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The Effect Of Technology-Enhanced Language Learning on Speaking Anxiety

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ABSTRACT

This study investigates the impact of technology-enhanced language learning interventions on reducing speaking anxiety among language learners. Addressing the significance of speaking proficiency in effective communication, the research employs a quasi-experimental design, comparing traditional methods in a control group with technology-enhanced approaches in an experimental group. The participants were 30 students in experimental group and 30 students in control group. By utilizing online platforms, podcasts, and gamified language learning, the study measures the reduction in speaking anxiety using the Foreign Language Speaking Anxiety Scale. The data were analyzed quantitatively through t-test. Results indicate a significant decrease in anxiety levels in both groups, with the experimental group exhibiting a more substantial reduction. The findings revealed the positive influence of technology in alleviating language-related anxieties, particularly speaking anxiety, providing valuable insights for pedagogical practices.
Keywords: *language learning, speaking anxiety, technology-enhanced language learning*

ABSTRAK

Penelitian ini menyelidiki dampak intervensi pembelajaran bahasa yang ditingkatkan oleh teknologi terhadap pengurangan kecemasan berbicara di kalangan pembelajar bahasa. Mengatasi pentingnya kemampuan berbicara dalam komunikasi efektif, penelitian ini menggunakan desain kuasi-eksperimental, membandingkan metode tradisional dalam kelompok kontrol dengan pendekatan yang ditingkatkan oleh teknologi dalam kelompok eksperimen. Peserta penelitian terdiri dari 30 siswa dalam kelompok eksperimen dan 30 siswa dalam kelompok kontrol. Dengan memanfaatkan platform online, podcast, dan pembelajaran bahasa berbasis permainan, penelitian ini mengukur penurunan kecemasan berbicara menggunakan Skala Kecemasan Berbicara Bahasa Asing. Data dianalisis secara kuantitatif melalui uji t. Hasil menunjukkan penurunan yang signifikan dalam tingkat kecemasan di kedua kelompok, dengan kelompok eksperimen menunjukkan penurunan yang lebih substansial. Temuan ini mengungkapkan pengaruh positif teknologi dalam mengurangi kecemasan terkait bahasa, khususnya kecemasan berbicara, memberikan wawasan berharga untuk praktik pedagogis.
Kata Kunci: Pembelajaran Bahasa, Kecemasan Berbicara, Pembelajaran Bahasa yang ditingkatkan dengan Teknologi

INTRODUCTION

Effective language learning comprises a variety of competencies, with speaking proficiency serving as the foundation for effective communication (Dewi & Wilany, 2022). The importance of having excellent oral communication skills is well established, as it allows language learners to engage in meaningful relationships and express themselves fluently in a variety of social circumstances (Hilao-Valencia & Ortega-Dela Cruz, 2023). However, the path to spoken fluency is frequently hindered by a common issue known as speaking anxiety. Speaking anxiety, a kind of language learning anxiety, refers to individuals' fear and unease when compelled to speak in a foreign language (Horwitz, Horwitz, & Cope, 1986). This emotional and psychological barrier can manifest in various forms, ranging from fear of making mistakes to concerns about pronunciation and the fear of negative evaluation by peers or instructors (Mao, 2022). Such anxiety not only impedes the progress of language learners but also has a profound impact on their willingness to engage in oral communication (Altun, 2023). Speaking anxiety can create a significant barrier that prevents language learners from expressing themselves, experimenting with new vocabulary, and accepting the trial-and-error aspect of language acquisition (Khan, 2015). Students who are experiencing increased speaking anxiety may retreat from speaking activities, impeding the development of their oral communication abilities and lowering their overall language competency.

The difficult obstacle of speaking anxiety, as previously highlighted, finds a potential end in the transformative capabilities of technology within the complex landscape of language acquisition. As technology advances in education, students are presented with new ways to overcome the emotional and psychological barriers associated with public speaking anxiety. Technology not only brings new tools and platforms, but it also reshapes old language learning paradigms (Chappelle, 2005). The incorporation of information and communication technology into language teaching could allow learners to engage in interactive and engaging experiences, thus reducing anxiety (Poudel, 2022).

As technological advancements continue to reshape the educational landscape, the integration of online language platforms, podcasts, and gamified language learning has garnered attention for its potential to address the nuanced challenges of speaking anxiety (Li & Swanson, 2014). Platforms like Duolingo and Rosetta Stone offer interactive lessons that provide learners with real-time feedback on pronunciation and speaking exercises. Podcasts, such as Coffee Break Spanish, expose learners to authentic spoken language, diverse accents, and various communication styles, contributing to improved listening comprehension and speaking skills. Additionally, gamified language learning apps like Memrise and Quizlet engage learners through interactive and competitive elements, making the language acquisition process more enjoyable and potentially reducing anxiety associated with formal speaking assessments.

In examining the impact of technology integration on language learning, Rashid and Asghar (2016), Setyorini and Hartono (2017), and Yang and Chen (2007) converge in highlighting the transformative potential of technology in enhancing student engagement and academic performance. Rashid and Asghar (2016) emphasize multimedia elements and interactive exercises, Setyorini and Hartono (2017) specifically focus on the effectiveness of digital comics, and Yang and Chen explore student perceptions in a technology-enhanced language learning

environment. These studies collectively underscore the positive influence of technology in diversifying learning experiences.

However, Saraswati et al. (2021) and Mei-mei and Hsiu-Ting (2019) introduce distinct perspectives. Saraswati et al. (2021) look into the relationship between digital literacy mastery and autonomous learning, emphasizing the mutual influence between the two and the facilitative role of lecturers in supporting autonomous learning. On the other hand, Mei-mei and Hsiu-Ting conduct a meta-analysis synthesizing research from 1990 to 2015, providing a comprehensive view of the effectiveness of technology in improving second language acquisition. The meta-analysis showcases a substantial positive impact, particularly when technology interventions involve small samples in higher education and are delivered through general-purpose applications on mobile phones. In summary, while the former studies collectively emphasize the positive influence of technology on language learning, the latter studies introduce nuanced perspectives by focusing on the interplay between digital literacy and autonomy and conducting a comprehensive meta-analysis, respectively.

Meanwhile, in the exploration of technology-enhanced learning and its impact on language-related anxieties, a synthesis of several studies reveals a collective effort to mitigate speaking anxiety among language learners through diverse technological interventions. Chen (2022), Bashori et al. (2020), Hapsari and Wu (2022), and Aswat et al. (2022) contribute to this narrative, each examining unique technological approaches such as VR, ASR-based web learning, AI chatbots, and online instruction. Despite differences in technologies, a shared objective emerges: the reduction of language-related anxieties, particularly speaking anxiety.

Chen's (2022) investigation into lecture-based, mobile-assisted, and VR-facilitated instruction demonstrates a reduction in perceived public speaking anxiety (PSA) across all groups. Notably, the VR-facilitated group showed statistical significance, suggesting the potential efficacy of virtual reality in ameliorating speaking anxiety. Bashori et al. (2020) employed mixed methods to gauge Foreign Language Speaking Anxiety (FLSA) in Indonesian vocational high school students. Their results indicate a moderate-to-serious level of FLSA, yet students reported reduced anxiety when speaking to ASR-based websites compared to peers or people.

Hapsari and Wu (2022) introduced an AI chatbot in a Casual Conversation Course, emphasizing the chatbot's role in alleviating speaking anxiety and fostering critical thinking. The study's results indicate that the proposed AI-assisted learning model is expected to aid the learning process effectively. Aswat et al. (2022), investigating the impact of CALL on Indonesian EFL learners, found that the experimental group, exposed to online instruction via Skype, outperformed the control group in speaking and vocabulary posttests. The experimental group also reported lower levels of speaking anxiety compared to the control group.

Dong et al. (2022) explored the effects of CALL, MALL, and face-to-face learning environments on Iranian EFL learners. The study revealed positive effects on motivation, anxiety, and self-efficacy in both CALL and MALL groups. While there was no statistically significant difference between the CALL and MALL groups, both exhibited improvements in motivation, anxiety, and self-efficacy compared to the face-to-face group. In contrast, Dewi et al.'s (2023) pre-experimental study comparing technology-based and traditional instruction methods found significant

differences in student engagement favoring technology-based approaches. Their results indicate that visual and multimedia components, such as videos and interactive activities, contribute to affective engagement.

While the previous studies provided a comprehensive overview of the influence of technology-enhanced language learning on speaking anxiety and showcased the positive impact of various technological interventions in reducing speaking anxiety, there remains a discernible research gap in the identification and exploration of specific pedagogical strategies within technology-enhanced language learning that effectively mitigate speaking anxiety. This study aims to address the identified research gap by conducting a comparative analysis between students taught through traditional methods (control class) and those exposed to a technology-enhanced language learning approach (experimental class). Employing the Foreign Language Speaking Anxiety Scale (FLSAS) developed by Öztürk and Gurbuz (2014), the study aims to determine whether technology has a significant effect on reducing speaking anxiety among language learners. The novelty of this article lies in its focused exploration of the impact of technology on a specific dimension of language learning: speaking anxiety. By narrowing the scope to this essential aspect, the study aims to contribute to theory that can inform pedagogical practices. Furthermore, the comparative design, incorporating a traditional control class, enhances the robustness of the findings, offering a comprehensive understanding of how technology may serve as a catalyst for reducing speaking anxiety in language learners.

The primary research question guiding this investigation are:

RQ1: "Is there a significant difference in speaking anxiety scores between pretest and posttest in the experimental class using technology-enhanced language learning"

RQ1: "Is there a significant difference in speaking anxiety scores between pretest and posttest in the control class using a traditional approach?"

RQ3: "How is the comparison of the effect of technology-enhanced language learning interventions and traditional instructional approaches in reducing speaking anxiety among language learners?

METHOD

This research employs a quasi-experimental with pre-test and post-test design to investigate the impact of Technology-Enhanced Language Learning (TELL), specifically focusing on online language platforms, podcasts, and gamified language learning, on speaking anxiety among language learners. Quasi-experimental methods are chosen to compare outcomes between a control group and an experimental group, allowing for a more controlled examination of the intervention's effects (Shadish, Cook, & Campbell, 2002). The participants in this quasi-experimental study consist of 60 undergraduate students enrolled in Speaking Class. The assignment to the control group (n = 30) and the experimental group (n = 30) is based on existing course structures, with the control group receiving traditional language teaching methods and the experimental group exposed to the TELL approach. Speaking anxiety is measured using the Foreign Language Speaking Anxiety Scale (FLSAS) developed by Öztürk and Gurbuz (2014). The FLSAS is a self-report questionnaire that assesses the degree of anxiety experienced by individuals when speaking in a foreign language. The scale consists of 18 items

related to different aspects of speaking anxiety, and participants rate each item on a Likert scale.

In terms of the intervention, the control group receives instruction through traditional language teaching methods, which may include lectures, textbook exercises, and in-class discussions without the integration of technology. On the other hand, the experimental group receives instruction through a technology-enhanced language learning approach. This includes the integration of online language platforms (e.g., Duolingo, Rosetta Stone), podcasts, and gamified language learning apps (e.g., Memrise, Quizlet).

The procedure involves a pre-test using the FLSAS to establish baseline levels of speaking anxiety before the intervention. The intervention is then implemented over a specified period, with the control and experimental groups following their respective instructional methods. After the intervention, participants in both groups complete a post-test using the FLSAS to assess changes in speaking anxiety. Data collection is conducted in a controlled classroom setting to ensure consistency.

Quantitative data collected from the Foreign Language Speaking Anxiety Scale (FLSAS) will undergo specific analyses tailored to address the research questions. Research Question 1: Hypothesis: There is a significant difference in speaking anxiety pretest and posttest scores between students taught in the experimental class using online language platforms, podcasts, and gamified language learning, and those taught in the control class using a traditional approach.

Analysis: A paired sample t-test employed to compare the pre-test and post-test scores of the control and experimental groups. This statistical analysis will determine whether the technology-enhanced language learning approach has a significant impact on reducing speaking anxiety

Research Question 2: Hypothesis: There is a significant difference in speaking anxiety pretest and posttest scores between students taught in the experimental class using online language platforms, podcasts, and gamified language learning, and those taught in the control class using a traditional approach.

Analysis: A paired sample t-test was employed to compare the pre-test and post-test scores of the control and experimental groups. This statistical analysis determines whether the technology-enhanced language learning approach has a significant impact on reducing speaking anxiety.

Research Question 3: Hypothesis: Technology-Enhanced Language Learning contributes more to a significant reduction in speaking anxiety compared to traditional approach. Analysis: A comparison between t-count of experimental and control group was employed. This statistical analysis determines whether the technology-enhanced language learning approach has a significant impact on reducing speaking anxiety compared to traditional approach.

RESULT AND DISCUSSION

The demographics of respondents involved in this research were reviewed regarding gender, distance education class, teaching place, and province. Respondent demographics can be shown in Table 1 below. Is there any significant difference between speaking anxiety pretest and posttest in experimental group (TELL)?

To examine the variance in speaking anxiety levels within the experimental group subjected to teachnology enhanced language learning, a paired sample t-test was conducted on the pretest and posttest scores, as detailed in Table 1.

***Table 1**. Means of Experimental Group*

			Deviation	Error Mean
1 riment_pr	7		40	3
riment_p	7		97	5

Table 2 presents the means and standard deviations for the experimental group's speaking anxiety scores, differentiating between pretest and posttest measurements. In Pair 1, the mean pretest score is 67.57, with a standard deviation of 10.040 and a standard error mean of 1.833. Transitioning to the posttest phase, the mean score decreases to 56.87, accompanied by a standard deviation of 11.697 and a standard error mean of 2.135. These statistics offer insights into the central tendency, variability, and precision of speaking anxiety scores within the experimental group, that provide a basis for evaluating the impact of the technology-enhanced language learning intervention on participants' anxiety levels over the specified pair of assessments.

***Table 2**. Paired Samples Test of Experimental Group*

	d Differences							
			Error	Confidence l of the nce				(2-
	ion			r	r			
1 riment_pr - ment_pos	00	1	1	0	50	5		

The paired samples test for the experimental group assesses the differences between pretest and posttest speaking anxiety scores. The mean difference is 10.700, with a standard deviation of 9.774 and a standard error mean of 1.784. The 95% confidence interval of the difference ranges from 7.050 to 14.350. The t-value is 5.996 with 29 degrees of freedom. It results in a significant p-value of .000 (2-tailed). This indicates a statistically significant difference between the pretest and posttest scores which suggest that the technology-enhanced language learning intervention had a notable impact on reducing speaking anxiety within the experimental group.

Is there any significant difference between speaking anxiety pretest and posttest in control group (Traditional Approach) ? To examine the variance in speaking anxiety levels within the control group subjected to traditional

language teaching methods, a paired sample t-test was conducted on the pretest and posttest scores, as detailed in Table 3.

***Table 3**. Means of Control Group*

			Deviation	Error Mean
1	ol_pretest			
	ol_posttest		69	

Table 3 displays the means and standard deviations for the control group's speaking anxiety scores, distinguishing between pretest and posttest measurements. In Pair 1, the control group's mean pretest score is 66.83, with a standard deviation of 9.432 and a standard error mean of 1.722. Transitioning to the posttest phase, the mean score decreases to 62.03, accompanied by a standard deviation of 11.769 and a standard error mean of 2.149. These statistics provide insights into the central tendency, variability, and precision of speaking anxiety scores within the control group, establishing a baseline for evaluating any potential changes in anxiety levels over the specified pair of assessments.

***Table 4.** Paired Samples Test of Control group*

	d Differences							
		ion	Error	Confidence l of the nce r	r			(2-
1	ol_pretest							
	_posttest							

The paired samples test for the control group evaluates the differences between pretest and posttest speaking anxiety scores. The mean difference is 4.800, with a standard deviation of 7.559 and a standard error mean of 1.380. The 95% confidence interval of the difference ranges from 1.978 to 7.622. The t-value is 3.478 with 29 degrees of freedom, resulting in a significant p-value of .002 (2-tailed). This suggests a statistically significant difference between the pretest and posttest scores within the control group, indicating a notable change in speaking anxiety levels.

How is the comparison of the effect of technology-enhanced language learning interventions and traditional instructional approaches in reducing speaking anxiety among language learners? The table 1 outlines the speaking anxiety scores for two distinct groups: the experimental group, which underwent a technology-enhanced language learning intervention, and the control group, taught through a traditional approach.

***Table 5.** Descriptive Statistics of Speaking Anxiety Scores*

		hum	mum		Deviation
riment_pretest					40

riment_posttest					*97*
ol_pretest					
ol_posttest					*69*
N (listwise)					

Examining the experimental group's pretest scores reveals a range from 50 to 86, with a mean score of 67.57 and a standard deviation of 10.040. In the posttest phase, scores ranged from 30 to 80, with a mean of 56.87 and a standard deviation of 11.697. Turning to the control group, pretest scores varied from 50 to 84, showcasing a mean of 66.83 and a standard deviation of 9.432. Posttest scores for the control group ranged from 45 to 90, yielding a mean of 62.03 and a standard deviation of 11.769.

***Table 6**. The Comparison of the Anxiety Reduction between Experimental and Control Group*

ıp		*(2-tailed)*
erimental	*6*	
trol	*8*	

Table 6 presents the comparison of anxiety reduction between the experimental and control groups. The t-values indicate the magnitude of the difference in anxiety reduction between the two groups, and the associated p-values assess the statistical significance of these differences. For the experimental group, the t-value is 5.996 with a p-value of .000 (2-tailed), indicating a highly significant reduction in speaking anxiety following the technology-enhanced language learning intervention. In the control group, the t-value is 3.478 with a p-value of .002 (2-tailed), signifying a statistically significant reduction in speaking anxiety within the control group.

The comparison between the two groups highlights that the experimental group experienced a more substantial reduction in speaking anxiety compared to the control group, as evidenced by the higher t-value and lower p-value.

The results of the study reveal a compelling argument for the efficacy of technology-enhanced language learning in significantly reducing speaking anxiety compared to traditional instructional approaches. As evidenced by the paired sample t-tests conducted on both the experimental and control groups, the technology-enhanced language learning intervention led to a highly significant reduction in speaking anxiety, as indicated by the substantial decrease in mean scores from pretest to posttest. The experimental group, exposed to online language platforms, podcasts, and gamified language learning apps, demonstrated a notable decrease in speaking anxiety levels, affirming the transformative impact of technology on language learners' emotional barriers. In contrast, while the control group, receiving traditional language teaching methods, also exhibited a statistically significant reduction in speaking anxiety, the magnitude of this reduction was comparatively lower than that observed in the experimental group. This discrepancy suggests that technology, with its interactive and engaging features, provides a more potent avenue for alleviating speaking anxiety that offers the learners a supportive environment for language acquisition that surpasses the benefits of traditional

approaches. It highlights the potential of technology to revolutionize language learning paradigms by not only diversifying learning experiences but also, crucially, by addressing and mitigating the impediment of speaking anxiety, thereby fostering more effective oral communication skills

The findings of the study align with the theoretical underpinnings that emphasize the detrimental impact of speaking anxiety on language learners and the potential role of technology in alleviating this anxiety. The theoretical framework posited that speaking anxiety poses a significant barrier to language learners, hindering their progress and impeding the development of oral communication skills (Dewi & Wilany, 2022; Altun, 2023). The results of the study confirm this theoretical premise, as both the experimental group (TELL intervention) and the control group (traditional approach) exhibited significant reductions in speaking anxiety. Many language learning applications and platforms offer real-time feedback on pronunciation and language usage. Immediate feedback allows learners to correct mistakes promptly, reducing the anxiety associated with making errors in front of peers or instructors during face-to-face interactions. The use of technology also allows for repetitive practice without the constraints of time or location. Learners can revisit speaking exercises and practice sessions to reinforce their skills and gradually reduce their speaking anxiety associated with unfamiliar linguistic contexts.

The theoretical foundation suggesting that technology can be transformative in addressing language-related anxieties is supported by the study's outcomes. It is in line with the studies of Chappelle (2005) and Li & Swanson (2014) which claim that technology has the potential to reshape traditional language learning paradigms and offers interactive and engaging experiences that reduce anxiety. The integration of online language platforms, podcasts, and gamified language learning, as explored in the study, demonstrates on how these technological interventions contribute to anxiety reduction.

The findings also corroborate the converging views of Rashid and Asghar (2016), Setyorini and Hartono (2017), and Yang and Chen (2007), who highlight the positive influence of technology on enhancing student engagement and academic performance. This aligns with the study's results which indicate that both the experimental and control groups experienced significant reductions in speaking anxiety, emphasizing the potential of technology in diversifying and improving learning experiences. Technology offers a vast array of resources such as podcasts, language learning apps, and online platforms, exposing learners to various accents, communication styles, and authentic spoken language. This diversity helps learners become more accustomed to different linguistic nuances, thereby boosting confidence in real-life speaking situations. Additionally, it allows learners to progress at their own pace and choose the level of difficulty that suits their comfort. This flexibility reduces the pressure associated with keeping up with a class that foster a more relaxed and conducive learning environment.

CONCLUSION

In conclusion, this study provides valuable insights into the effectiveness of technology-enhanced language learning interventions in reducing speaking anxiety among language learners. The findings underscore the transformative potential of technology, as demonstrated by significant reductions in anxiety levels within the experimental group. However, limitations include a focus on specific technological interventions, necessitating further exploration of a broader range of technologies and their diverse impacts. Additionally, the study's context-specific nature may limit generalizability. Future research could explore longitudinal effects, incorporate a more extensive array of technologies, and consider cultural variations.

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