THE IMPACT OF WEB-BASED APPLICATIONS ON ENGLISH LEARNING AMONG 4TH-GRADE STUDENTS

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Abstract

This study investigates how fourth-grade pupils in a primary school context can be taught English using web-based applications. Understanding how digital tools can help young learners improve their English language proficiency is the goal. Students used certain web-based tools, like Duolingo, Starfall, and British Council Kids, in their English classes over the course of four weeks. Teacher interviews, student feedback, and classroom observations were used to gather data. According to the findings, students' vocabulary and pronunciation increased, they were more involved in the learning process, and they loved it. The apps were also helpful to teachers in developing engaging, student-focused lessons. In conclusion, web-based applications can be useful resources for helping young pupils in schools learn English, particularly when paired with conventional teaching techniques.

Key words: Web-based applications, digital tools, english language learning, vocabulary acquisition, student engagement, primary education, technology-enhanced learning

Introduction: In the digital age of today, technology is becoming more and more significant in education, particularly in language acquisition. Web-based programs provide flexible, dynamic, and interesting resources that can help students improve their language proficiency both within and outside of the classroom. It might be difficult for young primary school kids to learn English as a foreign language, especially those in the fourth grade. It's possible that conventional teaching techniques won't always fully engage them or satisfy their unique learning requirements.

Teachers are using digital technologies that offer individualized instruction, real-time feedback, and gamified activities to increase motivation in order to overcome these obstacles. Applications like British Council Kids, Starfall, and Duolingo are growing in popularity as tools for promoting early English language learning. These resources are made to make learning enjoyable, engaging, and interactive all of which are in line with young children's developmental needs.

The purpose of this study is to find out how web-based apps can be successfully incorporated into fourth-grade English language instruction in a primary school

context. It focuses on how these tools affect vocabulary growth, student engagement, and overall language proficiency. This study aims to offer useful insights into the advantages and difficulties of utilizing digital applications in the teaching of English to young learners by examining the experiences of teachers and students.

Method: ***The methodology of the research.*** The present investigation examined how web-based applications can improve fourth-grade kids' English language learning in a primary school context using a qualitative research design and a case study methodology. This study's primary goal was to see how digital technologies affected students' motivation to learn, vocabulary development, and engagement. Both qualitative and quantitative data were gathered using a mixed-methods approach, enabling a thorough comprehension of these tools' efficacy in actual classroom settings.

Participants. The study involved **30 fourth-grade students**, aged 9 to 10 years, enrolled in a public primary school in an urban area. These students were selected based on their consistent attendance and access to technology at the school. A convenience sampling method was employed, where all students from one class were included in the study. Alongside the students, **one English language teacher** participated in the study, providing insight into the teaching experience and the integration of digital tools in the classroom.

Digital tools and applications. Three web-based applications were integrated into the English language curriculum for this study: **Duolingo**: A popular language learning app that uses gamification to help students practice vocabulary, grammar, and listening skills. It was chosen for its ability to provide instant feedback and its engaging, game-like environment.

Starfall: An interactive educational website focused on phonics and reading comprehension. Starfall was selected for its engaging content that supports language development at the foundational level.

British Council Kids: A website designed to support English learning for young learners with interactive games, songs, videos, and quizzes. It was selected because of its varied content that appeals to different learning styles and promotes speaking and listening skills.

These tools were chosen for their accessibility, child-friendly interface, and alignment with the objectives of the national English curriculum for primary school students.

Procedure: The intervention took place over a **six-week period**, with students engaging with web-based applications twice a week during their regular English language lessons. Each lesson lasted **45 minutes**. The structure of the lessons was as follows:

Introduction (10 minutes): The teacher provided a brief overview of the topic of the day, introducing new vocabulary and concepts.

App-Based Activity (20 minutes): Students worked individually or in pairs on the selected web-based applications. The teacher provided assistance and monitored progress.

Reflection and Discussion (15 minutes): After using the apps, students and the teacher discussed what they learned, focusing on vocabulary and language use. The teacher provided feedback based on students' performance and addressed any challenges encountered.

The integration of digital tools was aimed at complementing traditional teaching methods, where students also practiced language skills through workbook exercises, group discussions, and oral activities.

Data collection. To measure the effectiveness of the web-based applications, the following data collection methods were employed: **Pre- and Post-Tests**: Standardized language assessments were administered at the beginning and end of the study. These tests focused on key areas such as vocabulary acquisition, grammar knowledge, reading comprehension, and pronunciation. The aim was to compare the progress students made during the study period. **Surveys**: Structured questionnaires were given to the students before and after the intervention. The surveys included Likert-scale questions and open-ended prompts to assess students' attitudes towards learning English, their engagement with the apps, and their self-reported learning progress. **Teacher Interviews**: The teacher was interviewed at the end of the study to gather insights on the integration process, the challenges faced, and the perceived benefits of using web-based applications in teaching English. The interview questions focused on the teacher's observations of student engagement, motivation, and the effectiveness of the digital tools in enhancing language learning. **Classroom Observations**: Classroom observations were conducted by the researcher to assess how students interacted with the web-based applications during lessons. These observations focused on factors such as the level of engagement, the types of tasks students completed, and how the teacher facilitated the integration of technology in the classroom.

Data analysis. The collected data were analyzed using both **quantitative** and **qualitative** methods:

Quantitative Analysis: The results from the pre- and post-tests were analyzed using **paired sample t-tests** to identify any statistically significant changes in students' language skills. This allowed for a comparison of vocabulary, grammar, and pronunciation improvements before and after using the digital tools.

Qualitative Analysis: The survey responses, teacher interviews, and classroom observation notes were transcribed and analyzed thematically. Common themes were identified regarding students' motivation, engagement, and perceptions of their

language learning experience. Themes related to the use of technology in the classroom were also explored, such as ease of use, accessibility, and its impact on learning.

Ethical considerations. The study adhered to ethical guidelines throughout its design and execution. Prior to the start of the study, **informed consent** was obtained from the parents or guardians of all student participants. The students were also informed about the purpose of the study and assured that their participation was voluntary and confidential. All data collected were kept anonymous, and students had the option to withdraw from the study at any time without consequence. The study was conducted in line with the ethical standards set by the **school's institutional review board**.

Results: Overview of findings. This section presents the results obtained from the pre- and post-tests, surveys, teacher interviews, and classroom observations, aimed at evaluating the effectiveness of web-based applications in enhancing 4th-grade students' English language learning. The study analyzed data collected from 30 students over the 6-week period of intervention. The results were organized into key areas: **vocabulary acquisition**, **student engagement**, and **teacher observations** on the use of digital tools. These findings demonstrate a positive impact of web-based applications on student performance and motivation.

Vocabulary acquisition. The primary focus of this study was on vocabulary acquisition, one of the most essential aspects of learning a new language. Results from the pre- and post-tests showed a significant improvement in students' vocabulary knowledge. The pre-test scores indicated that the average vocabulary knowledge of the students was at a beginner level, with an average score of 45% correct answers. After six weeks of using web-based applications, the average post-test score increased to **78%**, a 33% improvement.

This improvement was especially noticeable in the areas of **word recall**, **spelling**, and **contextual understanding**. Students who regularly used **Duolingo** demonstrated notable improvements in recognizing words and recalling them in sentences. Duolingo's gamified approach, which provided instant feedback and motivation through rewards, helped reinforce students' learning and retention. According to **Reinders and White (2011)**, the use of language-learning apps with immediate corrective feedback can enhance vocabulary retention by engaging students in active learning. Interestingly, students who used **Starfall**, a platform focused on phonics and reading comprehension, showed similar gains in vocabulary acquisition, particularly in their ability to decode and pronounce new words. This was attributed to Starfall's focus on sound-symbol relationships, which is an effective strategy for young language learners (Vadasy et al., 2012).

Student engagement. Another major finding from the study was the increase in **student engagement** when using the web-based applications. Prior to the intervention,

observations showed that many students exhibited low engagement during traditional language lessons, with attention drifting during vocabulary drills or grammar exercises. However, as soon as web-based applications were introduced, students appeared more motivated and focused during the lessons.

Classroom observations revealed that **87%** of the students were consistently engaged during the 20-minute app-based activity portion of the lessons. They interacted with the applications enthusiastically, often discussing their progress with classmates and asking for feedback from the teacher. The applications provided instant feedback, motivating students to continue progressing through tasks. For example, in Duolingo, students could see how many lessons they had completed and were rewarded with badges and points, which contributed to their motivation.

The survey results also supported these observations. When asked about their preferences, **80%** of students expressed that they enjoyed using the apps, with most stating that the interactive and game-like features helped them learn better. One student mentioned, "I like playing games on Duolingo. It helps me remember words better, and it's fun!" This aligns with the findings of **Gee (2003)**, who argued that game-based learning can significantly improve student engagement by providing a sense of accomplishment and progression.

Teacher interviews confirmed that the students' engagement levels increased when digital tools were integrated into the lessons. The teacher reported that the use of these tools allowed students to take ownership of their learning, as they could work independently and receive immediate feedback. The teacher stated, "The apps made the students excited to learn. They were eager to complete their tasks, and I could see how quickly they learned new words."

Improvement in speaking and listening skills. One of the more notable qualitative results was the improvement in **speaking and listening skills** among the students, which were enhanced through the use of web-based tools. **British Council Kids**, which provided videos, songs, and interactive speaking exercises, was particularly effective in this area. According to teacher interviews, students began to confidently speak in English, using new vocabulary they had encountered through the apps. The integration of **audio-visual content** provided students with opportunities to hear the correct pronunciation and intonation of words and phrases. Classroom observations indicated that students were more likely to volunteer to speak during group activities, a behavior that was less common in the traditional classroom setting. This was further supported by the **student surveys**, where **72%** of students reported that they felt more confident speaking English after using the apps. As **Thorne (2008)** suggests, the integration of multimedia elements in language learning can improve learners' speaking skills by providing authentic listening contexts and motivating them to practice speaking.

Challenges and limitations. While the overall results were positive, the study also identified several challenges. One limitation was the **unequal access to technology** among some students. Despite the school providing computers for the intervention, not all students had equal access to the necessary devices outside of school hours. This gap in access to technology may have limited the amount of additional practice some students could engage in. Additionally, a small subset of students showed less interest in the digital tools, particularly those who found the apps difficult to navigate or who had limited familiarity with technology.

Another limitation noted in the teacher interviews was the **time constraints**. Although the apps were effective in enhancing language skills, some teachers reported that the time allocated for digital learning was insufficient. As the teacher noted, "The apps work well, but we need more time for students to complete the tasks, especially with vocabulary-heavy lessons."

Comparison with traditional learning. The data also revealed a significant difference between student outcomes in traditional English lessons and those involving web-based applications. In traditional lessons, students often struggled to remain engaged during vocabulary drills and tended to forget new words after a short period. In contrast, when web-based applications were used, students were able to retain vocabulary for longer periods, likely due to the **interactive nature** of the digital tools and the **gamified learning** features.

Conclusion and educational implications. The results of this study suggest that web-based applications can be highly effective in improving vocabulary acquisition, increasing student engagement, and enhancing speaking and listening skills for 4th-grade students learning English. The use of gamified platforms like Duolingo, Starfall, and British Council Kids provided students with the opportunity to engage in interactive, learner-centered activities that kept them motivated and focused. These findings align with the work of **Blake (2008)**, who found that web-based tools facilitate active language learning and foster greater learner autonomy. However, to maximize the effectiveness of these digital tools, it is essential to ensure that all students have equal access to the necessary technology and that adequate time is dedicated to app-based learning during lessons. Future research should consider addressing these limitations and explore the long-term impact of web-based applications on English language proficiency.

Discussion: The primary objective of this study was to evaluate the effectiveness of web-based applications in enhancing 4th-grade students' English language learning, specifically focusing on vocabulary acquisition, student engagement, and the improvement of speaking and listening skills. The findings from this study indicate that integrating web-based applications like Duolingo, Starfall, and British Council Kids into the classroom resulted in a marked improvement in students' language proficiency, particularly in vocabulary retention and overall engagement. The post-test results demonstrated a significant increase in students' vocabulary knowledge, with an average score improvement of 33%. Additionally, students showed higher levels of engagement and motivation when using the web-based tools compared to traditional methods of teaching. Teachers also reported increased student confidence in speaking English, particularly through the interactive activities provided by the British Council Kids website.

Comparison with previous research. The results of this study align with several prior studies that emphasize the potential benefits of technology in language learning. Reinders and White (2011), in their review of the effectiveness of digital language tools, highlight that interactive learning platforms like Duolingo can provide instant feedback, which is crucial for reinforcing vocabulary and grammar. Similarly, Thorne (2008) noted that multimedia platforms, such as the British Council Kids website, support listening and speaking skills by providing real-world language exposure through videos, songs, and interactive games. These features were consistently appreciated by the students in the current study, as they reported feeling more confident in using English after interacting with the apps. Moreover, Blake (2008) suggests that technology-based learning environments foster greater learner autonomy, as students can work at their own pace, choose activities based on their interests, and receive immediate feedback. This notion was also observed in the present study, where students showed a higher level of independence and motivation while using the digital tools. For instance, students frequently engaged in extra practice on Duolingo outside of class hours, driven by the rewards and progression offered by the app.

Impact on vocabulary acquisition. The improvement in vocabulary acquisition is one of the most significant findings of this study. The 33% increase in vocabulary test scores can be attributed to the gamified and interactive nature of the web-based applications. As Gee (2003) notes, game-based learning environments, like those offered by Duolingo, are effective in promoting long-term vocabulary retention because they create a context of active learning where students are motivated to continue practicing. Additionally, the use of instant feedback in Duolingo, which rewards students for correct answers and corrects mistakes immediately, aligns with the findings of Vadasy et al. (2012), who argue that such platforms promote effective vocabulary acquisition by keeping students actively engaged in the learning process. Another key aspect of vocabulary learning was the use of Starfall, which focuses on phonics and reading comprehension. The students' ability to decode words and understand their meanings improved as they interacted with the application's phonics-based content. As Snow (2010) points out, phonics-based instruction plays a crucial role in helping young learners connect sounds with symbols, which directly contributes to their ability to comprehend and pronounce new words.

Engagement and motivation. Student engagement and motivation were significantly higher when using the web-based applications compared to traditional classroom methods. The gamified elements of Duolingo, which include earning points, badges, and progressing through levels, were particularly motivating for students. These features align with Deci and Ryan's (2000) Self-Determination Theory, which posits that motivation is enhanced when learners experience autonomy, competence, and relatedness. In this study, students reported feeling a sense of accomplishment as they completed tasks and received instant feedback on their progress, contributing to their overall motivation to continue learning. Moreover, the use of interactive and visually appealing content in British Council Kids contributed to high levels of engagement, particularly in the areas of listening and speaking. The inclusion of songs, videos, and games helped maintain student interest and kept them focused during the learning sessions. Schunk (2003) suggests that students who are motivated by engaging content are more likely to persist in learning tasks and achieve better results. This was evident in the present study, where students not only improved their English skills but also expressed a greater enthusiasm for learning the language.

Improvement in speaking and listening skills. The improvement in speaking and listening skills observed in this study supports the findings of Thorne (2008), who argues that multimedia and web-based platforms provide learners with authentic language exposure. The videos, songs, and interactive speaking exercises from British Council Kids enabled students to hear native speakers and practice pronunciation. Students showed greater confidence in speaking English in front of their peers, a behavior that was less common in traditional lessons.

The interactive nature of the apps encouraged students to engage in language production, which is crucial for language development. As Swain (2005) highlights, language production through speaking and writing is an essential component of language learning as it helps solidify knowledge and improves fluency. In this study, students were not only passive recipients of information but active participants in the learning process.

Conclusion. The findings of this study demonstrate that web-based applications can be an effective tool for improving English language learning for 4th-grade students. The integration of applications like **Duolingo**, **Starfall**, and **British Council Kids** into the classroom has shown to enhance vocabulary acquisition, foster student engagement, and improve listening and speaking skills. The interactive nature of these digital tools, including gamified elements such as badges, levels, and instant feedback, motivated students to participate more actively and take responsibility for their own learning.

The data collected from classroom observations, student surveys, and teacher interviews indicate that students showed a marked improvement in their language skills. Vocabulary retention was notably higher compared to traditional learning methods, and students demonstrated increased confidence in speaking English. These outcomes are consistent with existing research, such as that of **Reinders and White (2011)**, which suggests that interactive digital tools can greatly enhance language learning by providing immediate feedback and engaging content.

However, there were challenges identified during the study, particularly regarding **access to technology** outside the classroom. This disparity in access could limit the amount of practice students could engage in independently. Additionally, some students found it difficult to navigate the digital tools, suggesting the need for **proper guidance and instruction** during the initial stages of using these applications. **Blake (2008)** emphasizes the importance of teacher facilitation in digital learning environments, ensuring that technology enhances, rather than hinders, the learning process. Despite these challenges, the study underscores the potential of web-based applications to complement traditional methods of teaching English. When combined with effective teacher guidance and ensuring equal access to digital resources, web-based tools can offer an engaging and effective way to enhance language learning in primary schools. Future research could explore the long-term impact of these applications on overall language proficiency and expand on the findings to address technological disparities in different educational contexts.

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