

Investigating the Effectiveness of Digital Game-Based Learning in Lowering Speaking Anxiety in Elementary EFL Classrooms

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Abstrak

"Penelitian ini mengkaji efektivitas Duolingo, platform Pembelajaran Berbasis Permainan Digital (DGBL), dalam mengurangi kecemasan berbicara di kalangan pelajar bahasa Inggris sebagai bahasa asing (EFL) muda. Penelitian ini dilakukan di SDN Sumodikaran 1 di Bojonegoro, Jawa Timur, dengan sampel 30 siswa kelas lima. Data diperoleh menggunakan pendekatan pre-test/post-test satu kelompok dengan Skala Kecemasan Kelas Bahasa Asing (FLCAS). Pre-test dilakukan pada pukul 07:30, dilanjutkan dengan intervensi berbasis Duolingo selama dua jam, dan diakhiri dengan post-test pada pukul 09:30. Analisis reliabilitas menunjukkan konsistensi internal yang memadai (Cronbach's α = 0.671 pada pre-test; 0.719 pada post-test). Uji normalitas memvalidasi asumsi parametrik (Shapiro-Wilk p = 0.578). Hasil uji t sampel berpasangan menunjukkan penurunan yang signifikan dalam kecemasan berbicara (p < 0.001), dengan skor rata-rata menurun dari 122,06 menjadi 103,50. Hasil ini menunjukkan bahwa Duolingo dapat secara signifikan mengurangi kecemasan berbicara pada pelajar EFL muda. Studi ini memperkaya literatur yang ada tentang DGBL dengan menekankan kemampuannya untuk menciptakan lingkungan yang mendukung dan menarik untuk pembelajaran bahasa".

Kata Kunci: Digital Game-Based Learning, speaking anxiety, EFL learners

Abstract

“This study examines the efficacy of Duolingo, a Digital Game-Based Learning (DGBL) platform, in alleviating speaking anxiety among young EFL learners. The study was carried out at SDN Sumodikaran 1 in Bojonegoro, East Java, with a sample of 30 fifth-grade students. Data were obtained utilizing a one-group pre-test/post-test approach with the Foreign Language Classroom Anxiety Scale (FLCAS). The pre-test was conducted at 07:30, succeeded by a two-hour Duolingo-based intervention, and concluded with a post-test at 09:30. Reliability analysis indicated satisfactory internal consistency (Cronbach’s $\alpha = 0.671$ pre-test; 0.719 post-test). The normality tests validated the parametric assumptions (Shapiro–Wilk $p = 0.578$). The paired sample t-test results indicated a substantial decrease in speaking anxiety ($p < 0.001$), with the mean score declining from 122.06 to 103.50. The results indicate that Duolingo can significantly reduce speaking anxiety in young EFL learners. The study enhances the existing literature on DGBL by emphasizing its capacity to foster supportive and engaging environments for language acquisition”.

Keywords: Digital Game-Based Learning, speaking anxiety, EFL learners

INTRODUCTION

English is essential in contemporary education, functioning as the global language for communication in both academic and social settings. Of the four language skills, speaking is regarded as one of the most crucial yet demanding components for learners of English as a Foreign Language (EFL). Challenges in verbal communication arise not solely from restricted vocabulary and grammatical understanding but are significantly affected by psychological elements, especially speaking anxiety. Prior research indicates that speaking anxiety can induce feelings of nervousness, fear of errors, reluctance to communicate, and even avoidance of oral tasks, hence adversely affecting students' confidence and speaking proficiency (Deyan, 2024; Syahrani et al., 2024). Consequently, speaking anxiety constitutes a significant obstacle that necessitates consideration in English language acquisition, particularly for EFL learners.

Speaking anxiety is recognized as a subtype of foreign language anxiety that emerges when learners must utilize English in communicative contexts, whether official or casual. This anxiety manifests as stress, fear of judgment, diminished self-control, and excessive worry during speaking, which impedes fluency and decreases students' motivation to engage in oral activities (Al Ghaithi & Behforouz, 2024; Anzanni & Dewi, 2023). These conditions suggest that language proficiency alone is inadequate for enhancing speaking ability; rather, effective learning procedures are essential to alleviate anxiety and foster a secure, comfortable, and emotionally supportive learning environment.

A viable strategy to tackle this difficulty is Digital Game-Based Learning (DGBL). DGBL provides an enjoyable, dynamic, and non-threatening educational environment by incorporating game features, including challenges, prizes, captivating images, and prompt feedback. This method has been demonstrated to improve learning motivation, student engagement, and English language proficiency (Amzalag et al., 2024; Bouzaiane & Youzbashi, 2024; Hwang & Zhang, 2024). Furthermore, numerous research indicate that digital games alleviate foreign language anxiety, since learners experience greater relaxation and comfort in comparison to traditional learning methods (Yang et al., 2024). Research in the Indonesian setting indicates that game-based learning enhances student engagement, academic performance, and participation (Fatoni & Lestari, 2022; Monalisa, 2023; Nofitasari et al., n.d.; Zainuddin & Fatoni, 2021). These findings underscore the potential of DGBL to enhance learning outcomes and foster more favorable learning experiences.

Despite prior studies indicating the beneficial effects of DGBL on motivation, engagement, and language acquisition results, a research gap persists that necessitates additional investigation. Certain research indicate that DGBL effectively alleviates foreign language anxiety in particular settings, such as vocabulary acquisition (Yang et al., 2024), although its influence on speaking anxiety remains insufficiently investigated. Moreover, scant research has specifically examined the efficacy of DGBL in alleviating speaking anxiety among EFL learners, particularly within the Indonesian educational framework. Consequently, more robust empirical evidence is required to elucidate the effect of DGBL in mitigating speaking anxiety, a primary obstacle to oral competency.

This study seeks to address this gap by examining the efficacy of Digital Game-Based Learning in alleviating speaking anxiety among EFL learners. The study aims to assess the degree to which the adoption of DGBL can reduce students' speaking anxiety following a digital game-based intervention. To align with this purpose, the research question is articulated as follows: (1) Is Digital Game-Based Learning effective in alleviating speaking anxiety among EFL learners? Is there a notable disparity in students' speaking anxiety levels prior to and subsequent to the deployment of Digital Game-Based Learning? This study hypothesizes that Digital Game-Based Learning (Duolingo) markedly alleviates speaking anxiety in EFL learners. This study aims to enhance theoretical understanding by reinforcing the literature on the impact of DGBL in alleviating language anxiety, especially speaking anxiety, and to deliver practical insights by proposing interactive, enjoyable, and supportive learning strategies that foster low-pressure environments for EFL learners.

LITERATURE REVIEW

Speaking anxiety is a subtype of foreign language anxiety that occurs when learners must engage in oral communication in English. It is generally exhibited through a fear of errors, excessive concern for evaluation by educators or peers, anxiety, tension, and evasion of verbal tasks. Numerous research indicate that speaking anxiety adversely impacts students' confidence, classroom engagement, and oral proficiency (Al Ghaithi & Behforouz, 2024; Anzanni & Dewi, 2023; Syahrani et al., 2024). In EFL courses, speaking anxiety is especially prevalent among young learners who are in the initial phases of language acquisition. They frequently exhibit a deficiency in confidence and harbor apprehensions over their speaking abilities, resulting in passive behavior or hesitance to engage in conversational activities. This suggests that enhancing speaking skills necessitates not only language proficiency but also consideration of emotional factors, particularly the regulation of speaking anxiety.

Digital Game-Based Learning (DGBL) has arisen as an educational methodology that incorporates digital games into the learning experience. DGBL offers an enjoyable, interactive, and stimulating atmosphere utilizing game components including challenges, points, reward systems, attractive images, and prompt feedback. Research indicates that Digital Game-Based Learning (DGBL) enhances students' motivation and interest while also improving learning outcomes, engagement, and active participation in English language acquisition (Amzalag et al., 2024; Bouzaiane & Youzbashi, 2024; Hwang & Zhang, 2024). In language acquisition settings, DGBL is regarded as effective in fostering a more relaxed and low-pressure atmosphere relative to conventional approaches. Research has shown that digital games help alleviate learners' nervousness, enhance comfort, and foster confidence in English interactions (Yang et al., 2024). Research in Indonesia indicates that game-based learning improves motivation, achievement, and student engagement in language acquisition (Lestari et al., 2023; Monalisa, 2023; Nofitasari et al., n.d.; Zainuddin & Fatoni, 2021). The findings indicate that DGBL possesses significant potential for application across many educational levels, including young EFL learners.

As technology advances, DGBL has been widely examined as a pedagogical approach to mitigate psychological hurdles in language acquisition, such as anxiety. The engaging, participatory, and non-threatening atmosphere provided by digital games is thought to facilitate a more comfortable experience for learners utilizing English, thereby diminishing anxiety levels. Research findings demonstrate that

digital games in foreign language acquisition reduce anxiety, as learners experience more comfort, diminished pressure, and greater freedom to explore during the learning process (Yang et al., 2024). Nevertheless, whereas data indicates that DGBL enhances motivation and overall language anxiety, discussions regarding its influence on speaking anxiety are scarce. Numerous studies have concentrated on learning outcomes, vocabulary acquisition, engagement, and other competencies such as listening and writing, however research investigating the impact of Digital Game-Based Learning (DGBL) on speaking anxiety remains limited, especially among young English as a Foreign Language (EFL) learners.

Prior research indicates that DGBL enhances English learning results, motivation, and student involvement (Amzalag et al., 2024; Bouzaiane & Youzbashi, 2024; Hwang & Zhang, 2024). Research indicates that digital games may alleviate foreign language anxiety (Yang et al., 2024). Nevertheless, the majority of these research have not explicitly investigated speaking anxiety as the primary emphasis, and only a limited number have been undertaken within the setting of elementary-level EFL learners in Indonesia. Consequently, a study vacuum persists about the necessity for more precise empirical evidence on the efficacy of DGBL in alleviating speaking anxiety among EFL learners. This study seeks to fill this gap by evaluating the efficacy of Digital Game-Based Learning in alleviating speaking anxiety in young EFL learners using a one-group pre-test/post-test methodology.

METHOD

This research utilized a quantitative pre-experimental design using a one-group pre-test/post-test methodology. The design was used to evaluate the efficacy of Digital Game-Based Learning (DGBL), particularly via the Duolingo platform, in alleviating speaking anxiety among young EFL learners. This study hypothesizes that Digital Game-Based Learning (Duolingo) markedly alleviates speaking anxiety in EFL learners. The strategy facilitated a direct comparison of students' anxiety levels by administering the same instrument pre- and post-intervention, thereby evidencing the treatment's impact. This methodology is commonly employed in educational research to assess short-term interventions, especially for emotive variables like anxiety.

This study involved 30 fifth-grade students from SDN Sumodikaran 1 in Bojonegoro, East Java, Indonesia. The students were chosen due to their developmental stage, which typically exhibits speaking anxiety in foreign language acquisition. The participants' age range was roughly 10 to 11 years, indicative of young learners who are still cultivating confidence in oral communication. The

research was performed in a classroom environment during standard school hours to guarantee ecological validity. All students participated willingly, and their responses were anonymised to ensure confidentiality.

Data were gathered utilizing the Foreign Language Classroom Anxiety Scale (FLCAS), initially created by Horwitz et al. (1986) and extensively employed in research on foreign language anxiety. The instrument comprises 33 items evaluated on a 5-point Likert scale, from "never" to "always." The FLCAS was selected due to its particular measurement of communication apprehension, test anxiety, and fear of poor evaluation, all pertinent to speaking anxiety. Reliability testing demonstrated satisfactory internal consistency, with Cronbach's Alpha values of 0.671 in the pre-test and 0.719 in the post-test.

The study was executed in a singular session lasting roughly two hours. A pre-test was conducted at 07:30 to assess baseline levels of speaking anxiety. Subsequently, students engaged in a two-hour Duolingo-based learning session, during which they undertook interactive exercises aimed at enhancing vocabulary, pronunciation, and sentence composition in English. The treatment included gamification components like points, prizes, and adaptive feedback, which are fundamental to the Duolingo platform. At 09:30, a post-test was conducted utilizing the identical FLCAS instrument to assess alterations in speaking anxiety. The intervention's timing and structure were crafted to mitigate external influences and guarantee that observed changes could be ascribed to the treatment.

Data analysis was performed via SPSS. Reliability was evaluated using Cronbach's Alpha, and normality was examined with the Shapiro-Wilk test, suitable for small sample sizes ($n < 50$). The findings validated that the data satisfied parametric assumptions, facilitating the application of paired sample t-tests to compare pre-test and post-test scores. The alpha level was established at $p < 0.05$. This analytical method guaranteed that the results were statistically sound and offered definitive proof on Duolingo's impact on alleviating speaking fear among the participants.

The research was executed in compliance with ethical protocols. The school and students were apprised of the study's objectives and procedures, with participation being voluntary. All data were maintained in confidentiality and utilized exclusively for scholarly reason.

FINDINGS AND DISCUSSION

FINDINGS

The initial phase of data processing involved assessing the reliability of the Foreign Language Classroom Anxiety Scale (FLCAS) utilized in this research. Reliability was assessed by Cronbach's Alpha to evaluate the internal consistency of the instrument. The reliability coefficient for the complete set of 33 items was 0.671 in the pre-test and 0.719 in the post-test, demonstrating satisfactory consistency for classroom-based research. The results indicate that the tool demonstrated adequate reliability in assessing speaking anxiety among the participants.

The subsequent phase involved assessing the normality of the data distribution, specifically the variance between pre-test and post-test scores. The Shapiro–Wilk test was utilized due to the sample size being less than 50 ($n = 30$). The p-value for the complete collection of entries was 0.578. The value surpassed the criterion of 0.05, signifying that the data were regularly distributed. This finding validated that the prerequisites for parametric testing were satisfied, permitting the application of paired sample t-tests to assess variations in speaking anxiety before to and during the intervention.

A paired sample t-test was used to ascertain if a significant difference existed between pre-test and post-test results. The comprehensive analysis indicated a statistically significant decrease in speaking anxiety, with a p-value of <0.001 . This signifies that the Duolingo-based intervention had a quantifiable impact on reducing pupils' anxiety levels.

Descriptive analysis corroborates these conclusions. The average score of speaking anxiety diminished from 122.06 in the pre-test to 103.50 in the post-test, indicating a significant reduction in anxiety levels following the intervention. The standard deviation diminished, signifying that pupils' results exhibited greater consistency post-treatment. The results underscore the efficacy of Duolingo in alleviating speaking anxiety among young EFL learners.

Table 1 encapsulates the results of the reliability, normality, and paired sample t-test studies for the complete collection of items.

Data	Reliability (Cronbach's α)	Normality (difference) (Shapiro–Wilk, p)	Paired Sample T- Test (Sig. 2- tailed)	Interpretation
All items (33)	Pre = 0.671; Post = 0.719	p = 0.578 (normal)	<0.001	Significant reduction in speaking anxiety

The findings indicate that Duolingo effectively alleviated speaking anxiety in young EFL learners, as assessed by the complete array of FLCAS measures. The substantial findings corroborate Hypothesis 1, which posited that Digital Game-Based Learning (DGBL) would reduce speaking anxiety. The findings align with prior research indicating diminished language learning anxiety in gamified settings (Pai et al., 2024; Yang et al., 2024), thereby underscoring the educational significance of Duolingo as an effective instrument for fostering engaging and less daunting learning environments.

DISCUSSION

This study aimed to investigate if Duolingo, as a Digital Game-Based Learning (DGBL) platform, could alleviate speaking anxiety among young EFL learners. The results indicated a substantial decrease in speaking anxiety as assessed by the complete array of FLCAS questions. The results robustly corroborate the initial hypothesis and underscore the potential of DGBL to mitigate affective barriers in language acquisition. This study enhances the existing literature on DGBL by evidencing its efficacy in alleviating anxiety and cultivating a more supportive educational atmosphere.

The results correspond with Krashen's affective filter hypothesis, which asserts that learners with reduced anxiety are more open to language information. Duolingo successfully reduced the affective filter for numerous students by establishing a gamified environment that prioritizes rewards, adaptive feedback, and repetitive practice, hence facilitating more confidence in speaking tasks. This substantiates the theoretical assertion that DGBL can cultivate a psychologically safe atmosphere in which learners are less constrained by the fear of errors or adverse assessment. The findings align with Vygotsky's sociocultural theory, as Duolingo's interactive features provide scaffolding that facilitated learners' advancement within their zone of proximal development.

The notable decrease in anxiety identified in this study aligns with the findings of Pai et al. (2024) and Yang et al. (2024), who indicated that DGBL environments diminished foreign language anxiety and enhanced learners' willingness to communicate. Al Ghaithi & Behforouz (2024) also highlighted the significance of game-based speaking exercises in alleviating cognitive anxiety during oral examinations. The similarities support the assertion that gamified learning platforms like Duolingo can significantly mitigate speaking fear in young learners.

The findings indicate that Duolingo may serve as an effective resource for alleviating speaking anxiety in basic EFL classrooms. Educators can include Duolingo into speaking class to create a supportive environment that fosters risk-taking and linguistic experimentation among students. The gamified elements of Duolingo—such as points, levels, and instant feedback—enhance motivation and mitigate the fear of failure. Duolingo is especially appropriate for young learners, who frequently experience challenges with confidence in verbal communication.

Future study ought to utilize larger samples, extended intervention durations, and enhanced instruments to accurately capture the complexities of anxiety reduction. Exploring the linkage between anxiety reduction and the enhancement of speaking skills may be beneficial, since prior research indicates a relationship between less anxiety and improved performance (Syahbani & Apoko, 2023). Furthermore, analyzing individual characteristics, including personality traits, previous gaming experience, and socio-emotional aspects, may yield profound insights into learners' responses to DGBL interventions.

In conclusion, the analysis of findings indicates that Duolingo has the capacity

to alleviate speaking anxiety in young EFL learners. The research enhances both theoretical and practical understanding by validating the efficacy of DGBL in reducing emotional obstacles to language acquisition. This study emphasizes the potential of gamified learning environments in mitigating speaking anxiety by contextualizing the findings within broader theoretical frameworks and prior research, while advocating for further investigation to comprehensively assess their effects.

CONCLUSION

This study examined the efficacy of Duolingo, a Digital Game-Based Learning (DGBL) platform, in alleviating speaking anxiety among young EFL learners. The results indicated that the comprehensive assessment of FLCAS items demonstrated that Duolingo substantially diminished students' speaking anxiety, corroborating the notion that gamified learning environments help alleviate affective obstacles in language acquisition. These results indicate that Duolingo can provide a conducive and encouraging atmosphere for learners, facilitating their more confident engagement in oral communication.

This research contributes by emphasizing speaking anxiety, a feature sometimes neglected in DGBL investigations, especially within the Indonesian elementary school context. The study demonstrates that integrating Duolingo into actual classroom environments can enhance confidence and diminish fear in young learners. The findings extend existing knowledge by demonstrating that DGBL not only improves motivation and engagement but also mitigates emotional barriers that impede oral proficiency.

Subsequent study ought to expand upon these findings by utilizing larger sample sizes, prolonged intervention durations, and enhanced tools to more accurately capture the subtleties of anxiety reduction. Exploring the association between anxiety reduction and the enhancement of speaking skills, together with the influence of individual learner variations such as personality traits, past gaming experience, and socio-emotional aspects, might be advantageous. By examining these aspects, future research can yield a more thorough comprehension of how DGBL affects both emotional and linguistic results, hence enhancing its implementation in various educational settings.

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