private secondary schools.

METHODS

The study employed a descriptive survey research design in order to understand the perceptions of the students and the Basic Science teachers about inclusive pedagogical practices in the selected public and private secondary schools. The design was deemed suitable as it allowed the researcher to gain insights from the students and teachers regarding their experiences and perceptions of inclusive teaching and learning while not altering the classroom setting. It also served as a baseline for comparison of the attitudes of the respondents from public and private schools.

The population for the study was the Basic Science teachers and the junior secondary school students in public and private secondary schools in Ojo Zone of Education District V in Lagos State, Nigeria. The study had 490 junior secondary school students and 35 Basic Science teachers from seven secondary schools of which four were public and three were private schools. The total number of samples was 70 students and 5 Basic Science teachers from each of the seven schools. So, 290 students and 20 teachers were selected from public schools and 200 students and 15 teachers were selected from private schools. Simple random sampling was used in selecting the schools and respondents of the study. The subjects were selected from public and private schools to gain their insight into inclusive pedagogical practices in Basic Science classrooms.

The instruments used in collecting data were two questionnaires developed by the researchers: the Student Questionnaire on Inclusive Pedagogical Practices (SQIPP) and the Teacher Questionnaire on Inclusive Pedagogical Practices (TQIPP). The student questionnaire consisted of 10 items aimed at gathering data on students' perception of inclusive teaching practices, their involvement in activities in Basic Science classroom and their learning experiences. The teacher questionnaire contained seven questions to gather information on teachers' understanding and perceptions of inclusive pedagogical practices, their experiences with inclusive pedagogical practices, perceived benefits and challenges of inclusive pedagogies, and institutional support for inclusive pedagogies. The response format of both instruments was a four-point Likert scale: Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). The instruments were validated by two experts, one of Test and Measurement and Science Education. They evaluated the clarity, relevance and suitability of the items regarding the goals of the study. The instruments were then tested for reliability using Cronbach's alpha that resulted in 0.87 for the student questionnaire and 0.83 for the teacher questionnaire, which were acceptable. After validation and reliability testing, a pilot study was carried out in five Basic Science teachers and 20 students in the schools outside of the study sample. The characteristics of the participants were similar to those of the main study. The pilot exercise was conducted to evaluate the appropriateness and implementation of the instruments prior to their application in the study.

The data were obtained from the sampled Junior Secondary School students and Basic Science teachers in the seven selected secondary schools in the education zone under study in Ojo Zone of Education District V, Lagos State during the period of study of the academic session. The researchers personally administered the questionnaires to the respondents after the formal permission from the relevant authorities and the management of the selected schools. There were 490 questionnaires for students and 35 questionnaires for teachers in 7 schools. The researchers coordinated the administration so as to ensure consistency in the data collection process. The questionnaires were distributed to the respondents and all of them were

retrieved, resulting in 100% retrieval rate. The completed questionnaires were subsequently checked and organised for data analysis.

Completed questionnaires were used to gather data which were analysed using descriptive and inferential statistical techniques. Students' responses related to engagement and learning experiences and teachers' perceptions of inclusive pedagogical practices were summarised using mean and standard deviation. A criterion mean of 2.50 was used as a decision point for the four-point Likert response scale. A mean score of 2.50 or more represented general agreement with the statements on the questionnaire, while a mean score of less than 2.50 represented general disagreement. A one sample t test was used to test the hypothesis that the mean rating of the students was significantly different from the criterion mean of 2.50. This is the average of the four response weights (1, 2, 3 and 4) and is the point on the 4-point response scale that is in the middle of the range. Independent-samples t-tests were conducted to compare mean ratings of the respondents from public and private secondary schools. Analysis was done using the Statistical Package for the Social Sciences (SPSS) version 23. The level of significance of all the hypotheses was set at 0.05.

Ethical Considerations

The principals of the seven secondary schools selected for the study gave permission to administer the research instruments. The respondents were informed of the purpose of the study and the consent of the students was sought before they participated in the study. All participation was voluntary and respondents were informed that the information given would be kept confidential and used only for research purposes. Anonymity was ensured by not revealing the personal identity of the respondents in presentation of the findings.

RESULTS

Research Question 1: What are students' perceptions of their engagement and learning experiences in Basic Science classrooms where inclusive pedagogical practices are employed?

Table 1: Students' Perceptions of Inclusive Pedagogical Practices, Engagement and Learning Experiences in Basic Science (n = 490)

Item	Statement	SA (%)	A (%)	D (%)	SD (%)	Mean
1	The teaching methods that my teacher applies make me more motivated to learn.	45.3	40.2	9.6	4.9	3.26
2	Basic science becomes easier to understand through real life or cultural examples.	52.0	36.9	7.8	3.3	3.37
3	Inclusive teaching makes me more motivated to participate actively.	48.5	38.7	8.2	4.6	3.31
4	My performance in Basic Science has improved due to teaching style.	44.9	39.4	10.6	5.1	3.24
5	I feel more confident in assignments/exams when I fully engaged in the learning process.	46.7	37.8	10.2	5.3	3.26

The mean scores (see Table 1) were between 3.24 and 3.37 on a four-point scale, which is above the criterion mean of 2.50. This means that generally pupils had positive perceptions of inclusive pedagogical practices in terms of their involvement and learning in Basic Science. Further, the obtained mean rating from students was significantly higher than the criterion mean as shown by the result of the one-sample t-test presented in Table 4, $t(489) = 30.12$, $p < .001$. Thus, the null hypothesis was rejected. This result suggests that pupils' self-assessment of their engagement and experiences of learning were significantly above the neutral mid-point of the scale.

Research Question 2: What are the differences in Basic Science teachers' perceptions of inclusive pedagogical practices between public and private secondary schools?

Table 2. Teachers' Perceptions of Inclusive Pedagogical Practices by School Type (n = 35)

Item	Statement	Public Teachers (n=20) Mean	Private Teachers (n=15) Mean
1	Inclusion enhances participation rates	3.45	3.60
2	Inclusion boosts academic achievements	3.35	3.53
3	Increased motivation and concentration when using student-centered instructional methods	3.40	3.67
4	Inclusive strategies work for everyone	3.28	3.60
5	Students show greater confidence with inclusive teaching	3.30	3.55
6	Teachers in my school have sufficient training	2.70	3.40

Item	Statement	Public Teachers (n=20) Mean	Private Teachers (n=15) Mean
7	Availability of teaching resources makes inclusive teaching easier	2.65	3.47

As seen in Table 2, teachers' perceptions of inclusive pedagogical practices in general were favourable in both public and private secondary schools. The mean score for Items 1-5 were between 3.28 and 3.45 for public school teachers and between 3.53 and 3.67 for private school teachers. The mean scores of private school teachers were higher in all five statements compared with the other groups, indicating that the teachers in the private school generally had more positive attitudes towards inclusive pedagogical practices. In terms of institutional support, private school teachers also rated themselves as having more access to training (M = 3.40) and teaching resources (M = 3.47) than public school teachers (M = 2.70 and M = 2.65, respectively). The differences indicate that teachers in the private schools felt that there was more institutional support for implementing inclusive pedagogical practices.

Research Question 3: What differences are there in students' ratings of inclusive pedagogical practices between public and private secondary schools?

Table 3. Students' Ratings of Inclusive Pedagogical Practices by School Type (n = 490)

Item	Statement	Public (n=290) Mean	Private (n=200) Mean
6	Teacher uses methods for all abilities	3.28	3.41
7	School provides enough facilities/materials	2.70	3.38
8	Teachers encourage all students equally	3.30	3.35
9	Class size affects ability to involve all students	2.45	2.91
10	Basic Science more inclusive than other schools	3.08	3.42

Table 3 shows that there is a difference in the rating of the inclusive pedagogical practices by students in public and private secondary schools. The mean ratings for all five statements were higher for the private school students compared to public school students. The highest mean score difference was found in the school facilities and learning materials with a mean score of 3.38 in the private school and 2.70 in the public school. Likewise, private school students rated teachers' use of teaching methods that accommodate students with varying abilities (M = 3.41) higher than public school students (M = 3.28). The mean ratings for teachers' equal encouragement of students were, however, fairly similar in public (M = 3.30) and private schools (M = 3.35), indicating that students' perceptions in this area were similar. In terms of class size, private school students rated higher on the mean (M = 2.91) than public school students (M = 2.45). This indicates that private school students were more likely to agree that class size has an impact on teachers' ability to engage all students in classroom activities. But it does not prove that the class sizes of private schools are smaller. Moreover, students in private schools rated the inclusiveness of Basic Science lessons in their schools (M = 3.42) as higher than the ratings of students in public schools (M = 3.08). The overall descriptive results indicate that students in private schools generally had more positive attitudes towards inclusive pedagogical practices and the learning environment in their schools.

H_{01}: There is no significant difference between students' mean rating of their engagement and learning experiences in Basic Science classrooms.

Table 4. One-Sample t-Test of Students' Ratings of Their Engagement and Learning Experiences in Basic Science (n = 490)

Variable	Mean	SD	Test Value	t	df	p-value	Decision
Student engagement and learning experiences	3.29	0.58	2.50	30.14	489	< .001	Reject H_{01}

As presented in Table 4, the mean of the students' rating of their engagement and learning experiences in Basic Science classrooms (M = 3.29, SD = 0.58) was higher than the criterion mean of 2.50. The one-sample t-test showed that this difference was significant, $t(489) = 30.12$, $p < .001$. This indicates that students' scores on engagement and learning experiences were well above the middle of the 4-point Likert scale. Thus, the null hypothesis was rejected. The result shows that generally students had positive perception regarding their involvement and learning in Basic Science classrooms.

H_{02}: There is no significant difference in teachers' mean ratings of inclusive pedagogical practices and institutional support between public and private secondary schools.

Table 5. t-test analysis of Teachers' Mean Ratings of Inclusive Pedagogical Practices and Institutional Support by based on School Type (n = 35)

School type	N	Mean	SD	t	df	p-value	Decision
Public	20	3.16	0.47	2.57	33	.015	Reject H_{02}
Private	15	3.55	0.39				

Table 5 shows that there are statistically significant differences between the mean ratings of inclusive pedagogical practices and institutional support given by public and private school teachers. The mean rating for private school teachers (M = 3.55, SD = 0.39) was higher than the mean rating of the public school teachers (M = 3.16, SD = 0.47). Independent-samples t-test revealed that the difference was significant, t(33) = 2.57, p = .015. Thus, the null hypothesis was rejected. The overall result indicates that private school teachers rated the inclusive pedagogical practices and institutional support available for the implementation of these practices more positively.

H_{03}: There is no significant difference in students' mean ratings of inclusive pedagogical practices between public and private secondary schools.

Table 6. Independent-Samples t-Test Comparing Students' Mean Ratings of Inclusive Pedagogical Practices in Public and Private Secondary Schools (n = 490)

School type	N	Mean	SD	t	df	p-value	Decision
Public	290	3.02	0.55	6.11	488	<.001	Reject H_{03}
Private	200	3.32	0.51				

Table 6 shows that there was a significant difference between the mean rating of inclusive pedagogical practices for students in private and public schools. The mean rating for students in private schools (M = 3.32, SD = 0.51) was higher than the mean rating for students in public schools (M = 3.02, SD = 0.55). The independent-samples t-test showed that this difference was statistically significant, t(488) = 6.11, p < .001. A moderate difference between the two groups is indicated by the effect size (Cohen's d = 0.56). Thus, the null hypothesis was rejected. This discovery indicates that generally, the students in private schools had a more positive perception of inclusive pedagogical practices than the students in public schools.

DISCUSSIONS

The results give an insight into the perceptions of pupils and Basic Science teachers on inclusive pedagogical practices in the selected public and private secondary schools in Ojo Zone of Education District V, Lagos State. The three major issues were: students' engagement and learning experiences, teachers' perceptions of inclusive practices and institutional support, and the differences in students' ratings between the different types of school. The results indicated overall positive attitudes of students towards their involvement and learning experiences. The mean ratings were between 3.24 and 3.37, which were above the criterion mean of 2.50 (see Table 1). The highest rating was that of the use of examples from real life and culture to support understanding of Basic Science concepts (M = 3.37) followed by the motivation to participate actively in classroom activities (M = 3.31). This indicates that students appreciated teaching methods which related science to their everyday experiences and involved them. This finding aligns with the view of Florian and Black-Hawkins (2011) that inclusive pedagogy is about providing meaningful learning opportunities for all learners and Jackson-Summers et al. (2024) who identified inclusive communication, inclusive teaching practices and inclusive curriculum design as important aspects of inclusive pedagogy.

The positive scores for real-life and cultural examples are especially pertinent for Basic Science where opportunities are provided to connect scientific concepts with learners' immediate environment. Onowugbeda et al, (2024) found that Culturo-Techno-Contextual Approach was found to facilitate the retention of Biology concepts by Senior Secondary School students in Lagos State. Likewise, Adam et al. (2025) discovered that culturally relevant science teaching facilitated students' critical thinking in Biology. These studies used intervention designs and were conducted in Biology but show that there is a need to link science teaching with the learners' cultural and contextual experiences. The present findings add support to this evidence in relation to the students' perceptions of Basic Science teaching. Students also expressed positive attitudes towards their motivation, involvement and self-confidence. This is significant because classroom contexts and teacher pedagogical decisions have an impact on student engagement (Kelly et al., 2024). The results thus indicate that students linked their learning in the classroom to the teaching styles used by teachers. But these ratings are based on students' perceptions and not necessarily on a direct relationship between inclusive practices and academic performance.

In terms of teacher perceptions, Table 2 indicates that teachers, both public and private school teachers, had a positive attitude towards inclusive pedagogical practices. However, private school teachers had higher mean scores on the five items that measured the perceived benefits of inclusive teaching, such as participation, academic

achievement, motivation, concentration and confidence. There were also differences in the perceived institutional support. Private school teachers rated access to training higher (M = 3.40) than public school teachers (M = 2.70), as well as access to teaching resources (M = 3.47) compared to public school teachers (M = 2.65). This indicates that the private school teachers felt that there was more positive institutional support. Positive attitudes towards inclusion need to be translated into classroom practice with the support of adequate training, instructional materials and institutional support. This aligns with UNESCO (2020) that highlighted the barriers that hinder learners' access and participation in education. However, the quality of training, amount of resources and the school funding arrangements were not evaluated separately in the current study.

The same trend was observed in the students' scores by school type. The mean scores of private school students were higher than those of public school students on all five statements as shown in Table 3. The biggest gap was in the availability of school facilities and learning materials (private: M = 3.38; public: M = 2.70), which indicated that private school students' perception of the availability of school facilities and learning materials was more positive. Access to the right resources can facilitate diverse teaching and learning styles, as well as meet the needs of different learners, consistent with the findings of Jackson-Summers et al. (2024). Private school students also rated teachers' use of methods that accommodate different abilities (M = 3.41) as higher than public school students (M = 3.28). But, there was not a significant difference between public (M = 3.30) and private schools (M = 3.35) when it came to teachers' equal encouragement of students. This indicates that there are similar perceptions of teacher encouragement in both categories of schools, and supports the stance of Florian and Black-Hawkins (2011) that inclusive pedagogy should be directed towards all learners. Care must be taken in interpreting the class size finding. The private school students' mean rating (M = 2.91) was higher than the public school students' mean rating (M = 2.45) on the statement that class size influences teachers' involvement of all students. This does not mean that the private schools had smaller classes, but rather that there was more consensus among the private school students that class size influences participation. Instead, it highlights class size as one of the factors that needs to be further explored in the context of inclusive Basic Science teaching. This concern is in line with UNESCO (2020) that highlighted the need to tackle obstacles to meaningful participation in education.

In addition, students in private schools rated the inclusiveness of Basic Science lessons in their schools more favourably (M = 3.42) than did students in public schools (M = 3.08). The independent-samples t-test in Table 6 revealed that the difference was statistically significant, and that the ratings for the private school students were higher. This suggests that there is a more positive perception of pupils in private schools but does not prove that this is the result of the ownership of the school. Funding, teacher professional development, leadership practices and distribution of instructional resources were not explored separately. In general, Oginni et al. (2025) also found challenges to equitable access to STEM learning in Nigeria schools and noted the need for inclusive learning experiences. The present study adds to this discussion by looking at students' and teachers' perceptions in public and private secondary schools. Overall, the results indicate that real-life and cultural examples, student participation, teacher encouragement, and professional development and access to instructional resources are important factors to consider in inclusive Basic Science education. However, there are areas that need attention, as differences in the perceived institutional support and learning resources indicate. Given that the data in the study were obtained from a self-reported questionnaire and the survey design was descriptive, it is impossible to determine the true effectiveness of inclusive practices or the reasons for differences between the school categories. Additional studies with classroom observations, interviews and direct measurements of classroom resources and conditions would help to better understand how inclusive pedagogical practices are being realized in Basic Science classrooms.

CONCLUSION

The study showed that in general, the perceptions of the students and the Basic Science teachers of the selected secondary schools towards inclusive pedagogical practices were generally favourable. Pupils indicated positive engagement and learning experiences including use of real-life and cultural examples. Teachers also had positive perceptions of inclusive practices, with private school teachers reporting more positive access to training and teaching resources than public school teachers. Likewise, students attending private schools had a higher mean rating on inclusive pedagogical practices compared to the students attending public schools. The findings here underscore the need for contextual approaches to teaching and learning, sufficient instructional materials and ongoing teacher training for inclusive Basic Science education. However, because of the self reported data and the descriptive survey design of the study, the findings do not provide causal relationships or actual effectiveness of the practices studied. Therefore, further research is recommended based on classroom observation and interview to gain deeper understanding on the implementation of inclusive pedagogical practices. The results are relevant to the overall goal of Sustainable Development Goal 4, with a strong focus on inclusive and equitable quality education.

Recommendations

Based on the findings of the study, the following recommendations are made:

1. **Teacher Professional Development:** Education authorities and school management should ensure

that Basic Science teachers, especially in public schools, are regularly provided pre-service and in-service professional development. The training should build teachers' capacity to employ culturally responsive and real-life and student-centered teaching practices, as public school teachers rated access to training lower.

2. **Contextualisation of Basic Science Teaching:** Basic Science teachers need to use familiar cultural practices, local examples and everyday experiences in teaching. This is corroborated by the high ranking of students for the use of real-life and cultural examples to make Basic Science easier to understand.
3. **Improvement of Facilities and Class Size in Public Schools:** Lagos State Ministry of Education and education authorities should give attention to adequate teaching facilities and learning materials in public secondary schools. School administrators should also consider class sizes, and implement classroom management practices that encourage all students to participate. This recommendation is based on public school students' ratings of the availability of facilities and learning materials (Table 3, Item 12), and on their responses to the question of how class size affects teachers' ability to involve all students (Item 14).
4. **Improving Institutional Support for Inclusive Teaching;** The Lagos State Ministry of Education, education district and school management should put in place practical support mechanism for inclusive Basic Science teaching. These should include teacher development on a regular basis, sufficient instructional materials, and regular monitoring of classroom practices, especially for public schools. These would help to take into account the disparity in teachers' perceptions of training and resources between public and private schools.

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