Effect of Performance Task and Peer Testing Assessment Modes on Senior Secondary School Students' Achievement in Practical Geography in Region Five, the Gambia

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ABSTRACT

In this quasi-experimental study, 90 senior secondary Gambian students' academic performance in practical geography was examined in relation to performance tasks and peer testing assessments. The Performance Task group received the highest post-test scores, followed by the Peer Testing group, while the Traditional Method control group received the lowest. The results showed a significant effect of assessment type. In the Peer Testing group, there was a significant gender gap that favoured men, but not in the Performance Task group. The experimental groups showed increased motivation and engagement, according to qualitative data. The study, which draws its conclusions from constructivism and self-determination theory, concludes that performance tasks are very successful and suggests incorporating them into the geography curriculum in addition to teacher preparation programs and additional research on gender dynamics in group settings.

Keywords: Performance Task, Peer Testing, Practical Geography, Academic Achievement, Gender Differences, The Gambia, Constructivism, Self-Determination Theory.

BACKGROUND OF THE STUDY

Through the study of both theoretical and practical components, geography education in The Gambia aims to give senior secondary students the fundamental analytical and problem-solving abilities they need (Ministry of Basic and Secondary Education [MoBSE], 2018). However, there is still a big problem, especially in rural regions like Region Five where the practical side of the subject is not given enough attention. The dominance of conventional, lecture-based teaching techniques, a lack of resources, and poor teacher preparation are the causes of this. As a result, students frequently struggle to apply their geographic knowledge beyond memorization, which results in consistently low scores on the West African Senior School Certificate Examination (WASSCE). The West African Examinations Council (WAEC, 2022) reports a significant decline in practical geography skills, particularly in map reading and spatial data analysis. Bah (2020) attributes this decline to assessment practices that encourage surface learning rather than critical thinking.

To address these systemic issues, this study explores two alternative assessment methods: performance task assessment and peer testing. Performance tasks require students to demonstrate their understanding through authentic, real-world applications such as constructing maps, conducting field surveys, or analyzing environmental data (Darling-Hammond & Adamson, 2013). This approach immerses students in realistic scenarios, allowing them to integrate theory and practice and perceive geography as an active, problem-solving discipline (Amoako, 2019). In contrast, peer testing involves students evaluating each other's work under teacher supervision, which promotes collaboration, responsibility, and a greater metacognitive awareness of assessment criteria (Topping, 2009). Research by Dakpoe (2019) found that this method enhances student engagement and motivation in social science classrooms.

Empirical evidence robustly supports the efficacy of innovative pedagogical methods. Research indicates that performance-based and collaborative assessments facilitate deeper learning and enhance retention compared to traditional examinations. For example, Egunjobi (2014) demonstrated that Computer-Assisted Instruction

improved practical geography outcomes, while Ene, Obi, and Nwosu (2025) found that peer evaluation resulted in higher student performance and retention. The incorporation of these strategies is consistent with The Gambia's educational objectives of fostering learner-centered, competency-based instruction (Biggs & Tang, 2011) and may assist in bridging the identified "intention-action gap" (Darling-Hammond & Adamson, 2013).

Additionally, the study examines the influence of gender, as existing research suggests that male students typically excel in spatial tasks such as map interpretation (Halpern et al., 2007), whereas female students may perform better in collaborative environments, such as peer testing (Weinburgh, 1995). Nonetheless, interactive methodologies can alleviate these disparities; Iwah (2025) found no significant gender differences in achievement when employing hands-on scale models. Consequently, this research aims to assess the impact of performance tasks and peer testing assessment modes on students' achievement in practical geography in Region Five, The Gambia, while also investigating whether gender moderates these outcomes. The findings are intended to contribute to essential educational reform, rendering geography education more interactive, competency-oriented, and effective.

Table:1.1. Percentage Past in Geography at WASSCE from 2019 to 2023 on Gender Based

YEAR	PERCENTAGE PAST FOR BOYS	PERCENTAGE PAST FOR GIRLS
2019	47.7%	38.5%
2020	54.8%	46.1%
2021	58.3%	51.4%
2022	51.8%	41.4%
2023	68.9%	61.8%

Purpose of the Study

This study aims to evaluate the effectiveness of performance tasks and peer testing assessment modes in comparison to traditional methods on the academic achievement of senior secondary students in practical geography, specifically in map work. The research seeks to identify which approach is most effective in enhancing learning and practical skills by first investigating the impact of these assessment methods on overall academic achievement. Secondly, it will explore the potential influence of gender differences on the effectiveness of these alternative assessment strategies. Finally, through direct observation, the study will analyze the learning behaviors exhibited by students during the various instructional treatments, thereby providing insights into the most effective pedagogical approaches for teaching and assessing map work geography at the senior secondary level.

Research Questions

Based on the purpose of the study; the following research questions will be addressed:

1. Are there any significant effects of treatments (performance tasks, peer testing and traditional methods) on senior secondary students' academic achievement in practical geography?
2. Are there significant differences in senior secondary school students' academic achievement in practical geography based on gender after the treatments (performance task and peer testing)?
3. What observable learning behaviours of students during the treatments?

LITERATURE REVIEW

This literature review establishes a comprehensive theoretical and empirical foundation for examining the effects of performance tasks and peer testing assessments on students' achievement in practical geography. The study is anchored in two primary theoretical frameworks: Constructivism, as proposed by Piaget, and Self-Determination Theory (SDT), formulated by Deci and Ryan. Constructivism asserts that learners actively construct knowledge

through experiential engagement, which aligns seamlessly with performance tasks that necessitate real-world application and peer testing that encourages collaborative knowledge construction through social interaction (Mutwarasibo, 2016; Eshun et al., 2024). SDT offers a motivational framework that elucidates how these methods enhance student engagement by satisfying fundamental psychological needs: autonomy (the ability to choose tasks), competence (achieving mastery and receiving feedback), and relatedness (collaborative engagement in peer testing). Empirical evidence strongly supports the transition from traditional instructional methods. Research on performance-based strategies indicates that Computer-Assisted Instruction (Egunjobi, 2014) and concept mapping (Okafor, 2016) significantly enhance geography achievement by rendering abstract concepts more tangible. Additionally, field-based and experiential learning methods, such as field trips, yield higher academic scores in comparison to traditional teaching approaches by linking theoretical knowledge to direct observation (Estawul et al., 2016). Investigations into collaborative and peer-based learning underscore its efficacy, revealing that peer assessment enhances academic achievement, retention, and critical thinking skills more effectively than teacher-led evaluations alone (Ene et al., 2025; El-Senousy, 2020). Comparative studies further validate the superiority of cooperative strategies, such as the Jigsaw method, over lecture-based approaches in teaching map skills (Adeyemi & Cishe, 2016; Shamle et al., 2025).

The literature reveals nuanced findings regarding the effects of gender. Several studies suggest that innovative methodologies can reduce gender disparities. For example, research indicates that no significant gender differences in achievement were observed when employing Computer-Assisted Instruction (Egunjobi, 2014) or cooperative learning (Adeyemi & Cishe, 2016). Conversely, other studies present mixed or context-dependent outcomes, such as males outperforming females in field-based settings (Estawul et al., 2016) and females exhibiting superior retention in blended environments (Egara & Mosimege, 2023). This implies that although alternative assessments may foster equity, results can differ depending on the specific task and learning context.

Moreover, the review emphasizes key observable learning behaviours that these interventions cultivate. Students engaged in peer and performance-based settings demonstrate increased active engagement and collaboration, transitioning from passive recipients to active co-creators of knowledge (Mutwarasibo, 2016; Yu, 2011). These approaches also enhance motivation and self-regulation, as students take ownership of their learning and develop skills in goal setting and time management (Ene et al., 2025). Furthermore, students exhibit reflective and feedback-oriented behaviours, engaging in critical self-assessment and continuous improvement through peer feedback (Hsu et al., 2020; Njiku, 2018). Such behaviours, bolstered by enhanced emotional engagement and self-efficacy (Pan et al., 2024), are essential for cultivating the practical and analytical competencies necessary in geography. Collectively, this review substantiates the study by demonstrating that performance tasks and peer testing are both theoretically sound and empirically validated strategies for enhancing achievement in practical geography.

RESEARCH METHODOLOGY

This study utilized a quasi-experimental design that incorporated pre-test and post-test measures alongside a control group to examine the impact of various assessment modes on the academic performance of senior secondary school students in practical geography. The research population comprised 168 Grade 12 Geography students from the Central River Region. A multi-stage sampling technique was employed, beginning with the purposive selection of three schools that represented distinct types: public, boarding, and mission schools. From these institutions, a simple random sampling method was applied to select 30 students from each school, culminating in a final sample size of 90 participants. The schools were subsequently assigned to specific interventions: one implemented Performance Task Assessment, another utilized Peer Testing Assessment, and the third functioned as the control group, adhering to the Traditional Method.

Data collection was conducted through a mixed-methods approach. Quantitative data were primarily obtained through pre- and post-test assessments specifically designed to evaluate practical skills in map work. The research instruments underwent rigorous validation through expert review and alignment with the curriculum, and their reliability was confirmed with a high Kuder-Richardson (KR-20) coefficient of 0.81. In addition, qualitative data were collected through researcher observations during the intervention periods to capture student

learning behaviors. Permissions were obtained from all relevant school authorities prior to the initiation of the study.

For data analysis, the quantitative scores were subjected to both descriptive and inferential statistical techniques. Descriptive statistics provided summaries of the pre-test and post-test scores, while inferential analyses included an Analysis of Covariance (ANCOVA) to compare the post-test results of the three groups, controlling for initial differences captured in the pre-test. An independent samples t-test was also conducted to explore potential gender-based differences in achievement. The qualitative data from observations were analyzed using thematic analysis. This comprehensive analytical strategy facilitated a robust evaluation of the effectiveness of the interventions on student achievement and associated learning behaviours.

PRESENTATION OF FINDINGS AND DISCUSSION

Socio-Demographic Characteristics of Respondents

The study included a total of 90 participants. The gender distribution was nearly equitable, with 48 females (53.3%) and 42 males (46.7%), suggesting a slight predominance of female participants across the three treatment groups.

Table: 4.1. Socio-Demographic Characteristics of Respondents

Gender	Number	Percentage
Male	42	46.7%
Female	48	53.3%

Effect of Assessment Types on Academic Achievement

To determine the effect of different assessment methods namely Performance Tasks, Peer Testing, and Traditional Methods on students' academic achievement in practical geography, an Analysis of Covariance (ANCOVA) was conducted using pre-test scores as a covariate to control for initial differences in ability. The results of the ANCOVA (see Table 2) revealed a statistically significant main effect of the model on post-test scores, $F(3, 86) = 27.898$, $p < .001$, which accounted for 49.3% of the variance in post-test performance (Partial $\eta^2 = .493$). Notably, the factor of assessment type was highly significant, $F(2, 86) = 40.950$, $p < .001$, Partial $\eta^2 = .488$, indicating that the type of assessment method employed exerted a substantial influence on students' academic performance even after adjusting for prior achievement levels. Post-hoc pairwise comparisons (see Table 3) further clarified the nature of these differences, showing statistically significant mean differences among all three groups ($p < .001$). Specifically, the Performance Task group achieved significantly higher scores than both the Peer Testing group (Mean Difference = 6.50) and the Traditional Method group (Mean Difference = 12.02). Likewise, the Peer Testing group significantly outperformed the Traditional Method group (Mean Difference = 5.52).

These findings establish a clear hierarchy of effectiveness among the three assessment approaches: Performance Tasks – most effective in enhancing achievement, Peer Testing – moderately effective, and Traditional Methods – least effective. The results suggest that active, student-centered forms of assessment foster superior learning outcomes compared to conventional teacher-centered approaches.

Complementing the quantitative results, a thematic analysis of classroom observation data revealed four major areas related to student learning behaviours during the implementation of the three assessment types. Students in the Performance Task and Peer Testing groups demonstrated high levels of active involvement through hands-on activities, discussions, and collaborative decision-making. In contrast, students in the Traditional Method group exhibited passive behaviours characterized by dependence on the instructor for guidance. The hands-on and evaluative nature of Performance Tasks and Peer Testing enhanced students' confidence, sense of ownership, and intrinsic motivation. Learners in these groups were eager to engage in problem-solving and apply their

knowledge to real-world situations. Conversely, Traditional Method students showed lower enthusiasm and less self-driven motivation. Both Performance Task and Peer Testing conditions encouraged teamwork, constructive feedback, and cooperative learning. These collaborative dynamics helped students articulate their understanding and refine their skills through peer interaction. However, such interactions were limited in the Traditional Method group, where instruction remained teacher-dominated. A clear gradient of independence was observed among the groups. Students exposed to innovative assessments (Performance Tasks and Peer Testing) demonstrated greater autonomy and self-regulation, often working independently or collaboratively without constant teacher intervention. Meanwhile, students in the Traditional Method group were significantly reliant on the teacher for information and direction.

However, the combination of quantitative and qualitative findings underscores the robustness of the results through methodological triangulation. The statistical evidence demonstrates that Performance Tasks and Peer Testing significantly improve academic achievement, while observational insights reveal that these approaches also enhance engagement, motivation, collaboration, and autonomy key behavioural indicators of deep learning. Together, these results confirm that interactive, student-centered assessment strategies not only yield superior academic outcomes but also foster positive learning dispositions essential for practical and lifelong learning. To further validate and expand these findings, future studies should adopt mixed-method triangulation, incorporating interviews, focus group discussions, or extended classroom observations. Expanding such investigations across different regions, subjects, or educational levels would help determine the generalizability and sustainability of the observed effects of Performance Tasks and Peer Testing in diverse learning environments.

Ancova Analysis

Table: 4.2.1. Tests of Between-Subjects Effects

Dependent Variable: post-test score						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2165.187[a]	3	721.729	27.898	.000	.493
Intercept	9894.469	1	9894.469	382.470	.000	.816
pre-test	.187	1	.187	.007	.932	.000
assessment type	2118.735	2	1059.368	40.950	.000	.488
Error	2224.813	86	25.870			
Total	369200.000	90				
Corrected Total	4390.000	89				

Table: 4.2.2. Pairwise Comparisons

Dependent Variable: post-tests score						
(I) assessment type	(J) assessment type	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
performance task	peer testing	6.503*	1.314	.000	3.891	9.114
	traditional method	12.018*	1.330	.000	9.374	14.662

peer testing	performance task	-6.503*	1.314	.000	-9.114	-3.891
	traditional method	5.515*	1.325	.000	2.880	8.150
traditional method	performance task	-12.018*	1.330	.000	-14.662	-9.374
	peer testing	-5.515*	1.325	.000	-8.150	-2.880

Gender Differences in Academic Achievement by Treatment

An independent samples t-test was employed to investigate gender-based differences across each experimental assessment mode: Performance Task Group: Levene's test confirmed the homogeneity of variances ($F = 0.254$, $p = .618$). The t-test indicated no statistically significant difference in post-test scores between male ($M = 69.29$, $SD = 8.71$) and female ($M = 66.25$, $SD = 7.42$) participants, $t(28) \approx 1.03$, $p = .312$. The mean difference was minimal (approximately 3 points), suggesting that the performance task assessment was equally effective for both genders. Peer Testing Group: Levene's test demonstrated equal variances ($F = 1.625$, $p = .213$). Nonetheless, a statistically significant gender difference was identified, $t(28) = 3.309$, $p = .003$. Male students ($M = 67.00$, $SD = 6.49$) outperformed female students ($M = 60.00$, $SD = 5.00$) by an average of 7 points within this assessment mode.

Table: 4.3.1. Analysis of performance task based on gender

Gender	N	Mean	S. D	f	Sig.	t	df.	Sig.2-tailed	Mean dif.
Male	14	69.29	8.709	0.254	0.618	1.029	28	0.312	2.949
Female	16	66.25	7.416			1.018		0.312	2.982

Table: 4.2.2.2. Analysis of peer testing based on gender

Gender	N	Mean	S. D	F	Sig.	t	df.	Sig.2-tailed	Mean dif.
Male	15	67	6.492	1.625	0.213	3.309	28	0.003	7
Female	15	60	5.00			3.309		0.003	7

DISCUSSION OF FINDINGS

This study shows that how you test students really matters for their learning in geography. The ANCOVA findings shows that the students who did Performance Tasks and Peer Testing did much better than those who just took the Traditional methods of tests. The type of assessment explained almost half of the difference in how well students performed. This makes sense when you think about how people actually learn. Learning isn't just about memorizing facts. It's about doing things, solving problems, and working with others. When students get to tackle real-world geography problems and discuss their work with classmates, they're not just learning information. This outcome aligns with the Constructivist Learning Theory (Vygotsky, 1978; Bruner, 1996; Piaget, 1972) they are building understanding through experience. The big takeaway? Students learn best when they're actively involved in meaningful tasks and can learn from each other. This approach helps them truly grasp concepts instead of just memorizing them for a test.

Looking at thematic analysis of classroom observations gave us more proof of what the numbers showed. Students who did performance tasks and peer testing showed they were more independent, worked better together, and seemed to really enjoy learning. These are key ideas from Self-Determination Theory (Deci &

Ryan, 1985, 2000). These students took charge of their learning, felt confident, and had fun while learning. This happens when people get to make their own choices, feel capable, and connect with others. The hands-on activities and working with classmates gave students chances to make real decisions, solve actual problems, and learn from each other. On the other hand, students in the traditional group mostly waited for the teacher to tell them what to do. They seemed less involved and more passive. This shows that when students don't have much control over their learning, they lose interest and motivation. So, the classroom observations back up the idea that when students are more involved in their learning, they not only do better but also care more about what they're learning.

Looking at the gender-based analysis gave us some interesting new insights. In the Performance Task group, we didn't see any big differences between male and female students. This suggests that when we use hands-on, real-world assessments, we create learning environments where everyone has a fair shot at showing what they know. Both male and female students seemed to build and demonstrate their understanding equally well. But in the Peer Testing group, things looked different. Male students scored about seven points higher than female students, and this difference was statistically significant. This makes us wonder if male and female students approach peer evaluation differently. Maybe they have different comfort levels when it comes to giving and receiving feedback from classmates. From a learning theory perspective, this could mean that some students feel more confident or connected during peer assessments than others. The key takeaway is that we need to be thoughtful about how we set up group work and peer evaluations. We want to make sure every student feels capable and included, no matter their gender.

The integration of quantitative and qualitative results demonstrates the explanatory power of methodological triangulation, as both strands converge to reveal that interactive, student-centered assessments not only improve academic outcomes but also nurture deeper psychological engagement, we see something powerful. Using different methods together helps explain why interactive, student-focused assessments work so well. They don't just boost grades they also get students more deeply involved in their learning. We can understand this through two important ideas. Constructivism helps explain the thinking gains by showing how learning happens through social interaction and real-world contexts. Self-Determination Theory explains the motivation side why students stay engaged when they feel in control of their learning. What really makes learning click? When students have choice in their tasks, when they work with others, when they see their own progress, and when they connect with classmates. These experiences make learning feel more personal and meaningful. Students take charge of their own education and stick with it longer. This matches what we know about Assessment for Learning. The research shows that when assessments help students learn rather than just measure them, students achieve more and feel more capable as learners. These findings resonate with the principles of Assessment for Learning (AfL) (Black & Wiliam, 1998) which stress that formative, participatory assessments enhance both achievement and learner agency

This study shows how important it is to use teaching methods that help students build knowledge and stay motivated. The results prove that Performance Tasks and Peer Testing really work. They get students actively involved, give them more control over their learning, and make lessons feel real and meaningful. These are the key ingredients for helping students do well in school and keep learning throughout their lives. But the study also reminds us that how we use these methods matters. Things like how boys and girls interact in class, the overall classroom environment, and how teachers guide the learning can all affect how well these strategies work. Future studies should use different research methods together. This could include interviews, group discussions, and studies that follow students over time. This would help us understand how different students feel about having control over their learning and feeling capable in various testing situations. If we expand this research to different areas, subjects, and grade levels, we can be more confident about these findings. This will help us create better testing methods that work for all students. These methods would be based on solid teaching theories and would help students both succeed in geography class and stay motivated to learn.

CONCLUSION

This research illustrates that assessment approaches focused on students, specifically Performance Tasks andPeer Testing, notably improve student performance in applied geography when compared to conventional

methods. The underlying theories of Constructivism and Self-Determination Theory (SDT) help explain these results, as such methods foster educational settings that are both intellectually stimulating and supportive of motivation. Through practical experience and cooperative efforts, students actively build knowledge while having their fundamental psychological needs for independence, proficiency, and social connections fulfilled.

The group utilizing Performance Tasks achieved the most significant progress, highlighting the effectiveness of experiential learning where students relate concepts to actual issues. Although slightly less effective, Peer Testing also greatly exceeded traditional techniques by promoting collaboration and feedback, even if its advantages can be affected by social factors like gender. In summary, these results support a shift in geography assessment practices from memorization to engaging models that prepare students with vital skills needed in the 21st century.

RECOMMENDATIONS

Based on the findings, several recommendations can be made: Educational authorities and institutions should incorporate performance-based tasks into the geography curriculum; Comprehensive training programs for educators are essential to equip them with the skills necessary to design and implement these hands-on activities; Peer testing should be complemented with performance tasks and carefully organized to ensure fairness and minimize gender disparities.; Policymakers must ensure the availability of adequate learning resources, such as mathematical sets and calculators and There should be a concerted effort to transition from traditional, teacher-centered methods towards these effective interactive approaches.

LIMITATIONS

This study has limitations that warrant acknowledgment. The findings are derived from a sample of 90 participants across three schools, which may restrict generalizability. Logistical challenges and variations in student commitment and resource availability could have influenced engagement and outcomes.

Suggestions for Further Study

Future research should consider the following: Conduct larger-scale studies across a broader range of schools to enhance external validity; Employ longitudinal designs to investigate the long-term effects on knowledge retention; Examine the gender disparities observed in peer testing to understand the underlying social and cultural factors; Explore the effectiveness of these assessment modes in other practical and scientific disciplines and Assess the impact of specialized teacher training and the relationship between resource availability and academic performance.

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