



ASEAN Journal of Educational Research and Technology



Journal homepage: <https://ejournal.bumipublikasinusantara.id/index.php/ajert>

Effect of Multimedia Instructional Approach on English Writing Performance of Pre-service Technical Teachers in South-Western Nigeria

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ABSTRACTS

This study examined the Effect of the Multimedia Instructional Approach (MIA) on the English writing performance of pre-service technical teachers in Southwestern Nigeria. The study adopted a quasi-experimental design of the pre-test post-test non-equivalent control group design to compare the performance of students who are exposed to MIA and those that are not. The population for this study consists of the college of education students located in the South-West geo-political zone of Nigeria. Four Colleges of Education were purposively sampled out of the 7 state-owned colleges of education from southwestern Nigeria. The following research instruments were adopted for the study: English Writing Performance Tests (EWPT) set A; EWPT Set B; and Multimedia Instructional Software Package. The reliability coefficient of the instruments was calculated at a reliability coefficient of 0.82. Mean, standard deviation, and analysis of covariance (ANCOVA) were used for data analyses at 0.05 level of significance. The findings of the study revealed that MIA was effective for teaching English language writing and there is no significant difference between males and females in the English writing performance of the pre-service technical teachers taught through MIA. This study concluded that MIA for English writing is an important variable because it is better to predict students' writing performance in the English Language than the conventional method of teaching.

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ARTICLE INFO

Article History:

Submitted/Received 03 Jan 2022

First revised 12 Feb 2022

Accepted 26 Feb 2022

First available online 08 Mar 2022

Publication date 01 Sep 2022

Keyword:

Fields of study,

Gender,

Multi-media approach.

1. INTRODUCTION

In every level of social interaction around the world, the English language has become a vital instrument. At all levels of education in Nigeria, the teaching and learning of English as a Second Language (ESL) is thoroughly embedded in the national curriculum. The English language is taught in tertiary institutions as part of the General Studies Program. It is taught as a Use of English course (UOE/USE) at universities and as English Language and Communication/Technical English in polytechnics, while it is taught as a General English course in the Department of General Studies in Education in colleges of education (GSE). The primary goal of the course, according to the National Commission for Colleges of Education, is to help students to gain fluency in the use of the language to communicate effectively.

Although, Second-language (L2) writing has long been considered to be a challenging field for second-language students and a popular one for second-language university students. The appearance of L2 writing, while it has been present for a long time, is a relatively new occurrence. The fact that in the last 30 years or more, research on the writing of L2 has achieved many firsts: first journal exclusively on the L2 in 1992 (L2 Writing Journal) (Purdue Symposium on L2 Writing). L2 writing became a separate discipline for academic studies with its disciplinary infrastructure, especially since its initial study in the 1980s and early 1990s (Hegele & Schnabel, 2021).

Writing skill is an index of language competence and use. The fundamental essence of writing is communication. The writer's primary concern is to transmit clearly in writing the code he encodes, while the main job of the reader is to decode correctly. Both writers and readers need a common language understanding to organize the structure into a comprehensible whole. Empirical research showed that teaching and learning writing have a beneficial impact on student's performance in academic and social settings in higher institutions. To enhance a more robust effect, a study on innovative ways of teaching/learning writing is highly essential. Students are more conversant with the conventional approach of teaching and learning writing which is primarily teacher-centered and learner-dependent. The traditional/conventional teaching method promotes dependence on the learner and shallow knowledge that does not promote introspection and self-orientation. The conventional approach falls short of innovation in the teaching/learning process and makes the learners docile and spoons-fed.

Therefore, learners need to be supported as self-directed, autonomous learners to provide learning opportunities. There is a need to employ instructional approaches that will enhance independent and collaborative learning opportunities, such as the Problem-based Instructional Approach (PIA), Multimedia Instructional Approach (MIA), Task-based Approach (TA), Choice Boards Approach (CBA), Jigsaw Approach (JA), etc. This study focused on the MIA because of its uniqueness in terms of collaboration and interactivity. MIA is a learner-centered style in which learners interact with media and learn at their own pace. Multimedia-based instruction would provide many interesting possibilities for language learning. Combining text, pictures, sound, and video in a range of activities is a significant advancement in Computer Application in Language Learning (CALL), but one that has not been completely exploited. The majority of multimedia apps excel in display but fall short on pedagogy and interaction. Nowadays, multimedia refers to computer-based products that are intended to be viewed and printed on a computer capable of displaying and printing text and high-quality images, playing pre-recorded audio and video, and creating new audio and video. Multimedia is of great interest to language teachers because of its capacity to integrate the four fundamental skills of listening, speaking, reading, and writing.

The MIA is an innovative instructional orientation that is bound to enliven the language classroom. It will also make pre-service teachers active and participative in the teaching/learning of writing. With today's technology, the educational system must include information technologies. The internet's fast development underscores the critical nature of web-based learning environments and opens the path for educators to reap even greater benefits from multimedia applications. Students in a multimedia classroom have opportunities to engage with various texts, which provides them with a strong foundation for the activities and material of a typical college course. It may assist students in developing their English skills via the use of multimedia: print text, film, video, radio, computer, and the internet. The essence of studying this approach is to evaluate its impact on the writing performance of pre-service technical teachers. Additionally, it offers a learning environment that encourages students to become more engaged and accountable for the learning process. This instructional approach tends to make the language classroom lively and learners' activities participative and collaborative. This approach is much better than the lecture instructional approach, where learners are docile, spoons-fed, and passive. This study focuses on gender and fields of study because studies have revealed their inconclusiveness.

Gender is a variable that could influence students' performance in multimedia instruction. Several theoretical and empirical studies have been conducted on gender issues and multimedia instructional methods generally. Girls are not socialized to take risks in the same way that males are but are encouraged to prepare ahead before starting on endeavors. This is why, when it comes to new technology such as computers, males dominate use since they are faster to pick up on how to use them. This is also because boys are more inclined to play to figure it out, while females are more likely to research how something works, the repercussions of actions, and so forth before engaging with it.

However, a study of the brain reveals that female brains are stronger in the left hemisphere which is rules language. As a result, they do better when tested for language ability and speech articulation than their male counterparts. Some gender differences in Second Language learning are social-culturally bound because it is more acceptable in some cultures and sub-cultures than in others for men and women to communicate freely and casually with each other at work and in social situations. From these observations, it is evident that gender could play an important role in language acquisition and the use of problem-based and multimedia instruction.

Another variable worthy of consideration in this study is the students' field of study. The field of study has a correlated impact on language acquisition, especially in effective writing. This is what gave rise to the teaching of English for Specific Purpose (ESP). The focal point of ESP is that English is not taught as a subject divorced from the student as an important subject matter in the learner's profession or field of study. In the ESP class, subject matter and English teaching are combined, and such combinations can highly motivate learners because they can apply what they learn in the English classes to their main field of study. The pre-service teachers in the colleges of education in southwestern Nigeria are the focus of this study. This is because of their perceived linguistic and communicative incompetence. This is a grave shortcoming that could impair their proficiency as technocrats and models.

The general purpose of this study is to examine the effects of MIA on the English writing performance of pre-service technical teachers in Southwestern Nigeria. Specifically, the study examined the difference in the English writing performance gains of the pre-service technical teachers in the South Western Nigerian Colleges of Education taught through MIA, the difference in the English writing performance of the pre-service technical teachers exposed

to MIA based on their gender and the difference in the English writing performance of the pre-service technical teachers taught through MIA based on their fields of study.

2. REVIEW OF RELATED LITERATURE

2.1. The Concept, Process, and Dimensions of Writing

In writing, the writer looks for thoughts and linguistic resources in his long-term memory and arranges them into a composition by the different objectives and regulations that have been established for the writer (Latif, 2021). As defined by Doğan (2021), text formation is the act of creating a text that serves as a communication bridge between the writer and the reader. As a result, learning to write is not only a necessary skill for language learners, but it may also serve to reinforce language learning.

Especially in the context of English as a foreign and second language, writing is a social act that reflects the writer's communication abilities, which may be difficult to acquire and master. The primary purpose of writing is to convey information. The primary concern of the writer is to communicate clearly what he encodes in the writing, and the primary responsibility of the reader is to decode it properly. Both sides must adhere to the so-called "game rules," which are a set of guidelines developed by the writer to organize the structure into a cohesive whole based on a certain subject. To do this, both parties must follow the guidelines.

The concept of 'game rules' is what provides both the writer and the reader with common language knowledge for communication are. Writing is considered in ESL situations as an interactive activity whereby learners are expected to know who and why they have to interact with. The writer is expected to consider the reader because he/she paints a picture of the reader, who becomes an ideal reader, and attributes to this reader certain experiences, knowledge, opinions, and beliefs based on which the writer constructs his/her message, which the writer calls the message.

Without a clear sense of the audience, the writer is unable to determine what to textualize, and the consequence is an incoherent and virtually unreadable work that requires a great deal of inferential effort to be digested. In a similar spirit, writing is not a goal in itself, but rather a series of intentional actions, since, under normal conditions, writing is a continuous social activity that takes place. The implication is that when learners write for writing's sake what they write may not be meaningful or even correct in terms of structure and content.

The importance of teaching writing effectively cannot be overemphasized because of the importance of writing skills to language acquisition and use. Second Language Learners need to be helped to write appropriately and to achieve this, the teachers need to take the learners' major problems in writing into consideration if a favorable outcome is to be achieved (Yee et al., 2021). Teaching writing skills is a difficult job to do. As a result, it becomes more challenging when the students come from a variety of diverse academic backgrounds and have varying learning requirements. Teachers of writing skills have a wide range of methods and strategies from which to select when teaching their writing classes (Hussein et al., 2012). Writing as a recursive, communicative, and social activity is incompatible with time constraints.

2.2. Related Empirical Studies on the Use of Multimedia in Instruction

Because of the rapid rise of information and communication technology, computers have been used in education. The use of technology in education provides students with a more appropriate learning environment, increases interest and generates a more focused learning environment, and aids in improving student motivation. Technology plays an important role

in the learning and teaching process. The construction of audio-visual equipment, such as animation and simulation by technology devices, in particular computers, has been launched in the educational environment in line with technological advancements.

Providing multimedia throughout the teaching and learning process is one way to help students meet their academic goals. The ability to communicate in English can be improved throughout the academic year. Multimedia classes allow students to interact with a variety of texts, providing them with a solid basis in traditional university courses and their content (Joshi, 2012). To date, various media technologies such as CD-ROMs and websites have been the most likely means of improving learning. The participative nature of these technologies holds the greatest educational potential. Multimedia is experiential and it avails multiple elements such as text, animation, video, sound, and hyperlinks in which users can interact simultaneously.

Many multimedia education devices are little more than electronic page-turners at the lowest level. The interaction is restricted to the student's capacity to browse through or click a button "turn the pages". However, the fundamental benefit of interactive multimedia technology is that students may be utilized efficiently to acquire, analyze and synthesize knowledge in a more pro-active way. This greater degree of interaction may be promoted by multimedia that differentiates them from previous technologies, such as projection systems, radio, or TV. This means that multimedia is an active learning medium, whereas projectors, radio, and TV are passive ones. Interactivity is particularly important for learning facilitation because of the constructivist perspective that students learn the best when they actively build their knowledge based on their own experiences and facts.

By acceptance of constructivism as the guide for the design of many multimedia products, including three subsequent examples, the emphasis on interaction to maximize the educational potential of multimedia emerges. The constructivist perspective of education and learning is often used as a framework to create teaching and learning methods to produce multimedia learning environments in ways that support the transformation of teaching into student-centered educational settings. The practical application of technology in the teaching of courses should be incorporated as one of the principal changes in the traditional curriculum.

In computer-assisted language training, the MIA is anchored. CALL is defined as a search for the computer's use and study for language instruction and education. There were three important theoretical developments in the recent history of language instruction, namely the structural, the cognitive, and the socio-cognitive. They impacted CALL developments significantly. In the last thirty years, CALL advances are therefore divided into three different sentences: structural CALL, communicative CALL, and integrative CALL. It is also known by many other names, such as TELL, CALI, and CALL, although this area is the same. Also, the development of CALL was divided into three phases: Behavioristic CALL, Communicative CALL, and Integrative CALL (Multimedia and the Internet). Three phases as Restricted, Opened and Integrated have been several other attempts to categorize the history of CALL.

2.3. Roles of Gender and Field of Study in Language Learning

Researchers are concerned with the notion of academic performance, particularly since the university achievement of graduates is declining. After the semester or program, academic performance is defined or seen as grades of examination of the participants. The degree of performance in a certain area of study may likewise be regarded. Higher scores indicate improved academic performance. Education is a major focus of Nigerian society as

the only pathway for domestic growth is considered to be. However, this can only be accomplished if students engaged in academic activities that improve their academic performance in the citadel of learning. In turn, this will lead to the nation's technical development.

Despite such, impressive figures connected to university academics have shown that their performance has decreased. This may be because they face so many expectations and obligations of schools and non-schools. This issue is a significant problem that needs a serious and urgent solution since the academic performance of students has an impact on the quality of human resources in society. Gender concerns the distinction between men and women and how this characteristic influences their disposition and perspective of life and academia. The gender disparity in student and academic achievement is not conclusive. This required the determination of whether there is a major difference in academic performance between male and female students. In the majority of research, females are better off in school than boys on average. Girls are graduating higher and high school more highly than guys. Standardized performance tests also indicate that women are better to speak for themselves and performing reading, writing, and general knowledge exams.

3. METHODS

The study adopted a quasi-experimental design of the pre-test post-test non-equivalent control group design to compare the performance of students who are exposed to MIA and those that are not. The independent variable in this study was the use of MIA for English writing. The moderating/intervening variable was gender. The field of study while the dependent variable was the post-test performance scores of both the experimental and control group.

The population for this study consists of the college of education students that are located in the South-West geo-political zone of Nigeria. The target population was the year two (NCE II) students. The reason for their choice is because they are in the penultimate class that has been opened to lecture method in the college in year one. Year three is for teaching practice and final year learning activities. Therefore, the second-year students were more appropriate for the experimental teaching. The respondents consisted of both male and female students.

Four Colleges of Education were purposively sampled out of the seven state-owned colleges of education from southwestern Nigeria. The reason for the purposive sampling is that these are colleges that are homogenous in terms of requisite infrastructure for the experiment. Four intact classes were involved in the study: quota sampling technique was used to select five students. Each of them is from the five Departments in the School of Technical and Vocational Education. In each of the four State-owned Colleges of Education, the five students were from the five departments on the premises that they have been minoring in the English language unit of the College of Education from a hundred level. The number of technical students on enrolment in each College of Education is peculiarly very low. A total of twenty-five constant students were involved in each group. Hence, the sample for the study was one hundred students. The students in each group were of a sizeable number because of space, facility, constraint, and lack of enough computer sets in the computer laboratory.

The following research instruments were adopted for the study; English Writing Performance Tests (EWPT) set A; EWPT Set B; and Multimedia Instructional Software Package. The validity of the instrument on multimedia approach was done by seeking the opinion of the computer graphic and animation experts in the Computer Science Department and the Department of Educational Technology, University of Ilorin. The face value and content

validity were done by experts and the researcher's supervisor. His comments and those of the experts were used to validate the instrument. The reliability coefficient of the collated at reliability coefficient 0.82 and the instrument was adjudged to be reliable and consistent.

4. RESULTS AND DISCUSSION

4.1. Results

The distribution of students on gender was analyzed. The students' gender was described using a percentage as shown in **Table 1**. **Table 1** indicates that 25 (25.0%) of the respondents were in the experimental group MIA out of which 13 (13. %) were males and 12 (12.0%) were females whereas 25 (25.0%) of the respondents constituted the control group (conventional method) out of which 14 (14.0%) were males and 11 (11.0%) were females.

Table 1. Demographic Information of Participants.

Groups	Gender	Frequency (%)	Total (%)
Experimental Group II MIA	Male	12 (12.0)	25(25.0)
	Female		
Control Group (Conventional Method)	Male	14 (14.0)	25 (25.0)
	Female	11 (11.0)	
Total			50 (100.0)

4.1.1. Research Question One: What is the General Level of English Writing Performance of Pre-service Technical Teachers in South-Western Nigerian Colleges of Education?

To answer this research question, data were collected to examine the effect of multi-media teaching strategies employed in this study on pre-service technical teachers' level of English writing performance in South-Western Nigerian Colleges of Education. Based on a pre-test conducted before introducing the strategies, this was done to ascertain the respondents' previous knowledge of the concept taught. Similarly, a post-test was conducted to ascertain the effect of the strategies on the English writing performance of the respondents. The percentage was used to analyze the data collected, while the range was used to determine the overall students' English writing performance using various strategies employed in this study based on a benchmark of 0-39, 40-44, 45-49, 50-59, 60-69, and 70-100 to represent fail, poor, fair, good, very good, and excellent respectively. The results of the analysis are shown in **Table 2**.

Table 2. Descriptive Statistics on the General Level of English Writing Performance of Pre-service Technical Teachers in South-Western Nigerian Colleges of Education through MIA.

Groups		Mean	S.D.	Mean Gain	Min	Max	Remark
Experimental Group II MIA	Pre-test	52.36	9.73	25.86	32.00	63.00	Low High
	Post-test	78.22	15.62		62.00	78.00	
Control Group Conventional Approach	Pre-test	30.61	6.60	16.01	20.00	51.00	Low Average
	Post-test	46.62	5.35		39.10	62.00	

Table 2 shows the performance of students (experimental and control groups). It is revealed that the post-test scores were higher than the pre-test scores. The result indicates that students' performance scores before the treatments (*Experimental Group 32.59, 52.36, 45.36, and Control Group 30.61*) were low. However, after the treatments, the mean score

of the English writing performance of students taught with MIA was 78.22. This shows that the English writing performance of students taught with the conventional method is relatively low compared to the experimental group. Thus, MIA was the most effective for teaching English language writing.

4.1.2. Hypothesis One: There is No Significant Difference in the English Writing Performance of the Pre-service Technical Teachers Exposed to MIA Based on Their Genders.

In an attempt to determine whether there is any significant difference between male and female COE students in English writing performance of the pre-service technical teachers taught through MIA an independent t-test was conducted. **Table 3** shows this.

Table 3. t-test Analysis on the Significant Difference in the English Writing Performance of the Pre-service Technical Teachers Taught through MIA based on Gender.

Gender	N	Mean	Std.	T	Df	Sig. (2 tailed)	Remarks
Male	9	4.00	0.05	1.16	23	0.43	Retained
Female	16	3.93	0.06				
Total	25						

Table 3 shows that there is no significant difference between males and females in the English writing performance of the pre-service technical teachers taught through MIA. The result showed that, $t(23) = 1.16$, $p > 0.05$. The null hypothesis is retained. This is because the result of the t-value of 1.16 resulting in a 0.43 significance value is greater than the p-value. This implies that there is no significant difference in the English writing performance of the pre-service technical teachers taught through MIA based on their gender.

4.1.3. Hypothesis two: There is No Significant Difference in the English Writing Performance of the Pre-service Technical Teachers Taught through MIA Based on the Field of Studies.

In an attempt to determine whether there is any significant difference amongst COE students in English writing performance of the pre-service technical teachers taught through MIA based on the field of study Analysis of covariance was conducted. **Table 4** shows this.

Table 4. ANCOVA Analysis on the Significant Difference in the English Writing Performance of the Pre-service Technical Teachers Taught Through MIA based on Field of Study.

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	0.435 ^a	2	109	0.672	0.612
Intercept	1703.924	1	1703.924	10531.873	0.000
Field of study	0.435	2	0.109	0.672	0.612
Error	150.948	98	0.162		
Total	9694.097	100			
Corrected Total	151.382	99			

R Squared = .003 (Adjusted R Squared = -.001)

Table 4 reveals the results on the significant difference in the English writing performance of the pre-service technical teachers when exposed to MIA based on their field of studies. It indicates that the calculated F-value is .672 with a p-value .612 computed at a 0.05 level of

significance. Since the calculated p-value is greater than the 0.05 level of significance, the null hypothesis is retained. This means that there is no significant difference in the English writing performance of the pre-service technical teachers when exposed to MIA based on their field of studies.

4.2. Findings and Discussion

Research question 1 looked into the general level of English writing performance of pre-service technical teachers in South-Western Nigerian colleges of education. MIA was shown to be successful in teaching English language writing based on the mean score. This study's findings corroborated all of whom found that combining innovative approaches increases students' writing ability. This finding also agrees with the previous findings which reported that multimedia classrooms provided the students' chances for interacting with diverse texts that gave them a solid background in the tasks and content of mainstream college courses (Joshi, 2012). The outcome of this study indicated that there was no significant difference in the English writing performance of the pre-service technical teachers taught through the MIA based on gender. These students also achieved better than those taught with the conventional method because the experimental approaches allow them to interact and exchange experiences which serve as a knowledge pool.

The findings agree with the earlier study of the International Association for the Evaluation of Education Achievement which indicated no differences between boys and girls in fourth grade on mathematics; boys began to perform better than girls on science tests in the fourth grade. Although the author indicated that girls continue to exhibit higher verbal ability throughout high school, they begin to lose ground to boys after fourth grade on tests of both mathematical and science ability. The finding, however, contradicts the previous findings of the National Centre for Education Statistics in 2003 whose study showed that females are better at spelling and performing better on tests of literacy, writing, and general knowledge. The findings agree with the previous study which reported no significant gender difference between the performance of secondary school students in English language comprehension (Adebileje and Akinola, 2020). In addition, no significant gender difference in diagnostic testing of reading.

This study indicated that there was no significant difference in the English writing performance of the pre-service technical teachers taught through the MIA. The finding contradicts the earlier findings indicating that field of study influences language acquisition, especially in effective writing. It is in effect what informed the development of the teaching of ESP. The ESP focal point is that English is not taught as a subject separate from the students' real world; instead, it is integrated into the subject matter important to the learners.

5. CONCLUSION

Based on the discussion of the findings of this study, the following conclusions were drawn: The general level of performance of students in English writing performance in the experimental approaches and convention approaches was low before treatments but better after the treatments. This finding implies that MIA for English writing is an important variable because it better predicts students' writing performance in the English Language than the conventional method of teaching. Based on the findings and conclusions of this study, recommendations are offered to teachers, curriculum planners, textbooks writers, and publishers as well as the government on effective ways of using multimedia instructional approaches in facilitating learners' writing performance.

6. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

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