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EFFECTS OF ARTIFICIAL INTELLIGENCE ON SENIOR SECONDARY SCHOOL 2 STUDENTS' ACHIEVEMENT IN COMPOSITION WRITING IN PANKSHIN LOCAL GOVERNMENT AREA OF PLATEAU STATE

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Abstract
Composition writing remains a critical means of communication and a key determinant of students' academic success, yet secondary school students in Nigeria continue to record high failure rates in both internal and external examinations, particularly the West African Senior School Certificate Examination (WASSCE). Persistent weaknesses in idea generation, organisation, sentence construction and paragraph development have been linked, among other factors, to the continued dominance of the traditional product-oriented, teacher-centred method of teaching writing. This study therefore investigated the effects of artificial intelligence (AI) on Senior Secondary School 2 students' (SSS 2) achievement in composition writing skills in Pankshin Local Government Area, Plateau State, Nigeria. A quasi-experimental design using intact classes was adopted. The population comprised 474 SS2 students, from which a sample of 80 was drawn, 38 in the experimental group and 42 in the control group. A pre-test was administered to establish the competence of the students in composition writing, after which the experimental group was exposed to AI-assisted instruction while the control group received traditional teaching. A post-test was conducted at the end of the intervention. Data were analysed using mean, standard deviation and analysis of covariance (ANCOVA). The research questions were answered using mean and standard deviation, while the hypotheses were tested using ANCOVA at 0.05 level of significance. Findings indicated that students taught with AI tools achieved substantially higher mean gains in idea generation, organisation and sentence construction than their counterparts in the control group. The study concludes that AI-assisted instruction is effective in improving students' composition writing skills and recommends its integration into secondary school English language classrooms.

Keywords*: Composition, writing, skills, artificial, intelligence*

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Introduction

The art of writing originated from man's desire to express themselves and to communicate with those who are not around. The feelings, thoughts, ideas and emotions that the writer wants to transmit could be to educate, entertain, inform and instruct in some cases. Al-Atabi (2020) asserts that, writing is the creating and organizing of written discourse into meaningful text. It means that writing is not an easy task, it is a complex exercise that demands careful fixing of ideas and mechanics of writing into full meaningful composition. It demands the writer to think, and to write not just any thoughts but sensible texts. It is a practical means of putting down various writing skills for effective communication, for instance, skills such as idea generation, idea organization and sentence construction among others. It is a productive process done through some stages exploring and transmitting ideas, thoughts and feelings into written form. Composition writing is the organized process of creating a coherent written work like an essay or report by putting together ideas, words and sentences to effectively communicate on a specific topic, often categorized into narrative, descriptive, expository and argumentative writing.

Writing can be used to refine and extent knowledge. In school setting, writing performs different communicative functions as well as in the society. Klimova (2025) posits that writing is used extensively in higher education and in workplace. Much of professional communication is done in writing: proposals, memos, reports, applications and interview among others. Teachers assess **students'** achievement through writing, and students cannot graduate from secondary schools without taking written examinations, continuous assessment tests, writing assignments, and engaging in **note-taking**. Writing enhances the ability to acquire and develop cognitive skills such as generating and organizing ideas, content, and language norms (spelling and grammar). Writing has the ability to solve linguistic issues and assist learners in developing their second language proficiency. Also, writing can be used to establish contacts with others. It helps to transmit information, thoughts, feelings and reaction.

Students specifically, struggling writers generally demonstrate weaknesses in more technical writing as they demonstrate: poor idea generation, poor idea organisation, wrong sentence construction, poor paragraph creation, inappropriate application of punctuation marks and editing. In idea generation, students' writing is accompanied by poor topic identification, poor grasping of the main ideas, limited ideas, and lack of the knowledge to the techniques of generating ideas. In idea organisation, from 2019 to 2023, Chief Examiners' reports in WAEC and NECO had shown students' weaknesses to include lack of clear purpose, fail to give any piece of writing proper tone, audience are not identified and lacks proper structure (introduction, body paragraphs, and transitions (Hassan & Joshua, 2022). As for sentence construction, comprehensive construction of thoughts start from proper connection of words, phrases, clauses, together to construct sentences that are meaningful, nevertheless, students writing is marred by poor sentence structure, lacks clarity and concise statements, poor grammar and expression. Another cause of students' poor achievements in writing could be connected to the methodology. Traditional product approach is predominantly use by many teachers in Nigeria. Studies have revealed that, the traditional product approach is predominantly **in use** by teachers in many schools in Nigeria. It subjects learners to

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produce a single text that opposes the multiple production of texts in the process approach. The product approach is mindless, repetitive and does not give learners the opportunity to think. The teacher assumes the role of a master because the instructor controls most of the writing activities. In other words, the product approach is teacher-centred with limited activities for learners. This study looks at the teaching of composition writing using Artificial Intelligence within the context of idea generation, idea organisation, and sentence construction.

Perhaps Artificial Intelligence can be useful to remedy students' weaknesses in writing. Artificial intelligence is a unit in computer science that manipulates the computers or machines as intelligent as human beings. Artificial intelligence is a way of making a computer-controlled robot, or a software think intelligently, similar to the way humans think. Artificial intelligence studies show how humans think and decide on matters that are pressing and uses such responses to create intelligence software and systems.

Floris (2025) asserts the relevance of AI to include providing tools that can enhance task in idea generation by brainstorming ideas and outlining them. It provides interaction between AI and writers giving students a way to explore into diverse ideas. Also, it answers difficult questions in skills like idea organization, sentence construction and paragraph creation. Artificial tools that can be helpful to writers are Grammarly, Canva Magic Write and ChatGPT.

As mentioned above, many secondary school students struggle to write compositions. Also, bad methodology on the part of writing and English language teachers is observed. Instead of using modern teaching method such as the Artificial Intelligence, collaborative method, think-pair-share, pair review and others, they enjoy using the traditional method. Worse still, they teach composition haphazardly by not putting into consideration that writing is a process where students need to be guided from the beginning of the work to the end using AI tools in order to present compositions that would score them high marks. It is for this reason that this study, effects of Artificial intelligence on senior secondary school students' achievement in composition writing skills for national development is conducted.

Statement of the Problem

Students in general are supposed to write proficiently because it is an important skill that enables them to express themselves appropriately and effectively in Language 2 writing. In addition, writing determines students' success to a great extent in both internal and external examinations. However, most of the students do not write competently as they demonstrate poor idea generation and organization, poor sentence construction and paragraphing.

Many Chief Examiners' reports from WAEC and NECO commenting on students' achievement in composition writing have this to say, “Students fail due to poor idea generation, poor expression, poor organisation of ideas, inability to construct simple and correct sentences” (NECO, 2019–2023; WAEC, 2019–2023), for instance, and specifically, the West African Examinations Council (WAEC) results in 2021 revealed that 48.61% obtained credits and above in English language and mathematics (Osayande, 2022). Similarly, in NECO examinations in 2021 revealed that 49.36% obtained credits and above in English Language and Mathematics. Students' poor achievement in English, especially writing can be attributed to students' failure in writing among other factors; failure to write the

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required number of words, poor organization of ideas; and chief among these factors is the unsuitable methods employed by most teachers of writing. It is on this backdrop that the study seeks to investigate, effects of artificial intelligence on senior secondary school students achievement in composition writing skills for national development.

Research Questions

1. What are the pre-test and post-test idea generation achievement mean scores of students in writing skills in the experimental and control groups?
2. What are the pre-test and post-test idea organisation achievement mean scores of students in writing skills in the experimental and control groups?
3. What are the pre-test and post-test sentence construction achievement mean scores of students in writing skills in the experimental and control groups?

Hypotheses

1. There is no significant difference in the pretest and posttest in idea generation achievement mean scores of SS2 in the experimental and control groups in composition writing skills.
2. There is no significant difference in the pretest and posttest in idea organization achievement mean scores of SS2 in the experimental and control groups in composition writing skills.
3. There is no significant difference in the pretest and posttest in sentence construction achievement mean scores of SS2 in the experimental and control groups in writing skills.

Literature Review

Composition Writing Skills: Writing Skills; Writing cuts across curriculum because everybody needs it to express ideas and situations. Specifically, language learners need it to overcome every challenging issue in different language units. Writing is a complex and cognitive activity that involves variety of skills. Because of that, it is described as a process of thoughtfully writing and taking decisions that concern what to say and organizing such thoughts in written form (Koay, 2021). The authors emphasized that writing is a process of making exploits. It has to do with taking series of steps and such are not often on a straight line. Writing is a collection of individual skills, idea generation, idea organisation and sentence construction among others. Writing is a meaning making process rather than teachers enforcing the conventions of writing on learners.

Writing is developing the skills of writing. It does not happen anyhow, but it takes a deliberate afford to achieve it, for example, in generating and organizing of ideas, learners are introduced to various techniques of generating large volumes of ideas. These techniques include brainstorming, clustering and concept mapping. Brainstorming is an organized way of allowing the mind to produce ideas without getting stuck down in trying to check which point is relevant and which is not (Akalor, 2025). The essence is to generate large ideas. To achieve the collection of ideas, the authors emphasize that learners should rule out criticism. There should be freedom to express oneself and learners should bear in mind that quantity is wanted and combination and improvement are sought later. Such guidelines when followed, they provide plenty of materials for making prediction.

Also, writing skills entail planning and organizing of separate materials into smaller units to form a whole text. Idea organization gives a text meaning, whether physically or contextually. In checking for organization in

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writing, some teachers pay attention to how different information is organized into paragraphs while others check how messages are well connected using cohesion and coherence devices (Alli & Aika, 2024). Sentence construction on the other side, means a comprehensive construction of thoughts which starts from proper connection of words, phrases, clauses, together to construct sentences that are meaningful, nevertheless, students writing is marred by poor sentence structure, lacks clarity and concise statements, poor grammar and expression.

Traditional Teaching of Writing: The teaching of composition writing is described as a difficult task among teachers and their action is invariably affecting learners' attitudes to learning writing whether negative or positive. It is evident that the method teachers use to impart writing determines to a large extend on students achievement or failure. It is equally sad to note that, most teachers are still applying the traditional product method to teach writing in schools. The method encompasses guided, free and lecture methods. Most teachers are not aware that there is a paradigm shift from the traditional to the twenty first century teaching of writing as it is done in other non-native English speaking countries of the world. It is hoped that after studying this text, teachers will improve on their method of teaching writing in schools.

Artificial Intelligence: Artificial Intelligence is a computer science that manipulates the computers or machines as intelligent as human beings. Artificial Intelligence is a science and engineering that makes intelligence that behaves like human beings. In other words, AI is a way of making a computer-controlled robot, or a software think intelligently similar to the way human beings think. Such AI tools that can assist students to learn writing are ChatGPT Grammarly, Quillbot, and Wordtune. The relevance of AI in composition writing cannot be underestimated. Artificial Intelligence can enhance task such as engaging in idea generating using techniques like brainstorming and outlining. It provides meaningful interaction with the students as it provides ways to explore ideas. In difficult situations, AI can issue answers to difficult questions. Morrison (2023) argues that critical inquiry into how AI tools work should accompany their use in writing instruction, so that students' practices with AI are informed by rhetorical awareness.

Effects of Artificial Intelligence on composition writing skills: Artificial intelligence can be helpful in writing composition writing skills in these ways:

Idea Generation: Ideas in writing form the content of a written text. Students can generate ideas using AI tools like Microsoft, Copilot, Gemini and ChatGPT using techniques of writing to brainstorm and outline ideas. Artificial Intelligence generated drafts can guide writers to start their composition by allowing them to expand and widen their task.

Idea Organisation: Meta AI is another tool device effective in helping writers to organise their work in a coherent manner. As soon as students submit their work to Meta AI to assess idea organisation in content, it quickly makes observation and offers the correct version, but students should be discreet to ensure it tallies with the purpose in order to communicate meaningfully.

Sentence Construction. This forms the building blocks of all communication. Artificial Intelligence powered-driven devices such as Grammarly, Virtual Writing

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Tutor and Microsoft word checkers, are spontaneous in checking errors in sentence construction, spellings and word order and quickly providing the right version.

Empirical Studies on Artificial Intelligence and Writing Skills

Empirical studies from different contexts have reported benefits of AI-assisted instruction for writing. Song and Song (2023) assessed the efficacy of ChatGPT in AI-assisted language learning for English as a Foreign Language (EFL) students and reported improvements in their academic writing skills and writing motivation. Marzuki et al. (2023) explored EFL teachers' views on how AI writing tools affect the content and organisation of students' writing, which relate directly to idea generation and idea organisation. Although such studies show the potential of AI, they were conducted largely with university students or in EFL settings outside Africa, and their findings may not transfer directly to Nigerian senior secondary school classrooms.

Evidence from Nigeria and other parts of sub-Saharan Africa is still emerging. A randomised evaluation of an after-school programme in Edo State, Nigeria, in which students used generative AI as a virtual tutor with teacher support for six weeks, found that participating students significantly outperformed their peers who were not in the programme on an English language test, which was the main focus of the programme (De Simone et al., 2025). Maisamari (2026) investigated the relationship between the frequency of use of generative AI tools and the mechanical accuracy of essay writing among SS2 students in the Federal Capital Territory, which shows growing research interest in AI and essay writing at the Nigerian secondary school level. At the higher education level, Chukwuere and Van (2026) surveyed 151 academics across African universities, most of them in Nigeria, and found that most respondents believed that the benefits of ChatGPT in academic writing outweighed its risks and this is the gap that the present study addresses.

Challenges of Artificial Intelligence in Writing Instruction

Despite its promise, the use of AI in writing instruction has limitations that teachers must manage. The first is over-reliance. Zhai and Wibowo (2024), in a systematic review, reported that students who accept AI-generated outputs without questioning them risk weakening cognitive abilities such as critical thinking and decision-making, and identified AI hallucination, algorithmic bias and plagiarism among the factors that encourage such over-reliance. In composition writing, over-reliance can lead students to submit AI-generated ideas and sentences without developing their own, which defeats the purpose of writing instruction. For this reason, AI should serve as a supplement to students' own knowledge and effort and not as a replacement for them, and students need guidance on when and how to use it.

The second challenge is plagiarism and academic integrity. Cotton and Cotton (2024) discuss how the availability of ChatGPT raises concern about cheating and how institutions can respond to them. Also, African academics share this concern as Chukwuere and Van (2026) stated in a study that about 62% of respondents agreed that the use of ChatGPT would increase academic dishonesty, and 55% strongly agreed that institutions should provide mechanisms to prevent plagiarism, cheating and bias. In secondary schools, where students sit for external examinations such as WAEC and NECO in which essays are written without

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assistance is a good practice, but when it becomes necessary, teachers should clearly separate AI-supported practice from independent assessment, require students to draft in their own words, and teach them to verify and acknowledge any AI-generated content.

The third challenge is equity of access. The UNESCO guidance on generative AI in education cautions that these tools can worsen digital poverty and calls for regulation and for institutions to validate the tools before classroom use (Miao & Holmes, 2023). In many Nigerian schools, limited electricity, the cost of data and devices, and uneven digital skills may leave students in rural or poorly resourced public schools without an equal opportunity to benefit. Chukwuere and Van (2026), stated in a study that about 44% of respondents strongly agreed that ChatGPT would exclude academics with limited resources in Africa. Any use of AI in teaching composition should therefore be matched with provision of devices and connectivity, teacher training and clear school policies, so that the benefits do not accrue only to better-resourced learners.

Summary of the Literature Reviewed

The literature reviewed shows that writing is a complex process in which idea generation, idea organisation and sentence construction are central skills, that traditional product-oriented teaching has not adequately developed these skills, and that AI tools offer ways of supporting each of them. Empirical evidence on the effectiveness of AI in writing instruction exists, but it comes largely from outside Nigeria and from higher education. The literature also warns of over-reliance, plagiarism and unequal access. The present study therefore examines the effect of AI on idea generation, idea organisation and sentence construction among SS2 students in Pankshin Local Government Area.

Methodology

The study adopted a quasi-experimental research design, specifically the pre-test post-test non-equivalent control group design, in which intact classes were used. The population of the study consisted of 474 Senior Secondary School Two (SS2) students in public secondary schools in Pankshin Local Government Area, Plateau State. Two schools were randomly selected, which provided 80 students in intact classes: 38 in the experimental group and 42 in the control group. Because intact classes were used, the groups were not randomised; the pre-test scores were therefore used as a covariate in the analysis.

The instrument for data collection was the Composition Writing Achievement Test (CWAT). The test measured three writing skills: idea generation (maximum score of 20), idea organisation (maximum score of 15) and sentence construction (maximum score of 15), giving a maximum total of 50 marks. Content validity of the instrument was established by experts in the Department of English and the Department of Measurement and Evaluation, Federal University of Education, Pankshin, whose suggestions and observations confirmed that the instrument was adequate for the study.

The pre-test was administered to both groups before the treatment. The experimental group was then taught composition writing using Artificial Intelligence (AI) tools, while the control group was not exposed to the AI treatment. A post-test was administered to both groups after the treatment, and the scores for the three skills were recorded. Data were analysed using the mean and standard deviation to answer the research questions, while the hypotheses were tested using Analysis of

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Covariance (ANCOVA), with the pre-test scores as the covariate, at the 0.05 level of significance.

Results

Research Question One

What are the pre-test and post-test idea generation achievement mean scores of students in writing skills in the experimental and control groups?

The achievement mean scores of students in idea generation in writing skills for the experimental and control groups are presented in Table 1.

Table 1: Pre-test and Post-test Idea Generation Achievement Mean Scores of SS2 Students in Writing Skills in the Experimental and Control Groups

Group	N	Pre-test Mean	Pre-test SD	Post-test Mean	Post-test SD	Mean Gain	Mean Gain Difference
Experimental	38	2.37	1.17	9.00	2.73	6.63	6.06
Control	42	2.71	0.97	3.29	1.35	0.57	

Table 1 reveals the pre-test and post-test idea generation achievement mean scores of students in writing skills in the experimental and control groups. The experimental group obtained a mean score of 2.37 with a standard deviation of 1.17 at pre-test. At post-test, a mean score of 9.00 with a standard deviation of 2.73 was obtained, giving a mean gain of 6.63. In the control group, a mean score of 2.71 with a standard deviation of 0.97 was obtained at pre-test, while at post-test a mean score of 3.29 with a standard deviation of 1.35 was obtained, giving a mean gain of 0.57. It then means that SS2 students in the experimental group had a higher idea generation mean score after exposure to Artificial Intelligence (AI) as against those in the control group who were not given the treatment, with a mean gain difference of 6.06. This implies that AI increases students' achievement in idea generation in writing skills.

Hypothesis One

There is no significant difference in the pre-test and post-test idea generation achievement mean scores of SS2 students in the experimental and control groups in composition writing skills.

Table 2: Analysis of Covariance (ANCOVA) of the Pre-test and Post-test Idea Generation Achievement Mean Scores of SS2 Students in the Experimental and Control Groups

Tests of Between-Subjects Effects. Dependent Variable: Idea Generation Post-test

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	651.912[a]	2	325.956	71.692	.000	.651
Intercept	114.369	1	114.369	25.155	.000	.246
Pre-test (Covariate)	.483	1	.483	.106	.745	.001
Group	628.861	1	628.861	138.315	.000	.642
Error	350.088	77	4.547			
Total	3882.000	80				
Corrected Total	1002.000	79				

a. R Squared = .651 (Adjusted R Squared = .642)

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Table 2 shows that, after adjusting for the pre-test scores, there was a significant difference between the idea generation post-test mean scores of students in the experimental and control groups, $F(1, 77) = 138.315$, $p = .000$ ($p < 0.05$), with a partial eta squared of .642. The adjusted post-test mean scores were 8.99 for the experimental group and 3.30 for the control group, a difference of 5.69 in favour of the experimental group. Since the p-value (.000) is less than the 0.05 level of significance, the null hypothesis, which states that there is no significant difference in the pre-test and post-test idea generation achievement mean scores of SS2 students in the experimental and control groups in composition writing skills, is rejected. This implies that AI significantly improved the idea generation achievement of SS2 students in composition writing skills in favour of the experimental group.

Research Question Two

What are the pre-test and post-test idea organisation achievement mean scores of students in writing skills in the experimental and control groups?

The achievement mean scores of students in idea organisation in writing skills for the experimental and control groups are presented in Table 2.

Table 3: Pre-test and Post-test Idea Organisation Achievement Mean Scores of SS2 Students in Writing Skills in the Experimental and Control Groups

Group	N	Pre-test Mean	Pre-test SD	Post-test Mean	Post-test SD	Mean Gain	Mean Gain Difference
Experimental	38	2.37	0.82	11.58	2.66	9.21	9.02
Control	42	2.69	1.20	2.88	1.09	0.19	

Table 3 shows the pre-test and post-test idea organisation achievement mean scores of SS2 students in writing skills. The experimental group obtained a mean score of 2.37 with a standard deviation of 0.82 at pre-test. At post-test, a mean score of 11.58 with a standard deviation of 2.66 was obtained, giving a mean gain of 9.21. This implies that there was an improvement in the idea organisation of SS2 students after the treatment. In the control group, a mean score of 2.69 with a standard deviation of 1.20 was obtained at pre-test, while at post-test a mean score of 2.88 with a standard deviation of 1.09 was obtained, giving a mean gain of 0.19. It then means that SS2 students in the experimental group had a higher idea organisation mean score after exposure to AI as against those in the control group who were not given the treatment, with a mean gain difference of 9.02. This implies that AI increases students' achievement in idea organisation in writing skills.

Hypothesis Two

There is no significant difference in the pre-test and post-test idea organisation achievement mean scores of SS2 students in the experimental and control groups in composition writing skills.

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Table 4: Analysis of Covariance (ANCOVA) of the Pre-test and Post-test Idea Organisation Achievement Mean Scores of SS2 Students in the Experimental and Control Groups

Tests of Between-Subjects Effects. Dependent Variable: Idea Organisation Post-test

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1511.230[a]	2	755.615	189.052	.000	.831
Intercept	98.075	1	98.075	24.538	.000	.242
Pre-test (Covariate)	1.910	1	1.910	.478	.492	.006
Group	1456.537	1	1456.537	364.421	.000	.826
Error	307.758	77	3.997			
Tota1	5753.000	80				
Corrected Total	1818.988	79				

a. R Squared = .831 (Adjusted R Squared = .826)

Table 4 shows that, after adjusting for the pre-test scores, there was a significant difference between the idea organisation post-test mean scores of students in the experimental and control groups, $F(1, 77) = 364.421$, $p = .000$ ($p < 0.05$), with a partial eta squared of .826. The adjusted post-test mean scores were 11.55 for the experimental group and 2.90 for the control group, a difference of 8.65 in favour of the experimental group. Since the p-value (.000) is less than the 0.05 level of significance, the null hypothesis, which states that there is no significant difference in the pre-test and post-test idea organisation achievement mean scores of SS2 students in the experimental and control groups in composition writing skills, is rejected. This implies that AI significantly improved the idea organisation achievement of SS2 students in composition writing skills in favour of the experimental group.

Research Question Three

What are the pre-test and post-test sentence construction achievement mean scores of students in writing skills in the experimental and control groups?

The achievement mean scores of students in sentence construction in writing skills for the experimental and control groups are presented in Table 3.

Table 5: Pre-test and Post-test Sentence Construction Achievement Mean Scores of SS2 Students in Writing Skills in the Experimental and Control Groups

Group	N	Pre-test Mean	Pre-test SD	Post-test Mean	Post-test SD	Mean Gain	Mean Gain Difference
Experimental	38	2.50	0.86	9.97	2.07	7.47	6.83
Control	42	2.71	1.11	3.36	1.32	0.64	

Table 5 indicates the pre-test and post-test achievement mean scores in sentence construction of SS2 students in writing skills. The experimental group obtained a mean

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score of 2.50 with a standard deviation of 0.86 at pre-test. At post-test, a mean score of 9.97 with a standard deviation of 2.07 was obtained, giving a mean gain of 7.47. This implies that there was an improvement in the sentence construction of SS2 students' writing skills after the treatment. In the control group, a mean score of 2.71 with a standard deviation of 1.11 was obtained at pre-test, while at post-test a mean score of 3.36 with a standard deviation of 1.32 was obtained, giving a mean gain of 0.64. It then means that SS2 students in the experimental group had a higher sentence construction mean score after exposure to AI as against those in the control group who were not given the treatment, with a mean gain difference of 6.83. This implies that AI increases students' achievement in sentence construction in writing skills.

Hypothesis Three

There is no significant difference in the pre-test and post-test sentence construction achievement mean scores of SS2 students in the experimental and control groups in writing skills.

Table 6: Analysis of Covariance (ANCOVA) of the Pre-test and Post-test Sentence Construction Achievement Mean Scores of SS2 Students in the Experimental and Control Groups

Tests of Between-Subjects Effects. Dependent Variable: Sentence Construction Post-test

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	873.611[a]	2	436.805	145.988	.000	.791
Intercept	103.876	1	103.876	34.717	.000	.311
Pre-test (Covariate)	.227	1	.227	.076	.784	.001
Group	860.239	1	860.239	287.507	.000	.789
Error	230.389	77	2.992			
Total	4484.000	80				
Corrected Total	1104.000	79				

a. R Squared = .791 (Adjusted R Squared = .786)

Table 6 shows that, after adjusting for the pre-test scores, there was a significant difference between the sentence construction post-test mean scores of students in the experimental and control groups, $F(1, 77) = 287.507$, $p = .000$ ($p < 0.05$), with a partial eta squared of .789. The adjusted post-test mean scores were 9.97 for the experimental group and 3.36 for the control group, a difference of 6.61 in favour of the experimental group. Since the p-value (.000) is less than the 0.05 level of significance, the null hypothesis, which states that there is no significant difference in the pre-test and post-test sentence construction achievement mean scores of SS2 students in the experimental and control groups in writing skills, is rejected. This implies that AI significantly improved the sentence construction achievement of SS2 students in writing skills in favour of the experimental group.

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Discussion

The results indicated that there was a significant difference between the achievements mean scores of students in idea generation in the experimental and control groups. The experimental group improved from a pre-test mean of 2.37 to a post-test mean of 9.00 (mean gain of 6.63), while the control group moved from 2.71 to 3.29 (mean gain of 0.57), a mean gain difference of 6.06 in favour of the experimental group. After adjusting for the pre-test scores, the difference was significant, F (1, 77) = 138.315, p = .000, and the null hypothesis was therefore rejected. The use of Artificial Intelligence (AI) tools is effective in changing the composition writing of SS2 students positively. This could be because AI helps students learn that the content of writing can be generated using tools like ChatGPT to develop outlines, to make quick observations where there are issues, and to suggest the right versions within the shortest time. Also, each student works at their own pace with clear steps to guide improvement. The finding supports that of Song and Song (2023), who reported that AI-assisted instruction with ChatGPT improved EFL students' academic writing skills, showing that AI is effective in teaching writing. It implies that AI fosters growth, confidence, and a deeper command of written communication.

Artificial Intelligence was also found to be effective in improving the idea organisation of SS2 students. The experimental group changed from a pre-test mean of 2.37 to a post-test mean of 11.58 (mean gain of 9.21), whereas the control group moved from 2.69 to 2.88 (mean gain of 0.19), a mean gain difference of 9.02. The post-test result showed a significant difference between the achievement mean scores of students in idea organisation in the experimental and control groups, F(1, 77) = 364.421, p = .000, and the null hypothesis was rejected. Sedita (2025) found that employing AI in the writing classroom helped students improve their writing skills, of which idea organisation is a part. This is so because AI guides writers to make proper use of linkers within paragraphs and across the entire work. AI exposes students to arranging ideas coherently, giving them structured opportunities to learn, apply, and correct the arrangement of their ideas in real writing situations. Rather than memorising rules in isolation, students learn to see the logical ordering of ideas as a vital part of clear and effective communication.

The findings further revealed that AI is effective in improving students' sentence construction. The experimental group improved from a pre-test mean of 2.50 to a post-test mean of 9.97 (mean gain of 7.47), while the control group moved from 2.71 to 3.36 (mean gain of 0.64), a mean gain difference of 6.83. The result indicated a significant difference between the achievement of students in sentence construction in the experimental and control groups, F (1, 77) = 287.507, p = .000, and the null hypothesis was rejected. Floris (2025) found that AI helps learners to identify the right word choice based on context, appropriate sentence construction, and the right application of punctuation marks. Artificial Intelligence transforms students from passive recipients of corrections into active editors of their own work. It builds their skills, confidence, and ownership of the writing exercises, leading to higher-quality and more polished compositions over time. In all three areas, the pre-test scores did not significantly influence the post-test scores (p = .745, .492 and .784 respectively), and both groups began at similarly low levels. The differences recorded at post-test can therefore be attributed to the AI-supported instruction

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given to the experimental group.

Conclusion

Based on the analysis of the results, it is concluded that Artificial Intelligence significantly improved the idea generation, idea organisation and sentence construction achievement of SS2 students in composition writing. Artificial Intelligence motivates learners' interest, provides instant feedback and promotes critical thinking. The use of AI in writing is student-centred, as is expected in the twenty-first-century teaching and learning, with the teacher engaging in scaffolding, guiding and facilitating learning activities. Teachers are therefore urged to implement it in teaching composition writing to address the poor performance of students in English Language for national development.

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