The Use of Diaphragmatic Breathing in Alleviating Thai Students' Public Speaking Anxiety

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Abstract

Public speaking anxiety (PSA) is a significant barrier to effective oral communication, particularly for English as a Foreign Language (EFL) students. Despite the growing importance of speaking skills in today's globalized world, many Thai EFL learners struggle with PSA, hindering their speaking performance. Traditional PSA interventions, such as systematic desensitization and cognitive restructuring, are well-documented but are often too time-consuming for integration into regular classroom activities. This study investigates the effectiveness of diaphragmatic breathing (DB) as a time-efficient intervention to reduce PSA and improve oral performance among Thai undergraduate students. An experimental design was used with 38 students, stratified by PSA levels, who were assigned to either an experimental group (DB intervention) or a control group. DB exercises were conducted before oral tasks to alleviate anxiety. PSA levels were measured post-intervention using the Public Speaking Anxiety Scale (PSAS). Key findings include: (1) high PSA levels among participants, (2) a negative correlation between PSA and oral performance scores, and (3) a significant reduction in PSA in the experimental group compared to the control group. The results suggest that DB is an effective strategy for reducing PSA, offering immediate relief through a simple, five-minute exercise. Its practicality and time efficiency make it an ideal technique for enhancing speaking skills in EFL contexts.

Keywords: Diaphragmatic Breathing, Deep Breathing Exercise, Public Speaking Anxiety, Anxiety Reduction Techniques, Thai EFL Students

Introduction

Speaking is widely recognized as the most demanding yet essential of the four macro language skills: listening, speaking, reading, and writing. As language education shifted from traditional grammar-translation and teacher-centered approaches toward communicative language teaching, the focus on speaking increased (Brown, 2007; Nunan, 2003; Thornbury, 2005). Globalization has further emphasized the need for oral fluency in non-native English settings. Despite the emphasis on speaking, learners in foreign language classrooms continue to find it one of the most anxiety-provoking skills. In large-scale studies (e.g., Okyar, 2023; Ran et al., 2022; Surani et al., 2025), speaking and listening consistently rank highest in foreign language anxiety, surpassing reading and writing.

Tasks requiring oral performance, such as class presentations or spontaneous dialogue, often trigger greater anxiety, which can hinder classroom participation and overall language performance (Byrne et al., 2012; Zambak, 2023). Although the negative impact of speaking anxiety is well-documented, some studies suggest that its effect may vary among learners. For instance, moderate levels of anxiety may be less detrimental, especially in supportive learning environments, or may respond well to targeted interventions (Kayhan, 2025; Wang & Zhang, 2021).

Public speaking anxiety (PSA), defined as the fear or anxiety individuals experience when speaking in front of others (Bodie, 2010), is a widespread phenomenon affecting a significant portion of the population. Recent research shows that approximately 75% to 77% of individuals report experiencing some level of fear related to public speaking (Crown Counseling, 2025; Dwyer & Davidson, 2012). Among university students, prevalence remains high, with studies reporting that over 60% experience significant PSA (Russell & Topham, 2012). PSA manifests across cognitive, physiological, and behavioral domains (Lang, 1968). Cognitively, speakers with PSA often experience intrusive thoughts such as "I'll forget what to say" or fears of negative evaluation. These anticipatory thoughts can take the form of vivid, distressing images of potential failure, which amplify anxiety and encourage avoidance (Bodie, 2010; Gallego et al., 2020; Thunnissen et al., 2022). Physiologically, anxious speakers may exhibit symptoms associated with the body's fight-or-flight response, including trembling, sweating, dry mouth, flushed skin, and an accelerated heart rate (Bodie, 2010; Oloba et al., 2025; Smith et al., 2005). Behaviorally, PSA can manifest through avoidance strategies such as reluctance to participate in speaking tasks, gaze avoidance, or reduced eye contact, which are commonly observed in socially anxious individuals (Schneier et al., 2011). In addition, PSA can lead to disruptions in speech fluency under stress, including longer pauses and reduced verbal output during speaking tasks (Buchanan, 2014). These interrelated symptoms not only impair performance but also contribute to a cycle of fear and avoidance that can persist without targeted intervention.

A moderate level of anxiety can positively affect performance by helping speakers focus and reduce errors (Yerkes & Dodson, 1908). However, excessive anxiety impairs performance and hinders language proficiency (MacIntyre & Gardner, 1994). This is especially true for students, who may avoid courses or careers that require public speaking and withdraw from social activities due to fear of speaking in front of others (Bodie, 2010). In the context of English as a Foreign Language (EFL) or English as a Second Language (ESL), learners often excel in reading, writing, and listening but struggle with speaking (Horwitz, 2001). This challenge is particularly evident in Thailand, where many learners struggle to express themselves orally in English and lack both the proficiency and confidence required for fluent communication. Studies indicate that a significant percentage of Thai students demonstrate low levels of communicative competence in English speaking tasks, with pronunciation issues, anxiety, and lack of fluency contributing to these limitations (Kalra & Siribud, 2020; Kurakan, 2021; Phisutthangkoon, 2024; Pruksaseat, 2022; Thaksanan, 2024).

Anxiety remains a significant barrier to English speaking proficiency among Thai Learners, often stemming from insecurities, limited vocabulary, fear of making mistakes, and culturally ingrained concerns about negative evaluation. Recent studies provide quantifiable evidence of this

issue. For instance, Kalra and Siribud (2020) reported that a majority of Thai EFL students experienced high levels of PSA, which negatively impacted their confidence and willingness to communicate. Similarly, Kurakan (2021) found that 55.6% of Thai engineering students experienced moderate anxiety during English oral presentations, with anxiety levels increasing during the actual presentation due to concerns about grammar, vocabulary, and audience questions. Qin and Poopatwiboon (2023) identified low self-confidence as the dominant source of speaking anxiety among Thai undergraduates, with most participants experiencing moderate levels of anxiety. Moreover, Pruksaseat (2022) highlighted that cultural factors such as the fear of "losing face," exacerbate students' anxiety, leading to avoidance of speaking opportunities. This avoidance further limits practice, creating a cycle that hinders the development of speaking proficiency.

The relationship between PSA and oral performance is significant, as anxiety often leads to reduced fluency, more hesitations, and impaired cognitive processing during speech. Anxious students focus more on their fear of making mistakes than on the content of their speech, which can impair their cognitive processing and communication. This, in turn, can further reinforce their anxiety, creating a cycle of poor performance and heightened stress. Effective PSA management can help students focus better, improve their verbal fluency, and enhance their overall speaking performance in public settings.

Numerous interventions have proven effective in reducing PSA among EFL learners, including systematic desensitization, cognitive restructuring, and visualization techniques. However, these methods are often complex and time-consuming, making them impractical for many classroom settings. For instance, Un-udom et al. (2017) found that synchronous computer-mediated communication can effectively reduce speaking anxiety while improving fluency among Thai EFL learners. Despite these advances, research specifically targeting PSA reduction in Thai EFL students remains limited, particularly in terms of classroom-applicable interventions, experimental studies involving Thai undergraduates, and practical strategies that address the cognitive, behavioral, and physiological aspects of anxiety during oral presentations. Kalra and Siribud (2020) emphasized that low self-confidence and fear of negative evaluation contribute significantly to PSA in this population, while Thaksanan (2024) highlighted that lack of language resources and self-perception issues further exacerbate anxiety during oral presentations. By focusing on a simple, accessible intervention such as diaphragmatic breathing tailored for Thai EFL learners, this study addresses a notable gap in PSA research and offers practical implications for language instruction.

One intervention that has gained increasing attention for its simplicity and effectiveness is diaphragmatic breathing (DB)**.** This technique, which involves breathing deeply from the diaphragm rather than the upper chest, helps regulate the autonomic nervous system and alleviates common physical symptoms of anxiety, such as sweaty palms, rapid heartbeat, and muscle tension (Greenberg, 2003; Zaccaro et al., 2018). Research shows that DB helps learners regain control over their physiological responses and manage PSA by promoting parasympathetic activation and reducing sympathetic arousal (Ma et al., 2017; Peper et al, 2022). While not conducted in an EFL context, studies such as that by Howe and Dwyer (2007) demonstrate that incorporating DB into public

speaking instruction can significantly reduce speaking anxiety and enhance learners' confidence. These findings are particularly relevant for EFL classrooms, where students often face similar challenges. Although traditional interventions like cognitive restructuring are effective, they often require significant time and effort, making them less feasible in busy classroom settings. DB offers a practical, quick, and evidence-based alternative, with research supporting its use as a standalone or complementary method to reduce anxiety in educational contexts (Jerath et al., 2015; Ortega-Donaire et al., 2023). Previous research on PSA reduction in EFL and ESL contexts has examined a range of interventions; however, there remains a notable gap regarding simple, practical techniques like DB, particularly for Thai EFL learners. This study seeks to fill that gap by investigating the effectiveness of DB in alleviating PSA among Thai EFL students to improve their speaking performance.

Research Objectives

The present study intends to:

1. Examine the level of Thai undergraduate students' public speaking anxiety.

2. Investigate the relationship between public speaking anxiety and students' oral test performance, as determined by their oral test presentation scores.

3. Examine the effectiveness of diaphragmatic breathing in reducing public speaking anxiety.

Research Methodology

Research Design

A quantitative research design was used to measure PSA levels and assess the impact of DB exercises on anxiety reduction. A survey method was employed for data collection, and statistical analyses were conducted to evaluate the relationship between anxiety levels and performance, as well as the effectiveness of the intervention.

Participants

The sample consisted of 38 English major students enrolled in a listening and speaking course during the first semester of the 2023 academic year at a private university in Samut Prakan, Thailand. Among them, 10 were male (26.32%) and 28 were female (73.83%). While all participants shared the same native language, they varied in gender, age, prior grades in a speaking course, and English proficiency levels.

Data Collection

Research instruments

1. Public Speaking Anxiety Scale (PSAS)

The Public Speaking Anxiety Scale (PSAS), developed by Bartholomay & Houlihan (2016), was administered to measure the students' PSA. This instrument gauged students' subjective perceptions

of their anxiety. It consisted of 17 items that assessed three properties of PSA: (1) cognitive, (2) behavioral, and (3) physiological.

The cognitive subscale (Items 1–8) measures thoughts, worries, and self-perceptions associated with public speaking. These items capture the mental aspects of anxiety such as fear of negative evaluation, concern about performance errors, and perceived loss of control. For example, items such as *"Giving a speech is terrifying"* and *"I am worried that my audience will think I am a bad speaker"* reflect anxious cognitions and self-doubt. Positively worded statements like *"I am focused on what I am saying during my speech"*, *"I am confident when I give a speech"*, and *"I feel satisfied after giving a speech"* are reverse-coded, indicating lower anxiety when respondents express confidence, focus, or satisfaction.

The behavioral subscale (Items 9, 12, 15, 17) focuses on the outward manifestations of anxiety, observable behaviors or performance disruptions that may occur during or prior to public speaking. These include actions such as fidgeting before speaking, voice trembling, and difficulty maintaining eye contact. These behaviors suggest avoidance tendencies or a lack of composure typical of individuals with heightened PSA.

The physiological subscale (Items 10, 11, 13, 14, 16) captures the somatic symptoms commonly linked with anxiety responses. Items such as *"I feel sick before speaking in front of a group"*, *"My heart pounds when I give a speech"*, and *"I sweat during my speech"* represent physical sensations resulting from autonomic arousal. The reverse-coded item *"I feel relaxed while giving a speech"* reflects a calm physiological state and therefore indicates lower anxiety when endorsed. Overall, the 17 items comprehensively assess the multifaceted nature of PSA, covering cognitive worries, behavioral signs, and physiological reactions. Reverse-coded items (Items 6–8, 16, 17) help control for response bias and allow for balanced scoring. A higher total score reflects greater levels of PSA, while lower scores indicate greater comfort and confidence during speech situations.

In this study, the PSAS was selected to measure PSA because it comprehensively assesses all three components of anxiety, namely physical, emotional, and cognitive, identified by Lang (1968), which aligns with the focus of this investigation. Unlike other self-report scales that typically measure only one aspect of anxiety (e.g., cognitive), the PSAS provides a more complete picture of PSA. Furthermore, a few other scales that do assess the three-component model require extensive time to complete (e.g., PRPSA, McCroskey, 2006). Thus, the PSAS is both a theoretically robust and practically efficient choice for this study.

Furthermore, to ensure students fully understood the questionnaire items, the PSAS was translated into Thai and then back-translated into English by professional translators prior to distribution. A pilot study was conducted with 44 English–Chinese major students who shared similar backgrounds with the target participants. Following the pilot test, the PSAS was adopted without modification. Its internal consistency, measured using Cronbach's alpha, was found to be .88, indicating a high level of reliability.

2. Oral Performance Test

The oral test structure involved three presentations that students completed over the course of the semester, each lasting three minutes to ensure consistency and fairness. The 3-minute time limit was applied to encourage concise delivery. Each presentation was based on specific course topics, with students given one week to prepare for each task, allowing time for research, drafting, and practice, which contributed to the quality of their presentations. The details of each oral test are as follows:

1. **First Oral Test**:
- **Topic**: "Sustainable Architecture"
- **Task**: Students presented their ideal office building design for the business district of Bangkok, focusing on sustainable architecture.

2. **Midterm Oral Test**:
- **Topic**: "The Importance of Games"
- **Task**: Students chose an online game they believed was beneficial for improving English language skills and persuaded their peers that it was the best option.

3. **Final Oral Test**:
- **Topic**: "Environmental Issues"
- **Task**: Students were provided with a case study on global warming and natural disasters and had to propose and justify a solution, weighing its advantages and disadvantages.

The participants' oral test performances were evaluated using a speaking rubric with three main criteria: Non-verbal Skills, Verbal Skills, and Content, scored on a 4-point scale, ranging from 1 (Poor) to 4 (Exceptional). Each criterion included subcategories with specific descriptors:

1. **Non-verbal Skills**: *Eye Contact, Body language, Poise*

Eye Contact - evaluates the extent to which the student engages the audience without relying heavily on notes or slides. Scores range from consistently maintaining audience attention (4) to reading the entire report from notes without looking at the audience (1).

Body Language - considers the use of gestures and movement to enhance communication, from fluid and visually supportive gestures that aid understanding (4) to minimal or no movement (1).

Poise - reflects confidence and the ability to recover from mistakes, from appearing relaxed and self-assured throughout the presentation (4) to visibly nervous with difficulty recovering from errors (1).

2. **Verbal Skills**: *Enthusiasm, Speaking Skills*

Enthusiasm - captures the student's interest and positive expression toward the topic, ranging from strong engagement and consistent energy (4) to showing no interest or negativity (1).

Speaking Skills - assess voice clarity, pace, audibility, and use of filler words, from clear, well-paced, fully audible speech without fillers (4) to mumbled, inaudible, rushed speech with frequent filler words (1).

3. **Content**: *Subject Knowledge, Language*

Subject Knowledge - evaluates whether information is relevant, clearly presented, and supported with evidence, from thorough and well-organized content (4) to unclear goals and unrelated or unsupported information (1).

Language - assesses precision, appropriateness, and effectiveness for the context, from vivid, precise, and contextually appropriate language (4) to limited, ineffective, or imprecise language with frequent filler words (1).

Students were provided with the speaking rubric in advance, outlining the specific criteria for assessment. The overall oral test performance score was calculated by combining scores across these three categories, with a total score range from 7 to 28 points.

The tests were graded by two raters: a native English speaker (British) and a non-native English speaker (Filipino), ensuring a diverse evaluation perspective. The inter-rater reliability, measured by the Pearson correlation coefficient (r), was found to be 0.73, indicating a high level of agreement between the two raters.

3. Diaphragmatic breathing video guide

A 5-minute instructional video on diaphragmatic breathing exercises was created and used for this study. To ensure credibility and accurate execution, a licensed Thai physician demonstrated the exercises in the video, which featured a Thai soundtrack with English subtitles to maximize student comprehension. The video briefly explained the purpose of DB and provided clear steps for performing the exercises.

Steps for Diaphragmatic Breathing (Concise Version):

1. Sit or stand comfortably, with a straight back and relaxed shoulders.
2. Close your eyes and focus on your breath.
3. Place one hand on your abdomen and the other on your chest; the abdomen should rise with each inhale while the chest remains mostly still.
4. Inhale slowly through the nose for a count of four.
5. Pause briefly while smiling gently.
6. Exhale slowly through the mouth for a count of four, making a soft "whooo" sound.
7. Repeat for several cycles.

The video helps students manage situational anxiety by guiding them to regulate rapid, shallow breathing that often occurs in stressful situations, such as public speaking. By practicing DB, students can achieve a calmer physiological state, which enhances concentration, reduces anxiety

symptoms, and supports clearer, more fluent speech. Repeated use of the video is expected to increase students' confidence and control during oral presentations, enabling them to maintain eye contact, articulate ideas effectively, and perform better in speaking tasks.

Figure 1 Sample Video Demonstration of Diaphragmatic Breathing Demonstrated by a Licensed Thai Physician (Screenshot from the Actual Footage)

Data Analysis

The following statistical analyses were used to address each research question:

1. **Descriptive Statistics**: Descriptive statistics (mean, median, and standard deviation) were calculated to provide an overview of the participants' PSA levels as measured by the PSAS at baseline. This analysis addresses Research Question 1, providing a snapshot of the general anxiety levels among participants.

2. **Correlation Analysis**: To address Research Question 2, a Pearson correlation test was conducted to examine the relationship between students' PSA scores and their oral performance scores. This analysis determined if higher anxiety levels were associated with lower oral performance.

3. **Non-Parametric Tests**: To determine the effectiveness of DB in reducing PSA (Research Question 3), two non-parametric tests were conducted:

    1. Wilcoxon Signed-Rank Test: This test compared the PSA levels measured at the midterm and final oral tests within each group to assess any reduction in anxiety over time.

    2. Mann-Whitney U Test: This test was used to compare the final oral test PSA levels between the control and experimental groups, determining whether the DB intervention group experienced a statistically significant reduction in PSA relative to the control group.

Research Procedure

In the second week of the semester, students completed their first oral presentation to establish a baseline for PSA. They each delivered a three-minute presentation on "sustainable architecture" in a typical setting, waiting their turn without intervention. Following their presentations, they completed the PSAS questionnaire to assess their anxiety levels.

In this study, PSAS was administered after the presentation to capture students' subjective perceptions of anxiety immediately following their performance. This approach allows for a more accurate reflection of students' anxiety as they directly experience it during public speaking, encompassing all three properties of anxiety (behavioral, cognitive, and physiological) that may be most vivid and assessable once the speaking task is completed. Measuring anxiety post-presentation also provides insights into students' reflective self-assessment, which is useful in understanding how they perceive their performance and anxiety levels once they have fully engaged in the task.

Based on the PSAS results, which classified students into high, moderate, and low anxiety levels, the class was stratified into three subgroups. The 23 students with high anxiety, 11 with moderate anxiety, and 4 with low anxiety were then assigned to either the experimental or control group, ensuring a balanced representation of each anxiety level in both groups.

To confirm that both groups were comparable in anxiety levels, a Mann-Whitney U test was conducted, yielding U = 176.50, p = 0.91. This result indicates no significant difference in anxiety levels between the groups, ensuring that any differences observed in the study are not due to initial anxiety level differences.

To evaluate whether differences in English proficiency between the control group and the experimental group could affect final presentation performance, the proficiency levels of students in each group were also compared. In the control group, most students were at the B1 proficiency level, with a few at B2 and A2 levels. Similarly, the experimental (DB) group consisted primarily of B1-level students, with some at B2 and A2 levels.

A Chi-Square test was conducted to statistically assess whether these proficiency levels (A2, B1, B2) were distributed similarly across both groups. The results indicated no statistically significant difference in proficiency distribution, χ^2 (2, N) = 0.414, p > 0.05. This finding suggests that proficiency levels were comparable between the groups, confirming that both groups started from a similar baseline in terms of English proficiency. Therefore, any observed differences in presentation performance cannot be attributed to differences in proficiency.

In week eight of the semester, students were tasked with delivering a three-minute presentation on "the importance of games". As part of the experimental procedure, each student was asked to leave the classroom individually and take a five-minute short break without any intervention before delivering their presentation. The break was designed to help reduce pre-presentation anxiety by giving students a moment to relax and mentally prepare. This brief period away from the classroom environment was intended to reduce stress and provide a mental reset before the presentation. After the presentation, students were asked to fill out the PSAS questionnaire electronically, immediately following each individual's oral test presentation.

The drill of the presentation is as follows:

1. The first presenter was asked to spend five minutes outside the classroom freely, engaging in any activity they chose during this time.

2. After the five-minute break, the first presenter was called in to deliver their presentation, while the second presenter was asked to leave the classroom and take a five-minute short break, just as the first presenter had.

3. After the first presenter finished their presentation, they returned to their seat and electronically filled out the PSAS questionnaire.

4. The second presenter was then called in to give their presentation and fill out the questionnaire afterward, while the third presenter was asked to leave the classroom for their five-minute break.

This process continued until all students had delivered their presentations.

In the final week of the semester, students were tasked with delivering a persuasive presentation on "environmental issues". For this presentation, the study divided the students into two groups: a control group and an experimental group. The control group followed the same procedure as in the previous presentation by taking a five-minute short break outside the classroom. The experimental group, however, was led through a five-minute DB exercise before their presentation, using a video tutorial guide demonstrated by a licensed Thai physician. This was done to evaluate the effectiveness of DB in reducing PSA and improving performance.

The process for the final presentation was as follows:

1. The first presenter from the control group was asked to take a five-minute break outside the classroom, free to engage in any activity.

2. After the break, the first presenter entered the room to deliver their presentation, while the second presenter from the experimental group was led to another room to complete the five-minute DB exercise using the video tutorial guide.

3. Once the first presenter finished their presentation, they returned to their seat and filled out the PSAS questionnaire electronically. The second presenter was then called in to deliver their presentation, and after finishing, they filled out the PSAS questionnaire as well. Meanwhile, the third presenter from the control group took their five-minute break outside the room.

4. This pattern continued until all students had delivered their presentations.

In summary, the control group was asked to take a five-minute short break outside the presentation room, while the experimental group participated in a five-minute DB exercise before their presentation. After each presentation, students were required to immediately complete the PSAS questionnaire to assess their perceived anxiety levels. This design allowed the researchers to compare the effects of a simple break versus the DB exercise on students' PSA and performance.
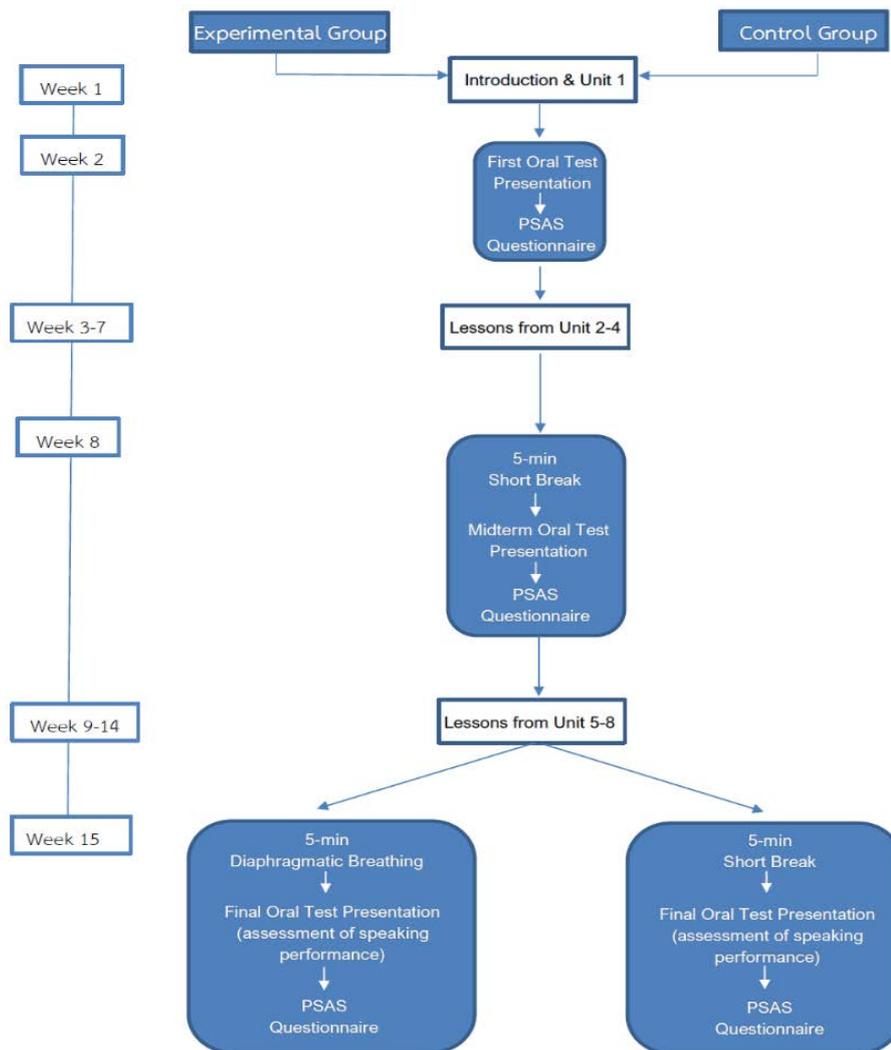
Figure 2 Research Procedure

Research Results/Findings

Research Question 1: What is the level of public speaking class anxiety among Thai undergraduate students?

Table 1 summarizes the average frequencies of the participants' responses to PSAS during the first presentation in Week 2, reflecting their subjective perceptions of their anxiety toward public speaking. The majority of participants concurred with the items in PSAS and showed a negative and apprehensive attitude toward public speaking. For instance, Item 1 - *"Giving a speech is terrifying"* (50.00%), Item 2 - *"I am afraid that I will be at a loss for words while speaking"* (44.74%), Item 3 - *"I am nervous that I will embarrass myself in front of the audience"* (47.37%), Item 11 *"I feel tense before giving a speech"* (50%).

Table 1: Frequencies and Percentages of Participants' Responses to PSAS

STATEMENT	Not at all (1)	Slightly (2)	Neutral (3)	Very (4)	Extremely (5)	Total
1. Giving a speech is terrifying.	0.00% (0)	0.00% (0)	15.79% (6)	34.21% (13)	**50%** **(19)**	100% 38
2. I am afraid that I will be at a loss for words while speaking.	0.00% (0)	0.00% (0)	23.68% (9)	31.58% (12)	**44.74%** **(17)**	100% 38
3. I am nervous that I will embarrass myself in front of the audience.	0.00% (0)	5.26% (2)	7.90% (3)	39.47% (5)	**47.37%** **(18)**	100% 38
4. If I make a mistake in my speech, I am unable to re-focus.	2.63% (1)	2.63% (1)	34.21% (13)	34.21% (13)	15.79% (6)	100% 38
5. I am worried that my audience will think I am a bad speaker.	5.26% (2)	5.26% (2)	10.53% (4)	**52.63%** **(20)**	26.32% (10)	100% 38
6. I am focused on what I am saying during my speech.	23.68% (9)	**28.95%** **(11)**	18.42% (7)	23.68% (9)	5.26% (2)	100% 38
7. I am confident when I give a speech.	**57.89%** **(22)**	42.11% (16)	0.00% (0)	0.00% (0)	0.00% (0)	100% 38
8. I feel satisfied after giving a speech.	0.00% (0)	5.26% (2)	21.05% (8)	**60.53%** **(23)**	13.16% (5)	100% 38
9. My hands shake when I give a speech.	0.00% (0)	7.90% (3)	28.95% (11)	39.47% (15)	23.68% (9)	100% 38
10. I feel sick before speaking in front of a group.	0.00% (0)	5.26% (2)	21.05% (8)	**42.11%** **(16)**	31.58% (12)	100% 38
11. I feel tense before giving a speech.	0.00% (0)	7.89% (3)	15.79% (6)	26.32% (10)	**50.00%** **(19)**	100% 38

12. I fidget before speaking.	0.00% (0)	2.63% (1)	**42.11%** **(16)**	21.05% (8)	34.21% (13)	100% 38
13. My heart pounds when I give a speech.	0.00% (0)	7.89% (3)	26.32% (10)	28.95% (11)	**36.84%** **(14)**	100% 38
14. I sweat during my speech.	0.00% (0)	39.47% (15)	**42.10%** **(16)**	10.53% (4)	7.90% (3)	100% 38
15. My voice trembles when I give a speech.	0.00% (0)	2.63% (1)	34.21% (13)	26.32% (10)	**36.85%** **(14)**	100% 38
16. I feel relaxed while giving a speech.	52.63% (20)	42.11% (16)	5.26% (2)	0.00% (0)	0.00% (0)	100% 38
17. I do not have problems making eye contact with my audience.	18.42% (7)	60.53% (23)	18.42% (7)	2.63% (1)	0.00% (0)	100% 38

Table 2: Descriptive Statistics of PSAS

	N	Minimum	Maximum	Mean	Std. Deviation
PSAS	38	50.00	77.00	64.8250	6.61225

According to Bartholomay & Houlihan (2016), scores higher than 64 are viewed as high anxiety, between 51 and 63 as moderate anxiety, and lower than 51 as low anxiety. In this study, the mean of PSAS is 64.83 (SD = 6.61, N = 38), as shown in Table 2. It reveals that the majority of the participants experienced a "high" level of PSA.

The descriptive results in Table 3 suggest that 60.53% of the participants scored higher than 64, which indicates a high level of PSA. The percentage of participants who experience a moderate level of PSA is 28.95%. Whereas, only 10.53% of them scored less than 51.

Table 3: Participants' Level of Public Speaking Anxiety

Level of Public Speaking Anxiety	Number of Respondents	Percentage
High (>64)	23	60.53%
Moderate (51-63)	11	28.95%
Low (<51)	4	10.53%
Total	38	100%

Research Question 2: What is the relationship between Thai students' public speaking anxiety level and their oral test performance?

The result of the Pearson correlation between PSA as measured by PSAS of the final oral presentation and the student's oral test performance during the final presentation as measured by their speaking test scores was highly statistically significant and in a strong and negative or inverse relationship, r (36) = -.87, p <.001.

Figure 3 displays the scatterplot of the PSA scores of the participants and their oral test presentation scores. As shown in the figure, when PSA scores tend to decrease, oral test presentation scores increase. Accordingly, it can be held that there is a negative correlation between PSA scores and oral test performance scores. Moreover, the strength of correlation based on its r value was at a strong level.
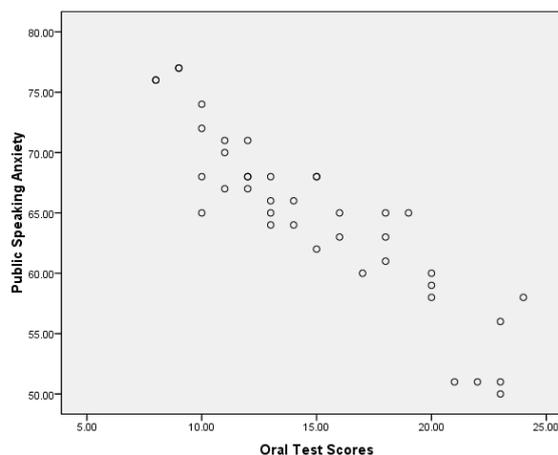

Figure 3 Pearson Correlation Result (Scatterplot)

Research Question 3: Is 'diaphragmatic breathing' effective in reducing overall self-perceived public speaking anxiety?

CONTROL GROUP

To examine the effectiveness of DB in reducing overall self-perceived PSA, the difference in the control group's PSA between the midterm and final oral presentations was analyzed. Descriptive statistics revealed that the control group's PSA during the final oral presentation ($\bar{x}$ = 63.05) was slightly lower than their PSA during the midterm presentation ($\bar{x}$ = 63.89). To determine whether this decrease was statistically significant, the Wilcoxon Signed-Rank Test was applied.

The results of the Wilcoxon Signed-Rank Test indicated that the median PSA during the final presentation of the control group (Mdn = 64.0) showed no statistically significant change, Z = -1.93, p < .001. Therefore, it can be concluded that the control group did not experience a significant reduction in their PSA between the midterm and final presentations.

Table 4: Summary of Statistical Results of Control Group During Midterm and Final Oral Presentation

Control Group	M	Mdn	SD	Z	Sig
Midterm Oral Presentation	63.89	64.00	6.15		
Final Oral Presentation	63.05	64.00	6.27	-1.934	p <.001

EXPERIMENTAL GROUP

To examine the effectiveness of DB in reducing overall self-perceived PSA, the difference in PSA scores between the experimental group's midterm and final oral presentations was analyzed. Descriptive statistics showed that the experimental group's PSA scores during the final oral presentation ($\bar{x}$ = 54.53) were lower than those during the midterm presentation ($\bar{x}$ = 64.10).

To determine if this difference was statistically significant, the Wilcoxon Signed-Rank Test was conducted. The results revealed that the PSA scores during the final oral presentation (Mdn = 53.0) were significantly lower than those during the midterm presentation (Mdn = 65.0), Z = -3.92, p < .001, with a large effect size, r = 0.62. This indicates that the experimental group experienced a significant reduction in PSA between the midterm and final presentations.

Table 5: Summary of Statistical Results of Experimental Group During Midterm and Final Oral Presentation

Experimental Group	M	Mdn	SD	Z	Sig
Midterm Oral Presentation	64.10	65.00	6.20		
Final Oral Presentation	54.53	53.00	4.46	-3.924	p <.001

BETWEEN GROUPS

Accordingly, to see if there was a statistically significant difference between the two groups' results and to assess the effectiveness of DB in alleviating PSA, the Mann-Whitney U test was conducted.

Table 6: Summary of the Statistical Results of Both Groups (Final Oral Presentation)

Between Groups	N	M	Mdn	SD	Z	Sig	r
Experimental Group	19	54.53	53.00	4.46			
					-3.88	p <.001	0.61
Control Group	19	63.05	64.00	6.27			

The Mann-Whitney U test (Table 6) revealed that individuals in the experimental group, who participated in DB exercises before the final oral presentation (Mdn = 53.0), experienced a greater reduction in PSA compared to those in the control group, who did not undergo any intervention (Mdn = 64.0). The result was statistically significant, Z = -3.88, p < .001, with a large effect size (r = 0.61).

Discussion

The results of this study align with existing research on PSA and its impact on Thai EFL students, offering valuable insights into the nature of PSA and its effect on oral performance. The findings show that a majority of Thai undergraduate students' report experiencing high levels of PSA, which is consistent with previous studies on language anxiety among EFL learners. Bartholomay & Houlihan (2016) and Khamkhien (2010) identify that anxiety, particularly in the context of public speaking and oral assessments, can significantly impair language learners' performance, disrupting fluency, confidence, and pronunciation.

The correlation between PSA levels and oral test performance in this study echoes the work of MacIntyre & Gardner (1991, 1994), who emphasized the inverse relationship between anxiety and performance. In this study, the negative correlation (r = -.87) between PSA scores and oral test performance indicates that as anxiety increases, students' performance in oral assessments decreases. This relationship has been observed across different cultural contexts, such as those outlined by Kurakan (2021) and Ho and Truong (2022), where the fear of negative evaluation in EFL contexts exacerbates the effects of PSA. Moreover, the increased physiological and cognitive disruptions, as noted by Gregersen & Horwitz (2002), can hinder language learners' fluency and accuracy, leading to reduced performance on oral exams.

As for the intervention of DB, the results also mirror the findings of studies that suggest DB is effective in reducing anxiety and improving performance. The significant reduction in PSA scores among the experimental group (r = 0.62) following DB exercises supports the conclusion that DB is an effective intervention for managing PSA. This is consistent with Howe and Dwyer (2007), who demonstrated that DB enhances relaxation, mental clarity, and confidence, all of which are critical

for effective public speaking. Additionally, research by Ma et al. (2017) highlights the cognitive benefits of DB. Their randomized controlled trial found that an 8-week DB intervention significantly reduced negative affect, lowered cortisol levels, and improved sustained attention. These outcomes directly benefit speaking performance by reducing stress-related disruptions and enhancing mental focus.

The findings of this study also suggest that DB, when practiced regularly, can foster long-term resilience to anxiety. This is supported by studies such as Chen et al. (2017), who found that an eight-week DB training program significantly reduced both self-reported anxiety and physiological stress markers, and Hopper et al. (2019), whose systematic review confirmed that consistent DB practice leads to sustained reductions in psychological distress and physiological stress responses. In the classroom context, DB can be a valuable tool for EFL instructors to incorporate into their teaching strategies, especially for Thai students who frequently experience heightened anxiety due to fear of negative evaluation and loss of face. Recent research with Thai EFL learners (Kurakan, 2021; Poolperm & Boonmoh, 2024; Suratin & Sribayak, 2025; Thaksanan, 2024) underscores the significant impact that cultural factors related to face-saving have on public speaking anxiety, making interventions like DB particularly relevant and beneficial in these contexts.

Conclusion

This study has demonstrated the high levels of PSA among Thai EFL students, confirming its negative impact on their oral test performance. The findings further reinforce the importance of addressing PSA, as it is a key factor that impedes both language proficiency and academic success in oral assessments. The significant correlation between PSA and oral performance emphasizes the need for effective interventions to mitigate anxiety and enhance students' ability to perform under pressure.

DB has proven to be a highly effective intervention for reducing PSA, significantly improving students' self-perception of anxiety and enhancing their oral test performance. The results suggest that DB not only provides immediate relief from physiological symptoms of anxiety but also offers long-term cognitive and psychological benefits, making it a valuable tool for EFL instructors in the classroom. By incorporating DB into language learning environments, especially in cultures like Thailand where PSA is common, educators can help students manage their anxiety, improve their fluency, and ultimately boost their performance in oral assessments.

Incorporating DB into language learning environments could help students better manage their anxiety, improve fluency, and ultimately elevate their performance in oral assessments. The findings underscore the importance of integrating evidence-based techniques like DB into EFL teaching practices, especially in cultures like Thailand, where PSA is a common and often overwhelming challenge for students. By addressing this anxiety through proven interventions like DB, educators can help students overcome this barrier to success and enhance their language learning experience.

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