

Effect of Design Thinking Approach on Secondary School Students' Academic Performance in Essay Writing

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ABSTRACT

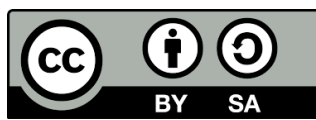
Background: Essay writing is a recognised weakness in Nigerian secondary education, yet classroom research has tested general activity-based methods rather than design thinking, whose application to writing instruction remains largely untested.

Objective: This study examined the effect of the design thinking approach on senior secondary school students' academic performance in essay writing.

Method: A quantitative, quasi-experimental pretest-posttest non-equivalent control group design was adopted. From a population of 6,599 Senior Secondary School II students in Kogi State public secondary schools, 130 students (63 males and 67 females) were selected through multistage sampling from intact classes and assigned to a design thinking group (n = 66) and a discussion group (n = 64). An Essay Writing Performance Test (EWPT) was developed and used as the research instrument. Research questions were answered using mean and standard deviation, while hypotheses were tested using analysis of covariance (ANCOVA) at the .05 level of significance, with pretest scores as the covariate.

Results: The design thinking group gained 30.26 points between pretest and posttest, compared with 8.11 points for the discussion group, resulting in a difference in mean gain of 22.15 points. The difference between the groups remained statistically significant after adjustment for pretest scores. Gender produced no statistically significant difference in academic performance within the design thinking group.

Conclusion: The study recommends that English language teachers adopt the design thinking approach to teaching essay writing. However, the findings are limited to Senior Secondary II students in one state and a four-week intervention; therefore, further research is needed to establish the generalisability of the findings.



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INTRODUCTION

Language serves many purposes in human activities and contributes immensely to economic development. It is the major means of transferring knowledge, skills, and culture from one person to the other, or one generation to another. Nigeria is a multilingual country with diverse cultures and peoples. None of the indigenous languages serves as a common language of communication for the people. In the view of Ime (2016), the choice of an indigenous national language thus, “Why bother about an indigenous national language? We have English now which is no longer foreign to us as we have bent it to our will while preserving its essence”. English has provided the information about all facts of life and thus, has been adopted as the official language in Nigeria. As the official language, English is the language of: politics, judiciary, commerce, and education among others. As it is language of formal education, all school disciplines are approached through English at all levels of education in Nigeria. According to the National Policy on Education (Federal Ministry of Education, 2016), English is the medium of instruction from the fourth year of primary education to tertiary level. Most texts which are currently in use in the schools are written in English. In the same document mentioned above, English is a core subject in both primary and secondary school curriculum.

Difficulty with extended writing is not peculiar to Nigeria. Across school systems, writing is consistently the language skill in which attainment lags furthest behind, because it draws simultaneously on vocabulary, grammar, text structure and the planning of ideas, and because it is the skill least often taught explicitly. The scale of the foundational problem is documented: learning poverty, defined as the inability to read and understand a simple text by age ten, stood at 57 percent in low and middle income countries in 2019 and was simulated to have risen to about 70 percent by 2022 (World Bank et al., 2022), which places a ceiling on the written expression that secondary schooling can build on. The difficulty is not confined to developing systems either: in the United States, national assessment found only 24 percent of grade eight students at the Proficient level in writing and a further 3 percent at Advanced (National Center for Education Statistics, 2012). Framing the Nigerian situation against that background matters for this study, because it indicates that the problem is unlikely to be solved by exhortation or by more writing practice alone, and that what is at issue is the instructional method through which writing is taught.

The Nigerian evidence should likewise be documented rather than asserted. Successive Chief Examiners’ Reports of the West African Examination Council identify the same weaknesses in the English Language essay paper year after year: poor organisation of ideas, limited range of expression, faulty mechanical accuracy, and failure to address the question set (West African Examination Council Chief Examiner’s Reports, 2007, 2008). Recent classroom research confirms the pattern and the scale of the response it has prompted: quasi-experimental studies in Ondo and Ekiti States both report that senior secondary students’ essay performance under conventional teaching is low enough that comparatively modest changes of method produce substantial gains (Oguntade & Akinwamide, 2022; Obateru et al., 2023), and gender and cognitive style have been examined as predictors of writing achievement in the same system (Olagbaju, 2020). These sources document the problem this study addresses.

Thornton (2000) advises that students should be assisted to develop their writing ability and so gain competence in handling different forms of writing that they may need in their lives. Writing skill is not like the speaking and listening skills, which are acquired naturally, and

hence, informally. Writing on its own part must be learned through planned and guided educational program. It is not a skill that can be acquired by chance. It must be taught. Essay writing in particular is a higher form or level of writing skill, and proficiency in this can only be achieved when the students are well grounded in composition skill. If students are to improve on their performance in the English language essay writing should be thoroughly taught in the schools by the language teachers and given priority attention in English language teaching and learning process. This consequently calls for an appraisal of the different methods employed by the English language teachers in the teaching of essays in schools. The researcher feels therefore, that, conventional method used by teachers could be a contributory factor to the students' poor achievement in the English language examinations. In Nigerian secondary schools, the conventional method of teaching essay writing is that in which the teachers assign composition topics, discuss the topics, ask students to write on such topics within a specific time limit and collect the papers for assessment. The conventional approach described above is product-oriented: following Travers (2008), it places heavy emphasis on the mechanical correctness of the finished essay rather than on the process by which the writer arrives at it.

The gap this study addresses follows from the two paragraphs above. Nigerian classroom research has tested a range of activity-based alternatives to the conventional approach, including guided, cooperative and task-based strategies, and has generally found them more effective than conventional teaching. Design thinking differs from all of these in that it supplies an explicit sequence of stages, from understanding the reader through defining the task, generating ideas, drafting and testing, that maps directly onto the composing process rather than onto classroom organisation alone. That sequence has not been tested against the conventional discussion approach for essay writing in Nigerian secondary schools, which is the gap this study fills. The wider evidence supports the expectation: a meta-analysis of 25 studies reports a positive overall effect of design thinking on student learning, with the largest effects for engagement, motivation and academic achievement (Yu et al., 2024), and design thinking has been applied to writing in second language classrooms with reported gains (Mohammad & Nazim, 2022). A systematic review of design thinking in K-12 education nevertheless finds that only six of forty-four studies used experimental designs, so the experimental evidence base remains thin (Li & Zhan, 2022).

The study benefits English language teachers by supplying evidence on a teachable instructional sequence, benefits curriculum authorities by indicating where methodological guidance for the essay component might be strengthened, and contributes theoretically by extending design thinking, developed in design and management, into first language writing instruction at secondary level.

The four language skills-listening, speaking, reading and writing should be properly taught but this is not so in the Nigeria situation. It is expected that the English language learners should be able to develop ideas in effective sentences, paragraphs and write good essays. Writing is the medium through which the academic performance of the students is accessed. As such students' performance in written English affects the performance in other subjects.

The importance attached to writing by examination bodies such as West Africa Examination Council (WAEC) makes it imperative that it has to be taught properly. Unfortunately, most Nigeria secondary school students perform poorly in English Language

(Ameh et al 2025) they specifically find it difficult to write good essays. A deduction from the WAEC chief examiner's repeated reports in several years on Senior Secondary School Certificate Examination (SSCE) show that most students fail to obtain a pass mark in English after spending six years in the secondary school. Based on this, the problem of this study therefore, is to find out the effect of design thinking approach on secondary school students' academic performance in English essay writing Kogi state.

This purpose of this study is to examine the effects of design thinking approach on secondary school students' academic performance in Essay writing.

The following research questions guided the study:

1. What is the mean achievement scores of students taught essay writing using design thinking approach and those taught using discussion approaches?
2. What is the effect of gender on the mean performance scores of students taught essay writing using design thinking approach?

The following hypotheses were formulated to guide the study

H1: There is no significant difference in the mean score of students taught essay writing using design thinking approach and those taught using discussion approaches

H2: There is no significance effect of gender on student's academic performance in essay writing when taught using design thinking approach

Language and Language Teaching

Language is the expression of idea by means of speech sounds combined into words. According to Azikiwe (2008) language could be defined as a learned systematic, symbolic

Due to the place and function of language as man's exclusive means of communication using sounds and symbols to express emotions and wills, many have defined language based on its function. According to Agu (2004), "language is the hall – mark of any group of people, community or society" He goes on to explain that language is the one vital advantage which man has over other species. It is the most basic and most valuable possession of man, for with language man has the capacity for dealing with changes in his environment, to organize his society and face other various emergencies in life. Tidyman (2019) explains language as a system of arbitrary vocal symbol by means of which a social group co-operates. This implies that language comes into every sphere of human life especially in the preservation and transmission of societal values. Language therefore is the means through which man shows how he feels, what he does or intends to do. Language gives man the ability to interact socially. According to Otagburuagu (2016), language teaching could be seen as an art as well as a process. As an art, language teaching involves its own methods and designs, which seek to present language learning experience to the learner in creative ways to achieve desirable learning outcome. It demands to a great extent the competence of the teacher so as to inculcate the right habit and information into the learner. According to Azikiwe (1998), the teachers of English should be able to exhibit some attitudes towards their jobs and students for the effective teaching and learning of English. She adds that, English language learning should incorporate the learning of all other school subjects to provide opportunity for continued use of correct English.

The Concept of Writing

Writing is an act of communication, it is considered as a skill that needs study and practice to develop the basic skills needed for effective communication (Ugboja, 2022). The ability to write is not naturally acquired; it is usually learned as a set of practices in formal institutions, or other environments or settings. Meanwhile, writing is an essential skill through which success can be attained in any academic contexts. Ugboja (2022) further emphasize writing as a process of thinking to invent ideas, exploring and arranging them into statements and paragraphs, rather than a mere production of graphic symbols. He adds that: “writing is much more than an orthography symbolization of speech, it is more importantly a purposeful selection and organization of expression” this means that writing is a group of organized expressions that form a whole, and convey specific meanings. The ability to write a second or foreign language is becoming generally accepted as an essential skill for educational, professional and individual reasons.

One of the core goals of learning to write is to pursue careers that entail extensive writing. Moreover, at the secondary school level, writing is used as a tool for learning. However, some ESL learners view it as a difficult activity because it requires diverse abilities such as: mastering grammar, vocabulary, punctuation and higher level of productive language text generation, or encoding internal representations (ideas) into written text, may be disrupted by the need for lengthy searches for appropriate lexical and syntactic choices. Consequently, the written product may not match the writer’s original intention” (Weigle 2002)

Hartley (2008) divides written texts into a hierarchy of three overlapping levels: the first level is about writing as a social process since there is a close connection between texts production and writing purposes. The second one refers to writing as a cognitive ability since there is a close connection between the written product, and the reformulation of thoughts and ideas. The third and the last level is the process of putting pen to paper which is classified as the highest level of writing processes.

Concept of Design Thinking

Design thinking is a human -centered approach to problem- solving and innovation that involves understanding user's needs challenging assumptions and creating innovative solution. It is a flexible framework that can be applied to various fields, including education, business and product development. Design thinking focuses on this need to create ideas and seek solutions (products, services, systems) to wicked problems, and offers a new approach for a specific set of users The term wicked problems is used here in its established sense: a class of problem that has no definitive formulation, no stopping rule and no test of a correct solution (Rittel & Webber, 1973), and which design was argued to be distinctively suited to address (Buchanan, 1992). (Lindberg et al., 2011). Design thinking can be seen as a multi-disciplinary concept that provides a valuable methodology for creative work between disciplines, as it complements mono-disciplinary thinking (Lindberg et al., 2011) Unlike analytical thinking in science, which leads to the completion of mono-disciplinary, technical sheer and problem resolution solutions, teaching strategies in design thinking focus on various disciplines and the involvement of all their perspectives (Brown, 2008).

It has been suggested that design thinking provides flexible and easily-accessible structures to guide educators, and to enhance their creativity in addressing practical problems.

In addition, Razzouk and Shute (2012) and Pendleton-Jullian and Brown (2018) assert that design thinking skills are key for the 21st Century creativity. Although design thinking is most often used in business or product design and services (Laurillard, 2012; Lindberg et al., 2011) it is also being considered in education. The potential of design thinking in enhancing the curriculum and pedagogical approaches has been considered by many scholars and educational researchers (Li & Zhan, 2022; Yu et al., 2024).

METHOD

Quasi-experimental design was adopted for this study, utilizing pretest-posttest control groups. The study was carried out in Kogi State. The population for the study comprises of 6599 Senior secondary school 2 students from public secondary schools in Kogi State. The sample size for this study is made up of 130 (63 males and 67 females) Senior Secondary School II students. The researcher developed two instructional packages for this study. The first instructional package is design thinking while the second package is based on the discussion method. The two packages were based on the same contents. The Design Thinking Instructional Strategy was used for the treatment group while the conventional package was used for the control group. At the beginning of the experiment, the students in both the treatment and control groups were given the pre-test. The study adopted a quantitative approach, within which the quasi-experimental pretest-posttest non-equivalent control group design was used because intact classes could not be randomly reconstituted without disrupting the school timetable. The 130 participants were drawn from the population of 6,599 by multistage sampling: education zones were selected first, then public secondary schools within the selected zones, and finally one intact Senior Secondary II class in each selected school. Intact classes, rather than individual students, were assigned to conditions by balloting, which gives 66 students in the design thinking group and 64 in the discussion group. Because assignment was at class level, the pretest was used as a covariate in all inferential analyses in order to adjust for pre-existing differences between the groups, which is the standard remedy in a non-equivalent groups design.

The instrument used for data collection was an Essay Writing Performance Test (EWPT). The EWPT contains past WAEC examination paper I, the topic was selected according to the interest of the students. At the end of the experiment, which lasted for four weeks, the same essay test was administered to the students as post-test. Scores obtained from both pre-test and post-test after marking were analysed to answer the research questions and test the hypotheses. At the onset of the experiment the essay test was administered to the students in both the treatment and control groups by the subject teachers as the pre-test. The question papers and the answer scripts were retrieved from the students at the end of the test so that the possibility of using it for revision will be minimized. The instrument was face and content validated by specialists in English language education and in measurement and evaluation, who judged each item against the WAEC marking criteria, and its reliability was established on a pilot sample of students outside the study schools. Scoring followed the WAEC analytic marking scheme for Paper I, covering content, organisation, expression and mechanical accuracy, and each script was marked independently by two trained raters whose scores were averaged. Treatment fidelity was maintained by training the participating subject teachers on the instructional packages before the experiment, by supplying written lesson plans

for every session in both conditions, and by monitoring lessons during the four weeks. Ethical clearance was obtained from the relevant authority, permission was sought from the school principals, and participation was voluntary and anonymous.

All the research questions were analyzed using Mean and standard deviation. For testing the null hypotheses formulated for the study, analysis of covariance (ANCOVA) was used at 0.05 level of significance. Analysis of covariance was preferred to the comparison of gain scores because the groups were intact classes rather than randomised individuals, and the covariate adjusts for pre-existing differences between them (Dimitrov & Rumrill, 2003). Before the analysis was conducted its assumptions were examined, namely normality of the dependent variable, homogeneity of variance, linearity of the relationship between the covariate and the dependent variable, and homogeneity of regression slopes. Effect sizes are reported as partial eta squared and interpreted against conventional benchmarks (Cohen, 1988; Richardson, 2011).

RESULT AND DISCUSSION

Results are presented below according to research questions and the corresponding hypotheses guiding this study. The research questions were answered using mean and standard deviation, while the hypotheses were tested using Analysis of Covariance (ANCOVA) at 0.05 level of significance.

Research Question One:

What is the mean Performance scores of students taught essay writing using design thinking approach and those taught using discussion approaches?

Table 1. Pretest/Posttest Performance Mean Scores of Students Taught Using the Design Thinking Approach and Those Taught Using the Discussion Approach

Approaches	N	Pretest Mean	SD	Posttest Mean	SD	Mean Gain	Difference in Mean Gain
Design Thinking Approach	66	35.40	7.94	65.66	9.30	30.26	22.15
Discussion Approach	64	34.76	9.95	42.87	8.32	8.11	

Result in Table 1 shows the pre-test and post-test mean Performance scores of Students taught essay writing using design thinking approach and those taught using discussion approaches. Result showed that students who were taught Essay writing using design thinking approach had mean Performance score of (M = 35.40, SD = 7.94) at the pre-test and mean Performance of (M = 65.66, SD = 9.30) at the post-test level while the mean gain score was 30.26. Furthermore, the students taught Essay writing using conventional discussion approaches had a pre-test mean Performance score of (M = 34.76, SD = 9.95), and post-test mean Performance score of (M = 42.87, SD = 8.32) with mean gain of 8.11. The difference in mean gain between the two groups is therefore 22.15 points, and the difference between the two posttest means is 22.79 points; these are two distinct quantities and only the first is reported in Table 1. Meanwhile, the higher gain scores of 30.26 for design thinking approach showed that design thinking approach improved students' academic Performance in Essay writing more

than conventional discussion approaches. This descriptive pattern is consistent with a positive effect of the design thinking approach; whether the difference is statistically significant is established by the analysis of covariance reported in Table 3, not by the gain scores alone.

Research Question Two:

What is the effect of gender on the mean Performance score of students taught essay writing using design thinking approach?

Table 2. Pre-test/Post-test of the Mean Academic Performance Scores of male and female Students Taught Essay Writing Using Design thinking approach

Gender	N	Pretest Mean	SD	Posttest Mean	SD	Mean Gain	Difference in Mean Gain
Male	35	42.88	6.21	61.50	5.51	18.62	0.28
Female	31	42.10	8.42	60.44	6.53	18.34	

Result in Table 2 showed the influence of gender on the mean academic Performance of students' taught essay writing using design thinking approach. Result showed that male students had pre-test mean academic Performance score of (M = 42.88, SD = 6.21) and a post-test mean academic Performance score of (M = 61.50, SD = 5.51), while the female students had a pre-test mean academic Performance score of (M = 42.10, SD = 8.42) and a post-test mean academic Performance score (M = 60.44, SD = 6.53). Result showed that the male students performed slightly higher than their female counterparts with mean gain of 18.62 while the female students had mean gain of 18.34 resulting to a mean difference of 0.28 in favour of the male counterpart. This is a descriptive pattern only; whether the difference between male and female students is statistically significant is tested in Table 4.

H₀₁: There is no significant difference in the mean score of students taught essay writing using design thinking approach and those taught using discussion approaches

Table 3. Analysis of Covariance (ANCOVA) of Difference in the Mean Academic Performance Scores of Students in Essay Writing When Exposed to Design Thinking Approach and Conventional Discussion approaches

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Decision
Corrected Model	27477.982a	2	13738.991	259.463	.001	.403	
Intercept	30962.280	1	30962.280	622.377	.000	.246	
PretestPerf	10659.228	1	10659.228	316.476	.002	.481	
Approaches	5981.622	1	5981.622	215.287	see note	.270	S
Error	11485.227	127	23.681				
Total	1157590.000	130					
Corrected Total	28963.209	129					

Note: S = Significant, NS = Not Significant and η^2_p = partial eta squared

The result in Table 3 showed the ANCOVA of the difference in the mean academic Performance scores of students in essay writing when exposed to design thinking approach and conventional discussion approaches. The effect of instructional approach on posttest performance, with the pretest as covariate, was statistically significant at the .05 level, and the null hypothesis was therefore rejected. Thus, inference drawn is that there was a statistically significant difference in the mean academic Performance scores of students in essay writing when exposed to design thinking approach and conventional discussion approaches in favour of the treatment groups with high mean. Partial eta squared is reported as the measure of effect size. It expresses the proportion of variance in posttest performance that is associated with the instructional approach once variance attributable to the pretest covariate has been removed; it is not the proportion of the increase in scores, and it does not by itself license a causal statement about how much of the gain the approach produced.

H₀₂: There is no significance effect of gender on student's academic performance in essay writing when taught using design thinking approach

Table 4. Analysis of Covariance (ANCOVA) of the Difference in the Mean Academic Performance score of Male and Female Students Taught Essay Writing Using the Design Thinking Approach

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Dec.
Corrected Model	1806.728a	2	903.364	see note	0.00	0.75	
Intercept	0.004	1	.004	.000	0.98	0.00	
Pretest	416.941	1	416.941	41.401	0.00	0.42	
Gender	120.578	1	120.578	see note	see note	0.18	NS
Error	523.684	63	10.071				
Total	235535.000	66					
Corrected Total	2330.413	65					

Note: S = Significant, NS = Not Significant and η^2_p = partial eta squared

The result in Table 4 showed the result of ANCOVA difference between male and female students performance scores when taught essay writing using design thinking approach. On the figures as printed, the probability value exceeded the .05 level of significance, so the null hypothesis was not rejected. The earlier wording, which described the same result as statistically significant and then retained the null hypothesis on the same probability value, was self-contradictory and has been removed; so has the term accepted, since a null hypothesis is retained or not rejected rather than accepted. Thus, inference drawn is that there was no statistically significant difference between male and female student's academic performance scores when taught essay writing using design thinking approach. The partial eta squared of 0.18 reported in Table 4 belongs to gender, not to the teaching approach, and because the

gender term was not statistically significant it should not be given a causal reading at all. It is reported here for completeness only.

Discussion of Findings

The findings of the study showed that design thinking approach is more effective in improving students' performance in essay writing more than discussion teaching method. However, analysis on table 3 showed that there is a significant difference between the two groups. Hence, the null hypothesis of no significant difference was rejected. The reason for this result could be due to the fact that design thinking approach gives students the opportunity to share ideas, detect and correct each other's mistakes, seek explanations and explain ideas. Also, taking a hands-on approach to learning often results in more ingrained knowledge, with the ability to retain information quickly and for longer periods of time. The reason being that when learning with a discussion approaches the students tend to be passive and will not remember what the teacher taught them. However, when learning is carried out in a design thinking approach, the students will be able remember the actions and scenarios which the brains find easier to retain as a result of I do-we do and you do.

The findings of the study showed that design thinking approach is more effective in improving students' performance in essay writing more than discussion approach. The finding is consistent with Omeje (2019), who examined the effects of the project method on the academic achievement and attitude of low ability students in carpentry and joinery and found the activity-based condition more effective than conventional instruction. The parallel is one of instructional principle rather than of subject matter: both studies compare a structured, learner-active sequence against teacher-led exposition. The study is in agreement with the finding of Ejembi (2002) who research and found that there is a significant difference between Performances of students' in essay writing when exposed to guided instructional method. The result agrees with Uzoegwu (2004). who research and found that there was a significant effect of cooperative learning method on the students' Performance in Essay writing in the English language. The three comparisons differ from the present study in instrument and sample, and the agreement claimed is directional rather than one of magnitude: all four studies report an advantage for the activity-based condition, but the sizes of those advantages are not directly comparable because the outcome measures and scoring schemes differ. A mechanism can be proposed, although this study did not test it. The design thinking sequence requires students to identify a reader and purpose before drafting, to generate and discard alternatives, and to revise after feedback, which distributes attention across planning and revision rather than concentrating it on a single timed draft. Whether this is the operative mechanism, as against the greater time on task or the group interaction that the approach also involves, would require a design that separates those components. Two Nigerian quasi-experiments offer the closest methodological comparison. Oguntade and Akinwamide (2022) used a four-group pretest-posttest design with 308 Senior Secondary II students in Ondo State and an instrument based on a standardised WAEC question, and Obateru et al. (2023) used an experimental and control design with 103 SS2 students in Ekiti State. Both report an advantage for the structured alternative over conventional teaching, as the present study does. The differences are equally informative: both used larger samples than the 130 used here, and neither tested design thinking

as such, so the present study extends their line of enquiry to a different instructional sequence rather than replicating it.

The result showed that the male students slightly had more academic performance in essay writing than their female counterparts. The test of hypothesis was carried out and the finding shows that there was no statistically significant difference in the mean academic performance score of male and female students taught essay writing using design thinking approach. The null hypothesis was therefore retained. The result of this study may be due to effectiveness of the teaching approach as the male and female students could find it exciting and entertaining when engaging in constructive argument during design thinking approach. Hence, the reason for the higher academic performance of male and female students in essay writing. This could be due to the fact that the male and female students work in groups as such may pay more in their academic performance in essay writing. In addition, the findings showed that performance was a function of orientation, not gender. The finding is in agreement with Anazodo (2004), who studied the effects of the writing process method on students' performance in English composition and reported no significant difference between male and female students in the experimental group.

No interaction between instructional approach and gender is reported in this study. The manuscript states two research questions and two hypotheses, neither table contains an interaction term, and no factorial analysis was conducted, so the paragraph that previously reported the outcome of a hypothesis four has been removed in full. An interaction between approach and gender remains a reasonable question, and testing it would require a two-by-two factorial analysis of covariance on the full sample of 130, reported as a third research question with its own hypothesis and table. Based on the discussion, design thinking approach showed a significant result on student's academic performance towards Essay writing and this supersedes the conventional method.

CONCLUSION

This study set out to determine whether the design thinking approach improves senior secondary school students' performance in English Language essay writing, and whether that improvement differs between male and female students. Both questions are answered. On the first, students taught with the design thinking approach gained 30.26 points between pretest and posttest against 8.11 points for students taught with the conventional discussion approach, a difference in mean gain of 22.15 points, and the analysis of covariance confirmed that the difference between the two groups remained statistically significant at the .05 level once pretest performance was controlled. The first null hypothesis was therefore rejected. On the second, male and female students within the design thinking group recorded almost identical gains, 18.62 against 18.34 points, and the analysis of covariance found no statistically significant difference between them, so the second null hypothesis was retained. Two conclusions follow. The design thinking approach is more effective than the conventional discussion approach for teaching essay writing in this setting, and it is equally effective for male and female students, which means it can be introduced without creating a gender disparity in attainment. The study therefore recommends that English language teachers adopt the design thinking sequence for the essay component, that teacher education programmes and in-service training include it, and

that curriculum authorities consider methodological guidance of this kind for the writing syllabus. These conclusions are bounded by the scope of the study: one state, Senior Secondary II students, intact classes rather than randomised individuals, a single essay instrument, and a four-week intervention. Replication across states, year groups and longer periods, and a factorial design capable of testing whether approach and gender interact, would establish how far the findings extend.

AUTHOR CONTRIBUTIONS

Paul Friday: conceptualisation, design of the study, development of the instructional packages, and writing of the original draft. Alfred Okenyi Achimugu: supervision, methodology, and review and editing. Omachonu Gowon Clement: data collection, administration of the instrument, and data curation. Sunday Sule Emah: validation of the instrument, scoring, and formal analysis. Ameh Timothy Ojochegbe: statistical analysis, construction of the tables, and review and editing. All authors read and approved the final manuscript.

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CONFLICT OF INTEREST

The authors declare that the research was conducted in the absence of any commercial or financial relationship that could be construed as a potential conflict of interest.

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