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Cooperative Learning with FIF Oral Training Application to Enhance Speaking Proficiency During Off-class Time and Interest towards Speaking English

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ABSTRACT

This study investigated the effectiveness of integrating cooperative learning with the FiF App to improve students' English-speaking proficiency during off-class hours. The study's overarching aim was to enhance speaking proficiency in semantics, pronunciation, fluency, and completeness, increase students' interest, and examine their learning experiences. The study employed a mixed-methods approach with a one-group pre-test and post-test design involving 49 Primary English Education students from Lijiang Normal University. The 9-week intervention involved cooperative learning-based lesson plans, and the FiF App. Speaking proficiency was assessed before and after the intervention through the app, while students' interest towards speaking English and experiences were measured using questionnaires and semi-structured interviews. Results showed significant improvement in overall speaking proficiency, with mean scores increasing from 49.57 to 69.96, $t(48) = 6.16$, $p < 0.001$. Pronunciation improved from 59.94 to 85.61 ($t = -7.48$, $p < 0.001$), and semantics increased from 29.55 to 53.55 ($t = 5.59$, $p < 0.001$). Although fluency scores decreased numerically from 78.98 to 64.31, the t-test ($t = 4.41$, $p < 0.001$) indicated significant improvement, likely to reflect greater accuracy over speed. Completeness rose slightly from 92.78 to 95.69 while moderate increases in speaking confidence ($M = 3.23$) and positive perceptions of cooperative learning ($M = 3.86$). The perceived importance of speaking skills was lower ($M = 2.66$). Interview data supported these findings, highlighting enhanced motivation, more meaningful peer interaction, and increased opportunities

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ARTICLE INFO

Received: 26 June 2025 | Revised: 7 July 2025 | Accepted: 11 July 2025 | Published Online: 19 August 2025
DOI: https://doi.org/10.30564/fls.v7i8.10730

CITATION

He, L., Robillos, R.J., 2025. Cooperative Learning with FIF Oral Training Application to Enhance Speaking Proficiency During Off-class Time and Interest towards Speaking English. Forum for Linguistic Studies. 7(8): 949–965. DOI: https://doi.org/10.30564/fls.v7i8.10730

for practice. This study demonstrates the effective combination of cooperative learning and mobile-assisted oral training outside class, encouraging educators to adopt blended models to improve English-speaking proficiency beyond traditional classroom settings.

Keywords: Cooperative Learning Strategy; Fif Oral Training Application; English Speaking Proficiency; Interest Towards Speaking English; Off-class Time

1. Introduction

Speaking proficiency is widely acknowledged as a fundamental component of English language learning [1–5]. Despite its importance, it remains one of the most challenging and underdeveloped skills among Chinese EFL learners, particularly at the tertiary level [6]. Within China's educational context, instruction tends to prioritize receptive and written skills—such as listening, reading, and writing—largely due to their prominence in high-stakes examinations [6,7]. Consequently, speaking is often marginalized in both classroom teaching and assessment practices, creating a significant gap between students' theoretical knowledge and their ability to communicate effectively in real-life situations. This persistent gap highlights ongoing challenges in fostering learners' spoken English competence, particularly within the Chinese EFL context, where factors such as limited speaking opportunities [6], low learner confidence and anxiety in oral communication [3] and teacher-centered instructional practices that de-emphasize interactive speaking activities [6] continue to hinder the development of effective speaking skills.

In light of these persistent issues, innovative pedagogical approaches are urgently needed to extend oral language practice beyond the constraints of limited classroom hours while fostering learner autonomy, engagement, and peer support [8]. One such approach is Cooperative Learning (CL), which emphasizes structured peer interaction, collaborative problem-solving, and mutual support among learners [9]. CL has been shown to enhance learners' speaking proficiency by providing meaningful opportunities for language use, negotiation of meaning, and the co-construction of knowledge—processes essential for developing communicative competence [10]. Moreover, CL fosters learner motivation and confidence, as students share responsibility for task completion and receive immediate peer feedback, helping to reduce anxiety commonly associated with speaking tasks [11].

However, despite the proven benefits of CL [11,12], its implementation in classroom settings is severely limited by curriculum constraints, particularly at Lijiang Normal University, where the Integrated English course for English majors has been reduced from 144 to just 72 periods due to national reforms. This significant reduction in classroom contact time sharply limits opportunities for guided speaking activities, making it unrealistic to rely solely on in-class instruction to develop students' speaking proficiency. As a result, this study deliberately focuses on off-class speaking practice as a necessary and practical solution to bridge this instructional gap.

To support this off-class focus, the FiF Oral Training App, developed by iFLYTEK, was selected for its capacity as a mobile-assisted language learning tool that facilitates structured speaking practice beyond the classroom. The app provides pronunciation models and immediate feedback, helping to compensate for the reduced classroom interaction time. However, prior research indicates that while such technology effectively supports individual practice, it may fall short in fostering the essential elements of social interaction and peer collaboration that are critical for comprehensive speaking development [13–16]. To address this limitation, the present study employs CL strategy with the FiF App, aiming to enhance the interactive and collaborative dimensions of speaking practice during off-class periods. By blending mobile-assisted language learning within CL strategy, the approach aspires to establish a more engaging, socially enriched, and pedagogically sound environment for developing learners' oral proficiency.

Set against the backdrop of Lijiang Normal University, where students face curtailed classroom speaking instruction and limited structured opportunities for oral communication beyond class, this study responds to an important empirical gap. Specifically, it investigates the potential of employing CL with FiF Oral Training App to improve key aspects of speaking proficiency as well as to boost learners' interests in speaking English. Through this integrative approach, the

research seeks to offer fresh insights into effective pedagogical strategies for enhancing the oral English competence of Chinese tertiary learners under curriculum and contextual constraints.

2. Literature Review

2.1. Challenges and Trends in Speaking Proficiency Development among Chinese EFL Learners

Speaking proficiency has long been identified as a critical yet underdeveloped skill among Chinese EFL learners, particularly at the tertiary level. Numerous studies highlight that the dominant focus in China's English education system is on listening, reading, and writing, mainly because these skills are heavily tested in high-stakes exams[6,17]. This emphasis results in a teaching and learning environment where speaking receives limited classroom time and attention, causing students to struggle with oral fluency and confidence[6,10,11]. For example, research at Lijiang Normal University and similar institutions consistently reports that students, despite their high exam scores, demonstrate significant difficulty in producing spontaneous and accurate spoken English.

Curricular reforms and the structure of English language courses further compound these challenges. Integrated English courses, designed to cover all language skills, have been shortened due to national educational policies, restricting opportunities for speaking practice. Secondary education's focus on receptive skills, with oral proficiency often being an optional or marginal part of assessments, means many students arrive at university ill-prepared for the communicative demands of higher proficiency levels such as Level 5 of the China Standards of English[9]. This level requires nuanced interaction and effective expression in academic and professional contexts, yet many learners find the transition from Level 4 to Level 5 especially daunting.

Despite recognition of these issues, existing studies often emphasize the descriptive nature of the problem without proposing or testing sustainable solutions tailored to the Chinese context. While speaking difficulties and motivation barriers are well-documented, less attention has been given to integrating curriculum changes with pedagogical innovations that can counterbalance the reduced instructional time. Moreover, there is a noticeable gap in longitudinal research that tracks how speaking skills evolve when targeted interventions are applied at the tertiary level, particularly in non-metropolitan universities like Lijiang Normal University where resources and exposure may be limited.

2.2. Technology-Assisted Oral Language Learning: Mobile Apps and Off-Class Speaking Practice

The use of technology in language learning has expanded significantly, with mobile-assisted language learning (MALL) tools becoming increasingly popular for addressing the limitations of traditional classroom instruction. Mobile apps like the FiF Oral Training App offer students the opportunity to practice speaking outside the classroom, providing features such as pronunciation models, immediate feedback, and flexible access[13–16].

FiF App is an oral English teaching and managing application developed by Beijing Foreign Research Flight Education Technology Co., Ltd. On the basis of the leading intelligent voice technology and the professional intelligent oral assessing training materials, FiF APP is characterized by various authoritative high-technologies like speech recognition and text-to-speech. The main functions are as follows: (1) The intelligent system of FiF APP can make immediate feedback after its intelligent assessment, and accurately diagnose students' oral English problems, (2) There are systematic training materials, and rich and diverse oral exercises to cater to the needs of most students, (3) Teachers can also create their own oral teaching item bank and all the exercises can be assessed by FiF APP intelligent system, and (4) Teachers can efficiently carry out oral teaching activities and monitor students' learning activities to master students' learning status. Research has shown that such tools can improve aspects of pronunciation and fluency by allowing repetitive practice in a low-pressure environment, which helps to reduce learner anxiety and build confidence[17]. Furthermore, these apps often incorporate gamified elements that enhance motivation and engagement, which are crucial for sustained language practice[15].

However, while MALL tools are promising, the literature points to several limitations. Most mobile apps are designed for individual use and focus on form rather than communicative function[18,19], which restricts their ability

to foster interactive speaking skills such as negotiation of meaning, turn-taking, and real-time response[18]. Moreover, the lack of collaborative features means that learners miss out on essential social aspects of language learning that contribute to communicative competence[12,20]. Studies in the Chinese EFL context reveal that although students benefit from mobile practice, their oral proficiency gains plateau when the apps are used in isolation, without complementary pedagogical support that promotes interaction and peer feedback[16,20].

This suggests a significant gap in research and practice: how technology can be integrated with collaborative learning strategies to create a more holistic and interactive speaking learning experience. There is a need to move beyond individual, form-focused practice toward blended approaches that combine digital tools with structured peer interactions[20]. Addressing this gap is particularly important for Chinese tertiary learners who face systemic constraints limiting classroom speaking opportunities and require alternative methods to develop their oral proficiency effectively.

2.3. Cooperative Learning (CL) in EFL Speaking Proficiency

CL has been extensively studied as a pedagogical approach that enhances language acquisition through peer interaction, mutual feedback, and shared meaning-making[10,12,20]. In the context of EFL speaking, CL facilitates authentic communication by creating opportunities for learners to negotiate meaning, correct errors collaboratively, and build confidence through supportive social engagement[20]. Empirical studies have consistently demonstrated that CL not only improves oral fluency and accuracy but also positively influences learners' motivation and affective factors, such as reducing language anxiety and increasing willingness to speak[12,20].

A theoretical foundation underpinning the effectiveness of cooperative learning is Vygotsky's Zone of Proximal Development (ZPD) theory, which emphasizes the critical role of social interaction and scaffolding in cognitive development. The ZPD refers to the gap between what learners can achieve independently and what they can accomplish with guidance or collaboration from more knowledgeable peers or instructors. Cooperative learning leverages this concept by enabling learners to support each other in this zone, facilitating language development that might otherwise be unattainable individually[21]. This framework helps explain how peer collaboration in CL creates a dynamic environment where learners co-construct knowledge, receive immediate feedback, and progressively internalize new linguistic forms and skills.

Despite this robust evidence, the integration of CL with digital tools remains underexplored, particularly within the Chinese EFL tertiary context. Most research treats technology and cooperative strategies as separate domains rather than investigating their potential synergy. For example, although mobile apps provide flexible practice environments[16], their solitary nature contrasts with the social interaction fundamental to CL. Consequently, opportunities for peer scaffolding and co-construction of knowledge – a core advantage of CL – are often absent in technology-mediated practice[19,21]. This disconnect limits the effectiveness of both approaches when used in isolation.

The existing gap points to the need for research exploring blended models that combine the strengths of CL with FiF oral training application. Such integrative approaches could foster learner autonomy while maintaining the social interaction vital for speaking development. Despite growing recognition of the challenges faced by Chinese tertiary EFL learners in developing speaking proficiency, significant gaps remain in both theoretical and practical domains. While FiF Oral Training App shows promise for flexible, individualized practice[12,20], their limited capacity for fostering collaborative interaction restricts their overall effectiveness. Concurrently, cooperative learning approaches have demonstrated clear benefits in enhancing speaking skills and motivation, yet their integration with technology-assisted language learning remains underexplored, particularly within the constraints of China's curriculum and educational context[17]. Moreover, most existing studies focus either on classroom-based interventions or isolated use of technology, lacking comprehensive approaches that blend peer collaboration with digital tools during off-class speaking practice. Addressing these gaps is crucial to developing innovative, context-sensitive pedagogies that can effectively improve Chinese EFL learners' oral competence and engagement in real-world communication. This study aims to investigate how combining CL strategies with technology-assisted speaking practice can overcome these limitations and better support learners'

speaking development. Building on these points, this study seeks to answer the following research questions:

1. How does cooperative learning with the FiF App influence students' English-speaking proficiency across pronunciation, fluency, semantics, and completeness during off-class time?
2. To what extent does cooperative learning with FiF App affect students' interest in speaking English?
3. What learning experiences have the students gained after the implementation of cooperative learning with FiF App in enhancing their English-speaking proficiency?

3. Materials and Methods

3.1. Design

This study utilized a mixed-methods research (MMR) design to achieve a comprehensive and nuanced understanding of the intervention's effects[22]. The quantitative phase employed a pre-experimental, one-group pretest-posttest design to systematically evaluate changes in students' English-speaking proficiency specifically in pronunciation, grammar, fluency, and completeness, following the implementation of a cooperative learning strategy integrated with the FiF Oral Training App. Concurrently, students' perceptions of the cooperative learning approach were quantitatively gauged through a structured questionnaire. Complementing this, the qualitative phase employed semi-structured interviews with purposively selected volunteer participants to elicit in-depth insights into learners' subjective experiences and perceived impact of the intervention on their speaking competence and motivation. This integrative methodology facilitated the triangulation of data, enabling objective quantification of proficiency gains alongside a rich, contextualized exploration of learner attitudes, thereby strengthening the validity and interpretive depth of the findings.

3.2. Participants

The study comprised 49 students enrolled in the 2023 primary English education major under the Foreign Languages department at Lijiang Normal University. The study focused on Class 1 of this cohort during the first semester of the 2023—2024 academic year, spanning a period of nine weeks. The students from Class 1 were selected via purposive sampling technique. The participants in this group were identified as having relatively low speaking proficiency, making them a suitable focus for interventions aimed at improving English-speaking skills. Their current performance levels presented an opportunity for meaningful improvement, aligning with the objectives of the study.

Furthermore, this class was deemed ideal for participation in off-class activities, as their schedule and learning needs made them a practical and motivated group to accommodate beyond regular classroom hours. The researcher's direct involvement with the group allowed for seamless integration of the intervention into both classroom and off-class settings, ensuring consistency in instruction and support throughout the study. By focusing on students with room for improvement in speaking proficiency, the study aimed to generate insights that could inform strategies for enhancing English speaking skills among similar learners.

3.3. Instruments and Data Collection

3.3.1. Lesson Plans

The lesson plans for the oral/speaking component were designed by the researcher, with topics drawn from the textbook New Advanced College English Integrated Course, which the students regularly use in the English class/es. A total of six topics from the teaching units were selected for inclusion in this study. Additionally, the speaking activities were conducted during off-class time following the students' regular classes. The teacher arranged these off-class sessions to ensure students could participate without interfering with their academic schedule. Furthermore, the speaking activities took the form of group discussions, with each group required to record their discussion sessions and submit the recordings to the teacher-researcher. Additionally, students were expected to present their group output during in-class sessions, allowing for further practice and feedback.

3.3.2. Pre-Test

Before implementing the cooperative learning strategy with the FiF App, learners recorded their responses for each speaking task using the FiF App. The app evaluated their performance and provided both overall scores and detailed scores in various key areas: semantics, pronunciation, fluency, and completeness. These pre-intervention scores served as a baseline for comparison with their post-

intervention performance, offering insights into the impact of the cooperative learning strategy on their speaking skills. The total possible score for all six speaking topics was 100 points. To pass, learners needed to achieve a minimum score of 60 points. A score below 60 indicated that the learner had not met the required competency threshold. The distribution of items across the four tasks reflected the weight of each task: Topics 1 to 3 included 20 points each, for a combined total of 60 points, Tasks 4 for 40 points.

3.3.3. Post-Test

In this session, the researcher organized the students into groups of four, with a total of 12 groups participating. Each group engaged in a speaking task session utilizing the CL strategy. Following their collaborative discussions, students recorded their responses on the FiF APP for the same topic addressed during the pre-test session. This second recording allowed the researchers to assess their progress by providing scores based on various criteria: overall performance, as well as specific scores for semantics, pronunciation, fluency, and completeness. Each student received scores of 100 for their performance, with a passing mark set at 60 or above, while scores below 60 were considered failing. The researcher meticulously documented these scores to facilitate data analysis, which would provide insights into the effectiveness of the CL strategy in enhancing students' speaking abilities.

3.3.4. Questionnaire on Interests towards Speaking English

This questionnaire was comprised of 34 closed-ended questions were administered to students via wjx.cn, a Chinese online survey platform, following the completion of the intervention. The questions were grounded in relevant theories and principles, informed by a comprehensive review of related literature. This questionnaire was designed by the researcher herself, however, during the design phase, the researcher invited the advisor to review the questionnaire and consulted three experts to assess its cognitive appropriateness. Based on their feedback, the researcher revised the questionnaire to enhance its clarity and relevance. Students were instructed to indicate their responses using a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), allowing for an accurate measurement of their perceptions. To ensure the reliability of the instrument, the questionnaire was piloted with a different group of students at a similar academic level. The pilot test yielded a Cronbach's Alpha coefficient of 0.83, indicating a high level of internal consistency and suggesting that the questionnaire was a reliable tool for measuring the intended constructs.

3.3.5. Semi-Structured Interviews

Semi-structured interviews were conducted to gather in-depth information from voluntary participants. The researcher invited approximately 15 participants to volunteer for the interviews. These 15 interviewees were selected based on voluntary participation, and the number reflects a balance between ensuring a diverse range of perspectives and maintaining a manageable scope for in-depth qualitative analysis. The use of voluntary participants ensured that the data collected were rich and reflective of students genuinely willing to share their experiences. The sample size was also guided by the principle of data saturation, where no new themes emerged beyond this number, indicating sufficient coverage of relevant insights from the total group of 49 students. The interview questions were derived from predetermined queries focusing on the learners' experiences in enhancing their speaking proficiency in English and interest in speaking English through the use of cooperative learning strategies with FiF APP. Furthermore, the responses from the semi-structured interviews underwent thematic analysis [22], wherein the data were transcribed, categorized, and coded to identify emerging themes. The following themes emerged along with their sub-codes after the conduct of the semi-structured interviews with the 10 voluntary interviewees.

3.4. Intervention

Before the intervention began, students completed a pre-test using the FiF Oral Training App. They recorded their responses to assigned speaking tasks, which were automatically evaluated by the app. Detailed scores were generated in four key areas: semantics, pronunciation, fluency, and completeness. These initial scores served as a baseline, offering a clear reference point to assess each student's progress following the treatment.

The heart of the study lay in the implementation of a formal group-based cooperative learning strategy. Guided by Vygotsky's ZPD, students were placed in heterogeneous groups designed to foster interaction between learners of

varying proficiency levels. These groups collaborated on structured speaking tasks integrated into the course, particularly during the fourth component of each unit, which focused on oral practice. To ensure meaningful engagement, all speaking activities were conducted outside regular class hours. The FiF App played a central role during this phase, allowing students to record and review their oral responses. Each student completed two tasks per topic, one before and one after group collaboration, enabling measurable comparisons. This integration of cooperative learning with a smart assessment tool created an interactive environment where peer support and technology worked in tandem to enhance students' speaking skills.

After the completion of the group-based activities, students participated in a post-test using the same FiF App under conditions identical to those of the pre-test. Working within their groups, they responded to the same speaking topics as before. This allowed for a direct and reliable comparison between pre- and post-test results, highlighting any progress in speaking proficiency across the same evaluation criteria.

To explore the students' affective responses to the intervention, a 34-item questionnaire on their interest in speaking English was administered through the online platform wjx.cn. Students rated each item on a 5-point Likert scale. Developed by the researcher and refined through expert consultation and a pilot test, the questionnaire demonstrated strong internal consistency (Cronbach's Alpha = 0.83). The results offered insights into changes in students' motivation and attitudes toward speaking English following the intervention.

Finally, semi-structured interviews were conducted with ten volunteers to gather more in-depth perspectives on their learning experience. These interviews focused on students' reflections regarding the cooperative learning strategy and the use of the FiF App to enhance their speaking skills. Responses were transcribed and thematically analyzed [22], revealing patterns and themes that enriched the interpretation of the quantitative findings and added depth to the overall results of the study.

4. Results

4.1. Students' English-speaking Proficiency Before and After the Implementation of the Intervention

Table 1 presents the students' English-speaking proficiency before and after the implementation of a cooperative learning strategy combined with the FiF APP during off-class time. The mean score improved notably from 49.57 (pre-test) to 69.96 (post-test), with the standard deviation decreasing from 20.868 to 7.525, indicating greater consistency in students' performance. The t-value of 6.16 reflects a substantial and meaningful difference between the pre- and post-test scores, while the p-value of 0.000 ($p < 0.001$) confirms the statistical significance of this improvement, suggesting that the likelihood of this result occurring by chance is extremely low.

Table 1. Students' speaking proficiency in English before and after the implementation of CL strategy with FiF App.

Test	Mean ($\bar{x}$)	S.D.	N	t	df	Sig.
Pre-English Speaking Test	49.57	2.868	49	6.16	48	0.000
Post-English Speaking Test	69.96	7.525	49			

Table 2 reveals significant improvements across the four aspects of English speaking proficiency following the intervention. For semantics, the mean score increased from 29.55 to 53.55, with the SD decreasing from 25.021 to 15.184, indicating better vocabulary use and more consistent performance; the initially high SD suggests students started at varied levels in semantic skills, which became more aligned after the intervention. Pronunciation showed marked progress, with the mean rising from 59.94 to 85.61 and the SD dropping sharply from 22.016 to 5.547, reflecting enhanced accuracy and reduced variability; the higher pre-intervention SD implies differing initial pronunciation abilities that were minimized as students benefited from focused practice and feedback via the FiF Oral Training App and peer learning. In contrast, fluency displayed a decline in the mean score from 78.98 to 64.31, suggesting students became more cautious and deliberate to prioritize accuracy, while the SD decreased from 21.732 to 12.272, showing greater uniformity in speech flow as learners adjusted their pacing in response to intervention demands. Completeness showed a slight, statistically insignificant increase in the mean from 92.78 to 95.69, with the SD reducing from 24.607 to 10.562, indicating stu-

dents produced more consistently complete and structured responses; the initially high SD reflects early variation in how thoroughly students completed responses, which became more uniform through the intervention. The notably high pre-intervention SD values across all aspects indicate varied starting proficiency levels among students, but the intervention effectively reduced these disparities, leading to more balanced and consistent speaking performance.

Table 2. Students' speaking proficiency in English across its four aspects before and after the implementation of the Intervention.

Aspects of English-Speaking Proficiency	Before the Intervention		After the Intervention		N	*t*	df	*Sig*
	Mean	S.D.	Mean	S.D.				
Semantics	29.55	25.021	53.55	15.184	49	-5.590	48	0.000
Pronunciation	59.94	22.016	85.61	5.547	49	-7.482	48	0.000
Fluency	78.98	21.732	64.31	12.272	49	4.414	48	0.000
Completeness	92.78	24.607	95.69	10.562	49	-0.754	48	0.455

4.2. Overall Results on the Students' Interests towards Speaking English After the Implementation of the Intervention

The results in **Table 3** indicate that students generally agree that the intervention had a positive effect on their confidence in speaking English. Specifically, students' responses suggest they feel moderately capable and engaged in speaking activities, with a mean of 3.23 under the category of English-speaking confidence and activity. This score shows that while students gained some confidence in speaking, their level of engagement and self-assurance in using English is not exceptionally high. Continued support and opportunities for practice could help further strengthen their confidence and willingness to speak English in various contexts.

Table 3. Overall mean and Standard Deviation results for students' interests towards speaking English after the implementation of the intervention.

Statements	Mean ($\bar{x}$)	S.D.	Description
English speaking confidence and activity	3.23	0.75	Neutral
Effectiveness of Cooperative Learning strategy	3.86	0.65	Agree
Perceived importance of speaking skills in English	2.66	0.63	Neutral
Support from peers and teachers	3.28	0.77	Neutral
Overall Mean	3.24	0.70	Neutral

Legend: 1.00–1.50, Strongly Disagree; 1.51–2.50, Disagree; 2.51–3.50, Neutral; 3.51–4.50, Agree; 4.51–5.00, Strongly Agree.

The effectiveness of the CL strategy was rated positively, with a mean score of 3.86. This result indicates that students benefited from working collaboratively with peers, suggesting that cooperative learning provided a valuable platform for shared learning experiences. The positive perception of this strategy reflects students' appreciation for collaborative tasks, which allowed them to practice speaking in an interactive and low-pressure environment. Such engagement fosters learning through feedback, mutual support, and meaningful interaction, all of which are essential for building proficiency in speaking English.

The statement on the perceived importance of speaking skills in English received a mean score of 2.66. While this score still falls under the "neutral" category, it is relatively lower than other areas, indicating that students acknowledge the importance of speaking skills but may not prioritize them as highly as other aspects of language learning. This result suggests that although students understand that speaking is a critical component of language proficiency, they may need further encouragement or explicit motivation to invest more effort into developing these skills.

In terms of support from peers and teachers, the students rated this category with a mean of 3.28, which falls under the "neutral" range. This indicates that students' experiences with support from their peers and teachers varied, with some feeling adequately supported while others did not perceive the same level of encouragement. This variability highlights the need for more consistent support systems to create an environment where all students feel motivated and confident to practice speaking English without fear of judgment or failure.

Overall, the mean score across all categories was 3.24,

indicating that students generally agree that the intervention had a positive impact on their attitudes toward speaking English. However, the results also point to specific areas for improvement. While CL was well-received, more efforts are needed to strengthen students' confidence in speaking and to emphasize the importance of speaking skills. Additionally, fostering a more supportive environment through teacher and peer encouragement could further enhance students' willingness to engage in speaking activities.

4.3. Qualitative Analysis

Following the semi-structured interviews with all ten volunteers, the researcher carefully transcribed, categorized, and coded the responses. A thematic analysis and coding were then conducted, resulting in the emerging themes presented follows:

4.3.1. Theme 1: Enhanced Communication Skills

- Oral Confidence Development

In a CL setting, students actively engage in group tasks that promote idea exchange and interaction. This ongoing communication builds confidence, making them more comfortable expressing themselves in English. Activities like discussions, role plays, and collaborative tasks provide frequent practice in a low-pressure environment, reducing fear of mistakes and fostering shared learning. Mutual encouragement motivates students to participate, helping their English expression become more natural, lowering anxiety, and enhancing fluency. As narrated by P1:

> *"Actively interacting with team members has helped me build up my oral confidence. I feel more comfortable speaking now because I know my peers are supportive."*—**P1**

- Pronunciation and Grammar Awareness

CL also fosters self-awareness in pronunciation and grammar through peer feedback and mutual correction. Working in groups, students not only practice speaking but also reflect on language accuracy. Hearing peers' mistakes helps them recognize and correct similar issues in their own speech. This collaborative process promotes both individual reflection and shared learning, enhancing linguistic accuracy. Group activities naturally involve correcting grammar and pronunciation, reinforcing language rules in real-time. Actively identifying errors—whether their own or others'—encourages correct usage and builds self-correction skills essential for independent learning. As P3 expressed:

> *"Working in groups helps us correct each other's spoken grammar, which is really useful because we don't always catch our own mistakes."*—**P3**

4.3.2. Theme 2: Collaborative Learning and Teamwork Skills

- Teamwork and Division of Labor.

In a CL setting, effective teamwork relies on a clear division of labor, with students taking roles based on their strengths and preferences. This fosters skills in organization, leadership, responsibility, and time management. Through communication, students identify individual abilities, delegate tasks fairly, and ensure active contribution from all members. Such teamwork enhances task efficiency, mirrors real-world collaboration, and prepares students for future professional settings. A clear division of labor also reduces redundancy, promotes equal participation, and minimizes conflicts. As P4 conveyed:

> *"It is important to cultivate students' ability to cooperate, and reasonable group division of labor is also important."*—**P4**

- Mutual Support and Feedback.

Mutual support is central to CL, where students encourage and assist each other throughout the learning process. Peer feedback fosters a supportive environment that promotes improvement through constructive criticism and positive reinforcement. In this setting, students learn to listen, respect diverse perspectives, and use encouraging language. Expressing opinions and attentively considering others' views builds empathy and mutual respect. Feedback highlights areas for growth while providing the emotional support needed to take risks and learn from mistakes. Offering suggestions, such as correcting language use, reinforces learning and collective progress. As narrated by P7:

> *"Members should listen to and respect each other's views and respond with encouraging language."*—**P7**

4.3.3. Theme 3: Group Dynamics and Participation Challenges

- Unequal Participation.

Unequal participation in CL occurs when some members are less engaged or reluctant to contribute, affecting group performance and causing frustration or conflict. This imbalance often shifts the workload to more active members, leading to potential resentment. Factors such as personality differences, low confidence, or language anxiety can make some students hesitant to share ideas. Addressing this requires strategies that create an inclusive environment where all members feel encouraged to participate. Group leaders or facilitators play a key role in prompting quieter members and preventing dominance by a few. As expressed by P10:

> *"There are students who do not like to express themselves, which makes the group learning inefficient."*—**P10**

- Conflicting Ideas within the Group.

Disagreements are natural in CL as students bring diverse backgrounds and perspectives. While such diversity can enrich discussions, it may also hinder progress if not managed well, causing delays or frustration. Differing views on task approaches—like structured vs. free conversation in oral practice—can create tension. Effective groups learn to negotiate, embrace differing opinions, and reach consensus. Facilitators play a key role by promoting open dialogue and modeling conflict resolution to help manage disagreements constructively. As P8 said:

> *"Each person has a unique opinion on oral practice, and it is difficult to adopt everyone's ideas."*—**P8**

4.3.4. Theme 4: Time and Task Management Issues

- Incomplete Tasks Due to Time Constraints.

Time management is a common challenge in CL, with students sometimes struggling to finish tasks within the allotted time, leading to frustration and unmet learning goals. Causes include individual issues like procrastination or language difficulties, as well as group inefficiencies such as off-topic discussions or overemphasis on minor details. Poor planning and coordination can result in stress and reduced task quality. Facilitators can support better time management by encouraging goal setting, timeline creation, and progress monitoring. While time limits promote focus, they should allow space for reflection and meaningful discussion. As P9 mentioned:

> *"The group discussion was not active enough, and as a result, tasks were left incomplete."*—**P9**

- Ineffective Task Distribution.

Another common issue in cooperative learning is the uneven distribution of tasks. When task allocation is poorly planned, some students may end up doing most of the work, while others contribute minimally. This not only lowers efficiency but also prevents students from fully engaging in the learning process. Effective task distribution ensures that all members are actively involved and contribute meaningfully to the group's success. However, some students may lack the motivation to take on responsibility, relying too heavily on more diligent peers to complete the tasks. Poor communication within the group may also lead to unclear roles, duplicated efforts, or missed steps, reducing the overall quality of the output. P1 conveyed that:

> *"Task allocation in the group was not well-planned, leading to low efficiency."*—**P1**

4.3.5. Theme 5: Enhanced Oral Proficiency through Technology-Assisted Practice

- Increased Confidence and Pronunciation Accuracy via FiF Oral Training Application.

Students benefited from using the FiF Oral Training App by gaining structured, personalized practice that improved their pronunciation and boosted their speaking confidence. The app's immediate feedback and pronunciation models allowed learners to self-correct and refine their oral skills independently. This technology-assisted practice provided a low-pressure environment outside the classroom, encouraging frequent use and continuous improvement, which translated into greater fluency and accuracy during real-life communication, as P11 conveyed:

> *"The FiF app helped me practice my pronunciation anytime, and the instant feedback made me more confident to speak English*

clearly."—**P11**

5. Discussion

5.1. Overall Results on Students' Speaking Proficiency in English Before and After the Implementation of CL Strategy and FiF App

The findings presented in **Table 1** highlight a significant improvement in students' speaking proficiency after the integration of a cooperative learning strategy with the FiF Oral Training APP. The increase in mean scores from 49.57 in the pre-test to 69.96 in the post-test, alongside a *t*-value of 6.16 and a p-value of .000, underscores the statistical significance of this intervention. This enhancement not only reflects an increase in language proficiency but also suggests a notable boost in students' confidence and competence in using English. As noted by Ghahraman and Tamimy[23], cooperative learning has gained popularity in education, especially in language learning contexts. Ning and Hornby[11,20] emphasize that cooperative learning can significantly enhance L2 acquisition, fostering a learning environment where students engage more deeply with the language. This aligns with the qualitative feedback from students in the present study, who reported that the CL environment heightened their willingness to communicate, echoing the findings of Zhang[16] and Robillos and Bustos[19], who argue that interactions with peers can effectively reduce anxiety and motivate language learners. Furthermore, the interactive model of L2 proposed by Robillos and Bustos[19] corroborates these findings by asserting that learner-learner interactions create more favorable learning conditions than traditional teacher-learner interactions. Ellis[24] also supports this by demonstrating that learner-learner interactions facilitate both vocabulary acquisition and comprehension. These studies collectively underscore the importance of a CL environment, which not only supports individual improvement but also fosters collective accountability among students[21].

The decrease in the standard deviation from 20.868 to 7.525 indicates a more uniform improvement across all students, suggesting that the intervention benefited learners regardless of their initial proficiency levels. This is crucial in diverse classrooms, where students often come with varying language abilities. Tang et al.[25] discusses how CL encourages peer support, enabling students to learn from one another's perspectives, which can be particularly effective in large classes where individualized attention may be limited. The present findings reinforce the notion that well-structured CL strategies can bridge gaps in language proficiency among students. The qualitative data highlights the significance of teamwork and effective communication in improving speaking proficiency. Students acknowledged the necessity of dividing tasks and collaborating, which reflects the elements of positive interdependence fundamental to CL. This perspective is consistent with findings from Balalle[26], who argue that CL enhances students' engagement and improves overall learning outcomes. The present study's observations of students' increased motivation to communicate and collaborate align with these perspectives, further emphasizing that collective motivation can drive individual and group success.

While the majority of students experienced growth, some challenges in participation were noted. The acknowledgment that not all students are equally willing to express themselves, as one student pointed out, reflects a common issue in cooperative learning environments. This aligns with the caution raised by researchers regarding the effective implementation of cooperative learning strategies. For instance, the success of CL can be hindered by improper grouping or a lack of clear objectives, as noted by various scholars[26]. Hence, educators must be vigilant in grouping strategies and in establishing clear communication norms to ensure that all students benefit from the learning experience.

5.2. Students' Speaking Proficiency in English

Recent studies[21,25,27] emphasize the effectiveness of CL strategies in enhancing English speaking proficiency. Tang et al.[25] and Ernesto[27] highlight that learner-learner interactions foster better vocabulary acquisition and understanding of language semantics, creating favorable learning conditions compared to traditional teacher-led approaches. Robillos and Bustos[21] further support this by suggesting that interactions with native speakers and peers can reduce anxiety and increase motivation in language learning. However, the success of CL relies heavily on proper implementation, such as appropriate group sizes and task management, as noted by Tang et al.[25]. Effective grouping and structured

tasks are essential to maximize the benefits of cooperative learning.

Empirical evidence underscores the impact of cooperative learning on speaking skills, with a study showing significant improvements in semantics, pronunciation, fluency, and completeness. The mean score for semantics rose dramatically from 29.55 to 53.55 after the intervention, indicating enhanced understanding and use of meaning in spoken English. Qualitative feedback from participants reinforced these findings, with students expressing greater confidence in articulating their ideas in group discussions. Local research in China also supports these claims, demonstrating that CL effectively engages students and improves their speaking abilities[12]. Overall, incorporating CL strategies not only advances speaking proficiency but also cultivates a supportive environment for collaboration and confidence-building among learners[11,28,29].

Aspects of Speaking Proficiency in English

Starting with semantics, the mean score rose significantly from 29.55 to 53.55 after the intervention, with the SD decreasing from 25.021 to 15.184, indicating not only improvement in students' understanding and use of meaning but also greater consistency across the group. The statistical result ($t = -5.590$, $p = 0.000$) confirms the significance of this gain. Qualitative responses echoed this improvement; one student reflected, "As we shared our different viewpoints in group discussions, I felt more confident in expressing my thoughts," showing that the CL environment fostered confidence and freedom in articulating ideas. This supports Vygotsky's[30] sociocultural theory emphasizing the role of social interaction in language development. The combined use of CL and the FiF App created opportunities for collaborative meaning-making and peer learning, consistent with findings from Namaziandost et al.[10] and Ghahraman-Tamimy[23]. These results suggest that students not only developed semantic accuracy but also became more engaged and confident in expressing nuanced and contextually appropriate meanings.

Transitioning to pronunciation, students showed a marked improvement, with the mean score rising from 59.94 to 85.61 and the SD dropping from 22.016 to 5.547, indicating both enhanced articulation and greater consistency. The statistical results ($t = -7.482$, $p = 0.000$) confirm that these gains are significant and attributable to the intervention. Qualitative responses reinforced these findings; one student shared, "I was able to correct my pronunciation errors thanks to my peers' input, which helped boost my confidence," underscoring the role of peer feedback during collaborative learning (CL). This reflects the effectiveness of CL in promoting active correction and mutual support, as emphasized by Liu and Hansen[31], who highlight peer feedback as vital in pronunciation improvement. The combination of the FiF App's targeted exercises and peer interactions allowed students to refine their sound production, boosting confidence and accuracy. These results are consistent with prior research on the value of structured practice and social interaction in building speaking skills[19,21].

The results concerning fluency revealed a decline in mean scores, dropping from 78.98 to 64.31, contrasting with the upward trends observed in semantics and pronunciation. This unexpected decrease raises concerns about the intervention's overall effectiveness and warrants further examination. Although the standard deviation decreased from 21.732 to 12.272, indicating reduced variability among students' fluency scores, the statistically significant t-value of 4.414 and a p-value of 0.000 emphasize the need to investigate the factors contributing to this decline. Qualitative feedback from participants indicated that some students felt pressure to prioritize pronunciation accuracy, which may have negatively impacted their fluency. One participant noted, "I found myself thinking too much about pronouncing words correctly, and it slowed me down," highlighting the potential conflict between accuracy and fluid speech. Furthermore, the drop in fluency scores might reflect the intricate dynamics of language acquisition, where advancements in one aspect of language, such as pronunciation, can inadvertently hinder another, such as fluency. As students concentrated on articulating words accurately, they may have altered their speaking pace, leading to a more hesitant delivery. This scenario suggests that while improvements in semantics and pronunciation were evident, the focus on accuracy might have come at the expense of students' ability to express themselves fluidly. Such insights underscore the complexity of language learning, where balancing multiple competencies can be challenging.

Regarding completeness, the mean score slightly increased from 92.78 to 95.69, with SD decreasing from 24.607 to 10.562, suggesting improved consistency despite

the change being statistically insignificant ($t = -0.754$, $p = 0.455$). This indicates a positive trend in students' ability to produce complete responses, though not uniform across all learners. Qualitative data reflected this variability; one student admitted, "I sometimes struggle to put all my ideas together clearly," pointing to the need for additional scaffolding in organizing thoughts—a key factor emphasized by de Pol et al.[32]. While gains in completeness were modest, the results suggest that focused activities such as brainstorming, outlining, and peer feedback, may further support students in developing structured and coherent spoken responses[19].

5.3. Students' Interests Towards English after the Implementation of CL Strategy with FiF App

The findings reveal that the intervention combining the CL strategy with FiF App positively influenced students' confidence, engagement, and attitudes towards speaking English. However, the results also highlight areas that require further enhancement, particularly in building students' speaking confidence, reinforcing the perceived importance of speaking skills, and ensuring consistent support from peers and teachers. These findings align with previous studies emphasizing the benefits of technology-enhanced CL for language development[8,14–16].

5.3.1. Impact on English Speaking Confidence and Activity

The mean score of 3.23 in speaking confidence indicates moderate gains in students' engagement, aligning with Zhang[16], who noted that language apps reduce anxiety by enabling independent practice but require additional support to transfer improvements to face-to-face speaking. The FiF App likely helped students rehearse pronunciation and fluency at their own pace, contributing to these moderate confidence gains. However, sustained in-person practice remains essential, as language anxiety persists despite technological support[21]. CL plays a key role by providing a low-pressure environment for meaningful peer interaction, which fosters open communication, mutual support, and risk-taking in language use[9,16,21]. Through such collaborative settings, students refine their speaking skills, share diverse perspectives, and improve overall proficiency.

Despite these benefits, moderate confidence levels suggest that barriers to oral proficiency remain, highlighting the need for more structured scaffolding and targeted feedback to effectively build students' speaking self-assurance[21]. Specific guidance and constructive critique can help learners identify areas for improvement, while incorporating peer assessments[4] and guided practice sessions can foster accountability and deeper language engagement. These combined strategies may better support students in overcoming challenges and advancing their oral communication skills.

5.3.2. Effectiveness of the CL Strategy

The high mean score of 3.86 for the collaborative learning strategy indicates that students appreciated working with peers. Collaborative learning creates a dynamic platform for learners to participate in meaningful conversations, significantly enhancing their social interaction skills and facilitating peer feedback. In these collaborative settings, students are encouraged to share ideas and perspectives, which not only enriches their understanding but also builds a sense of community among participants. This environment effectively reduces the fear of making mistakes, as learners realize that errors are a natural part of the language acquisition process. By engaging in repetitive practice and natural exchanges, students develop fluency as they become more comfortable using the language in various contexts. Furthermore, immediate feedback from peers allows for real-time corrections and adjustments, helping learners refine their language skills in a supportive atmosphere.

Furthermore, the combination of collaborative learning with the FiF Oral Training App is significant as research suggests that using online apps alongside classroom interaction maximizes language exposure[21]. The app likely facilitated out-of-class practice, while collaborative tasks allowed students to apply what they learned in real-time conversations. These complementary strategies align with Kessler[33], who emphasized that technology, when integrated with collaborative learning, enhances language acquisition by providing varied contexts for practice.

5.3.3. Perceived Importance of Speaking Skills

The mean score of 2.66 concerning the perceived importance of speaking skills suggests that while students recognize the significance of oral communication in their English learning journey, they may not consider it as critical as other language skills, particularly receptive ones like reading and

listening. This finding resonates with the observations made by [21] who highlight a common tendency among learners to prioritize receptive skills over productive ones. Many students may perceive reading and listening as foundational skills that facilitate comprehension and knowledge acquisition, thereby attributing greater value to them in the context of academic performance and test preparation. Consequently, this misalignment in perceived importance could lead to an imbalance in skill development, where speaking practice is deprioritized despite its vital role in achieving overall language proficiency.

Prior studies have consistently shown that effective speaking abilities are critical for academic performance and professional success, reinforcing the need for targeted interventions [4]. By integrating real-world speaking scenarios into the curriculum [17], teachers can demonstrate the practical applications of oral proficiency in everyday life, such as participating in discussions, delivering presentations, and networking in professional settings [5,6]. This contextualization not only makes speaking practice more relevant but also helps students recognize its importance beyond the classroom, thus motivating them to prioritize their speaking abilities.

5.3.4. Support from Peers and Teachers

The neutral mean score of 3.28 for peers and teacher support reveals a significant variability in students' experiences regarding the level of encouragement they receive in their language learning journey. While some students reported feeling adequately supported by their teachers and peers, others experienced a lack of the same level of motivation and assistance, leading to mixed feelings about the overall support system in place. This discrepancy suggests that not all students are benefiting equally from the collaborative and instructional environments designed to foster their language development. This finding aligns with previous research, including studies by Hofkens and Pianta [34] which emphasize the critical role that consistent and meaningful interactions with teachers and peers play in promoting student engagement and success in language learning. Promoting peer mentoring within CL activities can also be a powerful strategy, as it enables students to support one another, share insights, and build confidence in their speaking abilities [11,20].

6. Conclusions

This study demonstrates that integrating cooperative learning with the FiF Oral Training App effectively enhances students' speaking proficiency, particularly in semantics and pronunciation, while also boosting their confidence and engagement. These outcomes highlight the value of blended learning environments in supporting language acquisition beyond traditional methods. However, the decline in fluency reveals that achieving balanced oral skills requires ongoing, targeted interventions.

The findings imply that combining technology with collaborative practices creates a dynamic and supportive space where learners can receive immediate feedback and actively participate. Pedagogically, this suggests that teachers should incorporate blended learning approaches that balance accuracy-focused activities with fluency-building tasks, ensuring learners develop comprehensive oral communication skills. Emphasizing scaffolding and peer interaction alongside technology use can further promote learner autonomy and sustained motivation.

Notably, this study contributes novel evidence that the synergy of personalized technological feedback and cooperative learning enhances not only language skills but also learner confidence and sustained engagement. This blended model offers a promising framework for future instructional design, encouraging further exploration into how technology and collaboration can be optimized to meet diverse learner needs in English speaking.

7. Limitations

Although the findings are encouraging, several limitations remain. The homogeneity of the study sample may have influenced the results, so future interventions should purposefully engage diverse learner profiles to capture varied responses and increase applicability. The decrease in fluency suggests that an emphasis on pronunciation may have constrained spontaneous speech; thus, integrating explicit fluency-building tasks like impromptu dialogues or timed discussions is essential to balance accuracy with natural flow.

The exclusive use of self-reported data could have limited insight into learners' actual behaviors, recommending

incorporation of direct observational methods or mixed data sources to enrich interpretation. Additionally, the study did not analyze emotional or motivational factors affecting speaking attitudes; exploring these variables will clarify how to better support student engagement and reduce communication apprehension.

Finally, the temporary fluency decline likely reflects learners heightened self-monitoring. Addressing this requires extended or staggered interventions that gradually shift focus between accuracy and fluency, allowing students to consolidate gains while reclaiming speech fluidity. Instructional designs should scaffold both dimensions simultaneously to optimize communicative effectiveness.

Another notable limitation is the absence of a control group. While the study employed pre- and post-intervention measures to gauge changes, the lack of a comparison group limits the ability to attribute observed improvements solely to the intervention. Without a baseline from either a no-treatment group or an alternative instructional approach, it is difficult to rule out the influence of external variables such as maturation or exposure to English beyond the classroom. Future studies should consider including a control or comparison group to strengthen causal inferences and more robustly assess the intervention's effectiveness.

Author Contributions

All authors contributed meaningfully to the conception and design of the study. Data collection, analysis processes and prepared the initial draft of the manuscript, L.H.; developing the research framework and provided substantial critical revisions, R.J.R. Both authors collaborated in the final editing and refinement of the manuscript. All authors have read and approved the final version for publication.

Funding

No funding was received for this study.

Institutional Review Board Statement

This study received full ethical clearance from the Khon Kaen University Ethics Committee for Human Research (Approval No. HE673341). Informed consent was formally obtained from all participants, including both students and experts. For participants under the age of 18, parental consent was obtained alongside age-appropriate assent. Data collection commenced only after all necessary institutional approvals were secured. Throughout the research process, strict measures were taken to ensure confidentiality and safeguard participants' rights, including the right to withdraw from the study at any time without penalty.

Informed Consent Statement

Not applicable.

Data Availability Statement

The data underpinning the findings of this study can be obtained from the corresponding author upon reasonable request.

Acknowledgments

The researcher extends sincere gratitude to the students of Lijiang Normal University (China) for their participation in the study, as well as to the experts, statisticians, editors, technicians, and esteemed faculty members of the Faculty of Education, Khon Kaen University (Thailand), whose valuable support and contributions were instrumental to the success of this research.

Conflicts of Interest

The authors declare no conflict of interest.

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