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EMI GRADUATE STUDENT SUPPORT FOR ENGLISH SPEAKING ABILITIES THROUGH RECIPROCAL TEACHING: AN EXTRACURRICULAR PROGRAM

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ABSTRACT

The rise of English-medium Instruction (EMI) across academic disciplines underscores the need for proficient communication skills among students. Many tertiary-level students, however, encounter frustration due to language barriers. This study explores the efficacy of reciprocal teaching (RT), traditionally employed for enhancing second-language reading, in bolstering English speaking skills among English-as-a-foreign-language (EFL) graduate students. Given its emphasis on collaboration and meaningful interaction, RT aligns well with the needs of EFL learners who often lack authentic English communication opportunities. Twelve Computer Science graduate students with intermediate to low confidence in English proficiency, who attended EMI courses, engaged in a 14-week extracurricular program integrating RT. Pre- and post-tests on pronunciation, intonation and stress, grammar, vocabulary, coherence and cohesion, fluency, and content relevance were conducted. Pre- and post-program surveys explored their learning perception. A Wilcoxon signed-rank test was used to compare the pre- and post-test and survey results due to the small sample size. Significant improvements were found in post-program speaking abilities, including pronunciation, intonation, stress, and idea description, as well as in perceptions of reading and listening skills. Thematic analysis of qualitative responses revealed increased confidence, reduced anxiety, and greater willingness to communicate in English. Participants held a favorable view of the RT approach and demonstrated positive attitudes toward the program. These findings indicate that RT holds promise for fostering English-speaking skills, particularly within collaborative learning environments. The study highlights the pedagogical value of adopting RT to enhance EMI graduate students' English proficiency and suggests potential benefits for their academic performance in EMI contexts.

Key words: Reciprocal Teaching Approach; speaking abilities; English-medium Instruction (EMI)

INTRODUCTION

English has been widely used as a primary means of communication among people from different linguistic and cultural backgrounds. Many countries, including Taiwan, have made English a compulsory subject at every level of education. The Taiwan Ministry of Education (MOE) has also advocated the use of English as a medium of instruction (EMI) in higher education to enhance students' English language proficiency while studying academic subjects (MOE, 2022), thereby preparing them for the globalized world and the widespread use of English in academic discourse (Li & Wu, 2018). The adoption of EMI in higher education has thus emerged as a significant trend in Taiwan's educational landscape (MOE, 2022).

The increasing popularity of EMI in various academic fields places a demand on students to possess proficient communication skills. However, many tertiary-level students face challenges in meeting such a demand in their academic disciplines due to inadequate preparation, affective barriers, and inappropriate learning strategies (Pitura, 2022). Specifically, non-English major university students may lack adequate communication skills, especially speaking abilities which are often neglected in their professional training (Adams, 2003). Given the importance of English communication skills for future professional and career development, it is crucial to provide structured support for students in developing these skills (Adams & Missingham, 2006). Among various second-language instructional strategies, reciprocal teaching (RT) is promising for speaking practice due to its interactive and collaborative nature, which emphasizes comprehension and communication within a scaffolded learning environment (Palinscar & Brown, 1984). These affordances align well with the needs of EFL learners who often lack authentic English communication opportunities (Lee & Chiu, 2023). Yet, few studies have adopted such strategies to foster the development of second-language speaking skills. Thus, this study aims to investigate the efficacy of reciprocal teaching strategies in enhancing the English-speaking abilities of EMI students, particularly those with intermediate to low confidence in their English proficiency.

LITERATURE REVIEW

Students' Language-Related Challenges in EMI

EMI, defined as "the use of the English language to teach academic subjects other than English itself in countries or jurisdictions where the first language of the majority of the population is not English" (Macaro, 2018, p. 19), has emerged in recent years as a response to a call for higher-education internationalization (Chapple, 2015). Its instructional goal is mainly on content learning. In Taiwan, education authorities have been actively promoting the implementation of bilingual education and EMI, aiming to equip students with the ability to achieve global competitiveness. This initiative encourages students to engage in international mobility, enabling them to stay aligned with global trends (MOE, 2022). EMI environments provide students with greater exposure to English, the dominant international language, enhancing their English proficiency. Consequently, EMI not only facilitates access to a broader range of academic resources and knowledge but also improves students' employability and educational opportunities (Dearden, 2015; Kirkpatrick, 2011, 2014a).

While EMI offers considerable benefits, it also poses significant challenges. A major issue that frequently arises is language-related. For instance, the overemphasis on English can lead to the marginalization of students' local languages and cultures, hindering the development of local language skills and cultural identity (Kirkpatrick & Liddicoat, 2023). Furthermore, the quality of students' learning may suffer if their English proficiency is insufficient (Kirkpatrick, 2014b). Thus, before policymakers and educators endorse the effectiveness of EMI in higher education, it is critical to first understand the difficulties faced by students in their EMI experience. EMI studies have identified language-related frustration as a primary challenge for non-native English speakers (Su et al., 2021). Aizawa et al. (2020) found the English language proficiency level to be a useful indicator for predicting the extent to which students felt challenged in EMI programs. This language factor has also been confirmed as one that impacts students' attitudes toward

EMI (Wilang & Nupong, 2022). EMI students expressed their concern about their low English proficiency and considered themselves underprepared for such an instructional setting (Hammou & Kesbi, 2023). Further demonstrating the importance of a student's English abilities in their EMI learning experience, Pun and Jin (2021) found that university students in Hong Kong with adequate preparation and command of English before entering an EMI program encountered fewer language challenges and became quickly accustomed to using English in their interactions with peers and professionals.

The comprehension of teaching materials and participation in class discussions are some of the other language-related challenges that EMI students encounter. For instance, Chinese students were reluctant to interact with teachers in EMI classes because of their low level of English proficiency, which prevented them from understanding their teachers and expressing themselves clearly (An & Thomas, 2021). Moreover, their incomprehension with the class learning content delivered in English hampered their confidence in communicating in EMI classes (Ma et al., 2022). Furthermore, Vietnamese students in transnational universities experienced a similar challenge—they found verbal communication in English and understanding teachers' lectures to be challenging (Yao et al., 2022).

Language challenges have also been reported in studies conducted in Taiwan. Yeh (2014) revealed that Taiwanese students had difficulty understanding the learning content delivered in EMI classes due to their inadequate English proficiency. Poor comprehension leads to unsatisfactory learning performance. Chu et al. (2018) found that local students rarely continued using English after class, leading to little interaction with international students. Chan et al. (2024) reported EMI students' concerns about their inappropriate English proficiency levels to handling EMI classes. Additionally, Lin et al. (2021) reported that Taiwanese students relied on support from Chinese translations to help themselves understand the learning materials in EMI classes.

Thus, the ability to properly communicate and interact in English in EMI classes is an essential requirement for students. This also indicates that inadequate English ability creates a barrier to the implementation of EMI (Ekoç, 2020). Among the various language

skills, students specifically indicated reading and speaking as more difficult skills to master in the EMI context (Aizawa et al., 2020). Furthermore, studies have noted that students feel anxious and remain silent in EMI class discussions due to their limited English speaking skills (Pitura, 2022). Students also expressed their dissatisfaction with the limited opportunities to improve their English speaking skills during EMI classes (Sahan & Şahan, 2024). As Macaro (2018) emphasized, language support is essential for students both before and during their EMI learning. Yao et al. (2022) further advocated providing students with out-of-class learning opportunities and training in learning strategies. The above discussion addresses the importance of promoting students' English proficiency to be successful in learning through EMI programs.

Reciprocal Teaching Approach

Reciprocal teaching (RT), an instructional strategy originally proposed by Palinscar and Brown (1984) for reading comprehension, shows promise in addressing EMI students' language needs. RT "takes place in the form of a dialogue between teacher and students regarding segments of text" (Palinscar & Brown, 1984, p. 121) and can be adapted to support speaking skill development. Its core principles of scaffolded instruction, peer collaboration, and active engagement align with best practices in second language speaking instruction (Long, 1996; Swain, 2000). RT encourages all members to engage in dialogue and work collaboratively in small group discussions (Chang & Lan, 2021). The approach is grounded in Vygotsky's sociocultural theory (Vygotsky, 1978), focusing on what learners can accomplish with guidance from instructors or more competent others. In other words, interaction with others is crucial in fostering learning development, which is the core purpose of RT (Seymour & Osana, 2003). RT's emphasis on dialogue and interactive meaning-making resonates with sociocultural theories of language learning, which posit that language development occurs through social interaction and collaborative problem-solving (Lantolf & Thorne, 2006). Another concept closely related to RT is expert scaffolding (Brown & Palinscar, 1989), which highlights the

provision of immediate support to novices through expert guidance, thus shaping their learning efforts. This continuous support would cease when the novice picks up the targeted skills. Such scaffolding support can be provided in the form of questions, discussions, cues, and hints with the aim of developing task-related abilities (Wood et al., 1976). Finally, RT is supported by the peer-assisted learning model, which means "the acquisition of knowledge and skill through active help and support among status equals or matched companions" (Topping, 2005, p. 631). Moreover, during RT activities, all learners both learn from their instructors and reach out to their struggling learning partners, thus enhancing peer interaction and learning effectiveness (Rosencrum et al., 2021).

RT was originally proposed to develop learners' reading comprehension (Palinscar & Brown, 1984). Its application mainly involves small-group discussions, scaffolding, and learning-strategy practices. In RT, the instructor starts with direct and scaffolded teaching, including guided practice and modeling. Then, students engage in tasks to practice key learning strategies, like predicting, generating questions, clarifying, and summarizing. Finally, the teacher elicits peer support to encourage social interaction for employing learners' cognitive, metacognitive, and affective strategies. In summary, RT pedagogical practices help learners solve comprehension difficulties, achieve higher-level thinking, build metacognition, increase learning motivation, and cultivate self-regulatory capabilities in a dialogic setting (Kadam & Sawant, 2020; Palinscar & Brown, 1984).

To enhance their familiarity with learning strategies, individual learners are assigned to small groups to play different roles related to RT activities. Learners read a paragraph together, and then a dialogue leader initiates a discussion. The leader proposes questions and assists group members in clarifying confusing words or concepts. Group members answer questions, comment on responses, and ask new questions. The leader offers a summary and invites feedback, then encourages predictions for the next paragraph. The RT process resumes with a new section and leader (Yawisah, 2017).

The Application of the RT Approach to Second-Language Development

As an interactive teaching technique and a cooperative learning instructional method, the RT approach involves a high degree of social interaction and collaboration, where learners shoulder individual responsibilities of facilitating their group members to construct meaning from language input (Mafarja et al., 2023). Furthermore, the RT approach comprises both peer-peer and instructor-learner interactions. In such processes of social interaction, participants engage in dialogues that enable them to construct comprehensible input, produce language output, and receive feedback through interactions with others. These factors are key to the success of second-language acquisition (Harper & De Jong, 2004; Krashen, 1982; Long, 1996; Swain, 1993).

The RT approach features an evidence-based, structured strategy and a dialogic pedagogical process that facilitates learning in the context of a collaborative environment. It provides learners with sufficient exposure to constructive language input, engaging conversations, and meaningful interactions. This approach has already been used in second-language instruction, and its effectiveness has been examined in multiple studies. Research has confirmed its usefulness for enhancing second-language reading comprehension (Chang & Lan, 2021; Koşar & Akbana, 2021; Sari, 2021). Moreover, second-language learners were able to bolster their writing abilities (Alehegn et al., 2024; Liu & Cao, 2021), listening skills (Rokhaniyah, 2020), and vocabulary knowledge (Ningsih & Fitrawati, 2018) through the RT approach.

While initially designed for reading comprehension, RT's underlying principles are well-suited for developing speaking skills. The four key strategies of RT - predicting, questioning, clarifying, and summarizing - naturally lend themselves to oral language practice. Seminal research supports the use of RT for enhancing speaking proficiency, citing its features such as instructor's scaffolding, structured role discussion, collaborative process, and specified context (Harper & De Jong, 2004; Klingner & Vaughn, 1996). These are closely linked to common instructional approaches for developing second-language speaking skills, like task-based language teaching,

communicative language teaching, role-playing, and group discussion, highlighting meaningful communication, the use of language in authentic contexts, execution of specific tasks, and encouragement of active, interactive engagement (Hughes & Reed, 2016; Robinson et al., 2016; Reynolds & Yu, 2022). It is promising to adopt such an approach to expand the repertoire of second-language speaking skills.

However, to our knowledge, there has been little empirical research exploring its impact on second-language learners' speaking development. For example, Ahmad (2014) found that using the RT approach improved the English-speaking skills of 99 Indonesian twelfth graders, based on data from speaking tests, learning observations, video recordings, and interviews. Another study (Kadam & Sawant, 2020) found that a four-week RT activity improved the English communication performance of Indian university freshman students. The experimental group receiving the RT approach outperformed the control group taught with traditional methods. Finally, Sabzevari et al. (2022) demonstrated a positive impact of the RT approach on the English-speaking skills of Iranian students in virtual environments. However, the three aforementioned studies have been criticized for providing insufficient information to comprehensively understand the efficacy of RP on second-language speaking skill development, such as presenting only descriptive statistics data without conducting inferential statistics to validate their findings or detailing the pedagogical design of RT. Therefore, more studies that implement rigorous research methodologies are required.

The Current Research

Although equipping tertiary-level EMI students with proficient English-speaking skills is critical for active class participation and overall academic success, students are often inadequately prepared in this domain despite its importance. The RT approach, encouraging meaningful social interaction and collaborative learning, offers potential for second language acquisition. However, empirical research on RT's effectiveness in enhancing second-language speaking skills remains sparse, leaving a gap in the literature.

Accordingly, this study aims to explore the benefits of the RT approach for Taiwanese graduate students, who perceive their English skills as inadequate for courses delivered in EMI, aiming to answer the following research questions:

1. To what extent does the RT approach enhance Taiwanese EFL graduate students' speaking skills?
2. How do they perceive their own development of English skills?
3. What are their attitudes toward the program conducting the RT approach?

METHODOLOGY

Research Context and Participants

The research took place at a public university in northern Taiwan known for its Computer Science (CS) program. Approximately half of the graduate-level courses in the CS College are offered in EMI, aiming to equip students with both strong professional knowledge and internationalization perspectives. To better prepare students for their EMI courses, the College partnered with the Teaching-English-to-Speakers-of-Other-Languages (TESOL) Graduate Program within the same university, introducing the English Communication Roundtable Program to enhance students' English proficiency.

Twelve graduate students (10 males and two females) facing language barriers in EMI courses and wishing to improve their English proficiency enrolled in the program. They had never attended an English communication program of this kind. Before the program began, all students received detailed information about the study and provided signed consent forms. Aged 22-25, they were native Mandarin speakers who had studied English for 6-17 years.

At the outset of the program, students assessed their confidence in English proficiency by responding to the statement "To what extent are you confident in your English proficiency?" with options of low, intermediate, and high. They were required to submit score reports from standardized language assessments as evidence of their proficiency levels. Five students reported low confidence, and seven

indicated intermediate confidence. Regarding their proficiency levels, six had B1 or lower CEFR levels, and six had no experience with standardized assessments or knowledge of their proficiency levels.

Program Design

The program was an extracurricular English learning activity designed for CS graduate students. Under the supervision of the first author, four TESOL graduate students served as tutors. Prior to the program's commencement, these tutors underwent three comprehensive training sessions focused on communication facilitation, grounded in the RT framework and program design. To ensure consistency in program delivery and provide ongoing feedback, the first author and peers observed each TESOL tutor during their initial three sessions.

The RT approach, known for its interactivity and collaboration, was chosen as the main instructional approach. This approach fosters meaningful and contextual communication, thus enhancing oral skills. The RT sessions spanned 12 weeks, with each CS lab engaging with two different TESOL tutors for six weeks each. The first author designed the program and developed the framework and model teaching materials for the tutors to follow. Each week, the tutors selected a topic and a related short video clip (e.g., a TED Talk or TED-Ed video) for a roundtable discussion. They then created a discussion worksheet based on the RT framework. Each session followed a predetermined agenda. The program incorporated four discussion roles, adapted from Palinscar and Brown's (1984) reading comprehension strategies, as detailed in Table 1.

Table 1

Discussion Roles in the English Communication Roundtable Program

Role	Responsibility
Word Master	Identify at least 5 keywords from the video, define them in context, and teach them to your group
Questioner	Ask 2-3 open-ended questions about the video to generate discussion and encourage follow-up
Connector	Share personal experiences and help others connect and expand on their own experiences related to the video
Summarizer	Summarize the video and discussion to enhance everyone's understanding

A typical session in the program is exemplified by the "Conformity & Individuality: Are we afraid to stand out?" module, as illustrated in Table 2:

Table 2

Example of an RT Session

Before the session
Tutors selected relevant TED talks or TED-Ed videos based on their understanding of CS graduate students' interests and professional needs. For example, for one session, a TESOL tutor chose the talk "Conformity: Are we afraid to stand out?" by Mina Whorms from TEDxUCCI. She then prepared a comprehensive worksheet including the video link and transcript, a synopsis, and clearly defined objectives, including (a) content objective: Analyze the psychological and social factors influencing conformity in various contexts; and (b) language objectives: Apply topic-specific vocabulary in discussions about conformity and express personal views on conformity in academic and professional environments using

appropriate language structures and examples.

The worksheet was structured into three main sections: Reciprocal Group Discussion, Student Facilitating Table Topic, and Follow-Up Exercises, providing a clear framework for the session's activities.

During the session

Introduction (5-10 minutes): Tutor introduced the topic of conformity and individuality.

Warm-up (5-10 minutes):

- Review of key vocabulary from the video transcript (e.g., converge, conversion therapy, disciplinarian upbringing).
- Brief discussion on prior knowledge of conformity.

Small Group Discussion (30-40 minutes): Attendants were divided into small groups, assuming the following roles:

- Word Master: Define and explain key terms like "prejudice" and "execute somebody."
- Questioner: Pose questions such as "Why do people usually follow the crowd and not be themselves?" and create additional questions like "What are the pros and cons of conformity in society?"
- Connector: Relate the video content to personal experiences or wider societal issues using prompts like "This reminds me of..." or "I can relate..."
- Summarizer: Prepare to synthesize the group's main discussion points.

Whole-Class Discussion (Interspersed):

- Tutors facilitated broader discussions on vocabulary usage, thought-provoking questions, and real-world connections related to conformity.

Summary and Feedback (10 minutes):

- Each group's Summarizer presented their key takeaways using a suggested summary frame provided in the worksheet.
- Other students asked questions, and tutors provided final feedback and clarification.

Student Facilitating Table Topic (20 minutes): ○ A designated student facilitator presented on a related topic, followed by a Q&A session. ○ Follow-Up Exercises: Students completed additional exercises to reinforce learning and encourage further reflection on the topic.

Throughout the session, the tutor supported and guided group discussions, offering feedback, language assistance, and facilitation as needed. This collaborative approach, centered around the theme of conformity and individuality, fostered comprehension, motivated engagement, and provided ample opportunities for English language practice and skill development. The program ensured that participants engaged deeply with both the content and language aspects of each topic, while also developing their communication and critical thinking skills in English.

Instruments

TOEIC Speaking Pre- and Post-test

The TOEIC Speaking test—a popular standardized language assessment designed for daily and workplace English communication (ETS, n.d.)—was adapted to evaluate the participants' speaking skills. Although the official version of the speaking test had six tasks, the participants' tight schedules prevented them from completing all of the tasks. Thus, after a discussion with official TOEIC raters, two concise versions of the test were developed specifically for the current research. The test format, topic, scope, and difficulty levels in the two tests were similar, as confirmed by the raters.

Speaking tests were used as pre- and post-tests at the beginning and end of the program to monitor the participants' speaking skills development. Each test was designed to measure different aspects of the attendants' speaking skills, such as pronunciation, intonation, stress, grammar, vocabulary, cohesion, and relevance and completeness of the content (ETS, 2020). The first task, read-aloud questions, gave the participants 45 seconds to read nearly 100-word texts out loud. The second task, "Describe a Picture", asked

participants to first look at a picture, after which they were given 30 seconds to prepare their answer, describing the picture in as much detail as possible in 45 seconds. In the third task, "Respond to Questions", participants answered three questions. After hearing the questions, they immediately answered the first two questions for 15 seconds and the third question for 30 seconds. In the final task, "Express an Opinion", participants offered their opinions on a specific topic within 60 seconds. Tasks 1, 2, and 3 had a score range of 0 to 3, whereas Task 4 had a score range of 0 to 5 (ETS, 2020).

Pre- and Post-Program Surveys

Complementing the TOEIC Speaking tests, pre- and post-program surveys were designed based on the principles of questionnaire design in second language research (Dörnyei & Taguchi, 2009). These surveys aimed to capture participants' perspectives and attitudes toward English learning in the RT program context.

The pre-program survey consisted of two main sections. The first gathered demographic information and language learning background, providing a baseline understanding of participants' profiles. The second section included five-point Likert scale questions assessing participants' confidence in English proficiency and self-evaluation of their listening, speaking, reading, and writing skills. This self-assessment component was grounded in research highlighting the influence of learners' self-perceptions on language learning outcomes (Mercer, 2011).

The post-program survey maintained the self-assessment section for direct comparison with pre-program responses and added a program evaluation component. This new section comprised nine five-point Likert scale questions addressing various aspects of the program, such as its relevance and effectiveness, and three open-ended questions exploring participants' engagement, perceived learning changes, and feedback about the program. This mixed-methods approach allowed for both systematic comparison across participants and capture of individual, nuanced reflections. Both surveys underwent pilot testing to ensure clarity and relevance. Their Cronbach's alpha reliability values (0.85 for pre-program and 0.78 for

post-program) indicated good internal consistency (Nunnally & Bernstein, 1994).

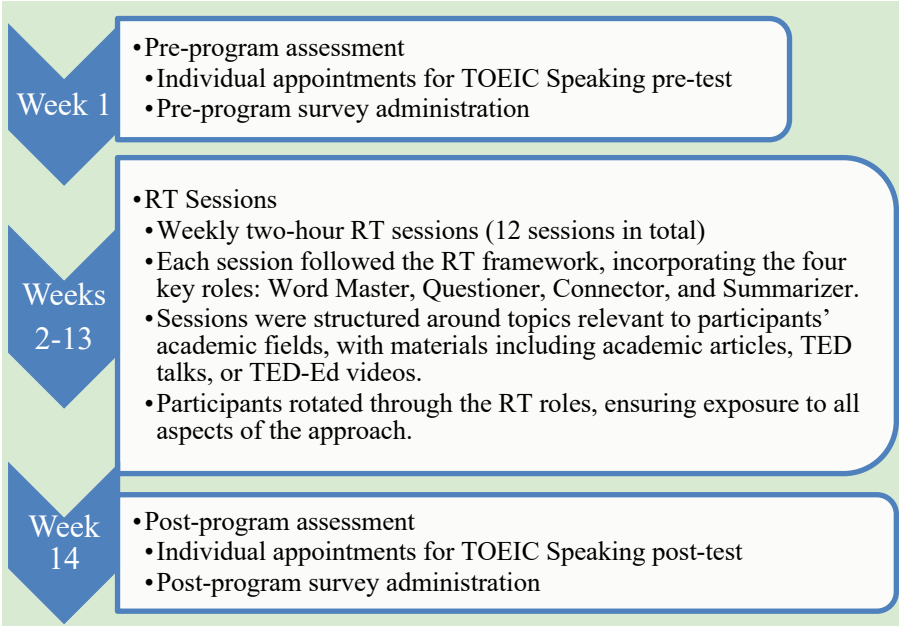
The combination of standardized speaking tests and tailored surveys provided a comprehensive assessment framework, aligning with best practices in language program evaluation (Norris, 2016). This multi-faceted approach enabled us to triangulate objective speaking performance data with participants' self-perceptions and program experiences, offering a rich, nuanced understanding of the RT program's impact on EMI graduate students' English skills and attitudes.

Research Design and Data Collection Procedure

This study employed a 14-week quasi-experimental design to investigate the effect of the Reciprocal Teaching approach on participants' English-speaking skills, their perceived development in English language skills, and their attitudes toward the program. The design was structured to align closely with the principles of RT, ensuring that each component of the approach was integrated into the research process. The 14-week timeline was presented as follows (see Figure 1):

Figure 1

The Timeline of the Research Design



The primary objective of this study was to examine the efficacy of RT in enhancing English-speaking skills. Our focus on quantitative methods was deliberate, aiming to establish measurable outcomes for this novel application of RT in an EMI context. Quantifiable improvements in speaking performance and students' perceived attitudes were closely aligned with the research questions, allowing for clear comparisions between pre- and post-intervention performance (Creswell & Creswell, 2017). The use of standardized speaking tests (i.e., adapted TOEIC Speaking) provided a validated and reliable measure of speaking proficiency, enhancing the generalizability and practical applicability of our findings. Although the primary analysis was quantitative, qualitative data from open-ended survey responses provided students' perspectives on their learning experiences and attitudes toward the RT intervention. These qualitative insights offered valuable context on how RT impacted their

English-speaking development, enriching the quantitative findings.

To ensure the validity and reliability of our instruments, meticulous preparations were undertaken before the research began. The TOEIC Speaking pre- and post-tests underwent an expert review (Tessmer, 1993) carried out by TOEIC raters to assure practicality and identify potential deficiencies. Additionally, a pilot study was conducted with a senior graduate student who had previously enrolled in the program. This pilot study helped refine the test-taking procedures, test directions, audio quality of the TOEIC Speaking tests, and question slides. For both the pre- and post-program assessments, individual appointments were scheduled to create a controlled environment for data collection. During these appointments, the test procedure and question types were fully explained to participants before administration. All responses were audio-recorded for later analysis.

This research design and data collection procedure allowed us to capture the impact of the program over time. By aligning our data collection methods with the RT approach, we ensured that our findings would directly reflect the effectiveness of RT in improving participants' English-speaking skills in the EMI context.

Data Collection and Analysis

Two types of data were collected in this study. The TOEIC Speaking tests were used to evaluate participants' English-speaking performances. Two official raters assessed recorded oral performances using the TOEIC Speaking test rubric (ETS, 2020). Inter-rater reliability between the two raters calculated using intraclass correlation coefficients (ICCs) was .72 in the pre-test and .87 in the post-test, both of which were acceptable (Larson-Hall, 2015). The average of their grading points determined the final scores. Descriptive statistics were calculated to determine means and standard deviations (SD). A Wilcoxon signed ranks test was conducted to compare pre- and post-test results due to the small sample size. Furthermore, surveys provided information on participants' perceived language abilities and program perspectives. Descriptive statistics were used for mean and SD calculations. The

Wilcoxon signed ranks test was applied to Likert scale data to identify any differences between pre- and post-program survey results. A thematic analysis (Braun & Clarke, 2006) was used to examine responses to open-ended items. The researchers collaborated to analyze the data, resolving discrepancies through discussion.

RESULTS

Taiwanese EFL Graduate Students' Speaking Skill Development

The first research question explored the effectiveness of the RT strategy in improving students' speaking skills by conducting pre- and post-tests in TOEIC Speaking. Table 3 presents descriptive statistics comparing pre-test and post-test scores for participants. It was found that all post-test task scores were higher than the pre-test scores. Specifically, Tasks 1 and 2 showed significant differences with z-scores of -1.98 and -2.07 ($p < 0.05$) and large effect sizes of -0.57 and -0.6, respectively. However, no significant difference was observed in the performance of Tasks 3 and 4 between the two tests (z = -.78 and -.79, $p > 0.05$), with small effect sizes of -0.23 for both tasks.

Table 3

Students' Speaking Performance and Wilcoxon Signed Ranks Test Results

Test / Task	Pre-test	Post-test	Z	Asymp. Sig. (2-tailed)	r
1. Read a text aloud	2.88 (.13)[a]	2.96 (.14)	-1.98[b]	.048*	-0.57
2. Describe a picture	2.58 (.36)	3.46 (.69)	-2.07[b]	.038*	-0.6
3. Respond to questions	2.58 (.48)	2.63 (.43)	-.78[b]	0.44	-0.23
4. Express an opinion	2.46 (.58)	3.71 (.92)	-.79[c]	0.43	-0.23

Note. N = 12 (7 with intermediate confidence, 5 with low confidence)
[a.] Mean (SD)

[b] Based on positive ranks.
[c] Based on negative ranks.
* $p < 0.05$

Taiwanese EFL Graduate Students' Perceptions of English Skills

To assess changes in students' perceptions of their English skills, pre-program survey and post-program survey approaches were used. The students reported improved self-evaluations in the post-survey, as shown in Table 4. The Wilcoxon signed-ranks test revealed significant differences in perceived listening and reading skills between the pre-program survey and post-program survey (z = -2.45 and -2.00, p < 0.05), with large effect sizes of r = -0.71 and -0.58, respectively. However, there were no significant changes in speaking and writing skills (z = -1.13 and -1.40, p > 0.05), with medium effect sizes (r = -0.33 and -0.41, respectively).

Table 4

Students' Perceptions and Wilcoxon Signed Ranks Test Results

Survey / Skill	Pre-program survey	Post-program survey	Z	Asymp. Sig. (2-tailed)	*r*
Listening	2.58 (.90)[a]	3.08 (.67)	-2.45[b]	.01*	-0.71
Speaking	2.08 (.79)	2.33 (.78)	-1.13[b]	0.26	-0.33
Reading	3.08 (.67)	3.42 (.51)	-2.00[b]	.046*	-0.58
Writing	2.08 (.67)	2.58 (.90)	-1.40[b]	0.16	-0.41

Note. N = 12 (7 with intermediate confidence, 5 with low confidence)
[a.] Mean (SD)
[b] Based on negative ranks.
* $p < 0.05$

Taiwanese EFL Graduate Students' Attitudes toward Application of the RT Strategy

Quantitative Findings

Analysis of the nine-item, five-point Likert scale questionnaire revealed generally positive attitudes towards the RT program among

participants. As shown in Table 5, all items scored above 3.5, with eight out of nine items averaging 4 or higher. The highest-rated aspects were the program's design facilitating increased English-speaking opportunities (item #4, $M = 4.75$) and the usefulness of input materials such as videos and readings (item #8, $M = 4.50$). The lowest-rated item, though still positive, concerned the program's impact on refining spoken grammar (item #6, $M = 3.83$).

Table 5

Students' Attitudes toward the Application of the Reciprocal Teaching Strategy

Item	Min	Max	M	SD
1.I actively participated in the session.	3.00	5.00	4.08	.79
2.The sessions were relevant to my English learning needs.	3.00	5.00	4.25	.62
3.The sessions improved my communication fluency.	3.00	5.00	4.42	.67
4.The sessions allowed me to speak more English.	4.00	5.00	4.75	.45
5.The sessions helped expand my spoken vocabulary.	3.00	5.00	4.00	.74
6.The sessions helped refine my spoken grammar.	3.00	5.00	3.83	.83
7.The sessions engaged my interest.	3.00	5.00	4.33	.78
8.I felt comfortable speaking during the session.	3.00	5.00	4.33	.78

9.I found the input materials (videos and readings) helpful.	4.00	5.00	4.50	.52
Did you actively engage in the program?	Yes: 9 (75%) OK: 1 (8.3%) Could be better: 2 (16.7%)			
What self-changes did you observe from the first to the last English Roundtable session?	1. More confident and relaxed while speaking in English 2. More increase in the amount of vocabulary 3. More engagement in activities 4. Broader perspectives on a variety of issues			
What did you like the most about the English Roundtable activity?	1. Performing a variety of activities 2. Exchanging ideas with other participants 3. Encouragement and support from tutors 4. Using English in the discussions			

Note. N = 12 (7 with intermediate confidence, 5 with low confidence). 1: Strongly disagree, 2: Disagree, 3: Neutral, 4: Agree, 5: Strongly agree.

Quantitative Analysis

To complement the quantitative data, a thematic analysis (Braun & Clarke, 2006) was conducted on responses to open-ended questions. This analysis revealed several key themes, providing deeper insights into participants' experiences with the RT strategy.

Self-Perception of Participation. A majority of participants viewed themselves as effective team members in the RT activities. They cited reasons such as active idea sharing, facilitation of group discussions, and consistent participation. For instance, one participant

noted, "*I can actively propose my ideas*," while another mentioned, "*I can organize everybody's ideas and pose interesting arguments*." This high level of self-reported engagement aligns with the core principles of RT, which emphasizes active participation and collaborative learning (Palinscar & Brown, 1984). However, a few participants acknowledged challenges in engagement, primarily due to shyness or discomfort with English expression. These responses reflect the anxiety often experienced by EFL learners in speaking situation.

Perceived Changes and Improvements. Participants reported several areas of improvement throughout the program. The most frequently mentioned was increased confidence in English speaking, followed by reduced anxiety about using English, enhanced vocabulary, greater involvement in discussions, and broadened perspectives on various topics. These findings support previous research on the positive impact of collaborative learning strategies on language anxiety reduction and confidence building (MacIntyre & Gardner, 1991).

One participant's comment illustrates this theme: "*I feel more courageous to talk to others in English*." Another noted, "*My anxiety about English speaking is lower*." Such responses suggest that the RT approach may be effective in creating a low-anxiety environment.

Favorite Aspects of the Program. Four main categories emerged as favored elements of the program: diverse and interactive tasks (e.g., cooking sessions, board games), peer interaction and idea exchange, tutor support and encouragement, and opportunities for active English use. Participants particularly appreciated how games and interactive activities motivated them to use English despite difficulties. One student remarked, "*Although it's still difficult for me to express all my ideas in English, playing games indeed motivated me to try*."

Program Impact on English Use. Students reported increased willingness to speak English, more opportunities for English practice, and improved ability to express ideas in English. A representative comment was: "*We could push ourselves to use English during the activity*." This increased willingness to communicate in English is a crucial factor in language learning success.

Areas for Improvement. While less prevalent, some responses indicated areas for potential enhancement. These included a need for

more preparation time and a desire for additional vocabulary focus. One student noted that "*Sometimes I was too busy to prepare well. Just need more time and vocabulary to complete tasks*", and the other mentioned that "*I still need to improve my speaking abilities to more actively participate in the discussion*." These suggestions align with research emphasizing the importance of adequate preparation and vocabulary knowledge in successful language production (Nation, 2001).

DISCUSSION AND CONCLUSION

Building on Macaro's (2018) argument for offering language support to EMI students, this study examined the effect of the RT approach on speaking abilities, English language perceptions, and attitudes of Taiwanese EFL graduate students. While previous studies (Ahmad, 2014; Kadam & Sawant, 2020) have highlighted the benefits of the RT approach based on descriptive statistics, further evidence derived from the rigorous research designs and analyses conducted in our study serves to reinforce the importance of RT as a useful, engaging, and meaningful pedagogical technique. Notably, our study found that Taiwanese graduate students with intermediate or low confidence in their English proficiency displayed significant improvements in post-program speaking abilities, including pronunciation, intonation, stress, and idea description, as well as in their perceptions of reading and listening skills.

In our program, the RT routine and activities notably improved the language competencies of the participating students with intermediate to low English confidence. Evidence of this improvement was reflected in the significantly better performance in Speaking Tasks 1 and 2, especially in pronunciation, delivery, and coherence. It might be due to the immediate feedback participants received during the RT sessions, which enabled them to practice and modify their production on the spot, thus resulting in a noticeable improvement in their comprehensibility and intelligibility. Yet, no significant improvement in Tasks 3 and 4 was identified. This could be explained that skills required to perform both tasks, including grammar, vocabulary,

cohesion, relevance, and completeness of the content, would develop incrementally over a long period of time (Dekeyser, 2005; Nation, 2001; Tsunemoto & Trofimovich, 2024). Participants might need more practice to improve such skills.

Moreover, the increased confidence in English listening and reading skills exhibited by the participants corroborated the effectiveness of the program in addressing EMI students' needs. The positive results can be attributed to RT's scaffolding nature (Brown & Palinscar, 1989), interactive environment (Seymour & Osana, 2003), and peer-assisted learning (Topping, 2005), confirming the assertions of previous studies (Ahmad, 2014; Harper & De Jong, 2004; Yawisah, 2017). The enhanced perceptions of the participants' listening and reading skills have important implications for their performance in the EMI context. Improved listening skills can directly contribute to better comprehension of lectures, discussions, and multimedia materials in English-medium courses (Macaro et al., 2018). Enhanced reading skills, in turn, can facilitate more efficient processing of academic texts, research papers, and online resources crucial for EMI course success (Breeze & Sancho Guinda, 2017). In EMI contexts, this heightened confidence in receptive skills could encourage more active participation in class discussions, willingness to engage with English materials, and overall better adaptation to the EMI environment (Tweedie & Johnson, 2018).

Interestingly, while participants valued the RT activities, they did not fully agree that these activities improved their spoken grammar. This perspective is consistent with the goal of the program, which prioritized fluency over linguistic perfection. Their positive perspectives on the RT approach reflected their enjoyment and perceived value of the interactive learning experience, which further enhanced their language and communication skills in an English-speaking environment (Harper & De Jong, 2004; Krashen, 1982; Long, 1996; Swain, 1993).

This study underscores the effectiveness of the RT approach in providing EMI students with the language skills necessary for academic success. Both qualitative and quantitative analyses demonstrated the students' improved English language skills and increased confidence. The RT approach provides a structured

framework for discussion and fosters a collaborative learning environment where students take on various roles in learning tasks, enhancing active participation and responsibility in their English practice. Through the discussion, spontaneous, supportive feedback from peers and tutors is encouraged. Additionally, practical speaking pedagogical strategies, such as group discussion, tasks, and role-playing, can be successfully integrated into the RT approach, demonstrating its flexibility and adaptability for promoting second-language speaking skills. The RT activities provided valuable language practice opportunities and language input that contributed to the student's overall academic and English-language development.

The findings of this study confirm the overall effectiveness of the RT approach in enhancing the English-speaking abilities of EMI graduate students. The significant improvements observed in pronunciation, intonation, stress, and idea description echo recent research on the benefits of collaborative learning strategies for language development (Abramczyk & Jurkowski, 2020). The structured nature of the RT sessions, incorporating roles such as Word Master, Questioner, Connector, and Summarizer, provided students with diverse opportunities to engage with the language. This aligns with Vygotsky's sociocultural theory and the concept of scaffolded learning (Lantolf & Poehner, 2014), where peer interaction and expert guidance facilitate language acquisition. The improved performance in Tasks 1 and 2 of the TOEIC Speaking test suggests that the RT approach particularly benefits pronunciation and descriptive abilities, highlighting the effectiveness of structured peer interaction in enhancing oral proficiency.

These findings have several pedagogical implications. First, the provision of language support is essential for EMI students to improve their language skills and facilitate the learning of EMI content. Students benefit from structured discussions that involve predicting, generating questions, clarifying, and summarizing. Second, assigning specific communication roles encourages interaction and practice, facilitates information exchange, and ultimately improves students' language proficiency (Doughty & Pica, 1986). Finally, empowering students by delegating speaking responsibilities and providing scaffolding support can significantly improve students' language

proficiency (Harper & De Jong, 2004; Savignon, 2005).

In conclusion, this study provides evidence for the effectiveness of the RT approach in supporting EMI graduate students' English-speaking abilities. The structured, collaborative nature of RT sessions, combined with diverse task-based and content-based learning, offers a promising model for language support in EMI contexts. While these results are encouraging, certain limitations warrant caution in their interpretation. These include the lack of a control group, the small sample size, and the relatively short duration of the study, thus limiting the generalizability of the findings. In addition, potential bias due to the presence of the researchers and possible variation in students' extracurricular English exposure may have influenced the results. Future research could address these limitations. The inclusion of a delayed post-test to assess long-term retention, the adoption of more comprehensive interactive speaking tasks, and the extension of the study duration are suggested. In addition, future research could explore the impact of the RT approach on English language skills across students from various EMI disciplines and with differing levels of English proficiency and confidence, to achieve a more nuanced understanding of its effectiveness. Finally, we acknowledge that a mixed-methods approach, incorporating more extensive qualitative analyses such as conversation analysis or semi-structured interviews, could provide deeper insights into the processes underlying speaking skill development through RT (Lee & Hellermann, 2014). Future research could benefit from such an approach to explore not just whether RT improves speaking skills, but how and why it does so, offering richer insights to inform pedagogical practice in EMI contexts.

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APPENDIX

Appendix 1. Scoring Rubric of TOEIC Speaking Test (ETS, 2020, pp. 10, 11, & 13)

Scoring Guide for Tasks 1-2: Pronunciation

SCORE	RESPONSE DESCRIPTION
3	Pronunciation is highly intelligible, though the response may include minor lapses and/or other language influence.
2	Pronunciation is generally intelligible, though it includes some lapses and/or other language influence.
1	Pronunciation may be intelligible at times, but significant other language influence interferes with appropriate delivery of the text.
0	No response OR no English in the response OR response is completely unrelated to the test.

Scoring Guide for Tasks 1-2: Pronunciation

SCORE	RESPONSE DESCRIPTION
3	Use of emphases, pauses, and rising and falling pitch is appropriate to the text.
2	Use of emphases, pauses, and rising and falling pitch is generally appropriate to the text, though the response includes some lapses and/or moderate other language influence.
1	Use of emphases, pauses, and rising and falling pitch is not appropriate, and the response includes significant other language influence.
0	No response OR no English in the response OR the response is completely unrelated to the test.

Scoring Guide for Questions 3: Pronunciation, Intonation and Stress, Grammar, Vocabulary, and Cohesion

SCORE	RESPONSE DESCRIPTION
3	The response describes the main features of the picture. • The delivery may require some listener effort, but it is generally intelligible. • The choice of vocabulary and use of structures allows coherent expression of ideas.
2	The response is connected to the picture, but meaning may be obscured in places. • The delivery requires some listener effort. • The choice of vocabulary and use of structures may be limited and may interfere with overall comprehensibility.
1	The response may be connected to the picture, but the speaker's ability to produce intelligible language is severely limited. • The delivery may require significant listener effort. • The choice of vocabulary and use of structures is severely limited OR significantly interferes with comprehensibility.
0	No response OR no English in the response OR the response is completely unrelated to the test.

Scoring Guide for Questions 3: Pronunciation, Intonation and Stress, Grammar, Vocabulary, and Cohesion

SCORE	RESPONSE DESCRIPTION
3	The response is a full, relevant, socially appropriate reply to the question. In the case of Questions 7-9, information from the prompt is accurate. • The delivery requires little listener effort. • The choice of vocabulary is appropriate. • The use of structures fulfills the demands of the task.
2	The response is a partially effective reply to the question, but is not complete, fully appropriate, or in the case of Questions 7-9, fully accurate. • The delivery may require some listener effort but is mostly intelligible. • The choice of vocabulary may be limited or somewhat inexact, although overall meaning is clear. • The use of structures may require some listener effort for interpretation. • In the case of Questions 7-9, the speaker may locate the relevant information in the prompt but fail to distinguish it from irrelevant information or fail to transform the written language so a listener can easily understand it.
1	The response does not answer the question effectively. Relevant information is not conveyed successfully. • The delivery may impede or prevent listener comprehension. • The choice of vocabulary may be inaccurate or rely on repetition of the prompt. • The use of structures may interfere with comprehensibility.
0	No response OR no English in the response OR the response is completely unrelated to the test.

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