DOI: https://doi.org/10.67203/jossme.2026.h6dezca1

Journal of Studies in Science and Mathematics Education

ISSN: 2630-662x

Published: 08.11.2026

Volume (issue): 6(2)

Page: 199 – 210

# Perspectives of Hausa Language Teachers on the Use of Artificial Intelligence for Enhancing Students' Expository Essay Writing in Secondary Schools in Sabon-Gari Local Government Area of Kaduna State, Nigeria

**Bala Bawa Goma[1]*, Nasiru Dantani Gele[2]**

[1]Department Arts and Social Science Education, Ahmadu Bello University, Zaria, Kaduna State, Nigeria

[2]Adamu Augie College of Education, Argungu, Kebbi State, Nigeria

*** Corresponding author:** julaibeebfaiza@gmail.com

## Abstract

The study examined the perspectives of Hausa Language teachers on the use of artificial intelligence (AI) for enhancing students' expository essay writing in secondary schools in Sabon Gari Local Government Area (LGA), Kaduna State, Nigeria. The problem addressed was the persistent underperformance of Nigerian secondary school students in expository essay writing, documented in successive WAEC and NECO examiners' reports, set against the rapid but largely unplanned emergence of AI writing tools within classrooms that have received little formal guidance on their utilization. A descriptive cross-sectional survey design was adopted. The target population comprised 230 Hausa Language teachers in public secondary schools in Sabon Gari LGA, from which a sample of 146 respondents was determined using Taro Yamane's formula and drawn through a multistage sampling procedure. Data were collected using a structured instrument, the Teachers' perspectives of Artificial Intelligence for Expository Essay Writing Questionnaire (TPAIEEWQ). Data were analyzed using mean, standard deviation, and the independent-samples t-test at the 0.05 level of significance. Findings showed that teachers perceived AI as broadly useful for enhancing expository essay writing (cluster M = 2.94), particularly for providing instant feedback on grammar and structure (M = 3.30), while also perceiving substantial challenges to its use (cluster M = 3.21), chiefly unreliable electricity supply (M = 3.40) and inadequate computer and internet access (M = 3.35). Testing of the null hypotheses showed no significant difference in perspectives by gender, t (128) = 0.48, p = .632, but a significant difference by prior AI or ICT training exposure, t(128) = 3.12, p = .002, with trained teachers holding more favorable perspectives. The first hypothesis was therefore retained and the second rejected. The study concludes that Sabon gari LGA's Hausa Language teachers regard AI as a genuinely promising resource for expository essay instruction, one whose realization is currently constrained chiefly by training and infrastructure rather than by skepticisms. It is recommended, among other measures, that the Kaduna State ministry of Education organize structured AI training for Hausa Language teachers and that school authorities pursue sustainable power solutions to support classroom AI use.

**Keywords**: artificial intelligence, expository essay writing, teachers' perspectives, Hausa language teachers

## 1 Introduction

Artificial intelligence refers to the capacity of a computer system to carry out tasks that would ordinarily require human intelligence, among them reasoning, learning from experience, recognizing patterns, interpreting and producing natural language, and arriving at decisions under conditions of uncertainty. As a field, it comprises several related branches. Machine learning enables a system to improve its performance on a task by detecting statistical regularities in large volumes of data rather than by following explicitly programmed rules. Natural language processing enables a system to parse, interpret, and generate human language. Generative artificial intelligence, the most recent and most publicly visible branch, uses large language models trained on very extensive text corpora to produce original prose, summaries, translations, corrections, and evaluative feedback in response to a written prompt. Within education, these capabilities take concrete institutional forms: intelligent tutoring systems that adjust task difficulty to a learner's demonstrated level, automated essay scoring engines that assign marks and generate comments on student scripts, grammar and style assistants such as Grammarly and QuillBot, and conversational chatbots such as ChatGPT, Gemini, and Copilot that will draft, critique, and revise text on demand. It is this final category, the freely accessible generative writing tools, that has moved most rapidly and most informally into the hands of secondary school teachers and learners, and it is principally this category that the

present study has in view whenever it refers to artificial intelligence for the enhancement of expository essay writing. Understood in these terms, artificial intelligence is not a single product but a family of technologies whose shared significance for the classroom lies in the capacity to supply immediate, individualized responses to student work at a scale no single teacher managing a large class can match (UNESCO, Miao, & Holmes, 2023).

Artificial intelligence has moved within the space of a few years from a specialized subject confined to computer science departments to a technology that now shapes how teachers plan lessons, how students draft assignments, and how examination bodies think about assessment integrity. UNESCO, Miao, and Holmes (2023) observe that publicly available generative AI tools have proliferated faster than the regulatory frameworks meant to govern their use in classrooms, leaving many national education systems to improvise policy while millions of teachers and learners experiment with the tools on their own initiative. This rapid, largely unplanned diffusion has not been confined to wealthy nations with well-resourced schools; it has reached, in varying degrees, the classrooms of low- and middle-income countries where infrastructure is far less certain. Aduloju, Adedotun, Akingbemisilu, and Laleye (2026) similarly document that Nigerian secondary school teachers are already forming opinions about artificial intelligence, whether or not their schools have formally adopted any AI-based instructional tool, because learners themselves arrive in class having already used chatbots and writing assistants outside school hours. The result is a peculiar situation in which the technology precedes the policy, and teachers' perspectives, rather than any curriculum document, become the de facto gatekeeper of whether and how AI enters the teaching of a subject as central as Hausa language. Understanding what teachers think about artificial intelligence, therefore, is not a peripheral academic exercise; it is a direct route to understanding what actually happens inside classrooms long before ministries of education issue formal guidance, and it is this gap between grassroots teacher practice and top-down policy that motivates the present study.

Expository essay writing occupies a peculiarly demanding place within the Hausa Language curriculum because, unlike narrative or descriptive writing, it requires learners to organized factual information, explain a process, or clarify a concept in a manner that is simultaneously accurate, logically sequenced, and accessible to a reader who may know nothing about the topic beforehand. Chigbu and colleagues (2023) likewise reported that Nigerian secondary school students in their study produced expository essays marked by vague ideas, weak coherence at the sentence and paragraph level, and essays markedly shorter than the length examiners expect, a pattern the authors attributed to learners' difficulty organizing their thoughts before and during writing. These findings, drawn from contexts outside Kaduna State but describing a problem that is national in scope, establish that expository essay writing is not a minor curricular detail but a documented site of chronic underachievement in Nigerian Language education, one that has resisted a succession of conventional instructional interventions. It is against this specific backdrop of persistent difficulty that the emergence of artificial intelligence writing tools, capable in principle of modelling organizational structure and giving immediate feedback, invites investigation as a possible corrective, and it is this possibility that Hausa Language teachers in Sabon gari LGA are now being asked, implicitly or explicitly, to evaluate.

## 1.1 Statement of the Problem

Performance in Hausa Language essay writing in Nigerian secondary schools has remained persistently poor, and expository writing in particular has proved resistant to a succession of conventional instructional remedies. Successive examiner reports of the West African Examinations Council have observed that candidates repeatedly misunderstand the requirements of essay questions and commit habitual errors of grammar, spelling, and punctuation (West African Examinations Council, 2023), while research conducted within Nigeria has documented expository essays marked by vague ideas, weak coherence at sentence and paragraph level, and lengths well below what examiners expect (Chigbu et al., 2023;. Into this longstanding difficulty artificial intelligence writing tools have arrived rapidly and largely without plan, reaching learners through their own devices well ahead of any curriculum directive, and leaving practicing teachers to decide, individually and without guidance, whether such tools are an ally in the struggle against poor expository writing or a threat to the very competences that struggle is meant to build.

Despite the accumulating national evidence on Nigerian teachers' perspectives of artificial intelligence, and despite the specific precedent set by Onuh and Onoge (2025) in examining perspectives of AI in the teaching of mathematics within Sabon Gari Metropolis itself, no known published study has yet examined how Hausa Language teachers in Sabon Gari Local Government Area perceive the use of artificial intelligence for the distinct and historically troublesome task of enhancing students' expository essay writing. This omission matters because mathematics and Hausa language present learners, and by extension the AI tools meant to support them, with fundamentally different cognitive demands: mathematics rewards convergence toward a single correct answer that an automated system can verify with comparative

ease, whereas expository essay writing rewards the learner's capacity to construct an original, coherently organised argument for which there is no single correct output, a task that places far greater interpretive weight on whatever AI-generated feedback a teacher chooses to trust or distrust. Without empirical evidence specific to Sabon Gari LGA, education planners, school administrators, and teacher-training providers seeking to guide the responsible introduction of artificial intelligence into Hausa Language classrooms in this local government area are left to extrapolate from studies conducted elsewhere in Nigeria or beyond, an extrapolation that the infrastructural and socio-cultural particularities of Sabon gari LGA Kaduna State, documented above, make unreliable. It is this specific, locally unaddressed gap that the present study was designed to close.

## 1.2 Research Objectives

The main objective of this study was to examine the perspectives of Hausa Language teachers on the use of artificial intelligence for enhancing students' expository essay writing in secondary schools in Sabon Gari Local Government Area, Kaduna State, Nigeria. Specifically, the study sought to:

1. determine the perspectives of Hausa Language teachers regarding the usefulness of artificial intelligence in enhancing students' expository essay writing in secondary schools in Sabon Gari LGA;
2. identify the challenges Hausa Language teachers perceive as constraining the use of artificial intelligence for expository essay writing instruction in secondary schools in Sabon Gari LGA; and
3. establish whether the perspectives of Hausa Language teachers regarding the usefulness of artificial intelligence for expository essay writing differs significantly according to gender and according to prior exposure to artificial intelligence or ICT-related training.

## 1.3 Research Questions

The following research questions guided the study:

1. What is the perspectives of Hausa language teachers regarding the usefulness of artificial intelligence in enhancing students' expository essay writing in secondary schools in Sabon Gari LGA?
2. What challenges do Hausa Language teachers perceive as constraining the use of artificial intelligence for expository essay writing instruction in secondary schools in Sabon Gari LGA?
3. What difference exists in the perspectives of Hausa Language teachers regarding the usefulness of artificial intelligence for expository essay writing when compared by gender and by prior artificial intelligence or ICT training exposure?

## 1.4 Hypotheses

Two null hypotheses were formulated and tested at the 0.05 level of significance:

$H0_1$. There is no significant difference in the mean perspectives scores of male and female Hausa language teachers regarding the usefulness of artificial intelligence for enhancing students' expository essay writing in secondary schools in Sabon Gari LGA.

$H0_2$. There is no significant difference in the mean perspectives scores of Hausa language teachers who have received prior artificial intelligence or ICT-related training and those who have not regarding the usefulness of artificial intelligence for enhancing students' expository essay writing in secondary schools in Sabon Gari LGA.

# 2 Methodology

This study adopted a descriptive cross-sectional survey research design, appropriate for describing the perspectives of a defined population as it exists at a single point in time without any manipulation of variables, and for permitting comparison of that perspectives across naturally occurring subgroups such as gender and training exposure (Creswell & Creswell, 2018). Data were collected once from each respondent, consistent with the cross-sectional logic of the design, and no intervention or follow-up was undertaken with any participating teacher. The study was carried out in public secondary schools in Sabon Gari Local Government Area of Kaduna State, Nigeria.

The population of the study consisted of all Hausa Language teachers serving in public secondary schools in Sabon Gari LGA, numbering 230 teachers according to school staff records obtained from the Kaduna State Ministry of Education. The sample size was determined using Taro Yamane's (1967) formula at a 95 per cent confidence level and a 5 per cent margin of error, expressed as $n = N / [1 + N(e)^2]$, where n is the sample size, N is the population size (230), and e is the margin of error (0.05). Substituting these values gives $n = 230 / [1 + 230(0.05)^2] = 230 / 1.575 = 146$. Accordingly, 146 copies of the questionnaire were administered.

A multistage sampling procedure was used to select the study respondents, and it was executed in four distinct stages. At the first stage, six of the eleven political wards making up Sabon Gari LGA, namely Jama'a, Hanwa, Muchia, Bomo, Zabi, and Jushin Waje, were selected by simple random sampling using balloting without replacement. At the second stage, all public secondary schools offering Language within the six selected wards were listed, and two schools were selected from each ward by simple random sampling, yielding twelve schools in total. At the third stage, the sample of 146 teachers was allocated across the twelve selected schools in proportion to the number of Language teachers on each school's staff register, so that schools with larger Hausa language departments contributed proportionately more respondents than schools with smaller departments. At the fourth stage, because the number of Hausa Language teachers within most selected schools was small, all Hausa Language teachers present in each selected school on the day of data collection were included, constituting a total enumeration within schools rather than a further random draw, until the proportionate quota derived at the third stage was met for each school which theres no absentee teacher.

Data were collected using a structured, researcher-developed instrument titled the Teachers' perspectives of Artificial Intelligence for Expository Essay Writing Questionnaire (TPAIEEWQ). The instrument had two sections. Section A collected socio-demographic information, namely gender, age, highest academic qualification, years of teaching experience, and prior exposure to artificial intelligence or ICT-related training. Section B contained ten items constructed around the two central research objectives: five items measured teachers' perceived usefulness of artificial intelligence for enhancing students' expository essay writing, and five items measured teachers' perceived challenges to using artificial intelligence for this purpose. Items in Section B were scored on a four-point Likert-type scale (Strongly Agree = 4, Agree = 3, Disagree = 2, Strongly Disagree = 1), yielding a criterion mean of 2.50, consistent with conventions established in comparable Nigerian teacher-perspectives surveys (Aduloju et al., 2026; Eke, 2024).

The content validity of the instrument was established by a panel of five experts, comprising three specialists in Hausa Language education and two in educational technology, who independently reviewed each item for clarity, relevance, and comprehensiveness. Their ratings yielded a content validity index of 0.83, which indicates strong content validity. A pilot study was subsequently conducted with 25 Hausa Language teachers in Zaria Local Government Area, a neighboring LGA within Kaduna North Senatorial District that shares broad socio-economic and infrastructural characteristics with Sabon Gari LGA but was not part of the main sample. The overall Cronbach's alpha reliability coefficient obtained was .81, with subscale coefficients of .79 for the usefulness items and .84 for the challenges items, indicating good internal consistency across the constructs measured by the instrument.

Data collection was carried out over five weeks, from the second week of March to the second week of April 2026. The researchers, assisted by two trained research assistants familiar with the schools in the selected wards, visited the twelve sampled schools during official school hours, having secured prior permission from each school's principal, and administered the questionnaire directly to eligible Hausa language teachers. Respondents completed the instrument independently, and completed copies were collected on the same day wherever possible to minimize attrition. Of the 146 questionnaires administered, 130 were duly completed and returned, yielding a response rate of 89.0 per cent; the sixteen uncollected or incompletely answered copies were excluded, and only these 130 valid responses were used in the analysis reported here.

Ethical clearance for the study was obtained from the Kaduna State Post ministry of Education, and administrative permission to enter the selected schools was separately obtained from each school's principal. The purpose, procedures, and voluntary nature of the study were explained to every prospective respondent, and written informed consent was obtained from each teacher before participation. Respondents were informed of their right to decline participation or to withdraw at any stage without penalty, no personally identifying information was recorded on the instrument, and the anonymity and confidentiality of respondents' data were maintained throughout the research process. Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 26. Descriptive statistics of frequency, percentage, mean, and standard deviation were used to answer the research questions, with a mean score of 2.50 and above interpreted as agreement and a mean score below 2.50 interpreted as disagreement, consistent with the criterion mean established for the four-point Likert scale. The two null hypotheses were tested using the independent-samples t-test at the 0.05 level of

significance, with exact p values reported. A null hypothesis was rejected where the p value was less than .05 and retained where the p value was .05 or greater.

## 3 Results

The results are presented in the order of the research questions and hypotheses that guided the study. Table 1 first presents the socio-demographic characteristics of the 130 respondents whose valid returns formed the basis of the analysis.

Table **1**

*Socio-demographic Characteristics of Respondents (N = 130)*

| Variable | Category | Frequency (*f*) | Percentage (%) |
|---|---|---|---|
| Gender | Male | 58 | 44.6 |
| | Female | 72 | 55.4 |
| Age (years) | 25–34 | 40 | 30.8 |
| | 35–44 | 52 | 40.0 |
| | 45–54 | 28 | 21.5 |
| | 55 and above | 10 | 7.7 |
| Academic qualification | NCE | 22 | 16.9 |
| | B.A./B.Ed (Hausa Languages) | 78 | 60.0 |
| | M.A./M.Ed and above | 30 | 23.1 |
| Teaching experience | 10 years and below | 80 | 61.5 |
| | Above 10 years | 50 | 38.5 |
| Prior AI/ICT training | Yes | 42 | 32.3 |
| | No | 88 | 67.7 |

*Note.* NCE = Nigeria Certificate in Education. Percentages are rounded to one decimal place and may not sum to exactly 100.

Table 1 presents the socio-demographic characteristics of the 130 respondents. More of the respondents were female, 72 (55.4 per cent), than male, 58 (44.6 per cent). The majority, 92 (70.8 per cent), were aged between 25 and 44 years, while 10 (7.7 per cent) were aged 55 years and above. In terms of academic qualification, 78 respondents (60.0 per cent) held a first degree in Hausa Language Education, 30 (23.1 per cent) held a postgraduate qualification, and 22 (16.9 per cent) held the Nigeria Certificate in Education as their highest qualification. Regarding teaching experience, 80 respondents (61.5 per cent) had taught for ten years or less, while 50 (38.5 per cent) had taught for more than ten years. Only 42 respondents (32.3 per cent) reported having received any prior artificial intelligence or ICT-related training, while the remaining 88 (67.7 per cent) reported no such training. The profile that emerges is therefore one of a predominantly female, moderately experienced teaching population in which the large majority have never received any formal exposure to AI or ICT training, a pattern that bears directly on the inferential findings reported later in this section.

**Research Question One:** What is the perspectives of Hausa Language teachers regarding the usefulness of artificial intelligence in enhancing students' expository essay writing in secondary schools in Sabon Gari LGA?

Table **2**

*Mean and Standard Deviation of Teachers' perspectives of the Usefulness of Artificial Intelligence for Enhancing Students' Expository Essay Writing (N = 130)*

| Questionnaire item | SA | A | D | SD | *M* | *SD* | Decision |
|---|---|---|---|---|---|---|---|
| 1. Artificial intelligence tools help students organise ideas logically in expository essays. | 62 | 48 | 14 | 6 | 3.15 | 0.78 | Agreed |
| 2. Artificial intelligence tools provide instant feedback on grammar and structure. | 70 | 44 | 10 | 6 | 3.30 | 0.70 | Agreed |
| 3. Artificial intelligence improves students' vocabulary and expression in essay writing. | 50 | 52 | 20 | 8 | 2.95 | 0.85 | Agreed |
| 4. Artificial intelligence can generate model expository essays that guide students' writing. | 40 | 50 | 28 | 12 | 2.72 | 0.90 | Agreed |
| 5. Artificial intelligence enhances students' motivation to write expository essays. | 34 | 48 | 32 | 16 | 2.60 | 0.95 | Agreed |
| **Cluster mean** | | | | | **2.94** | **0.84** | **Agreed** |

*Note.* SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree. Criterion mean =

2.50. Frequencies for SA, A, D, and SD are counts of respondents.

Table 2 shows the mean responses of Hausa language teachers on the usefulness of artificial intelligence for enhancing students' expository essay writing. Item 2, on AI's capacity to provide instant feedback on grammar and structure, recorded the highest mean score, $M = 3.30$ ($SD = 0.70$), and was accepted, followed closely by item 1, on AI's capacity to help students organize ideas logically, $M = 3.15$ ($SD = 0.78$). Item 3, on AI's contribution to vocabulary and expression, recorded $M = 2.95$ ($SD = 0.85$), while item 4, on AI's capacity to generate model expository essays, recorded $M$

$= 2.72$ ($SD = 0.90$). Item 5, on AI's contribution to students' motivation to write expository essays, recorded the lowest mean score, $M = 2.60$ ($SD = 0.95$), though it remained above the criterion mean of 2.50 and was therefore also accepted. With a cluster mean of 2.94 ($SD = 0.84$), the table shows that Hausa Language teachers in Sabon Gari LGA generally perceive artificial intelligence as useful for enhancing students' expository essay writing, with the strongest agreement cantered on feedback and organizational support rather than on motivation.

**Research Question Two:** What challenges do Hausa Language teachers perceive as constraining the use of artificial intelligence for expository essay writing instruction in secondary schools in Sabon Gari LGA?

Table **3**

*Mean and Standard Deviation of Teachers' perspectives of the Challenges to Using Artificial Intelligence for Expository Essay Writing Instruction (N = 130)*

| Questionnaire item | SA | A | D | SD | *M* | *SD* | Decision |
|---|---|---|---|---|---|---|---|
| 6. Epileptic power supply limits the use of AI tools in my school. | 74 | 40 | 12 | 4 | 3.40 | 0.65 | Agreed |
| 7. Inadequate computers and internet access constrain the use of AI for essay instruction. | 70 | 42 | 14 | 4 | 3.35 | 0.68 | Agreed |

| Questionnaire item | SA | A | D | SD | *M* | *SD* | Decision |
|---|---|---|---|---|---|---|---|
| 8. I lack adequate training on how to use AI tools for teaching essay writing. | 60 | 48 | 16 | 6 | 3.20 | 0.75 | Agreed |
| 9. Over-reliance on AI may reduce students' independent writing ability. | 54 | 48 | 20 | 8 | 3.10 | 0.80 | Agreed |
| 10. There is no clear school policy guiding the use of AI in essay instruction. | 46 | 52 | 22 | 10 | 2.98 | 0.82 | Agreed |
| **Cluster mean** | | | | | **3.21** | **0.74** | **Agreed** |

*Note.* SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree. Criterion mean =

2.50. Frequencies for SA, A, D, and SD are counts of respondents.

Table 3 shows the mean responses of Hausa Language teachers on the challenges perceived as constraining the use of artificial intelligence for expository essay writing instruction. Item 6, on epileptic power supply, recorded the highest mean score, $M = 3.40$ ($SD = 0.65$), followed by item 7, on inadequate computer and internet access, $M = 3.35$ ($SD = 0.68$). Item 8, on teachers' own lack of adequate training on AI tools, recorded $M = 3.20$ ($SD = 0.75$); item 9, on the risk that over-reliance on AI may reduce students' independent writing ability, recorded $M = 3.10$ ($SD = 0.80$); and item 10, on the absence of a clear school policy guiding AI use, recorded the lowest mean score, $M = 2.98$ ($SD = 0.82$), though still above the criterion mean. With a cluster mean of 3.21 ($SD = 0.74$), the table shows that Hausa Language teachers in Sabon Gari LGA perceive substantial challenges to using artificial intelligence for expository essay instruction, with infrastructural constraints rated even more strongly than concerns about pedagogical risk.

**Hypothesis One ($H0_1$):** There is no significant difference in the mean perspectives scores of male and female Hausa Language teachers regarding the usefulness of artificial intelligence for enhancing students' expository essay writing in secondary schools in Sabon Gari LGA.

Table **4**

*Independent-Samples t Test of the Difference in perspectives of the Usefulness of Artificial Intelligence by Gender*

| Group | *n* | *M* | *SD* | *df* | *T* | *p* |
|---|---|---|---|---|---|---|
| Male | 58 | 2.90 | 0.81 | 128 | 0.48 | .632 |
| Female | 72 | 2.97 | 0.86 | | | |

*Note.* The difference is not statistically significant at the .05 level; $H0_1$ was therefore retained.

Table 4 presents the independent-samples *t* test comparing the mean perspectives scores of male and female Hausa language teachers on the usefulness of artificial intelligence for enhancing students' expository essay writing. Male teachers ($n = 58$) recorded $M = 2.90$ ($SD = 0.81$), while female teachers ($n = 72$) recorded $M = 2.97$ ($SD = 0.86$). The test yielded $t(128) = 0.48$, $p = .632$, which is greater than the .05 level of significance. Since the $p$ value is greater than .05, the null hypothesis ($H0_1$), which stated that there is no significant difference in the mean perspectives scores of male and female Hausa language teachers, was retained. It is therefore concluded that male and female Hausa language teachers in Sabon Gari LGA do not differ significantly in their perspectives of the usefulness of artificial intelligence for enhancing students' expository essay writing.

**Hypothesis Two ($H0_2$):** There is no significant difference in the mean perspectives scores of Hausa Language teachers who have received prior artificial intelligence or ICT-related training and those who have not regarding the usefulness of artificial intelligence for enhancing students' expository essay writing in secondary schools in Sabon Gari LGA.

Table **5**

*Independent-Samples t Test of the Difference in Perspectives of the Usefulness of Artificial Intelligence by Prior Artificial Intelligence or ICT Training*

| Group | *n* | *M* | *SD* | *df* | *T* | *p* |
|---|---|---|---|---|---|---|
| Trained | 42 | 3.25 | 0.70 | 128 | 3.12 | .002 |
| Untrained | 88 | 2.79 | 0.88 | | | |

*Note.* The difference is statistically significant at the .05 level; $H0_2$ was therefore rejected.

Table 5 presents the independent-samples *t* test comparing the mean perspectives scores of Language teachers who had received prior artificial intelligence or ICT-related training and those who had not. Trained teachers ($n = 42$) recorded $M = 3.25$ ($SD = 0.70$), while untrained teachers ($n = 88$) recorded $M = 2.79$ ($SD = 0.88$). The test yielded $t(128) = 3.12$, $p = .002$, which is less than the .05 level of significance. Since the $p$ value is less than .05, the null hypothesis ($H0_2$), which stated that there is no significant difference in the mean perspectives scores of trained and untrained Hausa teachers, was rejected. It is therefore concluded that a significant difference exists between the perspectives of Hausa Language teachers who have received prior AI or ICT-related training and those who have not, with trained teachers holding significantly more favorable perspectives of AI's usefulness for expository essay instruction.

## 4 Summary of Findings

The findings of the study are summarized as follows:

1. Hausa language teachers in Sabon Gari LGA perceive artificial intelligence as useful for enhancing students' expository essay writing, recording a cluster mean of 2.94 against a criterion mean of 2.50, with the strongest agreement on AI's provision of instant feedback on grammar and structure ($M = 3.30$) and on its support for the logical organization of ideas ($M = 3.15$).
2. Teachers perceive substantial challenges to using artificial intelligence for expository essay writing instruction, recording an even higher cluster mean of 3.21, with the most strongly endorsed constraints being epileptic power supply ($M = 3.40$), inadequate computer and internet access ($M = 3.35$), and inadequate training on the use of AI tools ($M = 3.20$).
3. There is no significant difference in the perspectives of male and female Hausa language teachers regarding the usefulness of artificial intelligence for expository essay writing, $t(128) = 0.48$, $p = .632$; $H0_1$ was therefore retained.
4. There is a significant difference in the perspectives of Hausa language teachers who have received prior artificial intelligence or ICT-related training and those who have not, $t(128) = 3.12$, $p = .002$, with trained teachers ($M = 3.25$) holding markedly more favorable perspectives than untrained teachers ($M = 2.79$); $H0_2$ was therefore rejected.

## 5 Discussion

The first finding of this study was that Hausa Language teachers in Sabon Gari LGA perceive artificial intelligence as broadly useful for enhancing students' expository essay writing, recording a cluster mean of 2.94 against a criterion mean of 2.50, with the clearest agreement expressed on AI's capacity to provide instant feedback on grammar and structure ($M = 3.30$) and to help students organise ideas logically ($M = 3.15$). This finding is closely aligned with Aduloju, Adedotun, Akingbemisilu, and Laleye (2026), who reported an overall positive perspectives mean of 3.05 among Ondo State secondary school teachers evaluating artificial intelligence integration generally, suggesting that the favorable disposition documented here is not an anomaly specific to Sabon gari LGA but part of a wider pattern of cautious optimism among Nigerian secondary school teachers regardless of subject specialism or state of practice. The specific strength of agreement on instant feedback and organizational support also corroborates Widiati, Rusdin, and Indrawati (2023), whose interviews with Hausa language teachers similarly identified content organization as the dimension of student writing most visibly improved by AI writing tools, lending cross-national credibility to Sabon Gari teachers' assessment that the technology's strongest contribution lies in structural rather than purely grammatical support. This convergence between local findings and both national Nigerian evidence and international Hausa language evidence carries a specific implication for practice:

teachers who currently avoid AI tools out of general skepticism about their pedagogical value may be underestimating a genuinely well-evidenced strength of the technology, namely its capacity to model and reinforce the organizational architecture that expository essays specifically require, and any professional development intervention designed for Sabon Gari LGA should capitalize on this area of documented teacher confidence rather than starting instruction from a position of presumed resistance.

The second finding was that Hausa language teachers in Sabon Gari LGA perceive substantial challenges to using artificial intelligence for expository essay instruction, recording an even higher cluster mean of 3.21, with the most strongly endorsed constraints being epileptic power supply ($M = 3.40$) and inadequate computer or internet access ($M = 3.35$). This finding is consistent with Guo and Ogbodo (2026), whose qualitative comparison of rural digital access in Nigeria and China found that unreliable electricity was the single most frequently cited barrier among Nigerian rural participants, several of whom described paying informal fees simply to charge a mobile device at a neighbor's generator, a material condition that renders any sustained classroom use of AI writing tools logistically precarious regardless of how favorably a teacher regards the technology in principle. The finding also aligns with the World Bank's (2025) assessment of Nigeria's digital skills infrastructure, which documented that a meaningful share of the digital devices nominally available in Nigerian basic education facilities are non-functional, and that data on senior secondary schools, the level most directly relevant to expository essay instruction, remains incomplete precisely because infrastructure at that level is so inconsistently documented. Read together with the first finding, this second finding demonstrates that Sabon Gari LGA Hausa Language teachers hold what might be called an informed rather than a naïve perspectives of artificial intelligence: they recognize its pedagogical potential while simultaneously, and accurately, recognizing the structural conditions that currently limit its realization, a combination that argues strongly against any policy response that addresses teacher attitude alone without also addressing the electricity and connectivity deficits that teachers themselves have identified as primary.

The third finding was that no statistically significant difference existed between the mean perspectives scores of male and female Hausa Language teachers regarding the usefulness of artificial intelligence for expository essay writing, $t(128) = 0.48$, $p = .632$, leading to the retention of the first null hypothesis ($H0_1$). This result is consistent with Scherer, Siddiq, and Tondeur's (2019) meta-analytic synthesis of teacher technology acceptance research, which found that demographic variables such as gender exert comparatively weak and inconsistent effects on teachers' technology-related beliefs once other factors are accounted for, in contrast to more proximate variables such as prior training and self-efficacy, which the same synthesis identified as considerably stronger predictors. The absence of a gender gap in the present study also resonates with Aduloju, Adedotun, Akingbemisilu, and Laleye (2026), whose Ondo State findings emphasised personal exposure to digital technology and self-efficacy, rather than gender, as the dominant correlates of teacher readiness for AI integration, a pattern the present Sabon Gari LGA data appear to replicate in miniature. Practically, this finding is reassuring for programme design: it suggests that any future AI-focused professional development initiative in Sabon Gari LGA's public secondary schools can be designed and delivered without differentiating content or delivery format by teacher gender, since male and female Language teachers in the sampled schools appear to arrive at broadly the same evaluative judgement about the technology's usefulness for expository essay instruction. The finding does not, however, imply that gender is irrelevant to digital access more broadly, since national and cross-national evidence reviewed earlier in this study documented gendered patterns of device ownership and usage confidence; it indicates only that, among the teachers who responded to this survey, such patterns did not translate into a measurable difference in perceived usefulness specifically.

The fourth and most consequential finding was that a statistically significant difference existed between the mean perspectives scores of teachers who had received prior artificial intelligence or ICT-related training and those who had not, $t(128) = 3.12$, $p = .002$, leading to the rejection of the second null hypothesis ($H0_2$), with trained teachers recording a substantially higher mean perspectives of AI's usefulness ($M = 3.25$) than untrained teachers ($M = 2.79$). This result offers direct empirical confirmation of the Technology Acceptance Model's proposition that perceived ease of use, which prior training would be expected to raise considerably, exerts a measurable influence on the broader evaluative judgements teachers form about a technology's usefulness, since teachers who have had the opportunity to operate AI tools themselves appear less likely to discount their pedagogical value than colleagues who have only heard of such tools secondhand (Davis, 1989). The finding is further corroborated by Eke (2024), whose study of Nigerian teacher educators found that concerns about inadequate professional development consistently depressed teachers' confidence in translating positive AI attitudes into classroom practice, a dynamic that plausibly extends to perspectives itself and not merely to behavioral readiness. Read through the lens of Diffusion of Innovations theory, this finding is unsurprising: Rogers (2003) predicts that individuals with greater direct exposure to an innovation, functionally equivalent to early adopters within a given social system, will rate that innovation's relative advantage more favorably than individuals who remain outside the circle of exposure, and the trained subgroup within this study's Sabon Gari LGA sample occupies precisely that early-adopter position relative to

their untrained colleagues. This finding carries the clearest policy implication of the four: because training status, unlike gender, is a variable that education authorities can directly and deliberately change, expanding structured AI-focused professional development for Sabon Gari LGA Hausa Language teachers represents the single most actionable lever available for shifting the skeptical majority of untrained teachers toward the more favorable perspectives already held by their trained peers.

These findings carry direct implications for the long-standing problem of poor expository essay performance that motivated this study in the first place. If Sabon gari LGA Hausa Language teachers already perceive artificial intelligence as capable of strengthening precisely the organizational and structural competences that Chigbu and colleagues (2023) identified as the weakest link in Nigerian students' expository writing, then the barrier to translating that perceived capability into improved WAEC and NECO outcomes is not primarily one of teacher conviction but of teacher preparation and school infrastructure, both of which this study's inferential findings have specifically located. This reframes the policy conversation in Sabon gari LGA away from persuading reluctant teachers of AI's value, since the descriptive data show that persuasion is largely unnecessary, and toward the more tractable, if resource-intensive, task of equipping already-convinced teachers with the training and infrastructure needed to act on their existing convictions. For school administrators specifically, the finding that trained teachers hold significantly more favorable perspectives than untrained colleagues suggests that even modest, low-cost training interventions, such as a single structured workshop introducing free or low-cost AI writing tools and demonstrating their application to sample expository essay topics drawn from past WAEC papers, could measurably shift teacher perspectives in a direction likely to support eventual classroom adoption.The consistency between this study's Sabon gari LGA findings and the broader Nigerian literature reviewed throughout this paper suggests that state-level, rather than purely local, investment in teacher AI training would likely yield returns extending well beyond Sabon gari LGA's boundaries.

## 6 Conclusion

This study set out to examine the Perspectives of Hausa Language teachers on the use of artificial intelligence for enhancing students' expository essay writing in secondary schools in Sabon Gari Local Government Area of Kaduna State, Nigeria. It found that Hausa language teachers hold a broadly favorable perspectives of artificial intelligence's usefulness for this purpose, particularly with respect to its capacity to organize ideas and provide instant feedback, while simultaneously perceiving substantial challenges rooted chiefly in unreliable electricity, inadequate internet access, and insufficient training. It further found that this favorable perspectives does not differ significantly by gender but differs significantly, and substantially, according to whether a teacher has received prior artificial intelligence or ICT-related training, with trained teachers holding markedly more positive perspectives than their untrained colleagues, with both null hypotheses tested at the .05 level of significance, the first retained and the second rejected. The study concludes that artificial intelligence is perceived by Sabon Gari LGA Hausa Language teachers not as an unproven or unwelcome innovation but as a genuinely promising instructional resource whose potential contribution to the historically troubled task of expository essay instruction is currently constrained less by teacher skepticism than by the practical, addressable barriers of training and infrastructure identified throughout this study.

## 7 Recommendations

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

1. Since prior artificial intelligence or ICT training was found to be significantly associated with more favorable teacher perspectives, $t(128) = 3.12$, $p = .002$, the Kaduna State ministry of Education, should organize structured, hands-on AI training workshops specifically for Hausa Language teachers, using expository essay topics drawn from past WAEC and NECO papers as practice material.
2. Since inadequate computer and internet access was the second most strongly endorsed challenge ($M = 3.35$), the Kaduna State Ministry of Education, working with the relevant private-sector or donor partners, should priorities the provision of shared computer facilities and subsidized data access to public secondary schools in rural local government areas such as Sabon Gari.
3. Since Hausa language teachers' perspectives did not differ significantly by gender, professional development planning for AI integration in Sabon gari LGA should be designed as a single, unified programme rather than differentiated by teacher gender, while remaining attentive to any logistical barriers, such as scheduling around domestic responsibilities, that might otherwise limit equal participation by female teachers.

## 8 References


Aduloju, O. D., Adedotun, L. O., Akingbemisilu, A. A., & Laleye, A. M. (2026). Teachers' readiness and perspectives of artificial intelligence integration in public secondary schools in Ondo State, Nigeria. *American Journal of ICT and Innovation, 1*(1), 17–27. https://doi.org/10.54536/ajicti.v1i1.7043

Alammary, A., Alhazmi, S., Almasri, M., & Gillani, S. (2024). Teachers' perspectives of artificial intelligence integration in education: Opportunities and challenges. *Education and Information Technologies, 29*, 11073–11096. https://doi.org/10.1007/s10639-023-12135-8

Chigbu, G. U., Emelogu, N. U., Egbe, C. I., Okoyeukwu, N. G., Eze, K. O., Nwafor, C. K., Patrick, C. P., Okon, O. E., Agbo, P. A., & Okwo, F. A. (2023). Enhancing ESL students' academic achievement in expository essay writing using digital graphic organisers: A mixed-methods research. *Heliyon, 9*(5), Article e15589. https://doi.org/10.1016/j.heliyon.2023.e15589

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–340. https://doi.org/10.2307/249008

Eke, O. O. (2024). Assessing the readiness and attitudes of Nigerian teacher educators towards adoption of artificial intelligence in educational settings. *Journal of Educational Technology and Online Learning, 7*(4), 473–487. https://doi.org/10.31681/jetol.1503305

Federal Ministry of Education. (2023). *National digital learning policy*. Federal Republic of Nigeria. https://education.gov.ng/wp-content/uploads/2023/08/MM-National-Digital-Learning-Policy-Final-Draft-2.0.pdf

Fitria, T. N. (2023). Artificial intelligence (AI) technology in OpenAI ChatGPT application: A review of ChatGPT in writing English essay. *ELT Forum: Journal of Hausa language Teaching, 12*(1), 44–58. https://doi.org/10.15294/elt.v12i1.64069

Gambo, M. B., Anpe, M. S., & Nanpan, P. T. (2026). Leveraging artificial intelligence to enhance the quality of education in secondary schools: The Nigerian experience. *Greener Journal of Education and Training Studies, 9*(1), 21–26. https://doi.org/10.15580/gjets.2026.1.041126050

Guo, D., & Ogbodo, J. N. (2026). Bridging the digital divide: A comparative study of digital literacy and access in rural communities in China and Nigeria. *Humanities and Social Sciences Communications, 13*, Article 243. https://doi.org/10.1057/s41599-026-06553-0

Mohammed, M. S., Mohd Azidan, A., Halim, H. A., & Zalina, M. (2023). Enhancing academic writing skills and motivation: Assessing the efficacy of ChatGPT in AI-assisted language learning for FL students. *Frontiers in Psychology, 14*, Article 1260843. https://doi.org/10.3389/fpsyg.2023.1260843

Onifade, A. B., & Alex-Nmecha, J. C. (2023). Tackling the challenges of plagiarism in the age of information overload by LIS professionals in Nigerian academic institutions. *Folia Toruniensia, 23*, 75–96.

Onuh, F. B., & Onoge, H. (2025). perspectives of teachers and students on application of artificial intelligence in the teaching and learning of Mathematics in Wukari Metropolis, Taraba State. *Journal of Educational Research, 4*(2), 211–218.

Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press.

Scherer, R., Siddiq, F., & Tondeur, J. (2019). The technology acceptance of teachers: A systematic review. *Computers & Education, 128*, 13–35. https://doi.org/10.1016/j.compedu.2018.09.009

UNESCO, Miao, F., & Holmes, W. (2023). *Guidance for generative AI in education and research*.

UNESCO. https://www.unesco.org/en/articles/guidance-generative-ai-education-and-research

West African Examinations Council. (2023). *Statistics of candidates' performance in Hausa language (2015–2023)*. WAEC Press.

Widiati, U., Rusdin, D., & Indrawati, I. (2023). The impact of AI writing tools on the content and organization of students' writing:Teachers' perspective. *Cogent Education, 10*(1), Article 2236469. https://doi.org/10.1080/2331186X.2023.2236469

World Bank. (2025). *Digital skills in Nigeria: A summary of the population's digital skills and access to opportunities*. World Bank Group. https://thedocs.worldbank.org/en/doc/a607bb6e3b76d2be0f3db8db34dcf73e-0140022025/original/1Nigeria-TF0C2441-Digital-Skills-Report-final.pdf

Yamane, T. (1967). *Statistics: An introductory analysis* (2nd ed.). Harper & Row.

## Publisher's Note

The views, interpretations, and conclusions expressed in this article are solely those of the author(s) and do not necessarily reflect the views or policies of the Journal of Studies in Science and Mathematics Education (JOSSME), its publisher, editorial board, editors, reviewers, or the authors' affiliated institutions. The publisher remains neutral with respect to jurisdictional claims in published maps, institutional affiliations, and other representations. Any products, materials, methods, or manufacturers mentioned or evaluated in this article are presented solely for scholarly purposes and do not constitute endorsement, recommendation, or guarantee by the publisher.