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Effect Of Modern Instructional Strategies On Students' Academic Performance In Niger Delta University, Bayelsa State, Nigeria

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Abstract: *This study examined the effect of modern instructional strategies on students' academic performance in Niger Delta University, Bayelsa State, Nigeria. Specifically, it focused on three innovative strategies, Flipped Classroom Approach, Gamified Instructional Strategy, and Collaborative Online Learning and assessed their influence on students' academic outcomes. The research employed a descriptive survey design using a structured questionnaire instrument. A stratified sample of 258 academic staff was drawn from a population of 860 lecturers at the university, representing 30% of the target population. Data collected were analysed using mean and standard deviation for the research questions, and Analysis of Variance (ANOVA) was used to test the hypothesis at a 0.05 level of significance. The findings revealed that all three instructional strategies had a positive and substantial effect on students' academic performance. The Flipped Classroom Approach improved learner engagement and knowledge retention; Gamified Instruction fostered motivation and active participation; while Collaborative Online Learning enhanced critical thinking, problem-solving, and group interaction. The ANOVA results confirmed that there was a statistically significant difference in students' academic performance based on the instructional strategies adopted. The study concluded that modern instructional strategies are essential for improving academic achievement in higher education and recommended their systematic integration into teaching and learning at Niger Delta University and similar institutions.*

Keywords: Modern Instructional Strategies, Flipped Classroom Approach, Gamified Instructional Strategy, Collaborative Online Learning, Students' Academic Performance, Curriculum Delivery, Teaching and Learning, ANOVA

Introduction

Instructional strategies constitute the techniques, approaches, and methodologies that educators employ to facilitate learning in the classroom. These strategies serve as the backbone of effective teaching, enabling the translation of curricular objectives into measurable learning outcomes (Egbo, 2020). Over time, the landscape of instruction has evolved, driven by technological advancement, pedagogical innovation, and a growing emphasis on learner-centred education. This evolution has ushered in an era of modern instructional strategies, which integrate both digital and interactive components to enrich the teaching-learning process. Modern instructional strategies go beyond traditional lecture-based methods by embracing contemporary tools and learner engagement practices such as flipped classrooms, gamification, and collaborative online learning environments (Adeyemi & Salami, 2021).

The effect of modern instructional strategies on academic performance has become a focal point of educational research, particularly in higher institutions where innovation is increasingly essential to remain globally competitive. Studies have shown that these strategies significantly impact students' cognitive engagement, critical thinking development, knowledge retention, and academic outcomes (Ogunlade & Adebayo, 2022). Modern strategies redefine the teacher's role from an information transmitter to a facilitator of learning, while students actively construct knowledge in collaborative, autonomous, and tech-enabled settings (Bamidele, 2023).

Students' academic performance refers to the extent to which learners achieve short- or long-term educational objectives, often assessed through examinations, continuous assessments, practical demonstrations, or project outputs (Chikwe & Ekpo, 2020). Academic performance is influenced by several factors, among which teaching strategies are particularly significant. Evidence suggests that when students are taught using interactive, engaging, and digitally enhanced methods, their academic performance improves markedly (Nwokocha & Eze, 2021).

In the specific context of Niger Delta University (NDU), Wilberforce Island, Bayelsa State, Nigeria, the quest for improved student performance amid diverse learning needs and infrastructural challenges has heightened the demand for innovative instructional delivery methods. As a public university in Nigeria's South-South geopolitical zone, NDU is uniquely positioned to leverage modern pedagogical approaches to address gaps in instructional quality and student achievement (Igbinedion & Akpotohwo, 2022).

Among the notable modern instructional strategies gaining traction are the Flipped Classroom Approach, Gamified Instructional Strategy, and Collaborative Online Learning. The Flipped Classroom Approach reverses the traditional learning sequence by allowing students to study instructional content outside the classroom, typically through videos or digital resources, and engage in active, problem-solving activities during face-to-face sessions. This method promotes deeper understanding and higher-order thinking skills (Okoye & Ayeni, 2023).

The Gamified Instructional Strategy involves the integration of game elements such as points, leaderboards, challenges, and rewards, into instructional content to increase motivation and engagement. When applied to academic settings, gamification has been shown to reduce learner anxiety, enhance motivation, and encourage persistence in learning tasks (Akinyemi & Adeola, 2021).

Collaborative Online Learning, on the other hand, facilitates cooperative learning through digital platforms, enabling students to interact, share ideas, and solve problems in virtual communities. This approach fosters digital literacy, teamwork, and communication skills vital for success in the 21st-century workplace (Eze, 2022). It is particularly relevant in the post-pandemic era, where remote learning has become a strategic necessity.

Despite growing evidence of the positive effects of these strategies, their application within Nigerian universities remains varied, and empirical validation within specific institutional contexts is sparse. Therefore, this study is motivated by the need to investigate the effect of modern instructional strategies on students' academic performance in Niger Delta University, Bayelsa State.

Statement of the Problem

In recent years, global shifts in pedagogy have underscored the importance of adopting modern instructional strategies such as flipped classroom approaches, gamified learning, and collaborative online environments to improve students' academic performance and engagement (Brown & Green, 2022; Lee & Martin, 2021). These learner-centred strategies have been associated with deeper cognitive processing, enhanced motivation, and more meaningful classroom experiences. However, in many Nigerian universities, including Niger Delta University (NDU), teaching methods remain largely conventional, characterised by didactic lectures and limited interactivity (Okonkwo & Eze, 2021). This has contributed to persistent challenges in student performance, retention, and classroom participation.

Despite national calls for innovation in curriculum delivery, there is limited empirical evidence on how modern instructional strategies specifically impact student outcomes within the context of NDU. Furthermore, anecdotal observations suggest inconsistent implementation of these strategies among faculty, and a general uncertainty about their effectiveness in improving academic performance. The absence of reliable, data-driven insight into the influence of flipped classrooms, gamification, and collaborative learning tools on academic performance poses a significant gap in instructional decision-making. Therefore, this study seeks to examine the extent to which modern instructional strategies influence students' academic performance in Niger Delta University, Bayelsa State, thereby providing a basis for strategic educational reform.

Purpose of the Study

The main purpose of this study was to examine the effect of modern instructional strategies on students' academic performance in Niger Delta University of Bayelsa State, Nigeria. Specifically, the study aims to determine the effect of:

1. Flipped Classroom Approach on students' academic performance.
2. Gamified Instructional Strategy on students' academic performance.
3. Collaborative Online Learning on students' academic performance.

Research Questions

To guide the study, the following research questions have been formulated:

1. What is the effect of the Flipped Classroom Approach on students' academic performance in Niger Delta University?
2. What is the effect of the Gamified Instructional Strategy on students' academic performance in Niger Delta University?
3. What is the effect of Collaborative Online Learning on students' academic performance in Niger Delta University?

Research Hypothesis

The study will test the following null hypothesis at 0.05 level of significance: There is no significant difference in the academic performance of students in Niger Delta University taught using the Flipped Classroom Approach, Gamified Instructional Strategy, and Collaborative Online Learning.

LITERATURE REVIEW

The Concept of Instructional Strategies

Instructional strategies refer to the broad techniques teachers use to help students become independent, strategic learners. These strategies become learning strategies when students independently select the appropriate ones and use them effectively to accomplish tasks or meet goals (Schunk, 2021). Instructional strategies encompass teacher-led methodologies and student-centred approaches that shape the delivery and reception of content in academic settings. Effective instructional strategies are designed to meet learners' cognitive, emotional, and social needs, thereby facilitating meaningful learning (Killen, 2020).

Modern Instructional Strategies

Modern instructional strategies integrate technological tools, collaborative learning, and gamified techniques to enhance engagement, accessibility, and efficiency in the learning process. They are characterised by student-centredness, interactivity, and a shift from rote memorisation to constructivist learning approaches. As indicated by Almasi, Obidiegwu, and Oyetoro (2022), these methods respond to 21st-century learning demands, ensuring that students are active participants in the knowledge construction process. Examples include flipped classroom models, gamification, and collaborative online learning environments, all of which make learning more flexible, engaging, and personalised.

Effect of Modern Instructional Strategies on Academic Performance

Academic performance refers to the extent to which a student has achieved their educational goals and outcomes, commonly measured through grades and test scores. The effectiveness of instructional strategies can significantly impact students' academic achievement by enhancing their motivation, comprehension, and retention (Bandura, 2019). According to Ogbonna and Okeke (2021), modern instructional strategies improve academic performance by fostering greater student interaction with course content and offering timely feedback. When strategically implemented, these strategies bridge the gap between theoretical learning and practical application.

Flipped Classroom Approach and Academic Performance

The flipped classroom approach reverses traditional teaching by delivering instructional content outside the classroom, typically through videos or digital media and devoting in class time to active learning activities such as discussions, problem-solving, and collaborative exercises. This model promotes deeper understanding, student autonomy, and active learning engagement (Bishop & Verleger, 2013). In a study conducted by Eze and Ajah (2022), flipped classrooms were found to significantly improve students' performance in higher education institutions, primarily because students had more control over their learning pace and were better prepared for interactive class sessions.

Gamified Instructional Strategy and Academic Performance

Gamification involves the application of game elements such as points, badges, leaderboards, and challenges in non-game contexts like education. It aims to enhance student motivation, participation, and performance through playful and competitive dynamics (Deterding et al., 2011). Research by Yusuf and Bello (2021) demonstrates that gamified instructional strategies significantly enhance students' interest in learning and foster better academic outcomes, particularly when aligned with specific learning objectives. Gamification leverages extrinsic and intrinsic motivators to create a more engaging and effective learning environment.

Collaborative Online Learning and Academic Performance

Collaborative online learning entails the use of digital platforms to facilitate group-based learning activities, enabling students to share knowledge, solve problems, and develop communication and teamwork skills. According to Obielodan and Salihu (2020), online collaborative environments provide opportunities for distributed learning, critical thinking, and constructive feedback. These environments, when effectively structured, lead to better academic performance by encouraging active participation and peer-to-peer learning. The integration of platforms such as Google Classroom, Zoom, and Microsoft Teams has further amplified the potential of collaborative online learning in higher institutions.

Theoretical Framework: Constructivist Learning Theory

This study is underpinned by the constructivist learning theory, which posits that learners construct knowledge actively rather than passively receiving it. The theory, primarily developed by Jean Piaget and further refined by Vygotsky, supports the use of modern instructional strategies that engage students in meaningful, contextualised tasks. According to Vygotsky (1978), social interaction is fundamental to cognitive development, a view that aligns well with flipped classrooms, gamification, and collaborative learning. Constructivism promotes learner autonomy, scaffolding, and collaborative dialogue, all of which are core elements of modern instructional strategies.

Empirical Studies on Modern Instructional Strategies

Numerous empirical studies have examined the effectiveness of modern instructional strategies in improving academic outcomes. For instance, Adebayo and Adesina (2023) found that students exposed to a flipped classroom model outperformed those taught via conventional lecture methods in university-level mathematics courses. Similarly, Ogunlade and Fakolade (2021) observed that gamification improved knowledge retention and participation in computer science education. Moreover, research by Nwachukwu and Nnamdi (2022) reported that collaborative online learning enhanced critical thinking and academic success in undergraduate students across multiple faculties.

RESEARCH METHODOLOGY

The study employed a descriptive survey research design to assess the effect of modern instructional strategies on students' academic performance in Niger Delta University, Bayelsa State, Nigeria. This design was deemed appropriate as it facilitates the systematic investigation of respondents' opinions without manipulating the study variables. The target population is comprised of 860 university academic staff. Applying a 30% stratified proportionate random sampling technique, a sample of 258 academic staff was selected to ensure fair representation across faculties and disciplines. Data were collected using a structured questionnaire titled Modern Instructional Strategies and Academic Performance Questionnaire (MISAPQ), comprising 24 items categorised under three key modern instructional strategies: Flipped Classroom Approach, Gamified Instructional Strategy, and Collaborative Online Learning. Each item was rated on a 4-point rating scale ranging from Strongly Agree (4) to Strongly Disagree (1). The instrument was validated by three experts in Technology Education, Measurement and Evaluation, and Curriculum Studies, while a pilot study conducted using 30 academic staff in Federal University, Otuoke, outside the study area yielded a Cronbach's Alpha coefficient of 0.89, indicating high internal reliability. The instrument was administered physically, and 258 copies were duly completed and retrieved, representing a 100% response rate. Descriptive statistics (mean and standard deviation) were employed to answer the research questions, while inferential statistics using one-way Analysis of Variance (ANOVA) was adopted to test the null hypothesis at a 0.05 level of significance to determine if differences exist in students' academic performance based on the instructional strategies employed.

Results and Interpretation

Research Question 1: *What is the effect of Flipped Classroom Approach on Students' Academic Performance in Niger Delta University, Bayelsa State, Nigeria?*

Table 1: Mean and Standard Deviation Analysis of the effect of Flipped Classroom Approach on Students' Academic Performance

S/N	Item Statements	N	Mean	SD	Decision
1	Flipped classrooms improve students' participation in academic tasks.	258	3.61	0.58	Agreed
2	Students taught using flipped approaches show better understanding of topics.	258	3.48	0.63	Agreed
3	Flipped classroom enhances engagement and peer-to-peer learning.	258	3.54	0.59	Agreed
4	Pre-class video materials increase preparation for lectures.	258	3.50	0.60	Agreed
5	Assessment scores improve with flipped learning approaches.	258	3.42	0.68	Agreed
6	Flipped classes reduce absenteeism and lateness among students.	258	3.36	0.70	Agreed
7	The flipped model fosters collaborative learning and critical thinking.	258	3.40	0.65	Agreed
	Grand Mean	258	**3.47**	**0.63**	**Agreed**

The grand mean of 3.47 shows that the respondents agree that the Flipped Classroom Approach positively affects students' academic performance in Niger Delta University. Each item scored above the benchmark mean of 2.50, with the highest being item 1 (mean =

3.61), indicating strong agreement that flipped classrooms improve student participation. This suggests that this strategy is perceived as enhancing learner engagement and academic outcomes.

Research Question 2: *What is the effect of Gamified Instructional Strategy on Students' Academic Performance in Niger Delta University, Bayelsa State, Nigeria?*

Table 2: Mean and Standard Deviation Analysis the effect of Gamified Instructional Strategy on Students' Academic Performance

S/N	Item Statements	N	Mean	SD	Decision
1	Game-based tools increase students' motivation to learn.	258	3.56	0.60	Agreed
2	Gamified methods stimulate competitive academic performance.	258	3.51	0.64	Agreed
3	Students are more attentive during gamified lessons.	258	3.48	0.66	Agreed
4	Gamified instruction improves knowledge retention.	258	3.53	0.61	Agreed
5	Gamification encourages task completion and assignment submission.	258	3.46	0.63	Agreed
6	Use of educational games aligns with 21st-century learning needs.	258	3.39	0.69	Agreed
7	Gamification builds healthy learning competition among students.	258	3.44	0.67	Agreed
	Grand Mean		**3.48**	**0.64**	**Agreed**

Table 2 with a grand mean of 3.48, the respondents agreed that Gamified Instructional Strategies have a positive effect on students' academic performance. The highest rated item (mean = 3.56) confirms that gamification significantly enhances student motivation. These results suggest strong support for integrating gamification into classroom practices to foster academic improvement.

Research Question 3: *What is the effect of Collaborative Online Learning on Students' Academic Performance in Niger Delta University, Bayelsa State, Nigeria?*

Table 3: Mean and Standard Deviation Analysis he effect of Collaborative Online Learning on Students' Academic Performance

S/N	Item Statements	N	Mean	SD	Decision
1	Online collaboration platforms improve students' group assignments.	258	3.45	0.62	Agreed
2	Real-time interaction with peers boosts understanding of content.	258	3.50	0.60	Agreed
3	Collaborative platforms promote shared academic responsibility.	258	3.38	0.68	Agreed
4	Discussion forums and chat tools enhance critical reflection.	258	3.41	0.65	Agreed
5	Collaborative tools improve communication among students.	258	3.44	0.67	Agreed
6	Online teamwork improves students' digital and interpersonal skills.	258	3.47	0.64	Agreed
7	Teachers' feedback on collaborative platforms enhances performance.	258	3.52	0.61	Agreed
	Grand Mean		**3.45**	**0.64**	**Agreed**

The grand mean of 3.45 affirms that Collaborative Online Learning positively influences students' academic performance. Respondents rated teacher feedback (mean = 3.52) and real-time peer interaction (mean = 3.50) as particularly influential, suggesting that digital collaboration tools are valuable components of effective instructional delivery in a university context.

Hypothesis

There is no significant difference in the academic performance of students in Niger Delta University taught using the Flipped Classroom Approach, Gamified Instructional Strategy, and Collaborative Online Learning.

Table 4: Descriptive Statistics Table

Instructional Strategy	Sample Size (n)	Mean Score (M)	Standard Deviation (SD)
Flipped Classroom Approach	258	3.47	0.63
Gamified Instructional Strategy	258	3.48	0.64
Collaborative Online Learning	258	3.45	0.64

Table 5: One-Way ANOVA Summary Table on the significant difference in the academic performance of students in Niger Delta University taught using the Flipped Classroom Approach, Gamified Instructional Strategy, and Collaborative Online Learning.

Source of Variation	Sum of Squares (SS)	df	Mean Square (MS)	F-Ratio	Critical F (α = 0.05)	Decision
Between Groups (SSB)	0.129	2	0.0645	0.159	3.00	Fail to Reject H_0
Within Groups (SSW)	312.60	771	0.4053			
Total	**312.729**	**773**				

Based on the ANOVA analysis presented, the calculated F-ratio of 0.159 is considerably less than the critical value of 3.00 at the 0.05 level of significance. This statistical outcome indicates that there is no significant difference in students' academic performance across the three modern instructional strategies evaluated, namely the Flipped Classroom Approach, Gamified Instructional Strategy, and Collaborative Online Learning.

Hence, the null hypothesis is retained, implying that these strategies are perceived to be equally effective in improving academic outcomes among students in Niger Delta University, Bayelsa State.

Discussion of Findings

The results of the present study revealed that the use of modern instructional strategies, specifically the flipped classroom approach, gamified instructional strategy, and collaborative online learning, had a consistently high effect on students' academic performance in Niger Delta University. With mean scores of 3.47, 3.48, and 3.45 respectively, the respondents indicated strong agreement on the effectiveness of all three strategies. These mean values, all exceeding the benchmark mean of 2.50, demonstrate that the application of modern instructional methodologies significantly supports academic engagement, comprehension, and achievement among students.

Firstly, the findings on the Flipped Classroom Approach align with the assertion by Bergmann and Sams (2012), who argued that this strategy enables learners to explore instructional content independently before class, allowing class time to be used for interactive problem-solving. In the context of the present study, academic performance was positively influenced by this model, which repositions the learner as an active participant rather than a passive recipient of information. It supports Bloom's revised taxonomy that emphasises higher-order cognitive learning in classroom interactions (Anderson & Krathwohl, 2001).

Secondly, the Gamified Instructional Strategy was perceived as equally effective, as supported by studies like that of Hamari et al. (2014), which affirmed that gamification increases student motivation, participation, and retention of content. The slightly higher mean (3.48) recorded for gamified instruction indicates its capacity to foster competition, provide instant feedback, and make learning more enjoyable, critical elements for academic success in the 21st-century digital age.

Furthermore, findings related to Collaborative Online Learning underscore the power of peer-to-peer engagement and technological mediation in shaping academic outcomes. This is in line with the socio-constructivist learning theory advocated by Vygotsky (1978), which stresses the significance of social interaction in cognitive development. The mean score of 3.45 for this strategy confirms its relevance, especially in promoting digital literacy and collaboration skills that are fundamental for modern educational success.

The ANOVA analysis, which tested the hypothesis that no significant differences exist among the three instructional strategies, returned an F-ratio of 0.159, which is well below the critical F-value of 3.00 at a 0.05 level of significance. This implies that although each strategy was effective, no one strategy was significantly more effective than the others in influencing academic performance. This finding supports the integrative instructional framework proposed by Garrison and Vaughan (2008), which recommends the combined use of multiple strategies for optimal educational outcomes in higher education.

Collectively, these findings affirm that modern instructional strategies, when properly implemented, can revolutionise the teaching-learning process in higher institutions like Niger Delta University. The alignment of student-centred methods with digital technologies creates inclusive and engaging learning environments that meet the cognitive and affective needs of learners, thereby enhancing their academic performance.

Conclusion

The study explored the impact of three modern instructional strategies, Flipped Classroom Approach, Gamified Instructional Strategy, and Collaborative Online Learning, on the academic performance of students in Niger Delta University. The empirical evidence gathered through descriptive and inferential statistical analysis revealed that each of the strategies significantly contributes to improving students' academic performance, as perceived by university lecturers and educators.

The consistent high mean values across the three instructional strategies underscore their relevance in contemporary pedagogy. However, the ANOVA test result showed no statistically significant difference among the strategies, suggesting that while each strategy is effective on its own, none holds distinct superiority over the others. This finding implies that the effectiveness of instructional strategies lies in their contextual application and integration rather than in isolated usage.

In conclusion, modern instructional strategies collectively serve as vital tools for enhancing academic performance in higher education. Their capacity to personalise learning, foster collaboration, stimulate motivation, and bridge the digital divide makes them essential in modern curriculum delivery, particularly in institutions like Niger Delta University where educational innovation is key to national development.

Recommendations

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

1. The university management should support the structured integration of flipped classrooms, gamification, and collaborative online learning into teaching practices across faculties to enrich student learning experiences.
2. Continuous capacity-building workshops and training programmes should be organised to familiarise lecturers with the implementation and adaptation of these modern instructional strategies.
3. Adequate funding should be allocated to procure and maintain digital learning tools and platforms that facilitate flipped learning, gamified environments, and online collaborations.
4. The university should adopt clear policies that encourage innovative teaching practices and revise existing curricula to include flexible pedagogical models aligned with modern instructional methods.
5. A feedback mechanism should be instituted to assess the effectiveness of these strategies in real classroom settings and make necessary improvements based on students' learning outcomes and academic performance.

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