

Research Article

Cite this article: Tu, H. (2025). Effects of Integrating WSQ-based Flipped Learning and Cooperative Learning on L2 Speaking Performance. *Educational Process: International Journal*, 14, e2025047. <https://doi.org/10.22521/edupij.2025.14.47>

Received December 12, 2024

Accepted January 27, 2025

Published Online February 6, 2025

Keywords:

WSQ-based flipped learning, cooperative learning, speaking performance, EFL learners, oral proficiency.

Author for correspondence:

Hsiu-Lien Tu

✉ hltu@gm.cyut.edu.tw

✉ Chaoyang University of Technology, Taiwan

Effects of Integrating WSQ-based Flipped Learning and Cooperative Learning on L2 Speaking Performance

Hsiu-Lien Tu 

Abstract

Background/purpose. This research aimed to evaluate the impact of integrating the WSQ-based flipped learning method with cooperative learning on speaking performance among English as a Foreign Language (EFL) learners. Addressing the challenges EFL learners face in oral proficiency, the study sought to determine whether this innovative pedagogical approach could enhance vocabulary pronunciation, oral fluency, and content length in speaking tasks.

Materials/methods. The study employed a single-group quasi-experimental design with 25 tertiary-level EFL learners aged 18 to 21. Due to participant attrition, the final sample size was 15. Over six weeks, participants underwent an intervention combining multimedia content, cooperative learning principles, and Watch-Summary-Question (WSQ) worksheets. Pre-test and post-test evaluations assessed vocabulary pronunciation accuracy, oral fluency, and speaking content length.

Results. The findings demonstrated significant improvements in speaking performance. Participants' average pronunciation scores increased from 10.33 to 13.47, oral fluency scores rose from 4.27 to 7.49, and speaking content length expanded from 147 to 229 words. All improvements were statistically significant at the 0.01 significance level, underscoring the efficacy of the integrated approach in enhancing EFL learners' oral proficiency.

Conclusion. The study concludes that combining WSQ-based flipped learning with cooperative learning positively influences EFL learners' word pronunciation accuracy and oral proficiency. These results align with previous research supporting the effectiveness of blended pedagogical strategies. Educators can adopt this approach to improve oral English instruction. Future research should examine its long-term effects and applicability in diverse language learning contexts.



OPEN ACCESS

© The Author(s), 2025. This is an Open Access article, distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted re-use, distribution, and reproduction, provided the original article is properly cited.

1. Introduction

Language learning is a dynamic process that continuously evolves with the introduction of innovative pedagogical approaches. This research delves into the impact of integrating the WSQ-based (Watch, Summary, Question) flipped learning method with cooperative learning on word pronunciation and speaking performance among English as foreign language (EFL) learners. By exploring this novel pedagogical fusion, the aim is to contribute to the growing body of knowledge in language education and provide insights into effective strategies for enhancing language proficiency.

The foundation of this research lies in the intersection of two prominent educational methodologies and one strategy: flipped learning, cooperative learning, and the WSQ strategy. As defined by Bergmann and Sams (2012), flipped learning redefines the traditional classroom dynamic by shifting content delivery outside of class and using in-class time for active engagement and interaction. This approach has garnered international recognition and has been applied across various academic disciplines, emphasizing the need for student-centered, interactive learning environments (Schnieder et al., 2021; Hsia et al., 2022; Bagdasaryan & Huynh-Hohnbaum, 2022; Moore et al., 2023).

On the other hand, cooperative learning has been extensively studied and proven effective in enhancing language proficiency (Namaziandost et al., 2020). It fosters collaborative interactions, shared responsibilities, and positive interdependencies among learners (Abramczyk & Jurkowski, 2020). However, its integration into English language teaching in some contexts, like Taiwan, faces challenges due to the dominance of test-oriented methods and large class sizes (Chou, 2018; Chuang, 2020).

The WSQ strategy, initially proposed by Kirch (2012), serves as a tool to guide students in effectively engaging with pre-class materials and enhancing their comprehension. By combining the WSQ strategy's comprehensive approach with clear guidance, participants are equipped with a structured and well-defined path to follow throughout the flipped learning process. This integration enhances their understanding, critical thinking, and overall learning experience during in-class activities.

This research's novelty lies in synthesizing these approaches to address specific challenges in EFL learning. While flipped learning and cooperative learning have individually demonstrated their efficacy, their combination in the context of oral English instruction presents a unique pedagogical niche. This approach aims to tackle the limitations posed by large class sizes and test-oriented teaching methods by fostering collaborative, student-centered learning.

Moreover, this research utilizes a set of carefully designed instruments, including WSQ worksheets, vocabulary pronunciation tests, and open-ended questions, to comprehensively evaluate the impact of the intervention. These instruments offer a nuanced assessment of participants' language skills, allowing for a thorough analysis of word pronunciation accuracy and speaking proficiency.

To occupy this niche, a single-group quasi-experimental study was conducted involving 15 EFL learners, with a focus on vocabulary pronunciation, oral fluency, and speaking content length. The findings revealed significant improvements in word pronunciation accuracy and oral proficiency, indicating that integrating the WSQ-based flipped learning method with cooperative learning positively influences EFL learners' language skills. These results align with prior research on the effectiveness of similar pedagogical approaches, highlighting the potential of this integrated method in language instruction.

In conclusion, this research introduces a novel approach to language education by combining flipped learning, cooperative learning, and the WSQ strategy. By occupying this pedagogical niche,

valuable insights are provided for educators seeking to enhance language teaching, particularly in the realm of oral English instruction. The findings of this study offer a promising avenue for improving oral proficiency among EFL learners, and future research should explore its adaptability across diverse language learning contexts. This research contributes to the ongoing evolution of language education and underscores the significance of innovative pedagogical approaches in addressing the challenges faced by language learners.

2. Literature Review

2.1. The Definition of Flipped Learning

Over the past decade, the flipped learning approach has gained significant popularity in the field of education. The adoption and investigation of the flipped learning approach have been observed across diverse academic disciplines (e.g., Schnieder et al., 2021; Hsia et al., 2022; Bagdasaryan & Huynh-Hohnbaum, 2022; see also Moore et al., 2023). Bergmann and Sams (2012) defined flipped learning as the model “which is traditionally done in class is now done at home, and that which is traditionally done as homework.” (p.13) Brett (2012) pointed out that flipped learning in education involves reversing traditional college lecture expectations and includes interactive engagement, just-in-time teaching (where students respond to web-based questions before class, and professors use their feedback for instruction), and peer instruction. Based on the definitions mentioned above, it can be concluded that flipped learning is a transformative model that swaps in-class and homework, fostering interactive engagement and responsive instruction to create a dynamic and student-centered learning environment, redefining traditional education.

2.2. Flipped Learning as a Worldwide Phenomenon

The flipped classroom was pioneered by Jonathan Bergmann and Aaron Sams, two American chemistry teachers in 2007. They revolutionized the traditional teaching model by recording instructional videos to address the needs of absent students, ensuring they could stay up-to-date with the course's content and engage in learning outside the physical classroom environment. In 2016, The Flipped Learning Global Initiative (FLGI), formed by a global coalition of educators, scholars, researchers, practitioners, technologists, and leaders, supported the worldwide adoption of flipped learning, leading to the replacement of the term "flipped classroom" with "flipped learning" to encompass its broader context as an environment-independent teaching approach (FLGI, 2018). This groundbreaking approach marked the inception of the "flipped" teaching methodology, which has since gained recognition and adoption in various educational settings worldwide. Initially, flipped learning gained popularity primarily in K-12 education (Khan, 2012; Horn, 2013). In recent times, higher education has progressively emphasized the value of online teaching and has also started extensively integrating flipped learning into its instructional practices (O'Flaherty & Phillips, 2015).

2.3. The Advantages of Flipped Learning

The benefits of flipped classrooms can be examined from two perspectives: teaching and learning. In terms of teaching, flipped learning demands a carefully arranged instructional strategy, consequently evaluating teachers' aptitude in designing their teaching approaches (Fulton, 2012). Moreover, this approach allows teachers to choose from various learning activities, including mastery learning, peer instruction, cooperative learning, role-playing, inquiry-based learning, and the 5-E strategy (Birgili et al., 2021). On the other hand, as far as learners are concerned, flipped learning fosters autonomy, placing students at the center of the course (Sam & Bergman, 2013). As a result, learners are required to prepare and organize their learning process, assuming responsibility for their own education (Waner & Palmer, 2015). Additionally, flipped learning has been shown to positively impact cognitive development, empowering learners to engage in high-order thinking (Hung, 2015; Nhac, 2022). Furthermore, in relation to academic achievement, flipped learning has also

demonstrated positive results. This learning approach not only yields improved academic performance but also leads to higher grades (Berrett, 2012; Lee & Wallace, 2017).

2.4. The Disadvantages of Flipped Learning

Despite its numerous advantages, flipped learning is not without drawbacks. One significant concern is its reliance on technology. The implementation of flipped learning heavily depends on digital resources, internet access, and electronic devices, which enable students to access pre-recorded lectures and learning materials beyond the traditional classroom settings (Rotellar & Cain, 2016). Consequently, this dependence can create inequalities and barriers among students, as those lacking access to reliable technology or internet connectivity may face challenges in fully participating in the flipped learning model (Nielsen, 2012). Moreover, implementing flipped learning requires a considerable amount of preparation and effort on the part of the teachers. Creating high-quality pre-recorded content and designing engaging learning activities demand significant time and resources, making it essential to have a well-designed lesson plan; otherwise, the flipped learning model could become ineffective (Arnold-Garza, 2014). Additionally, teachers face a heavy load in maintaining weekly pre-recorded lectures, which can be demanding and time-consuming. Moreover, poor video quality in the pre-recorded lectures may fail to attract students' interest, potentially hindering their engagement with the learning materials (Nielsen, 2012). Additionally, in the context of flipped learning, when students fail to complete the pre-class videos, it can hinder the continuity of the in-class activities (Bognar et al., 2018). This incomplete preparation and reduced engagement during in-person sessions may potentially cause them to fall behind in their studies and adversely affect the overall learning experience.

2.5. Enhancing Learning Through the WSQ Strategy in Flipped Learning

The WSQ (watch-summary-question) strategy, initially proposed by Kirch (2012), proves to be an effective tool in guiding students toward their goals by ensuring they complete pre-class videos and adequately prepare beforehand. This approach encourages active engagement and higher-order thinking skills through the questioning step, aligning with Bloom's Taxonomy principles. Additionally, in the broader context of implementing flipped learning, providing explicit instructions and steps for participants becomes crucial, as students favored assignments that have clear objectives, provide guidance, are well-structured, and are concise (Han & Klein, 2019). By combining the WSQ strategy's comprehensive approach with clear guidance, participants are equipped with a structured and well-defined path to follow throughout the flipped learning process. This integration further enhances their understanding, critical thinking, and overall learning experience during in-class activities. In this research endeavor, flipped learning is utilized to deliver oral English course videos, which are subsequently watched by students in a group cooperative learning setting. Upon viewing the videos, students have to complete coursework sheets- WSQ sheets, thus ensuring a high standard of learning. The approach aims to facilitate the acquisition of essential vocabulary and sentence patterns related to the subject matter. Additionally, this method involves the design of classroom activities during face-to-face sessions, fostering deeper interactions between learners and the instructor as students apply the knowledge gained from the videos.

2.6. Cooperative Learning

Cooperative learning (CL), a student-centered teaching approach, gained prominence in the United States during the 1970s. This model has convincingly demonstrated both academic and social benefits (Abramczyk & Jurkowski, 2020). Additionally, it has proven its efficacy in enhancing language proficiency (Namaziandost et al., 2020). CL research covers a wide range of age groups, from elementary to graduate students. Studies on CL in children primarily delve into cognitive conflict, social construction, and meta cognition (Adey & Shayer, 2011). On the other hand, research in higher education revolves around theoretical aspects of cooperative learning, its application in specific

disciplines, and its implementation in English language teaching (Zhang, 2018). Over the past three years, the outbreak of the epidemic has compelled schools to shift their courses to online teaching, consequently leading to a transformation in CL research. The focus has shifted from traditional in-person group cooperation activities to exploring the dynamics of online learning modes (Ginaya et al., 2022; Fernández-Ferrer & Espinoza-Pizarro, 2022; Yang & Niu, 2023; Møgelvang et al., 2023; Cortez et al., 2023). These research findings have shown positive results in implementing online CL models to enhance academic performance. Furthermore, when compared to the traditional online teaching mode, the online CL approach has demonstrated the potential to reduce students' feelings of loneliness (Møgelvang et al., 2023). However, it is important to note that these studies were conducted during the epidemic when everyone was required to stay at home, which may have influenced the results. To ensure a thorough evaluation, further empirical research is needed to determine whether the reduction in loneliness can be genuinely attributed to online CL or if it's simply a consequence of the unique circumstances during the epidemic.

Numerous studies have explored the application of cooperative learning (CL) in language learning. The appeal of the CL model lies not only in its emphasis on collaborative learning but also in its ability to nurture shared responsibilities and positive inter-dependencies among group members (Abramczyk & Jurkowski, 2020). This interactive approach to learning effectively enhances communication skills, a crucial aspect of language acquisition. However, in Asian countries, including Taiwan, English teaching often revolves around grammar and reading. Despite the Taiwanese government's efforts to improve English courses and enhance students' listening and speaking skills, the dominance of test-oriented teaching methods prevails due to the significance of English in entrance examinations. These tests, focused on grammar and reading, only measure students' language and cognitive abilities, failing to assess their actual communication ability (Chou, 2018). Additionally, large class sizes of around 30 to 40 students make it challenging for every individual to get enough opportunities to speak English (Chuang, 2020).

In light of these challenges, CL's group-oriented approach becomes particularly valuable. By forming learning teams, CL ensures that every student gets a chance to actively participate and speak, effectively overcoming the limitations posed by large class sizes. Moreover, the completion of tasks in cooperative learning requires continuous communication, leading to an improvement in students' communication skills.

Among the various CL models, the Student Team Achievement Divisions (STAD) stands out as an ideal fit for language learning. Employing a heterogeneous grouping strategy, STAD brings together students of varying proficiency levels. This approach enables individuals with different abilities to find their own performance space and fosters a positive and mutual cooperative relationship among group members (Pandiangan, 2019). The STAD learning mode nurtures a supportive and interdependent learning environment, empowering learners to speak English with ease and reducing the anxiety associated with language communication.

2.7. Research questions

This study delves into the Effects of the WSQ-based flipped learning method integrated with a cooperative learning model on (L2) word pronunciation and speaking performance outcomes. By investigating the potential benefits of this combined approach, the study aims to contribute to a deeper understanding of how pedagogical strategies can influence language learning effectiveness. In this context, two central research questions guide the investigation:

(1) How does integrating WSQ-based flipped learning with cooperative learning affect (L2) word pronunciation?

(2) What are the effects of WSQ-based flipped learning with cooperative learning on (L2) speaking performance?

3. Methodology

3.1. Research Design

The research design for this study was based on a single-group quasi-experimental approach. In this design, a single group of language learners was subjected to the entire intervention process. The study began with a pre-test to establish the participants' baseline proficiency in (L2) word pronunciation and speaking performance. Subsequently, the participants engaged in a six-week intervention that incorporated multimedia video content, small group discussions facilitated by cooperative learning principles, and the completion of WSQ worksheets. Following the intervention period, a post-test was administered to assess any changes in the participants' language skills.

3.2. Participants

The study involved a set of 25 learners pursuing English as a Foreign Language (EFL) studies at the tertiary level. Among them, 6 were male, and 19 were female, distributed across different colleges, including Design, Management, Humanities and Social Sciences, and Information. The age range of the participants remained notably focused, covering young adults aged between 18 and 21 years. It's noteworthy that the initial participant count totaled 25. However, due to factors like personal commitments and scheduling conflicts, certain participants chose to withdraw from the study, resulting in a final sample size of 15 (n=15).

3.3. Instruments

The research instruments utilized in this study were thoughtfully designed to comprehensively assess the effects of the WSQ-based flipped learning method integrated with cooperative learning on (L2) word pronunciation and speaking performance. These instruments were carefully chosen to capture different language learning dimensions and provide a well-rounded evaluation of participants' progress. First, the WSQ worksheets were crafted to engage participants with multimedia content centered around three main topics: people, food, and place. These worksheets were divided into sub-topics and fostered pre-class engagement, content comprehension, and preparedness for in-class discussions. Second, a set of 18 vocabulary words related to the three main topics was selected for both the pre-test and post-test assessments. These vocabulary tests assessed participants' word pronunciation proficiency, allowing for a direct comparison of language learning outcomes before and after the intervention. Finally, the study incorporated six open-ended questions in the pre-test and post-test assessments. These questions evaluated participants' speaking performance, addressing topics relevant to people, food, and place. Together, these instruments formed a comprehensive framework for evaluating the impact of the intervention on participants' (L2) word pronunciation and speaking proficiency. A detailed explanation of each instrument is provided below:

1. WSQ Worksheets:

The WSQ (Watch-Summary-Question) worksheets were developed to engage participants with multimedia content, enhancing their interaction with the subject matter. The worksheets were structured around three primary topics: people, food, and place, and each of these topics were further divided into two sub-topics (appearance, character, cooking, eating, hometown and city). The purpose of these worksheets was to encourage participants to actively watch the assigned multimedia videos related to the topics, summarize the content in their own words, and formulate questions that arose from the material (See Table 1). By engaging participants in this process before class, the WSQ worksheets aimed to facilitate comprehension and thoughtful engagement with the

subject matter, enabling more informed and meaningful discussions during the subsequent in-class sessions.

Table 1. The Contents of WSQ Worksheets

Topic	Watch	Summary	Question
People-Appearance	Draw the appearance of each person according to the video description and write down the relevant words.	Write one to two sentences to describe each person's appearance.	Create three questions to ask someone's appearance.
People-Characteristics	Watch the video and write down the positive/negative adjectives under each description. For example: friendly <—> unfriendly	Describe a person's characteristics by using the sentence patterns provided.	Create three questions to ask about someone's characteristics.
Food-Cooking	Draw and write down the ingredients you need for egg and mushroom rolls according to the video.	Write the cooking steps.	Create three questions about cooking.
Food-Eating Habit	Write down the vocabulary you learned from the video clip.	Choose one of the categories (Types of Meals, Eating Habits, Good Taste, and Types of Flavour and Texture), and write the relevant descriptions.	Create three questions about eating habits.
Hometown	Draw and write down the relevant vocabulary of the hometown according to the video.	Describe the hometown in a paragraph.	Create three questions to ask someone's hometown.
City	Draw and write down the relevant vocabulary of the two cities according to the video.	Choose either city (Tokyo or Bariloche) and complete its descriptions.	Create three questions about the city you are interested in.

2. Vocabulary Pronunciation Tests:

For assessing participants' (L2) word pronunciation, a set of 18 carefully chosen topic vocabulary words was identified. These words were aligned with the three main topics: people, food, and place (See Table 2). The vocabulary pre-test was administered prior to the intervention, evaluating participants' baseline pronunciation skills. The same set of words was utilized for the post-test,

conducted after the six-week intervention, allowing for a direct comparison of any improvements resulting from the intervention. This instrument aimed to gauge the impact of the WSQ-based flipped learning approach integrated with cooperative learning on participants' ability to pronounce selected vocabulary words accurately.

Table 2. Topic Vocabulary

Topic	Vocabulary
People	plump, slim, optimistic, grumpy, competitive, independent
Food	creamy, greasy, cuisine, spicy, vegetarian, fussy eater
Place	cosmopolitan, urban, bustling, suburb, picturesque, contemporary

3. Open-Ended Questions:

Designed to evaluate participants' speaking performance, the open-ended questions were strategically developed to correspond with the three main topics: people, food, and place. These questions were posed in both the pre-test and post-test assessments to examine any changes in participants' ability to articulate ideas coherently and effectively (See Table 3). By requiring participants to respond to open-ended prompts related to the topics, this instrument aimed to assess the development of their speaking skills over the course of the intervention period. The open-ended questions facilitated a qualitative assessment of participants' speaking performance and their ability to express themselves clearly and fluently.

Table 3. Open-Ended Questions

Topic	Questions
People	1. Please describe your appearance.
	2. What is your personality?
Food	3. Describe your eating habits.
	4. What food do you usually like to eat?
Place	5. Describe your hometown.
	6. What is your favorite city? Why?

4. Oral Fluency Test :

In assessing participants' speaking fluency before and after the designated interventions, Hughes' (1989, 2003) techniques for evaluating oral proficiency were utilized. The evaluation encompassed five distinct categories: accent, grammar, vocabulary, fluency, and comprehension. In this study, Hughes' assessment approach for fluency was adopted, which is further categorized into six proficiency levels, ranging from lower to higher achievements. Each level is described in terms of specific attributes and corresponding scores. Please refer to Table 4. Hughes' Oral Speaking Assessment: Fluency Section (1989, 2003, p.132; Compiled by Tu).

Table 4. Hughes' Oral Speaking Assessment: Fluency Section

Item	Description	Scoring
1.	Speech is so halting and fragmentary that conversation is virtually impossible.	2
2.	Speech is very slow and uneven except for short or routine sentences.	4
3.	Speech is frequently hesitant and jerky; sentences may be left uncompleted.	6
4.	Speech is occasionally hesitant, with some unevenness caused by rephrasing and groping for words.	8
5.	Speech is effortless and smooth but perceptively non-native in speed and evenness.	10
6.	Speech on all professional and general topics as effortless and smooth as a native speaker's.	12

4. Results

The effectiveness of pedagogical interventions was evaluated using quantitative methods. Specifically, quantitative data analysis techniques were employed to analyze the results of vocabulary pronunciation pre-test and post-test evaluations, along with the insights derived from responses to open-ended questions. The quantification of subjects' advancements in speaking performance was achieved through calculations that incorporated the average scores and standard deviations of the pre-test and post-test assessments.

To bolster the credibility of the findings, a paired t-test was undertaken. This statistical analysis meticulously evaluated the significance of discrepancies between pre-test and post-test scores for each individual participant, encompassing both vocabulary pronunciation and open-ended questions assessments.

4.1. The Outcomes of Word Pronunciation Performance

To address the primary research question of the study, the subsequent table has been prepared, displaying the results of pronunciation accuracy before and after the tests. The pronunciation assessment consisted of a single-group evaluation to measure performance changes over time. As indicated in Table 5 below, the study included a participant pool of 15 individuals.

In the preliminary pronunciation accuracy pre-test, students achieved an average score of 10.33 (with a standard deviation of 4.06), while their post-test average increased to 13.47 (with a standard deviation of 3.07). The findings derived from the examinations revealed that, following the instructional intervention, the post-test scores related to pronunciation accuracy exhibited a significant increase compared to the pre-test scores. The mean score difference was 3.13 points, and the paired sample t-test revealed a t-value of 4.74, with a p-value of 0.0003159, which is statistically significant at the 0.01 level. Figure 1 compares the pronunciation performance in pre-test and post-test, demonstrating significant improvement following the intervention.

Additionally, the effect size (Cohen's d) was calculated as 1.22, indicating a medium to significant effect. Based on these results, a plausible conclusion can be drawn: the study successfully enhanced students' pronunciation performance, demonstrating a significant positive impact of the implemented teaching approach.

In addition to the paired t-test, a Wilcoxon Signed-Rank Test was conducted to account for non-parametric data distribution considerations. The test statistic (W) was 3.5, with a p-value of 0.001998,

confirming the significant improvement in pronunciation accuracy (See Table 6). Most participants exhibited positive changes in scores, with only a small number showing no change (e.g., Participant B) or a decrease (e.g., Participant E & J) (See Table 7). The statistically significant results from both parametric and non-parametric analyses affirm the effectiveness of the instructional intervention.

Based on these results, a plausible conclusion can be drawn: the study successfully enhanced students' pronunciation performance, demonstrating a significant positive impact of the implemented teaching approach.

Table 5. The Outcome of Pre-test and Post-test of Students' Vocabulary Pronunciation Accuracy

Test	N	Mean	S.D.	t.	Sig
Pre-test	15	10.33	4.06	4.74	0.000315877
Post-test	15	13.47	3.07		

*p< .01

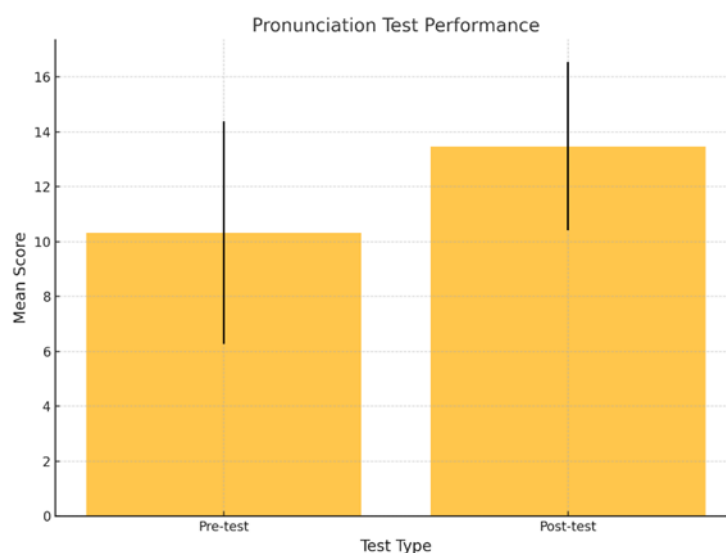


Figure 1. Pronunciation test performance comparison between pre-test and post-test, with error bars representing standard deviations.

Table 6. Wilcoxon Signed-Rank Test Results

Test Statistic (W)	P-Value
3.5	0.001998

Table 7. Wilcoxon Signed-Rank Test Data Summary

Participant	Pre-Test	Post-Test	Difference (Post- Pre)
A	5	10	5
B	15	15	0
C	11	16	5
D	12	16	4
E	15	14	-1
F	13	16	3
G	9	13	4
H	4	12	8
I	9	12	3
J	13	11	-2
K	14	16	2
L	9	12	3
M	14	18	4
N	2	6	4
O	10	15	5

4.2. The Outcomes of Oral Proficiency

To explore the second research question, the effect of the WSQ-based flipped classroom and cooperative learning on second language (L2) oral performance was evaluated, focusing on oral fluency as an indicator. The criteria outlined in Hughes' "Testing Oral Ability" (2003, p.132) were employed to assess fluency, with scores assigned based on six descriptors. The scoring range spans from a minimum of 2 points to a maximum of 12 points, with higher scores reflecting more proficient performance.

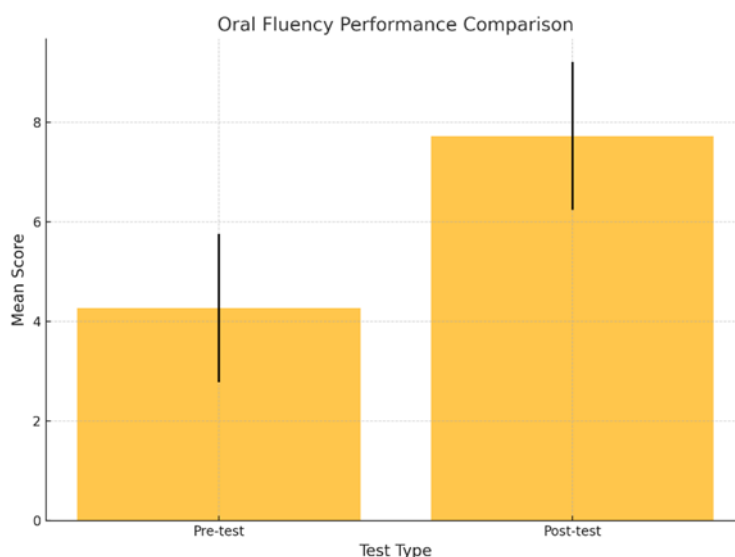
Based on the data presented in Table 8 below, the average pre-test score for students' oral fluency was 4.27 (with a standard deviation of 1.49), while their post-test average increased to 7.73 (with a standard deviation of 1.49). The mean difference between the scores was 3.47 points. The paired sample t-test revealed a t-value of 8.40 and a p-value of 7.682e-07, which is statistically significant at the 0.01 level. Figure 2 presents the oral fluency performance comparison between the pre-test and post-test, demonstrating significant improvement following the intervention. Moreover, the effect size (Cohen's d) was calculated as 2.17, indicating an extremely large effect.

The test results demonstrate a significant improvement in students' post-test oral fluency scores after implementing cooperative learning combined with the WSQ-based flipped learning approach. These findings suggest that the study effectively enhanced students' oral proficiency.

Table 8. The Outcome of Pre-test and Post-test of Students' Oral Fluency

Test	N	Mean	S.D.	t.	Sig
Pre-test	15	4.27	1.49	8.4	0.0000000768232
Post-test	15	7.73	1.49		

*p< .01

**Figure 2.** Comparison of oral fluency performance in pre-test and post-test, with error bars representing standard deviations.

A Wilcoxon Signed-Rank Test was conducted to further validate these findings and account for potential deviations from normality in the data distribution. This test compared the fluency scores of the 15 participants before and after the intervention. The results, presented in Table 3, revealed a test statistic (W) of 0.0 and a p-value of 0.000061, which is statistically significant at the 0.01 level (See Table 9).

Table 10 shows the detailed fluency data summary, including individual pre-test and post-test scores and their differences. All participants either improved or maintained their scores, with no decreases observed. Notably, participants such as Participant N exhibited the largest improvement, increasing their score by 8 points. The consistent positive changes across all participants highlight the robustness of the instructional intervention in enhancing oral fluency performance.

Table 9. Wilcoxon Signed-Rank Test Results for Fluency Scores

Test Statistic (W)	P-Value
0.0	0.000061

Table 10. Fluency Data Summary

Participants	Pre-Test Score	Post-Test Score	Difference (Post- Pre)
A	4	8	4
B	8	10	2
C	4	6	2
D	6	8	2
E	4	8	4
F	4	8	4
G	4	8	4
H	4	8	4
I	2	4	2
J	4	8	4
K	4	6	2
L	4	8	4
M	4	8	4
N	2	10	8
O	4	8	4

The combination of the paired sample t-test and Wilcoxon Signed-Rank Test provided consistent evidence of the instructional intervention's effectiveness. The significant improvements observed in both tests, with no decreases in scores, indicate the robustness of the WSQ-based flipped classroom and cooperative learning approach in enhancing students' oral fluency. These findings reinforce the conclusion that the instructional methods employed in this study were highly effective in fostering L2 oral performance.

Second, students' content length showed a significant increase from the pre-test to the post-test. The average pre-test content length was 147.47 words (SD = 48.02), while the post-test average increased to 228.73 words (SD = 59.48) (see Table 11). The paired sample t-test revealed a mean difference of 81.27 words, with a t-value of 6.23 and a p-value of 2.211e-05, which is statistically significant at the 0.01 level. Figure 3 displays the comparison of mean content lengths between the pre-test and post-test, highlighting the notable enhancement in participants' content production as a result of the intervention. The effect size (Cohen's d) was calculated as 1.61, indicating a very large effect. These results confirm that the post-test content length was significantly greater than the pre-test, demonstrating substantial improvement.

Table 11. The Outcome of Pre-test and Post-test of Students' Speaking Content Length

Test	N	Mean	S.D.	Mean Difference	t-value	p-value
Pre-test	15	147.47	48.02			
Post-test	15	228.73	59.48	81.27	6.23	2.211e-05

*p < .01

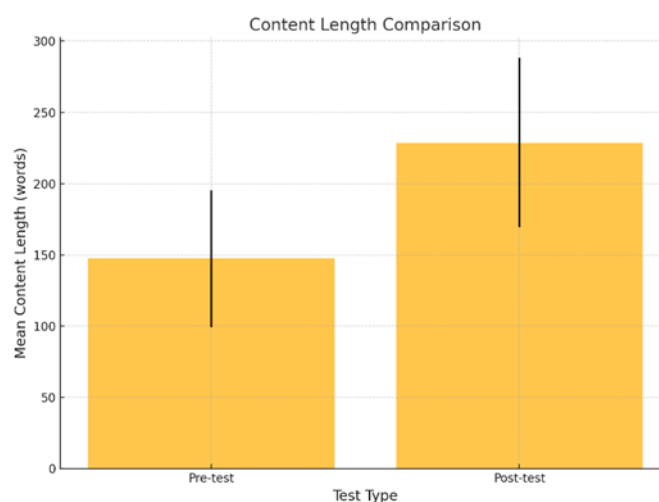


Figure 3. Comparison of mean content lengths (words) in pre-test and post-test, with error bars representing standard deviations.

5. Discussion

Flipped learning empowers students to take responsibility for their own learning by completing preparatory work, which enhances their engagement in interactive classroom activities (O'Flaherty & Phillips, 2015). Cooperative learning complements this by fostering a supportive, compassionate, and interdependent environment where students feel secure in communication and motivated to contribute to group goals (Kagan & Kagan, 2009b; Sönmez, 2020). This study explored the integration of WSQ-based flipped learning with cooperative learning to assess its impact on (L2) word pronunciation and speaking performance.

The findings demonstrated significant improvements in both oral fluency and content length. Regarding oral fluency, students' average pre-test score of 4.27 rose to 7.49 in the post-test, a substantial increase confirmed at the 0.01 significance level. This aligns with previous studies, such as Wang et al. (2018), which highlight the effectiveness of similar instructional methods. Additionally, the significant increase in speaking content length, from 147 words in the pre-test to 229 words in the post-test, underscores the success of the integrated approach in enhancing participants' ability to articulate ideas more comprehensively during oral tasks.

Despite these positive outcomes, the study's findings are context-dependent and influenced by the use of specific technological tools. The limited sample size also restricts the generalizability of the results. However, this research contributes to the growing body of literature by demonstrating the effectiveness of combining flipped learning with cooperative learning to improve oral English skills.

6. Conclusion

The integration of WSQ-based flipped learning with cooperative learning positively and significantly impacts EFL learners' word pronunciation accuracy and oral proficiency. The findings revealed that students achieved remarkable progress in oral fluency and content length, validating the effectiveness of the combined pedagogical approach. This study reinforces the potential of innovative, student-centered teaching methods to address gaps in oral English instruction.

7. Suggestion

Future research should expand upon this study by exploring the long-term effects of the WSQ-based flipped learning and cooperative learning integration. Additionally, investigations involving larger, more diverse sample sizes would help determine the broader applicability of this approach. Educators might also consider tailoring this method to other aspects of language learning, such as

listening comprehension or written communication, to further enhance EFL instruction. Finally, exploring the adaptability of this approach across different educational contexts and age groups would provide valuable insights for its implementation on a larger scale.

Declarations

Conflicts of Interest. The author declares no conflict of interest.

Funding. This research received no external funding.

Ethical Approval. Ethical approval was not required for this study as it did not involve sensitive or high-risk procedures.

Data Availability Statement. The data supporting the findings of this study are not publicly available due to concerns about participant confidentiality and privacy. However, data may be made available from the corresponding author upon reasonable request, subject to institutional and ethical guidelines.

Acknowledgments. During the preparation of this work, the author used ChatGPT to proofread. The author declares that she reviewed and edited the final output as needed and takes full responsibility for the content of the published article.

References

- Abramczyk, A., & Jurkowski, S. (2020). Cooperative learning as an evidence-based teaching strategy: What teachers know, believe, and how they use it. *Journal of Education for Teaching*, 46(3), 296–308. <https://doi.org/10.1080/02607476.2020.1733402>
- Adey, P., & Shayer, M. (2011). The effects of cognitive acceleration—and speculation about causes of these effects. In *The AERA Research Conference [Socializing intelligence through academic talk and dialogue]*.
- Arnold-Garza, S. (2014). The flipped classroom teaching model and its use for information literacy instruction. *Communications in Information Literacy*, 8(1), 7. <https://doi.org/10.15760/comminfolit.2014.8.1.161>
- Bagdasaryan, S., & Huynh-Hohnbaum, A. T. (2022). The use of flipped classroom technology in teaching social work research: Promising results. *Journal of Teaching in Social Work*, 42(5), 501–519. <https://doi.org/10.1080/08841233.2022.2120157>
- Bergmann, J., & Sams, A. (2012). *Flip your classroom: Reach every student in every class every day*. International Society for Technology in Education.
- Berrett, D. (2012). How “flipping” the classroom can improve the traditional lecture. *Education Digest*, 2, 36–41.
- Birgili, B., Seggie, F. N., & Oğuz, E. (2021). The trends and outcomes of flipped learning research between 2012 and 2018: A descriptive content analysis. *Journal of Computers in Education*, 8(3), 365–394. <https://doi.org/10.1007/s40692-021-00183-y>
- Bognar, B., Sablić, M., & Škugor, A. (2018). Flipped learning and online discussion in higher education teaching. In *Springer eBooks* (pp. 371–392). https://doi.org/10.1007/978-3-030-01551-0_19

- Chou, M. (2018). Speaking anxiety and strategy use for learning English as a foreign language in full and partial English-medium instruction contexts. *TESOL Quarterly*, 52(3), 611–633. <https://doi.org/10.1002/tesq.455>
- Cortez, C. P., Rosqueta, A. M. F. O., & Prudente, M. S. (2023). Cooperative-flipped classroom under online modality: Enhancing students' mathematics achievement and critical thinking attitude. *International Journal of Educational Research*, 120, 102213. <https://doi.org/10.1016/j.ijer.2023.102213>
- Chuang, Y.-Y. (2020). A study of Taiwanese technical college students' affective reactions to speaking English in the EFL classroom. *Journal of National Formosa University*, 29(1), 75–94.
- Fernández-Ferrer, M., & Espinoza, D. (2022). A flipped classroom experience in the context of a pandemic: Cooperative learning as a strategy for meaningful student learning. *Journal of Technology and Science Education*, 12(3), 644. <https://doi.org/10.3926/jotse.1701>
- Flipped Learning Global Initiative. (2018). FLGI - Flipped Learning Global Initiative. *Flipped Learning Global Initiative: The Exchange*. <https://www.flglobal.org/>
- Fulton, K. (2012). Upside down and inside out: Flip your classroom to improve student learning. *Learning and Leading With Technology*, 39(8), 12–17. <http://files.eric.ed.gov/fulltext/EJ982840.pdf>
- Ginaya, G., Somawati, N. P., & Mataram, I. G. A. B. (2022). Online cooperative learning in communication and teamwork skills development. *Journal of Applied Studies in Language*, 6(1), 46–52.
- Han, E. J., & Klein, K. C. (2019). Pre-class learning methods for flipped classrooms. *The American Journal of Pharmaceutical Education*, 83(1), 6922. <https://doi.org/10.5688/ajpe6922>
- Horn, M. B. (2013). The transformational potential of flipped classrooms: Different strokes for different folks. *Education Next*, 13(3), 78. <https://www.questia.com/library/journal/1G1-339734711/the-transformational-potential-of-flipped-classrooms>
- Hsia, L., Hwang, G., & Lin, C. (2022). A WSQ-based flipped learning approach to improving students' dance performance through reflection and effort promotion. *Interactive Learning Environments*, 30(2), 229–244.
- Hughes, A. (2003). *Testing for language teachers*. Cambridge University Press.
- Hung, H. (2015). Flipping the classroom for English language learners to foster active learning. *Computer Assisted Language Learning*, 28(1), 81–96. <https://doi.org/10.1080/09588221.2014.967701>
- Kagan, S., & Kagan, M. (2009). *Kagan cooperative learning*.
- Khan, S. (2012). *The one world schoolhouse: Education reimagined*. Twelve.
- Kirch, C. (2012). Flipping with Kirch. *Flipping With Kirch*. Retrieved June 10, 2023, from <http://flippingwithkirch.blogspot.com/2012/02/does-flippedclassroom-increasestudent.html>

- Lee, G., & Wallace, A. (2017). Flipped learning in the English as a foreign language classroom: Outcomes and perceptions. *TESOL Quarterly*, 52(1), 62–84. <https://doi.org/10.1002/tesq.372>
- Møgelvang, A., Vandvik, V., Ellingsen, S., Strømme, C. B., & Cotner, S. (2023). Cooperative learning goes online: Teaching and learning intervention in a digital environment impacts psychosocial outcomes in biology students. *International Journal of Educational Research*, 117, 102114. <https://doi.org/10.1016/j.ijer.2022.102114>
- Moore, B., Lee, M., Kubin, L., Spadachene, J., & Ellis, K. (2023). Nursing student outcomes in a flipped classroom: Attendance matters. *Teaching and Learning in Nursing*, 18(3), 446–449. <https://doi.org/10.1016/j.teln.2023.04.010>
- Namaziandost, E., Homayouni, M., & Rahmani, P. (2020). The impact of cooperative learning approach on the development of EFL learners' speaking fluency. *Cogent Arts & Humanities*, 7(1), 1780811. <https://doi.org/10.1080/23311983.2020.1780811>
- Nhac, H.-T. (2022). Effects of the flipped classroom model on students' legal English vocabulary learning at a higher education institution. *The International Journal of Learning in Higher Education*, 29(2), 141–155. <https://doi.org/10.18848/2327-7955>
- Nielsen, L. (2012). Five reasons I'm not flipping over the flipped classroom. *Technology & Learning*, 32(10), 46.
- O'Flaherty, J., & Phillips, C. (2015). The use of flipped classrooms in higher education: A scoping review. *Internet and Higher Education*, 25, 85–95. <https://doi.org/10.1016/j.iheduc.2015.02.002>
- Pandiangan, E. N. (2019). Comparative study: Enhancing students' reading comprehension ability through Ing Ngarsa Sung Tuladha and student teams achievement division (STAD) learning models. *Acuity: Journal of English Language Pedagogy, Literature and Culture*, 4(1), 1–9. <https://doi.org/10.35974/acuity.v4i1.672>
- Rotellar, C., & Cain, J. (2016). Research, perspectives, and recommendations on implementing the flipped classroom. *The American Journal of Pharmaceutical Education*, 80(2), 34. <https://doi.org/10.5688/ajpe80234>
- Sams, A., & Bergmann, J. (2013). Flip your students' learning. *Educational Leadership*, 70(6), 16–20. <https://eric.ed.gov/?id=EJ1015329>
- Schnieder, M., Ghosh, S., & Williams, S. (2021). Using gamification and flipped classroom for remote/virtual labs for engineering students. *Loughborough University Conference Contribution*. <https://hdl.handle.net/2134/19188251.v1>
- Sonmez, N. (2020). Using flipped classroom model for developing speaking skills: An integrative review research. *Innovational Research in ELT*, 1(1), 10–20. doi: 10.29329/irelt.2020.311.2
- Wang, J., An, N., & Wright, C. (2018). Enhancing beginner learners' oral proficiency in a flipped Chinese foreign language classroom. *Computer Assisted Language Learning*, 31(5–6), 490–521. <https://doi.org/10.1080/09588221.2017.1417872>

- Wanner, T., & Palmer, E. (2015). Personalising learning: Exploring student and teacher perceptions about flexible learning and assessment in a flipped university course. *Computers & Education*, 88, 354–369. <https://doi.org/10.1016/j.compedu.2015.07.008>
- Yang, T., & Niu, Z. (2023). Investigating the design of an asynchronous online discussion (AOD) in distance education: A cooperative learning perspective. *Education Sciences*, 13(4), 412. <https://doi.org/10.3390/educsci13040412>
- Zhang, L. (2018). English flipped classroom teaching model based on cooperative learning. *Kuram Ve Uygulamada Egitim Bilimleri*. <https://doi.org/10.12738/estp.2018.6.278>

About the Contributor(s)

Hsiu-Lien Tu, PhD, is a full-time instructor in the Department of Applied Foreign Languages at Chaoyang University of Technology, Taichung, Taiwan. Her main research interests include TESOL, curriculum design, and learning methodologies. Dr. Tu's dedication to English education is evident in her Teaching Excellence Award and recognition for outstanding contributions to teaching practice research. She has actively presented her work at esteemed conferences and published in academic journals, demonstrating her commitment to advancing effective learning strategies for English language learners.

Email: hltu@gm.cyut.edu.tw

ORCID: <http://orcid.org/0009-0009-7566-7348>

Publisher's Note: *The opinions, statements, and data presented in all publications are solely those of the individual author(s) and contributors and do not reflect the views of Universitepark, EDUPIJ, and/or the editor(s). Universitepark, the Journal, and/or the editor(s) accept no responsibility for any harm or damage to persons or property arising from the use of ideas, methods, instructions, or products mentioned in the content.*
