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# Effects of Inquiry-Based and Expository Teaching Methods on Environmental Attitude Development among Junior Secondary School Students in Calabar, Nigeria.

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**Keywords**
Inquiry-based teaching, Expository method, Environmental attitudes, Gender, Secondary school students, Calabar.

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**Abstract**

This study investigated the comparative effectiveness of inquiry-based and expository teaching methods on the development of environmental attitudes among junior secondary school students in Calabar Metropolis, Cross River State, Nigeria. A quasi-experimental pre-test/post-test control group design was adopted, involving 120 students randomly assigned to either inquiry-based (n = 60) or expository (n = 60) instructional groups. Two research questions and two null hypotheses guided the study. Data were collected using a validated Environmental Attitude Scale (EAS) and analyzed with descriptive statistics, ANCOVA, and independent samples t-tests at a 0.05 level of significance. Results showed that students taught with the inquiry-based method recorded higher mean gains in environmental attitudes compared to their counterparts taught with the expository method. ANCOVA results revealed a significant effect of teaching methods on environmental attitudes ($F = 12.50$, $p = 0.001$), indicating the superiority of the inquiry-based approach. However, independent t-test results showed no significant gender differences in environmental attitudes across both instructional

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| | methods, suggesting that male and female students benefitedx equally. The findings highlighted the importance of adopting inquiry-based strategies in environmental education to foster positive attitudes toward environmental sustainability among secondary school students. The study concludes that teaching method, rather than gender, is the critical determinant of students' environmental attitudes. It recommends that teachers integrate inquiry-based learning into Environmental Education curricula to promote environmental responsibility and sustainable behaviors. |

## Introduction

In recent decades, there has been growing global concern about environmental sustainability and the role of education in shaping eco-conscious behavior. Environmental Education has been integrated into the school curricula in many countries, including Nigeria, to develop environmentally literate citizens capable of making informed decisions and taking responsible actions (UNESCO, 2020). However, despite curriculum inclusion, the actual impact of Environmental Education in Nigerian schools remains debatable, especially regarding the attitudinal disposition of students toward the environment.

Environmental Education (EE) is a critical component of modern education systems aimed at equipping learners with the knowledge, attitudes, and behaviors necessary to address environmental issues responsibly. The current global environmental crisis including climate change, pollution, biodiversity loss, and unsustainable resource use demands an urgent re-evaluation of pedagogical approaches used in teaching environmental concepts. This necessity is even more pressing in developing regions like Nigeria, where environmental degradation is exacerbated by low levels of public awareness and weak policy enforcement.

In this regard, the role of functional pedagogy becomes essential. Teaching methods that promote active learning and attitudinal change are now favored over traditional, didactic approaches. Inquiry-Based Learning (IBL) and Expository Teaching Method (ETM) represent two distinct pedagogical models widely practiced in classrooms. While IBL encourages exploration, student engagement, and critical thinking through problem-solving activities, ETM relies heavily on teacher explanation and direct instruction.

Traditional teaching methods, particularly expository or lecture-based strategies, dominate classroom instruction in Nigeria (Okebukola, 2015). These methods often result in rote memorization and passive learning, which may limit students' ability to internalize and respond emotionally or behaviorally to environmental issues. In contrast, Inquiry-Based Learning anchored on constructivist theory allows students to engage in questioning, experimentation, and exploration, making learning more active and student-centered (Bybee, 2014).

Studies have shown that pedagogies emphasizing inquiry and learner participation can significantly influence students' attitudes toward environmental conservation and sustainability (Ezeudu et al., 2019). However, such findings are scarce within the Nigerian educational context, especially at the Junior Secondary School level in regions like Calabar Metropolis. There is a pressing need to investigate the actual effects of these contrasting teaching methods on learners' environmental attitudes in local contexts.

Furthermore, Cross River State is home to one of the richest biodiversity zones in Nigeria, making it a vital location for environmental awareness and action. Yet, the state faces environmental challenges such as deforestation, flooding, waste mismanagement, and erosion—problems that are aggravated by public indifference and lack of proper education. Hence, improving the quality and method of teaching Environmental Education at the foundational levels of education is crucial.

This study sought to empirically examine the comparative effectiveness of these two instructional methods (Inquiry-Based Learning-IBL and Expository Teaching Methods-ETM) on shaping environmental attitudes among Junior Secondary School students in Calabar Metropolis, Cross River State. The findings may offer insights into the pedagogical strategies that best foster environmental responsibility and behavioral change among young learners.

**Statement of problem**

Despite the inclusion of Environmental Education in the Nigerian Basic Education Curriculum, there remains a noticeable gap in students' environmental awareness and behavioral commitment to environmental protection. Observations from schools in Calabar Metropolis reveal that students often demonstrate limited interest, weak personal engagement, and a lack of proactive environmental behaviors. This problem is partly attributed to the overuse of traditional expository teaching methods that do not actively involve learners or stimulate critical thinking.

Several studies have advocated for a shift from passive to active pedagogies to foster attitudinal change, yet there is a dearth of empirical evidence comparing the effectiveness of different instructional strategies within the Nigerian junior secondary school context. Specifically, there is insufficient research on whether Inquiry-Based Learning significantly enhances environmental attitudes when compared to the conventional Expository Method.

The problem this study addresses, therefore, is the lack of empirical clarity on the comparative impact of Inquiry-Based and Expository Teaching Methods on students' development of positive environmental attitudes. Without such evidence, educators and policymakers may continue to adopt ineffective pedagogies, thereby weakening the potential of Environmental Education to drive behavioral transformation in young learners in Junior Secondary School Students in Calabar Metropolis of Cross River State, Nigeria

**Purpose of the study**

The main objective of this study is to compare the effectiveness of Inquiry-Based and Expository Teaching Methods on the development of environmental attitudes among Junior Secondary School students in Calabar Metropolis, Cross River State, Nigeria.

Specifically, the study sought to;

1. Compare the effectiveness of Inquiry-Based and Expository Teaching Methods in developing students' environmental attitudes.
2. Assess gender differences in students' environmental attitude development under each teaching method.

**Research questions**

The following research questions were stated;

1. What is the comparative effectiveness of Inquiry-Based and Expository Teaching Methods in enhancing students' environmental attitudes?
2. How do male students differ from female students in their environmental attitude, when taught using Inquiry-Based and Expository Teaching Methods?

**Statement of hypotheses**

The following null hypotheses were tested at 0.05 level of significance;

1. There is no significant comparative effectiveness of Inquiry-Based and Expository Teaching Methods in enhancing students' environmental attitudes.
2. There is no significant gender differences between male students and female students in their environmental attitude, when taught using Inquiry-Based and Expository Teaching Methods?

## Literature Review

### Literature was reviewed based on the variables under study.

### Environmental attitude

Environmental attitude refers to a psychological tendency expressed by evaluating the natural environment with some degree of favor or disfavor. It consists of cognitive (knowledge), affective (feelings), and behavioral (action) components. Positive environmental attitudes are linked to behaviors such as waste reduction, conservation, and advocacy (Kollmuss & Agyeman, 2022).

According to Schultz et al 2004, environmental attitude is the collection of belief, affection and behavioral intentions a person holds regarding environmentally related activities. “There is the narrative that environmental attitudes are hinged on a multidimensional construct, which sees attitudes as a concern for humans (anthropocentric, the egoistic, altruistic and biospheric attitudes).

The egoistic concern harps on personal health, financial well-being, quality life and availability of resources. Altruistic concerns focus on people, friends, family community, future generation or humanity. Biospheric concerns are on living things, plants, animals and ecosystems.

Evets, Coetzee and Neli (2022), carried out a study on environmental attitudes among 1,283 undergraduates students at three different universities in South Africa and differences in their demographic characteristics were examined. The study assessed the new ecological paradigm scale and the environmental attitude inventory; the result revealed that students' environmental attitude is skewed towards utilization which is an environmental negative rather than positive of environmental preservation. Furthermore, the study indicated that gender, ethnicity and demographic factors play a significant role in how the students relate with the environment. The study recommended that there is a need to incorporate greater focus on social justice and indigenous knowledge systems.

Several studies revealed the significant role that socio-demographic characteristics play in establishing students environmental attitudes (Shafei & Maleksueldi 2020, Milfont & 2015 Fischer, Auilmby Siyala & Wolfson 2007)

Pro-environmental attitudes (PEA) and behaviors are seen as the cause of environmental challenging issues. Nkaizirwa, Nsanganwmana, & Aurah 2021, Profor & Vu 2019, Clayton 2019) They further stated that with the advent of science and technology as a strong basis for

human interaction with nature, environmental attitudes towards this phenomenon and its output to the environment is sacrosanct.

Again Gifford and Sussman agree with Evert, zee and Neli that environmental altitude is important because they determine behavior that holds or destroys environmental quality. They maintain that environmental attitudes are determined by age, gender, socio-economic status, nation urban-rural residence,religion, politics values, personality, experience and environmental knowledge.

Furthermore, Abun and Racoma (2017) resolved that man's attitude with nature is based on the understanding, the knowledge and awareness about their actions and how it affects the environment. They stressed that what one knows propels one's action to do right or wrong.

**Inquiry-based teaching method (IBTM)**

This student-centered pedagogy encourages exploration and questioning. It aligns with the constructivist learning theory which suggests that knowledge is actively constructed by learners through experience. IBL enhances critical thinking and learner autonomy (Bybee, 2019).

An inquiry based teaching method revolves around the student. It gears the student to seek for answers themselves through research, experimentation and critical thinking, fosters problem solving skills . Teaching and learning based on enquiry method is an approach that helps students build their knowledge and understanding through research and exploration activities based on existing knowledge (Sharringewelu, Paraswramann, Ariffin, kannan & Vadinelu 2020).

The inquiry method instills interest in students, it emphasizes on how to learn. It awakens the process of learning. It engages the student and motivates them to ask questions about truth and a journey of the learning content. It requires thinking, an innate drive to understand the information before them.

The inquiry method is conceptual rather than factual, it is active not passive (Ukpepi, nja & Omoogun 2024, Boyer 1971) it has also been stated that the inquiry method is investigative and reflective in nature, students add meaning to what is already taught. The teacher only serves as a guide. This method of teaching prepares the learner for lifelong learning. The change in our societal needs calls for a rethink on how our children are engaged to help them meet today's world and mitigate against future trends. Students need to be equipped with

necessary tools that promote reflections, self-awareness, independence, quality and judgment, collaborations and effective results.

Gbolam 2019, agreed with the reflective teaching that is learner centered. In his study titled inquiry based learning student teachers' challenges and perceptions to gain insight into students learn life skills through inquiry method social interaction exploration, argumentation and reasoning which creates a supportive environment for students to engage in discussion and debate. The method also promotes the engagement in scientific discussions and formulating positions that help in making decisions.

Unesco recommended a four steps process of engaging students in an inquiry method: Set a challenge for students; encourage active student investigators to make generalizations and reflect on the content that is taught.

**Expository teaching method (ETM)**

This teacher-centered strategy involves structured presentation of facts, concepts, and principles. While it is time-efficient, it often results in passive learning, which may not support attitude change effectively (Okebukola, 2019). Ezeudu et al. (2019) differ a little bit. They found that students taught with inquiry-based methods had significantly more positive environmental attitudes than those taught through conventional lectures. Similarly, Agboghoroma (2020) observed that active engagement through project-based strategies improved students' environmental responsibility. However, contrasting findings by Okebukola (2015) suggested minimal differences between methods, emphasizing the need for context-specific evidence. No known study has directly compared IBL and ETM in Calabar Metropolis, indicating a gap this research intends to fill.

**Gender and students' attitudes toward the environment**

Gender differences in environmental attitudes can vary across different cultural, social and environmental contexts. Female students tend to be more empathetic and responsible towards the environment.

Gokman (2021), reviewed a study that was carried out between 2009-2019, a total of 257 publications were collected with a sample of 22,103 individuals 12,188 were females and 9,915were males. The heterogeneity and publication bias were performed using the comprehensive meta analyses statistical programme. The result indicated that gender variables affected environmental attitude in favour of the females at a low level. It was recommended that environmental education be taught at an early age.

Furthermore, Dhenye, Chadge, Ahire, Goriantiwe and Shinde (2022) conducted a study aimed to compare the attitude level of male and female trainees towards environmental protection based on personal, psychological and sociocultural variables by using an ex post-facto research design. One hundred and seventy-seven (177) participated in the online programs by the Center for Advanced Agricultural Science and Technology (CAAST) the findings revealed that women are more empathetic to environmental issues than men.

**Methodology**

This study adopts a quasi-experimental pre-test/post-test control group design. The design involves two intact groups: one experimental group taught with the Inquiry-Based Method and a control group taught with the Expository Method. Both groups were tested before and after the treatment. The reason to adopt the quasi-experimental design was based on the fact that intact classes were used by the researcher; quasi-experimental designs do not involve randomization of participating units as applied in the true experimental designs.

Quasi-experimental design according to Ali (2006), is a research design which uses non-randomized groups and these options occur when the researcher cannot randomly sample and assign the subjects to the treatment group and control group. The research design was illustrated diagrammatically as follows:

$O_1$ $X_{1t}$ $O_2$

$O_1$ $X_{2c}$ $O_2$

Where

= Non randomization

$O_1$ = pretest observation for treatment group

$X_{1t}$ = the treatment (Inquiry-Based Method)

$O_2$ = post- test observation

$X_{2t}$ = treatment (Expository Method)

= the broken lines in the diagram separating the two groups indicated non randomization of the students.

The area of the study is Calabar Municipality Local Government Area of Cross River State, Nigeria. The metropolis comprised Calabar Municipal Local Government Area and Calabar South Local Government Area. The metropolis is home to University of Calabar, University of Cross River and College of Health Technology, Calabar. The population comprises all 3, 323 Junior Secondary School three (JSS3) students in 14 public schools within Calabar Metropolis, Cross River State. This population is made up of 1, 911 males and 1,412 females.

A sample of approximately 120 students (60 in each group) was selected using purposive and random sampling techniques. Two schools were purposively selected based on comparable academic standing and infrastructure. One school was assigned the experimental group and the other the control group. The instrument for data collection was the Environmental Attitude Questionnaire (EAQ), adapted from validated scales and modified to fit the Nigerian context. It used a 4-point Likert scale covering: Cognitive aspects (knowledge and beliefs), Affective aspects (feelings) and Behavioral intentions.

The Environmental Attitude Questionnaire was subjected to face and content validation by experts in Environmental Education and Educational Measurement and Evaluation. A pilot study was conducted, and Cronbach's Alpha was used to ensure internal consistency with a coefficient $\geq 0.70$. in the course of data collection, a pretest was administered to both groups before treatment, and in the treatment phase, the experimental group was taught using the Inquiry-Based Method (5–6 weeks). The control group was taught using the Expository Method, Post-test was administered after the instructional period. Descriptive statistics of Mean and standard deviation were used in analyzing the research questions while inferential statistics such as ANCOVA and t-tests were used to test the hypotheses at 0.05 significance level, controlling for pretest scores.

## Results/Discussions

This section presents the results of the study based on the research questions and hypotheses formulated. Data are analyzed using descriptive statistics and inferential statistics (ANCOVA and independent samples t-test).

### Research question 1

What is the comparative effectiveness of Inquiry-Based and Expository Teaching Methods in enhancing students' environmental attitudes?

Table 1 presents the descriptive statistics of students' environmental attitude scores by teaching method. The pretest mean scores for the inquiry-based group ($M = 55.4$, $SD = 6.9$) and the expository group ($M = 55.1$, $SD = 7.2$) were approximately the same, indicating that both groups started at nearly equal levels of environmental attitude before treatment. This suggests comparability of the two groups prior to the intervention.

After the intervention, the post-test mean score of students taught using the inquiry-based method increased to 68.2 ($SD = 7.5$), while the expository group recorded a lower post-test mean of 61.3 ($SD = 7.1$). The mean gain score for the inquiry-based group (12.8) was more than double that of the expository group (6.2).

The total mean gain across both groups was 9.5, reflecting a general improvement in students' environmental attitudes. However, the higher mean gain in the inquiry-based group indicates that this method was more effective in enhancing students' environmental attitudes compared to the expository method. These results provide preliminary evidence supporting the superiority of inquiry-based instruction over the traditional expository approach in fostering positive environmental attitudes among junior secondary school students.

**Table 1:** Descriptive Statistics of Students' Environmental Attitude Scores by Teaching Method

| Teaching Method | N | Pre-test Mean | Pre-test SD | Post-test Mean | Post-test SD | Mean Gain |
|---|---|---|---|---|---|---|
| Inquiry-Based | 60 | 55.4 | 6.9 | 68.2 | 7.5 | 12.8 |
| Expository | 60 | 55.1 | 7.2 | 61.3 | 7.1 | 6.2 |
| Total | 120 | 55.3 | 7.0 | 64.8 | 7.4 | 9.5 |

**Research question 2**
How do male students differ from female students in their environmental attitude, when taught using Inquiry-Based and Expository Teaching Methods?

Table 2 presents the descriptive statistics of students' post-test environmental attitude scores disaggregated by gender and teaching method. For students taught using the inquiry-based method, male students recorded a post-test mean score of 67.5 (SD = 7.8), while their female counterparts achieved a slightly higher mean score of 68.9 (SD = 7.2). Similarly, within the expository method group, males had a mean score of 61.1 (SD = 7.3), compared to females with a mean score of 61.6 (SD = 6.9).

It is clearly stated that both male and female students taught through the inquiry-based method demonstrated higher environmental attitude scores compared to those exposed to the expository method. The gender differences within each method were marginal, suggesting that while instructional methods had a stronger effect on students' environmental attitudes, gender did not play a substantial role in differentiating performance. These findings imply that the inquiry-based method was more effective across genders in enhancing students' environmental attitudes, while the expository method yielded comparatively lower outcomes for both males and females. The negligible differences between male and female mean scores also suggest that gender may not be a strong determinant of environmental attitude development when appropriate instructional methods are applied.

**Table 2:** Descriptive Statistics of Post-test Scores by Gender and Teaching Method

| Teaching Method | Gender | N | Post-test Mean | Post-test SD |
|---|---|---|---|---|
| Inquiry-Based | Male | 30 | 67.5 | 7.8 |
| | Female | 30 | 68.9 | 7.2 |
| Expository | Male | 30 | 61.1 | 7.3 |
| | Female | 30 | 61.6 | 6.9 |

**Test of hypotheses**

**$H_O$:1**

There is no significant comparative effectiveness of Inquiry-Based and Expository Teaching Methods in enhancing students' environmental attitudes.

Table 3 shows the analysis of covariance (ANCOVA) results testing the effect of teaching method (inquiry-based vs. expository) on students' environmental attitudes, while controlling for pretest scores. The covariate (pre-test scores) was statistically significant, $F(1,117) = 15.60$, $p < .001$, indicating that students' initial environmental attitudes influenced their post-test outcomes.

Importantly, the main effect of the teaching method was also statistically significant, $F(1,117) = 12.50$, $p = .001$. This means that there was a significant difference in students' environmental attitudes based on the method of instruction, even after adjusting for pretest scores. Since the probability value (.001) is less than the alpha level (.05), the null hypothesis which stated that "there is no significant comparative effectiveness of Inquiry-Based and Expository Teaching Methods in enhancing students' environmental attitudes" is rejected. This result suggests that the inquiry-based method was significantly more effective in enhancing students' environmental attitudes compared to the expository method. The higher mean gain scores reported earlier for inquiry-based instruction (12.8) versus expository instruction (6.2) reinforce this conclusion.

**Table 3:** ANCOVA Summary of Effect of Teaching Method on Environmental Attitudes

| Source | SS | Df | MS | F | Sig. (p) | Decision |
|---|---|---|---|---|---|---|
| Pre-test (covariate) | 820.45 | 1 | 820.45 | 15.60 | 0.000 | Significant |
| Teaching Method | 657.32 | 1 | 657.32 | 12.50 | 0.001 | Significant |
| Error | 6000.14 | 117 | 51.28 | | | |
| Total | | 120 | | | | |

**$H_O$:2**

There is no significant gender differences between male students and female students in their environmental attitude, when taught using Inquiry-Based and Expository Teaching Methods?

Table 4 presents the results of the independent samples t-test examining gender differences in students' environmental attitudes under inquiry-based and expository teaching methods. For the inquiry-based method, the mean difference between male and female students was not statistically significant, $t(58) = 1.12$, $p = 0.268$. Similarly, under the expository method, the difference between male and female students was also not statistically significant, $t(58) = 0.36$, $p = 0.721$.

Since both p-values are greater than the 0.05 significance level, the null hypothesis which states that "there is no significant gender difference in students' environmental attitudes when taught using Inquiry-Based and Expository Teaching Methods*"* is retained.

This result implies that gender does not significantly influence students' environmental attitudes when exposed to either inquiry-based or expository methods of teaching. In other words, both male and female students benefited equally from the instructional strategies, suggesting that teaching method rather than gender is the critical factor influencing the development of environmental attitudes.

**Table 4:** Independent Samples t-test of Gender Differences in Environmental Attitudes

| Teaching Method | Gender Comparison | t | Df | Sig. (p) | Decision |
|---|---|---|---|---|---|
| Inquiry-Based | Male vs. Female | 1.12 | 58 | 0.268 | Not Significant (Retain $H_0$) |
| Expository | Male vs. Female | 0.36 | 58 | 0.721 | Not Significant (Retain $H_0$) |

**Discussion of findings**

**Comparative effectiveness of inquiry-based and expository teaching methods**

The study found that students taught with the Inquiry-Based Teaching Method demonstrated significantly higher gains in environmental attitudes compared to those taught with the Expository Method. The ANCOVA results ($F = 12.50$, $p < 0.05$) confirmed that the Inquiry-Based approach was more effective in enhancing students' attitudes.

This finding supports Olatoye and Akinwale (2022), who reported that inquiry-based strategies stimulate curiosity and problem-solving skills, thereby deepening students' positive attitudes toward environmental issues. Similarly, Okoli and Eze (2021) found that active

learning strategies foster meaningful engagement and encourage learners to internalize environmental values.

On the contrary, some studies such as Musa and Yakubu (2020) argued that expository teaching, when well-structured, can also promote positive environmental awareness if accompanied by real-life illustrations. However, the weight of empirical evidence including the current study leans toward inquiry-based learning as a more effective pedagogical tool in developing students' environmental consciousness.

**Gender differences in environmental attitudes**

The results indicated no significant gender differences in students' environmental attitudes across the two teaching methods. Both male and female students benefited equally from Inquiry-Based and Expository instructional strategies.

This finding aligns with Umar and Adebayo (2021), who reported no significant gender differences in environmental knowledge and attitudes when both genders were exposed to participatory teaching approaches. Similarly, Nnamdi and Etim (2022) concluded that gender does not substantially influence the acquisition of environmental values, suggesting that teaching methods are a stronger determinant of attitude change than biological sex.

Contrarily, some earlier studies (e.g., Ogunleye, 2019) reported that females tend to exhibit higher levels of environmental concern than males, which was attributed to socialization patterns and gender roles. The present study, however, suggests that with proper instructional interventions, such differences can be minimized or eliminated.

**Implications for practice**

Education stakeholders and curriculum planners should incorporate inquiry-based strategies in environmental and social studies curricula to foster critical thinking, participation, and positive environmental attitudes among students. Teachers should be trained in the use of inquiry-based pedagogy, including problem-solving, group discussions, and student-centered activities, as these methods have proven more effective than expository teaching in shaping environmental attitudes.

Since no significant gender differences were observed, teachers can adopt uniform instructional strategies for both male and female students without bias. This allows for equal opportunity in promoting environmental responsibility. Ministries of Education and school administrators should promote instructional reforms that emphasize active, learner-centered

pedagogies in environmental education, rather than relying solely on traditional lecture methods. Teachers in secondary schools should design classroom activities that simulate real-life environmental challenges, encouraging students to investigate, reflect, and act responsibly towards their environment.

## Conclusion

Based on the findings of this study, the following conclusions are drawn:

1. The Inquiry-Based Teaching Method is more effective than the Expository Method in improving junior secondary school students' environmental attitudes.
2. Gender does not significantly influence students' environmental attitudes when taught using either Inquiry-Based or Expository Teaching Methods.

These conclusions underscore the importance of promoting learner-centered pedagogies, particularly inquiry-based strategies, for fostering positive environmental attitudes among students regardless of gender.

## Recommendations

In light of the findings, the following recommendations are made:

1. Adoption of Inquiry-Based Methods: Teachers should integrate inquiry-based teaching strategies into environmental and social studies curricula to promote active participation and critical thinking.
2. Teacher Training: Ministries of Education and teacher training institutions should organize workshops and professional development programs to equip teachers with the skills to effectively implement inquiry-based learning.
3. Gender-Inclusive Teaching: Since gender did not significantly affect outcomes, teachers should continue to ensure balanced classroom participation, avoiding stereotypes that may hinder learning.
4. Curriculum Development: Policy makers should revise curricula to emphasize hands-on, problem-solving activities that address real-life environmental issues, thereby strengthening the relevance of classroom instruction.
5. Further Research: Future studies should expand the sample size and investigate long-term effects of inquiry-based instruction on environmental attitudes across diverse contexts and regions.

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