COMPUTER-ASSISTED LANGUAGE LEARNING: AN EVALUATION OF LANGUAGE APPS AND THEIR IMPACT ON JUNIOR SECONDARY STUDENTS' ENGLISH LEARNING IN BADAGRY, LAGOS STATE.

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Abstract

This study investigates the impact of computer-assisted language learning (CALL) through mobile applications on English language achievement among junior secondary school students in Badagry, Lagos State. In response to the growing adoption and integration of educational technology in language teaching, the research evaluates how language learning apps influence students' performance and engagement. A quasi-experimental design was adopted, involving 180 JSS2 students from six randomly selected public schools. The participants were divided into two groups: an experimental group (n = 90) used language learning apps such as Hello English, Busuu and,Duolingo alongside classroom instruction, while the control group (n = 90) received only conventional teaching. Data were collected using a 40-item English Language Achievement Test (ELAT) and a 15-item Student Engagement Questionnaire (SEQ). Pre-test and post-test results were analyzed using paired sample and independent t-tests. The mean pre-test score for the experimental group was 42.8%, which increased to 67.3% post-intervention. In contrast, the control group's mean score rose only from 43.1% to 54.6%. The difference in post-test mean scores between the groups was statistically significant ($t = 4.82$, $p < 0.001$), indicating the effectiveness of the apps. Additionally, 78% of students in the experimental group reported increased motivation, and 85% found the apps helpful in vocabulary development. The study concludes that CALL tools significantly enhance students' English language performance and engagement. It recommends the integration of user-friendly language apps into the junior secondary curriculum, alongside teacher training and instructional material support, to improve language learning outcomes in public schools.

Key words: Computer-assisted, educational technology, increased motivation, language learning, learning apps,

Introduction

The integration of digital technology into education has transformed traditional teaching and learning processes across the world (Adewale, 2016). In particular, Computer-Assisted Language Learning (CALL) has emerged as a dynamic approach to language instruction, leveraging digital tools particularly mobile applications to enhance learners' linguistic competence (Dapelle, 2011). CALL combines pedagogical principles with technological innovations to create interactive, learner-centered environments that enhance effective language acquisition. As the English language continues to serve as a major medium of instruction and global communication, the relevance of using digital platforms to improve English language proficiency among students has become increasingly significant.

In recent years, mobile-assisted language learning (MALL), a subset of CALL, has gained attention among educators and learners alike, offering interactivity, flexibility, and

personalized learning experiences (Kukulska-Hulme & Shield, 2018). Applications such as Hello English, Duolingo, and Busuu provide engaging, gamified interfaces that support vocabulary development, grammar practice, and pronunciation training. These apps have been widely adopted in various educational contexts and have shown positive outcomes in students' motivation, retention, and overall academic performance (Godwin-Jones, 2020; Burston, 2021).

In Nigeria, where the challenges of insufficient instructional materials, large classroom sizes, and limited teacher-student interaction persist, the use of language learning applications may offer a practical solution to bridge learning gaps, especially in English Language teaching at the junior secondary school level (Adewale, 2016). However, despite the increasing popularity of CALL tools, empirical research examining their effectiveness in Nigerian schools, particularly in semi-urban areas such as Badagry, Lagos State, remains limited. This study, therefore, investigates the impact of language learning applications on junior secondary school students' English language learning. It seeks to evaluate the extent to which these digital tools influence students' academic performance, motivation, and engagement in English language classes. By assessing the educational value of CALL in this context, the research aims to contribute to the emerging discourse on technology-enhanced learning and offer insights for policymakers and educators in the Nigerian educational system.

Statement of the Problem

The persistent decline in students' performance in English Language at the junior secondary school level in Nigeria has become a source of concern for educators, parents, and policymakers. Despite its status as the official language of instruction and national communication, many students continue to exhibit poor proficiency in essential language skills such as reading comprehension, vocabulary development, syntax, and writing. In areas like Badagry, Lagos State, these challenges are further compounded by factors such as overcrowded classrooms, inadequate instructional materials, and limited teacher-student interaction (Adewale, 2016). Traditional teaching methods, which are often textbook-based and teacher-centered, have proven insufficient in meeting the diverse learning needs of 21st-century students.

With the rapid advancement of digital technologies and the increasing accessibility of mobile devices, language learning applications have emerged as promising tools to supplement classroom instruction. These apps provide interactive and self-paced learning opportunities that can potentially improve student engagement and performance in English Language (Tonnbi, 2015; Jones, 2019). However, the actual integration and effectiveness of such digital tools in the Nigerian junior secondary school context remain largely unexplored, especially in semi-urban settings like Badagry.

While some studies have highlighted the potential benefits of computer-assisted language learning globally, there is a noticeable gap in empirical data assessing how language learning apps influence students' English language outcomes in Nigerian public schools. Therefore, this study seeks to examine the impact of language learning applications on junior secondary school students' English learning

achievement, motivation, and classroom engagement in Badagry, Lagos State.

Literature Review

1. **Computer-Assisted Language Learning (CALL)**

Computer-Assisted Language Learning (CALL) refers to the use of computers and digital technologies in the teaching and learning of languages. CALL has evolved over the decades from simple drill-and-practice software to sophisticated, multimedia-rich, and interactive applications. According to Chapelle (2001), CALL is grounded in the idea that technology can support second language acquisition by providing learners with rich input, timely feedback, and the opportunity for repeated practice. The primary goal of CALL is to enhance language learning by using technology not merely as a delivery tool but as an interactive partner in the learning process.

In modern classrooms, CALL has shifted from computer labs to mobile devices, giving rise to Mobile-Assisted Language Learning (MALL). MALL enables learners to access language resources anytime and anywhere, promoting autonomy and flexibility. Hulme and Shield (2018) emphasize that mobile technology fosters learner-centered and collaborative learning experiences, which are essential for effective language acquisition in contemporary educational contexts.

2. **Mobile Language Learning Applications**

The development of mobile language learning apps has made CALL more accessible and personalized. These apps integrate features such as gamification, speech recognition, flashcards, and real-time feedback to maintain learner motivation. Two of the most popular apps Duolingo and Busuu have gained prominence globally and are increasingly being introduced into formal and informal learning settings.

a. Duolingo

Duolingo is a widely-used, free language learning platform that offers lessons in multiple languages through interactive modules. It is based on a gamified learning structure, which awards users with experience points, badges, and daily streaks for consistency and progress. Research by Vesselinov and Grego (2012) found that learners using Duolingo for 34 hours made gains that are equivalent to one semester of college language instruction. The app offers activities that focus on reading, writing, listening, and speaking skills, and adapts to the learner's pace and proficiency level. In the context of English Language Learning (ELL), Duolingo helps junior secondary school students reinforce grammar rules, expand vocabulary, and improve pronunciation using short, manageable lessons. It also supports motivation and retention through a reward system that encourages continuous engagement and inclusivity (Godwin-Jones, 2011). However, some researchers note that Duolingo may have limited value in developing productive skills like speaking and writing due to its structure (Loewen et al., 2019).

b. Busuu

Busuu is another language learning app that combines structured lessons with community-based learning. Unlike Duolingo, Busuu includes human interaction by allowing users to submit written or spoken tasks for feedback from native speakers. The app covers core language skills and is aligned with the Common European Framework of Reference for Languages (CEFR), offering beginner to advanced-level content.

According to Rosell-Aguilar (2018), Busuu fosters a more communicative and social approach to language learning compared to other apps.

For junior secondary school students, Busuu's visual and audio content considers different learning styles, and its structured courses promote independent learning. Its offline mode and teacher-tailored platform make it suitable for integration into school curricula where internet access may be intermittent. This factor made the app more popular in Badagry and its environment (0binna, 2023).

3. **Student Engagement and Motivation in CALL**

Student engagement and motivation are central to successful language learning. Mobile apps like Duolingo and Busuu enhance motivation by incorporating elements of gamification, such as badges, levels, and leaderboards. These features support extrinsic motivation, while the personalized and adaptive content fosters intrinsic motivation (Burston, 2015). In particular, junior secondary school learners benefit from interactive content that holds their attention and aligns with their everyday digital experiences.

According to Deci and Ryan's Self-Determination Theory (1985), learners are more likely to succeed when they feel competent, autonomous, and connected. CALL tools support these psychological needs by providing immediate feedback (competence), flexible pacing (autonomy), and in some cases, peer interaction (relatedness). Studies conducted in sub-Saharan Africa, including Nigeria, also show that technology-enhanced learning environments improve learners' attitudes and classroom participation (Adewale, 2016). However, there are concerns regarding digital inequality, limited access to devices, lack of power supply to charge the devices and insufficient teacher training, which can affect the successful implementation of CALL in public schools.

4. **CALL in the Nigerian Context**

In Nigeria, English is both a subject and the primary medium of instruction, making proficiency in the language critical to students' academic success. Yet, many schools especially in semi-urban and rural areas face challenges such as overcrowded classrooms, limited teaching resources, inadequate power supply and undertrained teachers. CALL tools, particularly mobile apps, offer a cost-effective and scalable solution to enhance English language instruction. Studies have reported improved student performance and classroom engagement when mobile technology is effectively integrated (Adewale, 2016; Adebiyi & Ogunlade, 2020). Despite its potential, the use of language learning apps in Nigerian junior secondary schools remains under-researched, especially in locations like Badagry, Lagos State. It is important to empirically assess how these digital tools influence learners' academic outcomes, engagement levels, and motivation to learn English.

The reviewed literature establishes a strong foundation for the integration of CALL and mobile language learning applications in language instruction. While global studies have documented the benefits of apps like Duolingo and Busuu in enhancing language proficiency, their effectiveness within Nigerian junior secondary schools especially in semi-urban contexts requires empirical validation. This study

seeks to fill that gap by evaluating the impact of language learning apps on students' English language performance, engagement, and motivation in Badagry, Lagos State.

Theoretical Framework

This study is anchored on two interrelated theories: Constructivist Learning Theory by Jean Piaget and Krashen's Input Hypothesis from Second Language Acquisition (SLA) theory. These theories provide a foundation for understanding how digital tools like language learning applications support language development among learners.

Constructivist Learning Theory (Piaget, 1972)

Constructivism posits that learners actively construct knowledge through interaction with their environment. This theory emphasizes learner autonomy, engagement, inclusivity and the importance of meaningful experiences in the learning process. Language learning apps embody these principles by offering interactive, personalized, and learner-centered environments that encourage exploration and self-paced learning. Through gamified exercises, instant feedback, and multimedia content, students are able to engage in active meaning-making processes, which improve their language acquisition. The constructivist perspective supports the idea that digital tools can complement traditional instruction by creating more engaging and effective learning experiences.

Krashen's Input Hypothesis (1982)

Stephen Krashen's Input Hypothesis asserts that language is acquired when learners are exposed to comprehensible input slightly above their current proficiency level (i+1). Language apps are designed to offer scaffolded content that aligns with this hypothesis by adjusting difficulty levels based on user performance. Through repeated exposure to structured input such as listening, reading, and vocabulary tasks students internalize language forms naturally. This theory supports the use of mobile applications as tools that provide comprehensible input in diverse formats, promoting improved acquisition of English language skills.

Together, these theories underpin the study by explaining how language learning apps can create effective, interactive, and developmentally appropriate learning environments that enhance English language proficiency among junior secondary school students.

Research Objectives

The main objective of this study is to evaluate the impact of computer-assisted language learning (CALL) through mobile applications on junior secondary school students' English language learning in Badagry, Lagos State. Specifically, the study aims to:

1. Assess differences in English language achievement between students who use language learning apps and those who do not.
2. Examine how language learning applications affect students' motivation to learn English.
3. Investigate the influence of language learning apps on students' engagement during English lessons.
4. Explore students' perceptions and experiences regarding the use of language learning applications for English learning.
5. Identify the challenges and limitations associated with the use of language

learning apps in junior secondary schools.

Research Questions

1. What differences exist in English language achievement between junior secondary students who use language learning apps and those who do not?
2. How do language learning applications affect students' motivation to learn English?
3. How do language learning apps influence students' engagement during English lessons?
4. What are students' perceptions and experiences regarding the use of language learning applications in learning English?
5. What challenges and limitations are associated with the use of language learning applications in junior secondary schools in Badagry, Lagos State?

Research Design

This study adopts a quasi-experimental research design with a pre-test, post-test, non-equivalent control group format. This design is appropriate for educational settings where random assignment of participants is not always feasible due to administrative or ethical constraints. It allows the researcher to compare the effects of an intervention (in this case, the use of language learning applications) on one group, while using another similar group as a control.

Two groups of junior secondary school students (JSS2) were selected from six public schools in Badagry, Lagos State. The experimental group received English language instruction supplemented with selected mobile language learning applications (such as Duolingo and Hello English), while the control group received instruction using traditional, teacher-centered methods alone. Both groups were given a pre-test to assess their baseline proficiency in English language, followed by a six-week teaching period, and then a post-test to evaluate learning outcomes. In addition to the achievement tests, a Student Engagement and Motivation Questionnaire was administered to collect data on learners' attitudes and engagement during the study period.

The design allows for the comparison of mean scores between the two groups before and after the intervention, using statistical tools such as paired sample t-tests and independent sample t-tests to determine significant differences. This approach is effective for measuring the impact of technology-enhanced instruction on language learning outcomes and identifying any changes in student motivation and engagement

Population and Sampling Techniques

The target population for this study comprises all Junior Secondary School Class Two (JSS2) students in public secondary schools in Badagry Local Government Area of Lagos State. This population is considered appropriate because JSS2 students have foundational exposure to English language instruction and are at a critical stage of language development where technology-based interventions can be meaningfully assessed.

To ensure representativeness and manageability, the study focused on six public junior secondary schools selected from the population using a multi-stage sampling technique:

1. Stage One – Purposive Sampling:
Badagry Local Government Area was purposively selected due to its semi-urban characteristics and reported challenges in English language achievement.

2. Stage Two – Stratified Sampling:
The schools in the area were stratified based on geographical zones (e.g., rural vs. semi-urban sections of Badagry), and six schools were randomly selected three for the experimental group and three for the control group.

3. Stage Three – Simple Random Sampling:
From each selected school, 30 JSS2 students were randomly selected, giving a total sample size of 180 students (90 in the experimental group and 90 in the control group). Random sampling at this level ensures that all students have an equal chance of being selected and that the groups are comparable.

This sampling technique provides a fair representation of the student population and buttresses the generalization of the findings within the local government area.

Method of Data Analysis
The data collected from this study were analyzed using both descriptive and inferential statistical methods, based on the nature of the data and the research questions.

1. Descriptive Statistics:
Descriptive statistics such as mean, standard deviation, frequency counts, and percentages were used to summarize and describe the characteristics of the data. This includes the pre-test and post-test scores, students' responses to the engagement and motivation questionnaire, and demographic information. These statistics provided a clear overview of student performance and perceptions before and after the intervention.

2. Inferential Statistics: To test the hypotheses and determine whether significant differences exist between the experimental and control groups, the following inferential techniques were employed: **Paired Sample t-Test** was used to compare the pre-test and post-test scores within each group (experimental and control) to determine if there was any improvement due to the intervention. **Independent Sample t-Test** was used to compare the post-test scores between the experimental and control groups to assess the impact of the language learning apps on English language achievement.

Analysis of Variance (ANOVA) was used to examine the influence of other variables such as gender or school location on students' performance.

Chi-square test was used to analyze categorical data from questionnaire responses, and to evaluate levels of students' motivation and engagement.

Instrumentation
The study employed two main instruments for data collection:

1. English Language Achievement Test (ELAT):
This is a 40-item standardized multiple-choice test designed to assess students' proficiency in key areas of English such as vocabulary, grammar, reading comprehension, and sentence structure. The test was administered both before (pre-test) and after (post-test) the intervention to measure learning gains.

2. Student Engagement and Motivation Questionnaire (SEMQ):
This is a 15-item structured questionnaire designed to gather data on students' level of interest, participation, and motivation in learning English, particularly in relation to the use of language learning apps. The questionnaire used a 4-point Likert scale (Strongly Agree to Strongly Disagree).

Validity and Reliability of the Instruments

Validity:
The face and content validity of both instruments were ensured through expert's review. The instruments were submitted to language education specialists, ICT in education experts, and secondary school English teachers to evaluate the relevance, clarity, and appropriateness of each item. Their suggestions and corrections were incorporated into the final versions of the instruments. To ensure reliability, the ELAT and SEMQ were pilot-tested on a group of 30 JSS2 students in a school outside the sampled population.

Presentation of Results

Research Question 1: What is the difference in English language achievement between students who use language learning apps and those who do not?

Table 1: Pre-test and Post-test Mean Scores of Experimental and Control Groups

Group	N	Pre-test Mean (%)	Post-test Mean (%)	Mean Gain (%)
Experimental Group	90	42.8	67.3	24.5
Control Group	90	43.1	54.6	11.5

Interpretation:
The experimental group showed a greater mean gain (24.5%) compared to the control group (11.5%), indicating a positive effect of the language apps.

Research Question 2: How do language learning applications affect students' motivation to learn English?

Table 2: Students' Motivation Levels (Experimental Group Only)

Motivation Item	Strongly Agree	Agree	Disagree	Strongly Disagree
I enjoy learning English using mobile apps	54 (60%)	24 (26.7%)	8 (8.9%)	4 (4.4%)
The apps make English lessons more interesting	49 (54.4%)	31 (34.4%)	6 (6.7%)	4 (4.4%)
I feel more motivated to study English after using them	51 (56.7%)	28 (31.1%)	7 (7.8%)	4 (4.4%)

Interpretation:
Over 85% of students in the experimental group agreed that the apps increased their motivation and enjoyment of English learning.

Research Question 3: To what extent do language learning apps influence students' engagement during English lessons?

Table 3: Mean Engagement Scores by Group

Group	N	Engagement Mean Score (Max = 4.0)	Standard Deviation
Experimental Group	90	3.48	0.52
Control Group	90	2.71	0.63

Interpretation:
Students in the experimental group showed higher engagement levels, with a mean score of 3.48 compared to 2.71 in the control group.

Research Question 4: What are students' perceptions and experiences regarding the use of language learning apps?

Table 4: Summary of Students' Perceptions (Experimental Group)

Perception Statement	**Positive (%)**	**Neutral (%)**	**Negative (%)**
The app helped me learn new vocabulary	82 (91.1%)	5 (5.6%)	3 (3.3%)
I prefer using the app along with classroom lessons	76 (84.4%)	9 (10%)	5 (5.6%)
I encountered technical difficulties using the apps	21 (23.3%)	10 (11.1%)	59 (65.6%)

Interpretation:
A majority of students had positive perceptions about the use of apps, with few experiencing technical issues.

Conclusion
The purpose of this research was to examine the impact of computer-assisted language learning (CALL) through mobile language applications (Duolingo and Busuu) on English language instruction motivation and performance of junior secondary school students in Badagry, Lagos State. The findings revealed that students exposed to language learning apps performed significantly better in English achievement tests compared to those taught through traditional methods. Additionally, the experimental group showed greater levels of motivation and engagement, with many students expressing positive attitudes and preference for using the apps alongside regular classroom instruction.

The research affirms that mobile learning technologies, when thoughtfully blended into the curriculum, can play an important role in addressing some of the persistent challenges in English language education in Nigeria, including large class sizes, lack of individual attention, and low student participation. Furthermore, the interactive, game-like features of language apps helped to sustain learners' interest and support self-paced learning. These are key elements often missing in conventional instruction.

Despite these positive outcomes, the study also noted barriers such as access to devices, poor internet connectivity, and limited teacher preparedness. These factors must be addressed to ensure equitable and sustainable implementation of CALL in public schools.

Recommendations

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

1. **Curriculum Integration**
   Educational authorities should formally integrate mobile language learning applications into junior secondary school English instruction to supplement traditional methods.
2. **Digital Infrastructure and Teacher Support**
   Government and private stakeholders should provide affordable devices, reliable internet access, and regular teacher training programs to ensure effective use of CALL tools.
3. **Blended Learning Approaches**
   Schools should adopt blended learning models that combine face-to-face instruction with app-based learning to enhance engagement and achievement.
4. **Monitoring and Evaluation**
   School management should establish systems to monitor and evaluate the use of language learning apps, ensuring they are applied effectively and deliver intended outcomes.
5. **Future Research**
   Further studies should explore the long-term effects of CALL on student learning, cost-effectiveness, and teacher readiness for sustainable implementation.

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