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Effect of Problem-Based Metacognitive Training Strategy on Students Achievement in English Language Composition in Abia State

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Abstract

This study investigated effect of problem-based metacognitive training strategy on students' achievement in English Language composition in Abia State. Two research questions and one hypothesis guided the Study. The study adopted a quasi-experimental pre-test–post-test control group design. The population consisted of all Senior Secondary schools one (SS1) Students in the Government owned Secondary schools in Aba Education zone. Two Secondary Schools were purposively selected for the work. One School was used for experimental group while the other was used for control group by use of balloting. Students in experimental group were taught in their intact class using Problem-based Metacognitive Training Strategy while those in control group were taught same contents in their intact class using traditional Lecture method. An English Composition Achievement Test (ELCAT) was used for data collection. The experiment lasted for eight weeks of two periods in each week. The instrument was validated by three experts, one in educational psychology, Measurement and Evaluation and English language department. It yielded a reliability coefficient of 0.84 using Cronbach's alpha. Data were analyzed using mean, standard deviation to answer the research questions while Analysis of Covariance (ANCOVA) was used to test the hypothesis at 0.05 level of significance. Major findings indicated that Problem-Based Metacognitive training Strategy facilitated higher academic achievement in Students as there was a significant difference in the mean achievement of the two training strategy groups. The study concluded that integrating problem-based training Strategy enhanced students' English language composition achievement. It was recommended that English language teachers should incorporate structured metacognitive problem-solving approaches into composition writing for sec

Keywords: Achievement, English language Composition, Problem-Based Metacognitive Training Strategy, Traditional lecture method

Introduction

English language composition remains a core component of secondary school curricula and a critical determinant of students' academic success.Composition writing requires higher-order cognitive processes such as planning, organizing, evaluating, and revising ideas. However, students' performance in composition writing has remained unsatisfactory of late. This persistent problem has often been attributed to the continued use of traditional instructional approaches that emphasize memorization and passive learning rather than strategic thinking and active engagement. Traditional lecture method has been one of the most widely used instructional strategies in schools. According to Cohen, Manion, and Morrison (2018), lecture method is a teaching approach in which the teacher verbally presents information while students listen and record key points for later study. Similarly, Gage and Berliner (1998) described the lecture method as a teacher-dominated instructional strategy in which knowledge is transmitted from the teacher to students primarily through oral explanation. Woolfolk (2016) further explained that the conventional lecture method is a traditional form of instruction in which the teacher organizes and presents subject matter while learners mainly play receptive role. In the same vein, Eggen and Kauchak (2012) defined the lecture method as a structured presentation of information by the teacher intended to communicate knowledge efficiently to a large number of learners.

Although the lecture method allows teachers to cover large amounts of content within a short period of time, it is largely teacher centered and provides limited opportunities for students to actively engage in teaching and learning processes. Aproaches which give students limited opportunity in class to contribute to learning may restrict students' ability to develop strategic thinking, creativity, and self-regulated learning skills. Consequently, there is an increasing need for instructional strategies that actively involve learners in the learning process and encourage them to think critically about their writing tasks because used in teaching the students English language composition. One instructional approach that has gained considerable attention in contemporary educational research is Problem-Based Learning (PBL). Problem-Based Learning is a learner-centered instructional approach that engages students in solving authentic and meaningful problems. The approach encourages inquiry, collaboration, and critical thinking, enabling learners to construct knowledge actively rather than passively receiving information from the teacher. Through problem-based activities, students become more involved in analyzing issues, generating ideas, and developing solutions.

Another important concept in effective learning is metacognition, which refers to individuals' awareness and regulation of their own thinking processes. Flavell (1979) described metacognition as knowledge about one's cognitive processes and the ability to regulate those processes during learning. Similarly, Oxford (1992) explained that metacognitive strategies involve planning, monitoring, and evaluating one's learning activities. In writing tasks, metacognitive strategies help students plan their ideas, monitor coherence while writing, and evaluate the effectiveness of their arguments. Research evidence indicates that the use of metacognitive strategies can significantly improve students' writing performance. For instance, Sun and Zhang (2022) reported that metacognitive strategies enable learners to set writing goals, organize ideas effectively, monitor their progress, and revise their work more efficiently. Likewise, Qin et al. (2022) found a positive relationship between students' metacognitive awareness and their writing achievement.

Several empirical studies have also demonstrated the effectiveness of metacognitive strategy instruction in language learning. Alade and Kuku (2022) reported that the use of metacognitive strategies significantly improved creative writing achievement among primary school pupils. Similarly, Sama and Ibrahim (2018) found that instruction in metacognitive learning strategies enhanced senior secondary school students' performance in narrative essay writing. In another study, Eluemuno (2014) demonstrated that explicit strategy instruction positively influenced English language performance among secondary school learners.

At the international level, studies have also confirmed the effectiveness of training in metacognitive to improving writing skills. For example, Mardiah, Sya'roin, and Junaidi (2023) reported that metacognitive training Strategy improved students' writing organization and clarity, while Chen (2024) found that metacognitive instruction enhanced writing fluency and grammatical accuracy among

learners. Despite the positive outcomes reported in previous studies, most of the existing research has examined metacognitive strategies as independent instructional interventions. Few studies have explored the integration of metacognitive strategies with problem-based learning activities, particularly in the context of English composition writing in Nigerian secondary schools. Integrating Problem-Based Learning with metacognitive training strategy may provide a dual advantage by engaging students in authentic problem solving while simultaneously encouraging them to regulate their thinking processes during writing tasks.

The persistent decline in students' performance in English composition in many Nigerian secondary schools has been linked to teacher-centered instructional approaches and limited opportunities for students to develop metacognitive awareness during writing activities. Students often demonstrate weak writing performance due to limited strategy use, poor self-monitoring, and inadequate pedagogical support (Sama & Ibrahim, 2018; Eluemuno, 2014). Given these concerns, it becomes necessary to explore innovative instructional strategies that can enhance students' engagement and improve their writing achievement. The integration of Problem-Based Learning and Metacognitive Strategy Instruction, referred to in this study as Problem-Based Metacognitive Strategy (PBMS), may provide an effective approach to improving students' performance in English Language composition writing. Therefore, this study investigates the effect of Problem-Based Metacognitive Strategy (PBMS) on students' achievement in English Language composition.

Purpose of the Study

The purpose of this study was to determine the effect of problem-based metacognitive training strategy on students' achievement in English Language composition in Abia State.

Specifically, the study sought to:

Determine the difference in the mean achievement scores of students taught using Problem-Based Metacognitive Strategy and those taught using the traditional lecture method.

Examine whether Problem-Based Metacognitive Strategy significantly influences male and female students' achievement in English composition using their pretest and posttest scores.

Research Questions

1. What are the Pretest and Posttest mean achievement scores of students trained in problem based metacognitive Strategy and those taught using the traditional lecture method?
2. What is the Pretest and Posttest mean achievement scores of male and female Students taught English composition using Problem Based Metacognitive Strategy?

Hypothesis

There is no significant difference in the mean achievement scores of students taught using Problem-Based Metacognitive Strategy and those taught using the traditional lecture method.

Methodology

The study adopted a quasi-experimental pretest–posttest control group design. Intact classes from two different schools were used. The population comprised all the students in Senior Secondary schools 1(SS1) in State owned Secondary schools in Aba education zone of Abia State 2024/2025 academic session. From the 11 Schools in the Local Government of Aba education zone. Two schools were randomly assigned to experimental group and control group respectively using balloting. The sample comprised of 111 Senior Secondary (SS1) students purposively selected from two Senior secondary schools in the Local Government area of Study. The experimental group had 53 students, 27 males and 26 females while the control group had 58 students 27 males, 31 females. The instrument used for data collection was English Language Composition Achievement Test (ELCAT). The test was in essay format. Each topic was taken from the students' scheme of work for the term. It consisted of structured essay tasks scored using a standardized marking rubric focusing on Content:10mks, organization :10 marks, Expression: 20 marks and Mechanical Accuracy 10 marks. West African Examination Council (WAEC)pattern for marking English language Essay was used in marking the students' scripts.

Students' scores were multiplied by two (2). The total score was over 100%. Validity of the instrument was established through three experts review. one from measurement and evaluation, Educational Psychology and English language department and the reliability tested on 30 SS1 students of Akirika Secondary school Ukwa East, Abia State. The reliability was determined through test and retest using Cronbach's alpha and it yielded a value of 0.84 which was considered very good for the study. The instrument was administered by the regular English language teachers (research assistants) of both schools used for experimental and control groups. Research questions were answered using mean and standard deviation while the hypothesis was tested at 0.05 level of significance using ANOVA

Experimental Procedure

The experimental group was taught English language composition using the Problem-Based Metacognitive Strategy (PBMS). The first week was used to train the students in metacognitive strategy. What they should do anytime they are to write essays. Then the teaching lasted for eight weeks during regular English language periods. The instructional procedure was designed to help students consciously plan, monitor, and evaluate their thinking while solving writing problems.

The teaching procedure followed structured stages as described below:

Stage 1: Presentation of the Writing Problem. At the beginning of each lesson, the teacher introduced a realistic writing problem related to students' experiences. The purpose was to stimulate students thinking and also to activate their prior knowledge.

Examples of problems presented included:

It is observed that many students in your school write poorly organized essays. Write a composition explaining, how students can improve their writing habits.

Students were asked to analyze the problem and identify what the composition should address.

Stage 2: Metacognitive Planning

At this stage, students planned how they would approach the writing task. The teacher guided them to think about what they know, what they need to know, and how they will structure their essay.

Students were encouraged to ask themselves metacognitive questions such as:

What is the main idea of this essay?

What points will support my argument?

How will I organize my introduction, body, and conclusion?

Students then developed outlines for their essays.

Stage 3: Collaborative Problem Exploration

Students were grouped into smaller discussion groups (4–5 students) where they discussed the problem and shared ideas for their essays.

Activities included: brainstorming possible points, discussing examples and supporting details

organizing ideas logically.

The teacher acted as a facilitator, guiding discussions and prompting students to think deeper about their ideas.

Stage 4: Metacognitive Monitoring During Writing

Students individually wrote their essays while consciously monitoring their thinking and writing process. During this stage, students asked themselves monitoring questions such as:

Am I following my outline?

Does this paragraph support my main idea?

Are my sentences clear and logically connected?

The teacher moved around the classroom providing guidance where necessary.

Stage 5: Self-Evaluation and Reflection

After completing their essays, students evaluated their own work using metacognitive reflection questions such as: Did I answer the problem clearly? Is my essay well organized?

What part of my essay needs improvement?

Students then revised their essays based on their reflections.

Stage 6: Feedback and Class Discussion

The teacher reviewed selected essays and discussed common strengths and weaknesses observed in students' writing.

Feedback focused on:

organization of ideas

clarity of expression

relevance to the writing problem

grammar and sentence construction

Students were encouraged to reflect on how their thinking strategies influenced their writing performance.

Duration of Treatment
The treatment lasted for eight weeks, with two instructional periods per week, making a total of sixteen lessons.

Role of the Teacher
The teacher functioned mainly as a facilitator and guide, helping students develop awareness of their thinking processes during writing.

The control group received conventional lecture-based instructions from the regular classroom teacher.

The teacher controlled the lesson, explained the contents, facts, ideas directly to students. She explained the format of the essays, wrote them on the board and the students listened and copied the notes.

The experimental group and control group were taught the same instructional contents (from the approved curriculum for English language from Ministry of Education, Umuahia) for the same period of eight weeks for two periods of forty-five minutes per period each week.

Before the commencement of the lessons, both the control and experimental groups were given a pretest in essay writing. The teachers marked the scripts and recorded the scores against each student's name. At the end of the eight weeks instructions, a revised version of the ELCAT was used to collect the data.

The pretest and post test scores were analysed using Mean and standard deviation to answer the research questions, while Analysis of Variance (ANOVA) tested at 0.05 level of significance was used to test the hypothesis.

Results

What are the Pretest and Posttest mean achievement scores of students trained in problem based metacognitive Strategy and those taught using the traditional lecture method?

TABLE 1: Mean and standard deviation scores of students in Experimental and Control Groups

Group	N	Pretest mean	SD	Variance	Posttest X	SD	Variance	Mean gain
Experimental	53	46.23	15.15	229.52	55.75	13.64	186.05	9.52
Control	58	51.59	13.12	172.13	53.38	12.07	145.69	1.79

Table 1 shows the mean, standard deviation, variance, and mean gain scores of students in the experimental and control groups in the pretest and posttest.

The results reveal that the experimental group had a pretest mean score of 46.23 with a standard deviation of 15.15 and variance of 229.52, while the control group recorded a higher pretest mean score of 51.59 with a standard deviation of 13.12 and variance of 172.13. This indicates that the control group performed slightly better than the experimental group in the pretest before the treatment. After the treatment, the experimental group obtained a posttest mean score of 55.75 with a standard deviation of 13.64 and variance of 185.05, while the control group had a posttest mean of 53.38 with a SD of 12.07 and variance of 145.69. The mean gain score of the experimental group was 9.52, which is considerably higher than the mean gain score of 1.79 obtained by the control group. This suggests that the students taught using Problem- Based Metacognitive strategy improved more in their English language writing Composition than those taught using the conventional method.

What is the Pretest and Posttest mean achievement scores of male and female students taught English composition using Problem Based Metacognitive Strategy?

Table 2: Pretest and Post test Achievement Scores of male and female students taught English Language composition with problem-based Metacognitive strategy.

Source of variation	N	Pretest X	SD	Variance	Post test $\bar{x}$	SD	Variance	Mean gained
Male	27	48.19	15.15	229.53	57.96	13.64	165.85	9.77
Female	26	44.50	14.50	210.25	53.46	13.20	176.89	8.96

Table 2 shows that male students had a pretest mean score of 48.19, while female students recorded a pretest mean score of 44.50. After the application of the Problem-Based Metacognitive Strategy, the posttest mean score of male students was 57.96, while the female students had a posttest mean of 53.46. This showed that both male and female students improved in their achievement after being taught using the strategy. The mean gain score for male students was 9.77, while female students had a mean gain of 8.96, indicating that male students benefited slightly more from the Problem-Based Metacognitive Strategy than female students. However, the standard deviation values for both genders are relatively close, suggesting that the variation in students' scores within the two groups is similar.

Therefore, it can be concluded that Problem-Based Metacognitive Strategy improved the achievement of both male and female students in English language composition, although male students recorded a slightly higher mean achievement score.

Table 3: ANOVA on the Pretest and Posttest mean achievement scores of students taught using Problem-Based Metacognitive Strategy and those taught using the traditional lecture method.

Source	Type III Sum of square	df	Mean square	F	Pr
Corrected model	12, 345.62	2	6172.80	187.7	.001
Intercept	1845.57	1	1845. 57	559.45	.001
Pretest	10365.20	1	1036.52	314.29	.001
Methods	1, 977.45	1	1977.45	59.96	.001
Error	3, 562.1	108	32. 98		
Total	344,000.00	111			
Corrected	347.562.1	110			

Table 3 above shows a significance of .001 which is <.0.05 significance level. This means that there is a significant difference in the mean achievement scores of students taught English language writing composition with Problem Based Metacognitive strategy and those taught same contents with traditional lecture method. The null hypothesis was therefore not accepted.

Discussion

The result of the data in table 1 indicated that the students taught in Problem Based Metacognitive class achieved more academically than those in the teacher-centred class. This shows that even though the control group had higher score in the pretest but they could not improve as did the experimental group after the treatment. This shows that the method Problem Based Metacognitive strategy, whereby the learners were made to be in full control of their learning, thinking within and outside the box helped the students to acquire the necessary skill needed for writing composition. The result in table 2 indicated that the method used in teaching the students in experimental group helped both genders to improve in their academic achievement though the male slightly outweighed female but the difference is not significant indicating that the method is gender friendly. With ANOVA result in table 3, it indicated that there is a significant difference between in the achievement of the students taught using Problem Based Metacognitive strategy and those taught using Traditional lecture method. These findings were consistent with the findings of Pandey (2003) who carried out a study to examine the effect of Teacher-centred method and Learner- Centered method on achievement in Islamabad. Data analysed using Analysis of Covariance revealed that Learner Centred method was more effective than Teacher centred method in academic achievement. Also in agreement with this finding is the study of Alade and Kuku (2022). Their work was to compare lecture method and Metacognitive strategy in teaching pupils creative writing. The study found that the use of metacognitive strategies significantly improved pupils' creative writing achievement. The findings of this study also agree with the study of Sama and Ibrahim (2018). They investigated effects of Teacher- enhanced learning and Metacognitive learning Abilities on students in narrative writing. They found that teaching metacognitive learning strategies enhanced students' narrative essay writing. The present finding also aligns with Qin et al. (2022), who reported a positive relationship between metacognitive awareness and writing achievement.

Furthermore, the result is consistent with the finding of Mardiah, Sya'roin, and Junaidi (2023) and Chen (2024), which indicated that metacognitive strategy instruction improves writing fluency, organization, and accuracy among learners. The present study extends these findings by demonstrating that combining metacognitive strategies with problem-based learning activities provides a more effective instructional framework for improving students' composition writing achievement. The strategy helped the students to actively involved in learning process and to regulate their thinking during writing tasks.

Recommendations

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

A. English language teachers should incorporate Problem-Based Metacognitive Strategy in teaching composition writing in order to improve students' achievement and promote active learning.
B. Teacher training programmes and professional development workshops should include training on metacognitive and problem-based instructional strategies so that teachers can effectively implement them in classrooms.
C. Curriculum planners and educational authorities should encourage the integration of learner-centered strategies such as PBMS in English language instruction at the secondary school level.
D. Schools should provide instructional support and learning activities that encourage planning, monitoring, and evaluation during writing tasks, as these processes enhance students' metacognitive awareness and writing skills.

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