



Mind Map and Interactive Learning on Students' Performance in English Language in Selected Secondary Schools in Ogbomosho North Local Government Area, Oyo State.

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ABSTRACT

This study aims to investigate the impact of using mind map and interactive learning on students' performance in English language in selected secondary schools in Ogbomosho North Local Government Area, Oyo State. Mind maps are visual representations that help students organize and connect information, while interactive learning involves active participation and engagement of students in the learning process. The study involved 212 secondary school students from four schools in Ogbomosho North Local Government area, Oyo state, Nigeria; who were randomly assigned to a treatment or control group. The English Language Achievement Test (ELAT) was used for data collection, with a reliability of 0.83 and a total-item difficulty of 0.52. The study used an ELAT, consisting of two sections A and B, to assess students' comprehension skills. Teachers were trained in Mind Map and Interactive Learning techniques, and data was analyzed using descriptive statistics and ANCOVA. Engaging in strategic conversations and strategic learning techniques, such as mind map and interactive learning techniques, can enhance students' understanding and critical thinking skills in English language learning. Incorporating technology to the learning process can further enhance these learning experiences, making them more interactive and engaging. Based on the findings, it was recommended that teachers should make sure that the teaching techniques they use are varied, particularly to be more student-centered and participatory in nature. In order to guarantee that students are engaged in the learning process, the two modes of learning were used to investigate performance enhancement in secondary school English language teaching and learning.

Keywords: Mind Map, Interactive Learning, Students' Performance, English Language and Secondary School.

Introduction

With reference to the notion of positive interactive and group-based collective perception in the field of education and instructional methodology, the attention of scholars have been drawn to the role of positive emotions, acquisition strength, collective interaction and rewarding classroom climate. The incorporation of a positive classroom environment and control seems to set the positive affective stage for the enhancement of classroom interaction and rewardable performance.

The assessment of students' opinions about the rigor of the classroom, the level of interactive opportunities with their teacher and other students; and the level of engagement in classroom tasks and activities is observable and worthy of close attention by scholars in the field of education and curriculum planners (Adebile, 2020). It should be noted that every student now has personal perception of the classroom management and environmental factors that enhance smooth learning and rewardable performance, most especially in English language. Hence, the investigation on mind map and interactive learning on students' performance in English language.

Several factors may be responsible for students positive or negative performance in English language. Realizing such factors as learners' nature in learning, the learning environment, the kind of the learning materials, the learners' attitude, the belief systems about the subject and the teacher methodological competence and instructional delivery mode (Adebile, 2019). For such factors, the investigation on mind map and interactive learning techniques could serve as a positive measure for the enhancement of students' performance in English Language by providing insightful information on how to enhance both the learning factors and English Language proficiency of learners of English Language in Ogbomosho North Local Government Area, Oyo State.

The process of picking up a new behavioural pattern is called learning. Educational psychologist Stones (1966) described learning as any action that results in a modification of human behavior where formal or informal learning is possible. The daily encounters and events that alter our thoughts and behaviours are known as informal learning. Formal education may include enrolling in a course at a college or institution that has a set schedule (Nwobi, Nwanneka, & Agwu, 2023). One of the organized courses that college students from secondary schools must master is the English language. English

became a second language for Nigerians when the British government colonized their country. Together with the three officially designated indigenous languages, English is thus extensively spoken and plays a crucial role in the media, the workplace, and educational settings and most important as a school subject and medium of instruction. Since gaining independence, the English language has remained significant and important (Nwobi 2023).

According to Nwobi et al. (2023), studying English is a crucial component of the educational process. This is particularly valid when it serves as a teaching tool in educational institutions, the language of science and technology, as a bridge for further education and well-paying jobs. It serves as a medium of communication both domestically and internationally and is the language of trade, business, and administration. Improvement in language skills; listening, speaking, reading, writing, grammatical precision, structure, and literature are anticipated to get particular degree of understanding and competence from the English language teachers (Agwu, 2013; Nwobi 2023). As educators, English language teachers contribute to the conversion of educational concepts into tools that help schools and students to turn societal aspirations into tangible realities. Iliyas (2011) notes that among students, failure to pass the entrance examination into the next school ladder stratum, poor vocabulary and syntactic knowledge are sources of understanding constraints and lack of adequate mastery of the English language (the language of instruction), which is a major problem related to inadequate understanding of the teacher's instruction (listening problem) and performance enhancement in English language.

Mind map is an instructional technique involving a visual thinking tool that facilitates knowledge structure for improved understanding, recall, analysis, and idea production. According to Kenesha, Eddia, & Natalie (2016) and Abamba, Efe, & Esiekpe (2021) mind maps are diagrams that are used to depict words, thoughts, activities, or other objects related to and grouped around centralised important words or concepts. Additionally, it is a graphical means of expressing ideas and concepts. It is a visual aid for thought that aids in information organisation and improves one's ability to analyse, understand, synthesise, remember, and create new tools. Tony Buzan created and popularised the mind map to assist students in taking notes using only keywords and visuals (Kenesha, 2016). The instructional technique includes the use of colours, line thickness, images, and diagrams to facilitate the gathering of information (Abamba, Efe, & Esiekpe, 2021). Mind maps facilitate idea generation, visualisation, classification, and analysis of a concept's organisational patterns, as well as problem resolution and decision-making. For the map to be visually appealing and engaging for kids, colour coordination is crucial. The elegance of mind maps lies in their ability to facilitate not just memory but also quick comprehension of the information being taught. Mind maps help students retain knowledge for extended periods of time because they leave attractive mental images of the maps, colouring pages, and flow charts in the thoughts and memories of the learners for consistent retention and ability of the learners to reproduce the learning content.

Mind maps aid in the summarization of ideas to be taught and acquired, they are advantageous to both the teachers and students. It is an effective teaching method that inspires students based on the mind mapping way of instruction, being activity-based. During the teaching and learning process, it is an effective way to condense concepts and conceptions onto paper and summarize them into a vibrant mental map (Bo, Jang, & LiWang, 2019). Over time, the use of mind map in the process of teaching and learning has become more popular and has shown benefits. Constructivism-based concept mapping highlights that students are the agents of their own learning, with the teacher serving as a facilitator. A group taught utilising the mind map instructional strategy outperformed the group taught using the traditional teaching method, according to Katcha, Orji, Ebele, Abubakar, and Mohammed (2018). Studies have shown favourable increases in academic performance, retention, motivation, and students' attitudes towards learning, yet, findings on how mind maps could improve performance in English language in the current study location is very scanty.

Considering the use of interactive virtual environments for mind map technique, there is a need to track students' performance and predict the speed of their progress in order to improve their performance. Marzuki, Prayogo & Wahyudi (2016) revealed that interactive methods of teaching English language in secondary schools are covered with a number of scientific works, which comprehensively examine and improve interactive methods of instructions. In particular, mind map is technique of creating a positive learning atmosphere, communication, motivation for learning activities, updating of basic knowledge, assimilation of new knowledge, formation of skills, abilities, emotional-value orientations, positive attitudes in students, generalization, systematization of knowledge and organization of reflections on cognitive activities of participatory, activity-based and in a threat-free environment (Dewi, Kultsum & Armadi, 2017).

Dall'Alba and Bengtson (2019) consider interactive teaching methods in the context of competence-based, communicative, culturological, reflexive, and professionally oriented approaches as valuable orientation for learners' performance enhancement. Generalization, characterization, and conditions of application of interactive techniques in teaching English language in secondary schools are carried out with a number of activities to motivate students interest in learning and comprehension (Omar, Nawi, Shahdan, Mee, Pek & Yob, 2020). The optimal interactive technologies for teaching and learning English Language through interactive learning technique, cooperative learning, groups and collaborative learning, discussion group, and modeling are all to be adopted into the teaching learning process even in the secondary level of education in order to enhance interactive and positive learning environment for enhancement of performance (Zhang & Zou, 2020).

Statement of the Problem

Studies have associated poor academic performance of students in English language instruction to several factors which include the learner's nature, the nature of the learning environment, availability of learning materials, learners' attitude, belief system about the language, methods of instruction etc. Research results have shown that the conventional method of teaching English language in secondary school is no longer achieving the objectives of teaching and learning English language in secondary schools according to the English language curriculum, especially in Ogbomoso North Local Government Area, Oyo State. It was revealed that public secondary schools' authorities in Oyo State received relatively poor 2023 West African Secondary School Certificate Examination (WASSCE) results from the West Africa Examination Council (WAEC). According to the statistics made available by Patrick Areghan, the Head of the Nigeria Office (HNO) of WAEC, a total number of 1,287,920 (79.81%) candidates, out of 1,613,773

candidates passed the examination by obtaining credit in a minimum of five (5) subjects, including English language and Mathematics, while 325,813 candidates failed the examination (*ogbomosoinstightonline.com*). Mind map and interactive learning as innovative modes of teaching and learning have been used by several researchers to assess improvement on learning outcomes on several school subjects, however, there is dearth of information on such intervention using English language, especially on the teaching of comprehension aspect of English language instruction. The extent to which these innovative and activity-based instructional techniques have enhanced English language students' performance in secondary schools in Ogbomoso North Local Government Area have not been sufficiently researched into; hence this study.

Objectives of the Study

This study aims at assessing the enhancement effect of mind map and interactive learning on the performance of English language students in secondary schools. The specific objectives of the study are to

- (i) Investigate the impact of mind map and interactive learning on students' academic performance in English language over the conventional method.
- (ii) Compare the effectiveness of mind map and interactive techniques on the performance of English language students in the study location.

Hypotheses

Based on the objectives of the study, the following null hypotheses were gathered and tested to give direction to the study:

Ho1: There is no significant difference of mind map and interactive learning techniques on students' academic performance in English language when compared with the conventional methods.

Ho2: There is no significant level of effectiveness in students' learnability when using mind map and interactive techniques over the conventional method of teaching English language.

Methodology

The research which aimed at exploring mind map and interactive learning on students' performance in English language in selected secondary schools in Ogbomoso North Local Government Area, Oyo state, adopted a non-equivalent quasi-experimental design involving the pretest, posttest and a control group. The population for the study comprised of all secondary English language students in Ogbomoso North Local Government Area, Oyo state. The sample consisted of senior secondary English language students using purposive sampling technique. 212 secondary school students (102 males and 110 females) from four schools in the study location served as respondents for the study. The schools are co-educational public secondary schools and one intact class of English language students were selected per school. Two intact classes were randomly assigned to treatment and two to control group. Self-developed instruments were employed for data collection. They are: "English Language Achievement Test" (ELAT) used to assess both the pretest and posttest achievement for both treatment and control groups. Using Scorbat computer programme, the test was validated both for reliability and difficulty index via the Kuder Richardson formular-20. The reliability of the instrument was established to be $r = 0.83$ while the total-item difficulty was 0.52. The ELAT comprised of two sections A and B which contain the demographic data of the students and the multiple-choice objective test items respectively. The ELAT contains 25-items drawn from the 2021/2022 English language SSS II curriculum with 5 options. The topic taught was 'comprehension'. The researcher trained teachers appointed to serve as research assistants on Mind Map and Interactive Learning techniques while others were trained to handle the conventional lecture method. The study period lasted 6 weeks. The data collected were analyzed using descriptive statistics and ANCOVA using the pretest scores as covariance.

On mind map techniques, a comprehension passage was selected; after studying the story in the comprehension passage using mind map to analyze the content and setting the objectives of each lesson, the concepts were specified and arranged sequentially, the mind map was adopted to ensure the correctness and accuracy of the information contained in these maps. The respondents who have been taught by teachers of English language presented their observations which enhanced the learning outcomes as against the conventional method of teaching English language.

On the interactive learning techniques, the researcher actively engaged students in the learning process using various activities designed according to the learning process. Students participated in questions, collaborated with their peers, including activities such as group discussions, role play and simulation. These were used to ensure the effectiveness of interactive learning techniques over the conventional method of teaching English language in secondary schools; and for the purpose of gathering relevant data for the study.

Results:

Hypothesis 1: There is no significant difference between the mean achievement scores of students taught English language with mind map and interactive learning techniques when compared with the conventional method of teaching English language.

Table 1: The mean score and standard deviations of the scores of the experimental and control groups in the pre and posttest

Pretest Group	Posttest						
	Number	Mean Score	Standard Deviation	Mean score	Standard Deviation	Mean score	Standard Error
Control Group	80	13.623	2.84	16.323	3.18	17.312	0.54
Experimental Group	80	16.157	3.11	18.767	3.31	19.588	0.54

These findings suggest that incorporating mind maps and interactive learning techniques into English language instruction can significantly improve students' performance. The experimental group, which received this type of instruction, demonstrated higher mean scores and lower standard deviations compared to the control group. This indicates that these teaching methods may be effective in enhancing students' understanding and retention of English language concepts.

Hypothesis 2: There is no significant level of effectiveness in students' learnability when using mind map and interactive techniques over the conventional method of teaching English language.

Table 2: Results of the significant level of effectiveness in students' learnability using mind map and interactive techniques over the conventional methods.

Source of Variance	Sum of squares	Degree of Freedom	Mean Squares	(F) value	Statistical Significance	Practical Significance
Pretest	84.508	1	121.237	14.080	0.000	0.198
Group	118.237	1	77.508	9.002	0.004	0.136
Error	520.797	49	8.610			
Total	697.790	67				

The statistical significance of effectiveness indicates that there is a significant difference in students' learnability in the English language classroom based on the use of mind map and interactive learning techniques over the conventional method. This means that these teaching techniques have a measurable effectiveness on students' learnability of English language. Additionally, the practical significance suggests that implementing these techniques in classrooms can lead to meaningful improvements in students' English language skills and effectiveness in English language learning.

The effect size of ($\eta^2 = 0.1267$) suggests that approximately 12.67% of the variance in the dependent variable can be attributed to the use of mind map and interactive learning techniques. Furthermore, the large effect size ($\Delta = 0.751$) indicates a substantial difference between the groups in terms of their outcomes. According to Kailani & Shraifeen (2011), this value was considered of medium effect. This value was very close to the level of the significant effect since the effect was considered medium when Δ (d) ranges between (0.50- 0.70), and it is considered significant when Δ (d) is \geq (0.80).

Discussion

These results suggest that the mind map and interactive learning techniques were effective in improving the students' ability to comprehend and analyze texts. Furthermore, the findings highlight the potential benefits of incorporating technology and interactive methods in educational settings to enhance reading comprehension skills. Additionally, it assisted the students in the experimental group in creating techniques for concept organisation, analysis, and construction, all of which enhanced their reading comprehension abilities (Berg, 2011; Mohaidat, 2018).

Besides, the significant progress of the experimental group might be attributed to the fact that students often show positive attitudes toward new teaching methods and techniques that keep them away from boredom and monotony of the traditional class. Al-Jarf, (2009), Naghmeh-Abbaspoura, Rastgoob, Fathic and Yek (2019) and Lukáčiková and Kozárová (2019) discussed the use of mental maps as a teaching tool in a variety of academic disciplines and discovered that using these maps, particularly electronic mental maps, led to favourable attitudes towards studying these subjects. They also mentioned how students competed with one another while working on these mind maps in the computer lab, showcasing their creative abilities. Creating these maps that illustrated the concepts in the assigned books demonstrated a deeper comprehension of these materials.

Furthermore, these studies found that students who were exposed to mind maps and interactive learning techniques reported higher levels of engagement and motivation in their studies. This suggests that the positive attitudes towards new teaching methods may contribute to the progress observed in the experimental group. Feng, Alsager, Azizi and Sarabani (2023) showed that the mind-mapping technique was beneficial for improving the EFL learners' vocabulary learning, learning motivation, and WTC. The EFL learners who were trained using the mind-mapping technique were able to enhance their vocabulary recall and retention, learning motivation, and WTC. The findings suggest that the mind-mapping technique may be a suitable and effective technique for second language (L2) learning as it can motivate the EFL learners to think about the topics before teaching the target materials.

Conclusion

Mind map and interactive learning techniques project active conversations which helps students deepen their understanding of the text by exchanging ideas, asking questions, and clarifying any confusion. Additionally, engaging in strategic conversations and interactive learning can also enhance critical thinking skills as students learn to analyze and evaluate different perspectives within the text. Also, the use of mind map and interactive learning techniques have been found to have positive impacts on students' performance in the English language in Ogbomoso North Local Government area, Oyo state. These methods not only engage students in the learning process but also help them to understand better and retain the information. More so, incorporating technology into these techniques can further enhance students' learning experiences and make them more interactive and engaging.

The revealed achievement by incorporating interactive reading strategies, such as guided reading or literature circles, where students actively engage with the text and discuss their interpretations with their peers is a major impact on the performance enhancement of students. On this premise, providing opportunities for students to read a variety of texts that align with their interests can further enhance their reading fluency and comprehension skills through mind map and interactive learning techniques. Facilitating meaningful interactions between students and their texts should be the aim of teaching reading comprehension. It is important to teach students how to read independently by teaching them how to decipher written language and comprehend the information they are reading.

Recommendations

Based on the findings of the study, the following recommendations were suggested:

- During the teaching and learning process, teachers should make sure that the teaching techniques they use are varied, particularly should be more student-centered and participatory in order to guarantee that students are engaged in the process teaching process.
- English language teachers should implement interactive mind map activities in English language classes to enhance students' comprehension and critical thinking skills by using online and mind mapping tools or encouraging students to create their own mind maps on relevant topics.
- Teachers should incorporate gainful learning experiences into English language lessons, such as interactive quizzes or educational games, to make the learning process more engaging and enjoyable for students.
- A strong awareness should be created in the teaching profession circles, especially among the English language teachers that these techniques have proved to assist in performance enhancement, motivation for learning activities and retention of English language concepts.
- There should be some professional policies that will encourage teachers to retrain on innovative techniques of teaching in order to gain more effective teaching tactics outside of the traditional teaching approach which would be beneficial.

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