Effects of Digital Flashcards and Flipcharts on Junior Secondary Students' Academic Achievement in French Grammar

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ABSTRACT

Digital flashcards are one such technology that is becoming more and more popular; they provide a dynamic and interactive method of language learning. Innovative teaching techniques are constantly changing the face of education in the digital age, especially in language learning. The study used a quasi-experimental research design to study students and teachers in Lagos State public Junior Secondary Schools II. It included 160 participants aged 12-17, six French teachers from six Education Districts, and selected schools based on factors like school size, location, and demographic composition. The sample size was distributed across the selected schools to ensure diversity, the researcher sought the permission of the school's head for the administration of the instruments and the purpose of the instrument was discussed with the teachers concerned for their consent. The instrument used in this study was the French Language Achievement Test on Grammar (FLATG). The peer review ensured content validity and face validity of instruments, adjusting language to suit student comprehension. The items were moderated, and feedback was sought, resulting in necessary corrections. The final instruments were produced for field testing. The study assessed the reliability of digital flashcards and flipcharts on Junior Secondary students' French grammar academic achievement using the French Language Achievement Test on Grammar (FLATG). Cronbach's Alpha was used to measure internal consistency, resulting in a reliability coefficient of 0.85. The instrument's data was analyzed using ANCOVA's inferential statistics. The finding revealed that the treatment on the flashcards, flipcharts and control group classrooms in their French grammar with an F-value of $[F (2,522) =4.327; p<0.05]$ was significant at 0.014. This implies that the treatments have effects on students' achievement in French grammar. Conclusively, using these technological innovations can result in more efficient and interesting language teaching methods as they develop. Recommendations are made based on the findings of this study, the principal should give teachers thorough instructions on how to make and use digital flip charts and flashcards and this will help the teachers integrate digital flashcards into language teaching and learning more interesting.

HOW TO CITE

Introduction

Teaching French as a foreign language in Nigeria is mandated for both primary and secondary education levels. The National Policy on Education (NPE, 2013), which mandates French as a second language for primary and junior secondary school children, emphasises the value of learning the language. The French program's objective in Nigerian basic education is to help students attain a decent level of proficiency in reading and comprehending simple texts, writing about a basic subject or event, and speaking and listening to French at an acceptable rate. However, several factors make it difficult to apply this policy, such as resource accessibility, classroom dynamics, instructor skills and methods, and student motivation.

Digital flashcards are one such technology that is becoming more and more popular; they provide a dynamic and interactive method of language learning. Innovative teaching techniques are constantly changing the face of education in the digital age, especially in the field of language learning. Teachers are experimenting with different tools to improve the efficiency of the teaching and learning processes as a result of the incorporation of technology into the classroom. Digital flashcards are one such technology that is becoming more and more popular; they provide a dynamic and interactive method of language learning.

Lagos State, the largest city in Nigeria and a major economic centre, must ensure that its students have the language skills necessary to successfully traverse the globalized world. Knowing how effective digital flashcards are in this situation has a big impact on teaching strategies and educational regulations. Adebayo (2021) added that this proclamation clarifies the emphasis on teaching and learning French in the larger education system for Nigerian students, highlighting the importance of knowing the language in that country. French language training was consequently incorporated into the nation's primary, secondary, and postsecondary educational systems. In the beginning, secondary schools, institutes of education, and universities throughout Nigeria employed foreign professionals to teach French. Around this time, Nigerian students learning French were sent to study abroad in France for a year, allowing them to immerse themselves in the language and improve their skills (Adebayo, 2021).

The development of educational technology in recent years has yielded innovative tools designed to enhance the quality of teaching and learning. Digital flashcards are one of these tools that have grown in popularity because of their potential to completely transform conventional teaching techniques, especially in language learning.

A chart is a visual representation designed to elucidate ideas or concepts that might pose challenges when conveyed verbally. One commonly employed type of chart for this purpose is the digital flash card and flip Chart. This particular form of charting involves presenting information with various components of the message written or depicted on individual sheets. These sheets are subsequently compiled into a cohesive unit (Ngure, 2014). In the words of Shuhratjon, Tursunoy, and Dildora (2019), a flashcard is a card with information on both sides that is intended to aid in remembering.

The term "digital" in the context of flashcards is associated with numbers or computer technology. Wikipedia lists various types of digital flashcards, including Anki, Brainscape,

Cerego, Course Hero, Linguist, Memorise, Mnemosyne, Pimsleur Language Programs, Pleco Software, Quizlet, Supermemo, Synap, and WaniKani. (Shuhratjon, Tursunoy & Dildora, 2019).

One approach to fulfilling this requirement is the utilization of flashcards. In the wider educational context, research has demonstrated that flashcards are an effective tool for acquiring new information (Kornell, 2009; Nakata, 2008; Nation, 2011; Nist & Joseph, 2008 as cited in Byrd & Lansing, 2016). While there are diverse methods or systems for employing flashcards, one of the most efficacious is spaced rehearsal. This involves reviewing flashcards containing the desired information multiple times at specific intervals until mastery is achieved (Kornell, 2009). Byrd and Lansing (2016) contribute to the discussion by asserting that the combination of technology and flashcards has demonstrated effectiveness in the acquisition and retention of second language (L2) vocabulary. This suggests that incorporating both traditional flashcards and modern technological tools can enhance the language-learning process.

French learning and proficiency were given priority less in the past. At one point, as observed by Moir and Nation (2008), there was a widespread belief that lexical instruction was unnecessary because it might happen naturally, which made teaching French unpopular (Nation, 2011). There is a growing body of evidence supporting the usefulness of French grammar, knowledge comprehension, and language learning. Griffiths (2016), for example, points out that there has been a recent realization of the value of teaching and learning French.

As can be seen, throughout the history of teaching languages, flashcards have served several educational functions. As an illustration, improving feedback for teachers, classroom interaction between students and teachers, grasp of French grammar and word recognition for those students who struggle with reading (Culyer, 2017). Teaching students to practice their vocabulary building and completion drills in the study of a foreign language is another illustration (Ervin, 1988).

However, a flipchart is a stationary instrument used for visual presentations and communication that is made up of big paper sheets that are typically attached to a frame. Flip charts continue to be a very useful tool for taking notes, brainstorming sessions, illustrations, and demonstrations.

According to Arief et al. (2005), flip charts are pictures or diagrams that show how concepts, things, organizations, or people sequentially change throughout time and space. A good flip chart should be simple enough for kids to understand, free of extraneous details, and up to date. When presenting the data sequence on a chart proves to be difficult, it can be used to convey any kind of information (Azhar et al, 2006). A flipchart can serve as a tool for delivering instructional commands in learning settings. Its utilization involves flipping to the next sheet once the message on the current sheet has been displayed, replacing it with the subsequent content provided.

When the sequential presentation of information proves challenging on a traditional chart, a flipchart can be employed effectively (Arief et al., 2012). Utilizing flipcharts in teaching and learning is highly effective. A flipchart comprises summaries, diagrams, images, and tables that unfold sequentially, corresponding to the learning material being covered. This paper aims to examine the effects of using digital flashcards to teach French grammar in the junior

secondary schools of the public education system in Lagos State.

Statement of the Problem

In contemporary language education, the integration of digital tools has become increasingly prevalent, aiming to enhance the learning experience and outcomes for students. However, there is a noticeable gap in the existing research regarding the specific impact of two widely used digital aids, digital flashcards and flipcharts in teaching and learning French grammar. The problem at hand revolves around the need to investigate and understand the potential effects of digital resources in the context of French language instruction. The traditional methods of teaching French grammar often involve static instructional approaches, which may not fully capitalize on the interactive and collaborative potential of digital tools.

The extent to which digital flashcards and flipcharts contribute and fostering student engagement, communication, and collaboration, remains a gap in the literature. Understanding the influence of these tools on the dynamics of classroom engagement is crucial for teachers seeking effective strategies to facilitate language learning. Although the inclusion of visual aids, like digital flashcards and flipcharts, is assumed to improve understanding, there is not much actual data to back up this claim in the particular context of French grammar. The issue is the paucity of thorough studies examining the effects of digital tools on students' memorization, and application of French grammar principles. In this paper, examining the efficaciousness of digital flashcards will aid teachers who aim to maximize language teaching approaches.

Theoretical Framework
Schea Theory

Teachers' expertise provides an extensive understanding of the theories guiding teaching and learning allowing them to identify the reasons for the effectiveness of particular methods, know how to adapt them appropriately, and know when to employ them. To clarify the effect of flashcards, the knowledge of French grammar in Lagos Junior Secondary Schools, and teacher responses. Examining some applications and relevant theories is necessary.

Schema theory refers to the cognitive and conceptual structure and representation of knowledge (Unrau & Alvermann, 2013). Schemas can be thought of as mental filing cabinets that allow individuals to process, encode, organize, and retrieve information (Anderson, 2013). Comprehension results from the activation of schemas, which provide a framework for explaining objects and events within a text (Anderson, 2013).
Schema theory describes in detail how the background knowledge of the learner interacts with the reading task and illustrates how a student's knowledge and previous experience with the world are crucial to deciphering a text. The ability to use these schemata, or background knowledge, is fundamental for efficient comprehension to take place. According to Nunan (1999), schema theory is based on the notion that past experiences lead to the creation of mental frameworks that help us make sense of new experiences

Smith (1994) calls schemes the extensive representations of more general patterns or regularities that occur in our experience. As an example, he uses our generic scheme for a classroom, which allows us to make sense of classrooms we have not previously been in. This

means that past experiences will be related to new experiences, which may include the knowledge of "objects, situations, and events as well as knowledge of procedures for retrieving, organizing and interpreting information" (Kucer, 1987). This theory simply means that people categorize and interpret data using mental models, or schemas, that they have already formed from past experiences and knowledge. Schema theory argues that students would integrate new grammatical structures and vocabulary more efficiently when delivered in a way that matches their existing mental frameworks, which applies to learning French grammar with digital flashcards and flipcharts.

Teachers can use the concepts of schema theory to construct digital flashcards and flipcharts that activate and reinforce students' pre-existing schemas when teaching French grammar. For instance, new grammatical rules can be linked to well-known linguistic patterns or ideas in the student's native tongue or other languages they have already studied, using flashcards and flipcharts design. When new material is connected to well-known schemas, pupils are better able to understand and remember it. For teaching and learning French grammar in junior secondary schools, the application of schema theory can improve the results of employing digital flashcards and flipcharts. Teachers can build exciting and productive learning experiences that enhance students' language proficiency development by utilizing these theoretical frameworks to guide their instructional design and learning activities.

Research Questions

The following research question guided the process of this study:

i. How does the use of digital flashcards and flipcharts affect French Grammar lessons in Lagos State public junior secondary schools?

Hypothesis

HO1: There is no significant effect of using digital flashcards and flipcharts in teaching and learning French grammar lessons in Lagos State Public Junior Secondary Schools.

Methodology

The study used a quasi-experimental research design to study students and teachers in public Junior Secondary Schools II in Lagos State. It included 160 participants aged 12-17, six French teachers from six Education Districts, and selected schools based on factors like school size, location, and demographic composition. The sample size was distributed across the selected schools to ensure diversity, the researcher sought the permission of the school's head for the administration of the instruments and the purpose of the instrument was discussed with the teachers concerned for their consent. The instrument used in this study was the French Language Achievement Test on Grammar (FLATG). The peer review ensured content validity and face validity of instruments, adjusting language to suit student comprehension. The items were moderated, and feedback was sought, resulting in necessary corrections. The final instruments were produced for field testing. The study assessed the reliability of digital flashcards and flipcharts on Junior Secondary students' French grammar academic achievement using the French Language Achievement Test on Grammar (FLATG). Cronbach's Alpha was used to measure internal consistency, resulting in a reliability coefficient of 0.85. The instrument's data was analyzed using ANCOVA's inferential statistics.

Results

Research Question One: How does the use of digital flashcards and flipcharts affect French grammar lessons in Lagos State public junior secondary schools? In dealing with this research question, the participant's scores on the French Grammar Achievement Test were summarized in terms of pre-test and post-test. The mean difference of each group is illustrated in the table below.

Table 1: Descriptive statistics of the flashcards, flipcharts and control group in their French Grammar Achievement Test

Grammar Achievement Test	N	Post-test Mean	Pre-test Mean	Mean Difference
Flashcards group	143	6.92	2.75	4.17
Flipcharts group	150	12.94	8.71	4.23
Conventional group	230	11.36	6.10	5.20
Total	523	10.60	5.93	4.67

Table shows that participants in the conventional group had the highest mean difference of 5.20; the participants in the flipcharts group were next with a mean difference of 4.23 and the participants in the flashcards group had the least mean difference of 4.17.

The ANCOVA of the student's achievement test on French Grammar

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	19772.995[a]	6	3295.499	312.355	.000	.784
Intercept	1374.514	1	1374.514	130.280	.000	.202
Pre-test	15671.760	1	215671.760	1485.408	.000	.742
Groups	91.293	2	45.647	4.327	.014	.016
Sex	.046	1	.046	.004	.947	.000
Groups * Sex	141.808	2	70.904	6.720	.001	.025
Error	5444.046	516	10.550			
Total	165516.000	523				
Corrected Total	25217.040	522				

a. R Squared = .784 (Adjusted R Squared = .782)

The Table is the summary of findings, showing the main and interaction effects of the treatments and the sex of the students. The Table shows that the mean square value of the post-test is 1374.514 and the pre-test is 15671.760, indicating a significant difference as the pre-test mean square value is greater than the post-test means the square value of the students in the two experimental and control groups. The summary of findings extracted from hypothesis was presented in the following table in line with their respective variable.

Research Hypothesis One: There is no significant difference in digital flashcards and flipcharts during French grammar lessons in Lagos State Public Junior Secondary Schools. To test this hypothesis, the data collected were subjected to Analysis of Covariance (ANCOVA) which was extracted from Table.

Effects of treatments on the flashcards, flipcharts and control group classrooms in their French Grammar and Comprehension Achievement Test

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Groups	91.293	2	45.647	4.327	.014	.016
Error	5444.046	516	10.550			

Table shows that the treatment on the flashcards, flipcharts and control group classrooms in their French grammar with an F-value of [$F_{(2,522)}$ = 4.327; $p < 0.05$] was significant at 0.014. This implies that the treatments have effects on students' achievement in French grammar. Therefore, hypothesis one which says there is no significant difference in digital flashcards and flipcharts during French grammar lessons in Lagos State Public Junior Secondary Schools is rejected; that is, HO_1 is hereby not upheld.

Discussion of findings
In dealing with this research question, the participant's scores on the French Grammar Achievement Test were summarized in terms of pre-test and post-test. The result in Table 1 shows that participants in the conventional group had the highest mean difference of 5.20; the participants in the flipcharts group were next with a mean difference of 4.23 and the participants in the flashcards group had the least mean difference of 4.17. This proves that the teaching and learning of French grammar poses unique challenges, given its inherent complexity and abstract nature. Conventional methods often rely on traditional instructional materials, which may not fully cater to the diverse learning styles and preferences of students. With the advent of digital technologies, educators now have the opportunity to explore more dynamic and interactive tools to engage students in the language learning process. According to Onukaogu (2001), the conventional mode of instruction gave students fewer opportunities to actively participate in class, which made them less confident to express themselves. Indiana (2011) opines that the advantages of flashcards are very obvious, such as flashcards are easy to carry anywhere, Practice to make and use, flashcard help pupils summarize and memorise, the media is also very fun to use as a media learning, can be used in the form of the game.

Hypothesis one investigated the effect of using digital flashcards in teaching and learning French grammar lessons in Lagos State Public Junior Secondary Schools. Table 2 shows that the treatment on the flashcards, flipcharts and control group classrooms in their French Grammar with an F-value of [$F_{(2,522)}$ = 4.327; $p < 0.05$] was significant at 0.014. This implies that the treatments have effects on students' achievement in French Grammar. Therefore, the hypothesis that says There is no significant effect of using digital flashcards in teaching and learning French grammar lessons in Lagos State Public Junior Secondary Schools is rejected; that is, HO_1 is hereby not upheld. In addition to improving vocabulary acquisition, the use of flashcards has also been shown to promote teaching and learning French grammar. The findings of this study were in agreement with the findings of research conducted by Salma Nodoushan (2012) discovered that incorporating flashcards into the classroom environment led to heightened student engagement and promoted peer interaction. This

finding was corroborated by Alqarni's study (2019), which demonstrated that the utilization of flashcards contributed to an increased level of student participation in various classroom activities.

Conclusion

In conclusion, the emergence of digital flashcards and flip charts signifies a substantial change in the way teachers deliver language education. These innovative materials provide dynamic, personalized, and interactive learning opportunities that have the potential to positively impact both teachers and students. Using these technological innovations can result in more efficient and interesting language teaching methods as they develop. The study revealed that the treatment on the flashcards, flipcharts and control group classrooms in their French Grammar with an F-value of [$F_{(2,522)} = 4.327$; $p < 0.05$] was significant at 0.014. This implies that the treatments have effects on students' achievement in French grammar.

Recommendations

The following suggestions will help the teachers integrate digital flashcards into language teaching and learning more successfully:

i. The principal should give teachers thorough instructions on how to make and use digital flip charts and flashcards. Teacher can perform at their best in the classroom by being familiar with the capabilities and functionalities of the tools.

ii. Teachers should effectively incorporate the usage of flip charts and digital flashcards into the language curriculum. For maximum efficacy, make sure the content of these resources is in line with learning outcomes, language proficiency levels, and lesson objectives.

iii. Teachers should think about offering assistance or materials to students who could experience technical difficulties.

iv. Teachers should promote group projects that make use of flip charts and digital flashcards for collaborative learning.

v. Teachers should incorporate group activities, conversations, and cooperative projects that make use of these resources to promote peer engagement and communication.

vi. Teachers should implement feedback mechanisms by using digital flashcards to provide timely evaluation and feedback.

vii. Make use of tools like progress monitoring, interactive activities, and quizzes to keep an eye on students' progress and provide them with specific feedback.

viii. Teachers should research new resources and platforms that can improve language instruction even more, and keep up with developments in educational technology.

ix. Teachers should accept experimentation and innovation as a means of enhancing teaching and learning strategies over time.

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