



# Effect of Collaborative Learning Strategies on Junior Students' Environmental Knowledge and Attitude towards Social Studies

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## Abstract

This study investigated the impact of collaborative learning strategies on students' environmental knowledge and attitudes towards social studies in Junior Secondary Schools in Ibadan, Oyo State, Nigeria. A quasi-experimental, non-equivalent control group pre-test post-test design was employed, involving 180 students (93 males and 87 females) selected through multistage sampling. Six co-educational secondary schools were purposively chosen based on the presence of environmental challenges in their immediate surroundings and were randomly assigned to experimental and control groups. Data collection instruments included the Environmental Knowledge Test (EKT) and the Social Studies Attitude Scale (SSAS). Both instruments demonstrated high reliability coefficients of 0.81 and 0.85, respectively. Results indicated that students taught using collaborative learning strategies significantly outperformed those taught using conventional methods in terms of environmental knowledge and attitudes towards social studies. Additionally, gender did not significantly influence the outcomes of the collaborative learning strategy. The study recommends incorporating collaborative learning strategies into social studies curricula to enhance students' engagement and knowledge retention. Further research is suggested to explore the long-term effects of collaborative learning on students' academic performance and attitudes.

## Keywords

Collaborative learning, Environmental knowledge, Social studies education, Quasi-experimental design, Student attitudes

## INTRODUCTION

In contemporary education, collaborative learning has emerged as a promising strategy for enhancing student engagement and understanding across various subjects (Nzeadibe et al., 2019). Defined as a pedagogical approach where students work together to achieve shared learning goals, collaborative learning fosters group interaction, mutual support, and collective problem-solving (Flaherty, 2022; Huri et al., 2024; Le et al., 2018). This study focuses on the impact of collaborative learning strategies on junior students' environmental knowledge and attitudes towards social studies. Social studies education, which encompasses the study of societal structures, historical events, and environmental issues, is critical for developing informed and responsible citizens (Hollstein & Smith, 2020). However, poor performance in social studies has been a persistent issue, with many students struggling to grasp key concepts and demonstrate a positive attitude towards the subject (Manni, 2023). Factors contributing to this poor performance include a lack of engagement, insufficient interaction with the material, inadequate instructional strategies and negative attitude of students (Carl & Negumbo, 2017; Mensah & Frimpong, 2020).

Attitude is a psychological concept that mirrors an individual's feelings, beliefs, and predispositions towards a specific subject or situation (Okeke et al., 2023). In the context of social studies, a positive attitude encompasses students' interest, enthusiasm, and willingness to engage with the subject matter. Conversely, a negative attitude may manifest as disinterest or reluctance to participate (Getie, 2020; Mensah & Frimpong, 2020). Collaborative learning strategies have been proposed as a means to improve students' attitudes by fostering a more engaging and interactive learning

environment (Ajaja & Mezieobi S., 2018; Akinoso et al., 2021; Author, 2023). Collaborative learning strategies, which promote group discussions and cooperative problem-solving, are expected to enhance students' understanding of environmental concepts and improve their attitudes towards social studies (Akaraonye et al., 2017). By working together, students can share diverse perspectives, engage in meaningful dialogue, and develop a collective responsibility towards societal and environmental issues. These interactions are anticipated to lead to better environmental knowledge and more positive attitudes among students.

### **Theoretical Framework**

This study is grounded in two primary theoretical perspectives: Social Interdependence Theory and Constructivist Learning Theory. These theories provide a comprehensive foundation for understanding how collaborative learning strategies can impact students' environmental knowledge and attitudes towards social studies.

**Social Interdependence Theory:** Social Interdependence Theory, developed by Morton Deutsch (1949) and subsequently elaborated by David and Roger Johnson (1989), posits that the outcomes of interactions among individuals are significantly influenced by the nature of their interdependence. This theory distinguishes between two types of interdependence: positive and negative. In positive interdependence, individuals perceive that their goals are aligned and that working together will help achieve mutual success. Conversely, in negative interdependence, individuals view others' success as hindering their own. In the context of collaborative learning, positive interdependence is crucial. When students work together with shared goals and mutual support, they are more likely to engage deeply with the material and achieve better learning outcomes (Johnson & Johnson, 2009). Collaborative learning environments that foster positive interdependence encourage students to interact, share knowledge, and build collective understanding, which aligns well with the objectives of enhancing environmental knowledge and improving attitudes in social studies (Gillies, 2016).

**Constructivist Learning Theory:** Constructivist Learning Theory, primarily associated with Jean Piaget (1970) and Lev Vygotsky (1978), emphasizes the duty of learners in actively constructing their own understanding and knowledge by way of interaction with their environment and peers. According to constructivism, learning is a process of making sense of the world through personal experiences and social interactions. This theory highlights the importance of social contexts and collaborative activities in facilitating cognitive development and conceptual understanding. In constructivist terms, collaborative learning strategies support the idea that students co-construct knowledge through dialogue, shared experiences, and problem-solving activities (Vygotsky, 1978). By working together, students can challenge each other's thinking, refine their understanding of environmental concepts, and develop more nuanced perspectives on social studies content. This process aligns with the goals of improving students' environmental knowledge and fostering positive attitudes through collaborative learning (Piaget, 1970).

Integrating Social Interdependence Theory with Constructivist Learning Theory gives a strong framework for this study. Social Interdependence Theory stresses the significance of positive interactions and shared goals in collaborative settings, which can enhance students' engagement and learning outcomes. Constructivist Learning Theory underscores the role of social interaction in constructing knowledge and attitudes, emphasizing the benefits of collaborative activities in deepening understanding and fostering positive attitudes towards environmental issues. By applying these theoretical perspectives, this study aims to explore how collaborative learning strategies can effectively improve junior students' environmental knowledge and attitudes towards social studies. The interplay between positive interdependence and constructive social interactions is expected to facilitate a more engaging and meaningful learning experience, addressing the challenges of poor performance in social studies and promoting better educational outcomes.

### **REVIEWED STUDIES**

This section reviews the relevant studies under two main themes: the impact of collaborative and cooperative learning strategies on student achievement and their influence on student attitudes.

#### **Impact on Achievement**

Several studies have explored the impact of cooperative and collaborative learning strategies on student achievement across various educational contexts. Toklucu and Tay (2016) conducted a study in Turkey to evaluate the effects of cooperative learning, systematic teaching, and constructivist learning approaches on 4th-grade students' achievement in social studies. Utilizing a pretest-posttest control group experimental design with 110 students, the study found that all three approaches significantly enhanced student achievement. In Nigeria, Salami and Spangenberg (2024) examined the impact of cooperative learning on senior secondary students' performance in mensuration in Ogun State. This quasi-experimental study involving 80 students revealed a significant improvement in the mean scores of students taught using cooperative learning compared to traditional methods, indicating the effectiveness of cooperative learning in enhancing academic performance in mathematics. Similarly, Akaraonye et al. (2017) investigated the effectiveness of cooperative learning on social studies achievement among JSS II students in Owerri, Imo State. This quasi-experimental study, involving 360 students, found that cooperative learning significantly improved student achievement compared to conventional methods, underscoring its importance in enhancing academic performance.

Ajaja and Mezieobi (2018) also explored cooperative learning in social studies among JSS II students in Rivers State. Their study, involving 122 students, demonstrated that cooperative learning significantly improved performance, benefiting students irrespective of their ability levels and gender. This highlights the broad applicability of cooperative

learning in diverse classroom settings. Additionally, Salako et al. (2012) investigated the effects of cooperative learning on junior secondary students' knowledge and attitudes towards multicultural education concepts in social studies in South-West Nigeria. The findings indicated that cooperative learning was more effective than traditional methods in enhancing student achievement in multicultural education.

### **Impact on Attitude**

The impact of collaborative learning strategies on student attitudes has also been a focus of several studies. Akinoso et al. (2021) investigated the effect of collaborative strategies on secondary school students' attitudes towards mathematics in Lagos State. In their pre-test, control group quasi-experimental design involving 60 students, they found a significant positive impact on students' attitudes towards mathematics, despite the effect on achievement not being significant. This suggests that collaborative strategies can improve students' perceptions and attitudes towards challenging subjects. Alalade (2023) investigated the effects of service learning and collaborative learning on junior secondary students' environmental attitudes in Nigeria. The quantitative study revealed significant improvements in students' environmental attitudes with these strategies, highlighting their potential to positively influence students' perspectives on environmental issues.

In a study on EFL students' English learning and social interactions, Alzubi et al. (2024) found that collaborative learning interventions significantly improved both areas for the experimental group. This quasi-experimental study with prep-year university students emphasized the benefits of collaborative learning in enhancing language skills and social interactions. Dinjangu and Kumar (2024) investigated collaborative learning strategies to enhance pre-service teachers' teamwork, communication, and metacognitive abilities in India. Their mixed-methods study revealed significant improvements in these skills, recommending the integration of collaborative learning into teacher education programs to foster better instructional practices and learning outcomes. Darko and Wang (2021) evaluated the use of collaborative learning among B.Ed. Management students at the University of Cape Coast, Ghana. Their descriptive survey design involving 245 student-teachers highlighted positive attitudes towards collaborative learning, showcasing its benefits in improving academic skills, working relationships, and class participation.

### **PROBLEM STATEMENT**

While the existing literature highlights the positive impact of cooperative and collaborative learning strategies on both achievement and attitudes across various subjects and educational levels, several gaps remain. Firstly, most studies have focused on either achievement or attitude in isolation, rather than examining their interrelated effects. Additionally, while the studies cover a range of subjects, there is a notable gap in research specifically addressing the impact of collaborative learning on social studies at the junior secondary level. Furthermore, the majority of studies have been conducted in specific regions, such as Nigeria and Turkey, with less representation from other regions. This geographical limitation suggests a need for more diverse studies to understand the broader applicability of these findings. Lastly, the implementation challenges and teacher readiness for adopting collaborative learning strategies, as highlighted by studies like Author (2023) and Ajaja and Mezieobi (2018), point to the necessity of further research on effective training programs and support systems for educators.

This study aims to investigate the effect of collaborative learning strategies on junior students' environmental knowledge and attitudes towards social studies. It seeks to determine whether these strategies have the potentials to improve understanding of environmental concepts and foster more positive attitudes towards social studies, thereby addressing the issue of poor performance in the subject. The significance of this research lies in its potential to inform educational practices and contribute to the development of effective teaching strategies in social studies. By exploring the relationship between collaborative learning and students' performance in social studies, this study intends to give insights that can enhance instructional approaches and promote better educational outcomes.

### **RESEARCH QUESTIONS**

1. What are the mean scores of students' environmental knowledge when taught using collaborative learning strategies compared to those taught using conventional learning strategies?
2. What are the mean scores of students' attitudes towards social studies when taught using collaborative learning strategies compared to those taught using conventional learning strategies?
3. What are the mean scores of male and female students' environmental knowledge taught using collaborative learning strategies?
4. What are the mean scores of male and female students' attitudes taught social studies using collaborative learning strategies?

### **Hypothesis**

1. There is no significant difference in the mean scores of students' environmental knowledge taught using collaborative learning strategies compared to those taught using conventional learning strategies.
2. There is no significant difference in the mean scores of students' attitudes towards social studies taught using collaborative learning strategies compared to those taught using conventional learning strategies.

3. There is no significant difference in the mean scores of environmental knowledge between male and female students taught using collaborative learning strategies.
4. There is no significant difference in the mean scores of attitudes towards social studies between male and female students taught using collaborative learning strategies.

## METHODOLOGY

### Research Design

The research employed a quasi-experimental, non-equivalent control group pre-test post-test design. This design was chosen because intact classes were used rather than randomizing students into groups, which is impractical in quasi-experimental studies (Rogers & Révész, 2019).

### Data collection instrument

The instruments for data collection included the Environmental Knowledge Test (EKT) and the Social Studies Attitude Scale (SSAS). The EKT consisted of 20 multiple-choice questions, with seven higher-order questions and thirteen lower-level questions. The EKT was subjected to face and content validation by three experts—one from measurement and evaluation and two from social studies education. The content validation was ensured through strict adherence to the test blueprint. The EKT was trial-tested on 45 students outside the study area, yielding a Kuder-Richardson Formula 20 reliability coefficient of 0.81. The SSAS was adapted from the version of the Attitude Scale for a Social Studies Course by Faiz and Karasu Avci (2020). This scale measures students' attitudes towards social studies and their environmental knowledge. Adaptation involved contextual modifications to fit the Nigerian educational environment and the study's focus on environmental knowledge within social studies. The SSAS consists of 20 items rated on a Likert scale, ranging from strongly agree to strongly disagree. Three experts validated the adapted SSAS, ensuring its relevance and appropriateness for the target population. The reliability of the SSAS was evaluated using Cronbach's alpha, resulting in a reliability coefficient of 0.85, indicating high internal consistency. Both instruments were used in pre-test and post-test assessments to measure the impact of collaborative learning strategies on students' environmental knowledge and attitudes towards social studies. The data collected from these instruments were analyzed to determine the effectiveness of the intervention and to address the research questions and hypotheses.

### Population and Sample

The target population for this study comprised all Junior Secondary School 2 (JSS 2) students in Ibadan, Oyo State, Nigeria, totalling 4,540 students. The study utilized a sample size of 180 learners (93 males and 87 females). A multistage sampling procedure was engaged. Two local governments were selected using stratified sampling out of eleven local governments in Ibadan; one from an urban area and the other from a rural area. 6 mixed junior secondary schools from Ibadan were purposively selected on the basis of the presence of environmental issues in the surroundings. 3 schools were picked from the urban area, and 3 from the rural area. The schools were mixed schools to ensure that treatments were applied simultaneously to male and female genders under similar conditions. Randomization was employed to assign sample schools to experimental and control groups. Intact classes within these schools were employed, and JSS 2 students were considered appropriate for this study as they were not preparing for any unified examinations and were mature enough to reflect on their experiences outside the school environment.

### Research Procedure and Data Analysis

Before the research commenced, approval was obtained from the heads of the six selected schools, and informed consent was acquired from the parents. The researcher enlisted six social studies and civic education teachers as research assistants. Three teachers representing the experimental group were trained for one week on implementing the collaborative learning approach to teaching social studies concepts. The training workshop briefed and instructed the teachers on the nature and purpose of the research, the weekly activities, and their involvement. They were encouraged to ask questions and offer suggestions on how to successfully carry out the participatory activities in their schools. The remaining three teachers, representing the control group, were briefed on how to implement the subject contents using the conventional teaching method guide designed by the researcher. Each lesson for five weeks was discussed with the teachers to ensure they did not stray from the content. The teachers were provided with lesson plans: one for the experimental group, which included the demonstration utilizing the collaborative learning strategy, and another for the control group.

The JSS 2 students were pre-tested using the pre-EKT before the commencement of the experiment. The main teaching for both groups lasted six weeks. The pre-EKT was rearranged after the fourth week to give the questions a different appearance and to prevent memory effects before being used for the post-EKT. The scores obtained from the post-EKT were recorded and used to present data on students' achievement by gender and treatment group. Measures were taken to control for extraneous variables. The acquired data were analyzed statistically using the Statistical Package for Social Sciences (SPSS) version 23. Research questions were reported using mean ( $\bar{x}$ ) and standard deviation (SD). At a significance threshold of 0.05, the formulated hypotheses were tested using analysis of covariance (ANCOVA). ANCOVA was chosen to establish the equality of baseline pre-test data before commencing the treatment and to help determine the covariates between the pre-test and post-test.



## RESULTS

The results are presented following the research questions and hypotheses.

**Research Question 1:** What are the mean scores of students' environmental knowledge when taught using collaborative learning strategies compared to those taught using conventional learning strategies?

**Table 1** The mean scores of students' environmental knowledge in social studies taught using the collaborative learning strategies (CLS) versus those taught using the conventional approach (CA)

Group	N	Pre-test		Post-test	
		$\bar{x}$	SD	$\bar{x}$	SD
Experimental	92	11.35	2.98	22.39	5.62
Control	88	10.58	3.43	16.48	3.68
Total	180				
Mean difference				5.91	

In Table 1, the mean scores of students' environmental knowledge in social studies were compared between those taught using collaborative learning strategies and those taught using the conventional approach. The experimental group had a pre-test mean score of 11.35 ( $SD = 2.98$ ) and a post-test mean score of 22.39 ( $SD = 5.62$ ). In contrast, the control group had a pre-test mean score of 10.58 ( $SD = 3.43$ ) and a post-test mean score of 16.48 ( $SD = 3.68$ ). The mean difference in post-test scores between the experimental and control groups was 5.91. Hence, the result suggests that the collaborative learning strategies enhanced students' environmental knowledge in social studies compared to the conventional approach.

**Hypothesis 1:** There is no significant difference in the mean scores of students' environmental knowledge taught using collaborative learning strategies compared to those taught using conventional learning strategies.

**Table 2** ANCOVA of mean scores of students' environmental knowledge in social studies subjected to both experimental and control groups

Source of variation	Type III Sum of squares	df	Mean sum of square	F cal	Sig.	Partial Eta squared
Corrected Model	1647.781 <sup>a</sup>	4	411.945	18.108	.000	.293
Intercept	4479.075	1	4479.075	196.884	.000	.529
Pre-EKT	24.037	1	24.037	1.057	.305	.006
Gender	25.266	1	25.266	1.111	.293	.006
Group	1519.111	1	1519.111	66.775	.000	.276
Gender * Group	27.275	1	27.275	1.199	.275	.007
Error	3981.219	175	22.750			
Total	74074.000	180				
Corrected Total	5629.000	179				

a. R Squared = .293 (Adjusted R Squared = .277)

The analysis revealed a significant effect of the teaching method on students' environmental knowledge, as shown in Table 2:  $F(1, 175) = 66.775$ ,  $p < .001$ . Consequently, the null hypothesis, which posited no statistically significant difference between the mean scores of students taught using collaborative learning strategies and those taught using conventional learning strategies, was rejected since  $p < .05$ . These findings indicate a significant difference in mean scores favoring the experimental group. Furthermore, the effect size (partial eta squared) was .276, suggesting that 27.6% of the variation in students' environmental knowledge scores can be attributed to the use of collaborative learning strategies.

**Research Question 2:** What are the mean scores of students' attitudes towards social studies when taught using collaborative learning strategies compared to those taught using conventional learning strategies?

**Table 3** The mean scores of students' attitudes towards social studies taught using the collaborative learning strategies versus those taught using the conventional approach

Group	N	Pre-test		Post-test	
		$\bar{x}$	SD	$\bar{x}$	SD
Experimental	92	12.04	2.81	21.91	5.54
Control	88	11.16	3.17	16.47	3.45
Total	180				
Mean difference				5.44	

Table 3 presents the mean scores of students' attitudes towards social studies when taught using collaborative learning strategies compared to those taught using the conventional approach. The experimental group had a pre-test mean score

of 12.04 ( $SD = 2.81$ ) and a post-test mean score of 21.91 ( $SD = 5.54$ ). The control group had a pre-test mean score of 11.16 ( $SD = 3.17$ ) and a post-test mean score of 16.47 ( $SD = 3.45$ ). The mean difference in post-test scores between the experimental and control groups was 5.44, indicating that students taught using collaborative learning strategies had more positive attitudes towards social studies than those taught using the conventional approach.

**Hypothesis 2:** There is no significant difference in the mean scores of students' attitudes towards social studies taught using collaborative learning strategies compared to those taught using conventional learning strategies.

**Table 4** ANCOVA of mean scores of students' attitudes towards social studies subjected to both experimental and control groups

Source of variation	Type III Sum of squares	df	Mean sum of square	F cal	Sig.	Partial Eta squared
Corrected Model	1501.295 <sup>a</sup>	4	375.324	17.904	.000	.290
Intercept	2874.865	1	2874.865	137.143	.000	.439
PreATTI	96.607	1	96.607	4.609	.033	.026
Gender	29.936	1	29.936	1.428	.234	.008
Group	1216.428	1	1216.428	58.028	.000	.249
Gender * Group	39.408	1	39.408	1.880	.172	.011
Error	3668.455	175	20.963			
Total	71871.000	180				
Corrected Total	5169.750	179				

a. R Squared = .290 (Adjusted R Squared = .274)

The analysis revealed a significant effect of the teaching method on students' attitudes towards social studies, as shown in Table 4:  $F(1, 175) = 58.028$ ,  $p < .001$ . Consequently, the null hypothesis, which posited no statistically significant difference between the mean scores of students taught using collaborative learning strategies and those taught using conventional learning strategies, was rejected since  $p < .05$ . These findings indicate a significant difference in mean scores favoring the CLS group. Furthermore, the effect size (partial eta squared) was .249, suggesting that 24.9% of the variation in students' attitudes towards social studies can be attributed to the use of collaborative learning strategies.

**Research Question 3:** What are the mean scores of male and female students' environmental knowledge taught using collaborative learning strategy?

**Table 5** The mean scores of male and female students' environmental knowledge taught using collaborative learning strategy

Gender	N	Pre-test		Post-test	
		$\bar{x}$	$SD$	$\bar{x}$	$SD$
Male	48	11.65	3.29	21.69	5.38
Female	44	11.02	2.59	23.16	5.84
Total	92				
Mean difference				1.47	

Table 5 presents the mean scores of male and female students' environmental knowledge taught using the collaborative learning strategy. The male students had a pre-test mean score of 11.65 ( $SD = 3.29$ ) and a post-test mean score of 21.69 ( $SD = 5.38$ ). The female students had a pre-test mean score of 11.02 ( $SD = 2.59$ ) and a post-test mean score of 23.16 ( $SD = 5.84$ ). The mean difference in post-test scores between male and female students was 1.47, with female students showing slightly higher scores than male students.

**Hypothesis 3:** There is no significant difference in the mean scores of environmental knowledge between male and female students taught using collaborative learning strategies.

The researcher conducted a subgroup analysis using the data from Table 2 to test Hypothesis 3, which examines the mean scores of environmental knowledge between male and female students taught using collaborative learning strategies. The ANCOVA results indicate that the main effect of gender was not statistically significant ( $F(1, 175) = 1.111$ ,  $p = .293$ ,  $\eta^2 = .006$ ), suggesting that there is no significant difference in mean scores of environmental knowledge between male and female students within the collaborative learning strategy group. Therefore, we fail to reject the null hypothesis, indicating that gender did not significantly influence the outcomes of collaborative learning strategy on environmental knowledge scores.

**Research Question 4:** What are the mean scores of male and female students' attitudes taught social studies using collaborative learning strategies?

**Table 6** The mean scores of male and female students' attitudes taught social studies using collaborative learning strategy

Gender	N	Pre-test		Post-test	
		$\bar{x}$	SD	$\bar{x}$	SD
Male	48	12.19	3.04	21.10	5.31
Female	44	11.89	2.56	22.80	5.73
Total	92				
Mean difference				1.7	

Table 6 displays the mean scores of male and female students' attitudes towards social studies taught using collaborative learning strategies. Male students had a pre-test mean score of 12.19 ( $SD = 3.04$ ) and a post-test mean score of 21.10 ( $SD = 5.31$ ). Female students had a pre-test mean score of 11.89 ( $SD = 2.56$ ) and a post-test mean score of 22.80 ( $SD = 5.73$ ). The mean difference in post-test scores between male and female students was 1.7, indicating a slightly higher improvement in attitudes towards social studies among female students compared to male students following collaborative learning strategies.

**Hypothesis 4:** There is no significant difference in the mean scores of attitudes towards social studies between male and female students taught using collaborative learning strategies.

The researcher conducted a subgroup analysis using the data from Table 4 to test Hypothesis 4, which examines the mean scores of attitudes towards social studies between male and female students taught using collaborative learning strategies. The ANCOVA results show that the main effect of gender was not statistically significant ( $F(1, 175) = 1.428, p = .234, \eta^2 = .008$ ), indicating that there is no significant difference in mean scores of attitudes towards social studies between male and female students within the collaborative learning strategy group. Therefore, we fail to reject the null hypothesis, suggesting that gender did not significantly influence the outcomes of collaborative learning strategy on attitudes towards social studies.

## DISCUSSION OF FINDINGS

The aim of this study was to examine the effectiveness of collaborative learning strategies in enhancing students' environmental knowledge and attitudes towards social studies. The findings of this study reveal several important understanding regarding the effectiveness of collaborative learning strategies in enhancing students' environmental knowledge and attitudes towards social studies compared to conventional learning strategies. The first research question investigated whether there were differences in the mean scores of students' environmental knowledge when taught using collaborative learning strategies compared to those taught using conventional learning strategies. The results indicated that students in the experimental group (taught using CLS) had significantly higher post-test scores compared to those in the control group (taught using conventional strategies). This suggests that CLS effectively enhances students' environmental knowledge in social studies. This finding aligns with Toklucu and Tay (2016), who established that cooperative learning approaches significantly improved students' academic achievement. The collaborative nature of CLS likely encourages active participation, peer-to-peer interaction, and deeper engagement with the material, leading to improved comprehension and retention of environmental knowledge. Moreover, CLS provides opportunities for students to clarify doubts, discuss concepts, and reinforce learning through group activities, which may contribute to their higher achievement.

The second research question examined the impact of CLS on students' attitudes towards social studies. The results demonstrated that students taught using CLS had more positive attitudes towards social studies compared to those taught using conventional methods. This finding supports the notion that collaborative learning environments foster a more engaging and enjoyable learning experience, which can positively influence students' attitudes towards the subject. The positive impact of CLS on student attitudes is supported by studies such as Salami and Spangenberg (2024), which showed that cooperative learning strategies improved students' attitudes towards mathematics. The collaborative approach likely creates a more supportive and inclusive classroom environment, where students feel that they are valued and motivated to participate. This can enhance their interest and positive perceptions of social studies.

The third and fourth research questions explored whether there were significant gender differences in the mean scores of environmental knowledge and attitudes towards social studies when taught using CLS. The results revealed no significant differences between male and female students in both environmental knowledge and attitudes towards social studies. This suggests that CLS is equally effective for both genders. These findings contrast with previous studies, such as Lin et al (2017), which suggested potential gender differences in the effectiveness of learning strategies. However, the lack of significant gender differences in this study may indicate that CLS provides an equitable learning environment that benefits all students regardless of gender. The collaborative nature of CLS may help mitigate any potential gender disparities by promoting equal participation and interaction among students..

## CONCLUSIONS AND RECOMMENDATIONS

### Educational Implications

The findings of this study have significant implications for educational practice. The effectiveness of CLS in enhancing both environmental knowledge and attitudes towards social studies suggests that educators should consider incorporating

collaborative learning strategies into their teaching practices. CLS not only improves academic achievement but also fosters a positive learning environment that can enhance students' interest and engagement with the subject. The lack of significant gender differences in the effectiveness of CLS highlights the potential of this approach to provide an equitable learning experience for all students. Educators can use CLS to create inclusive classrooms where all students could succeed and develop positive attitudes towards learning.

### Limitations and Future Research

Despite the positive findings, this study has some limitations that should be acknowledged. The study was conducted within a specific educational context, and the findings may not be generalizable to other settings. Future research should explore the effectiveness of CLS across different subjects, grade levels, and cultural contexts to give a more thorough understanding of its impact. Additionally, while this study focused on immediate post-test outcomes, future research should investigate the long-term effects of CLS on students' knowledge retention and attitudes. Longitudinal studies could provide valuable insights into the sustained impact of collaborative learning strategies.

### Conclusion

In conclusion, this study demonstrates that collaborative learning strategies significantly enhance students' environmental knowledge and attitudes towards social studies compared to conventional learning strategies. The findings highlight the potential of CLS to improve academic achievement and foster a positive learning environment for all students, regardless of gender. Educators are encouraged to incorporate collaborative learning strategies into their teaching practices to promote student engagement and success in social studies. Future research should continue to explore the broader applicability and long-term effects of CLS in various educational contexts.

### Recommendation

Based on the study's findings, several recommendations are proposed. Firstly, social studies teachers should integrate CLS into their teaching practices, given it demonstrated positive impact on students' environmental knowledge and attitudes. Professional development opportunities, such as workshops and training sessions, should be provided to teachers to ensure effective implementation of CLS. Additionally, it is crucial to promote gender equity in the classroom, as the study found no significant gender differences in the effectiveness of CLS. Designing CLS activities that encourage active participation and peer interaction, such as group discussions and cooperative projects, can further enhance learning outcomes. Organising a supportive and inclusive classroom setting where all students become valued and respected is also essential. Lastly, regular assessments and constructive feedback should be implemented to monitor student progress and adjust teaching strategies as needed.

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The research did not receive funding.

### DECLARATION OF CONFLICT

The author(s) declare no conflict of interest.

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