Incorporating 'Flipped Classroom Model': Developing English Speaking Skills of Engineering Students

Amir[1], Md Sarfaraj[2], Sohaib Alam[3,*], Tamer Tawfik Saudi[4,5], Farhan Ahmad[3], and Wahaj Unnisa Warda[3]

[1]Department of Humanities, Galgotias College of Engineering and Technology, UP, India
[2]Department of English, Chaitanya Bharathi Institute of Technology, Hyderabad, India
[3]College of Sciences and Humanities, Prince Sattam Bin Abdulaziz University, Alkharj, Kingdom of Saudi Arabia
[4]Department of Basic Studies and Sciences, Applied College, University of Tabuk, Tabuk, Kingdom of Saudi Arabia
[5]Department of Foreign Languages, Faculty of Education, Tanta University, Tanta, Egypt
Email: amirkhan@galgotiacollege.edu (A.); sarfarajmd_english@cbit.ac.in (M.S.); s.alam@psau.edu.sa (S.A.); tsaudi@ut.edu.sa (T.T.S.); f.ahmad@psau.edu.sa (F.A.); w.saber@psau.edu.sa (W.U.W.)
*Corresponding author

Manuscript received November 26, 2024; revised December 19, 2024; accepted January 17, 2025; published April 15, 2025

***Abstract*—The present study aims to assess the effectiveness of the flipped classroom model in improving engineering students' speaking skills in fluency, accuracy, and pronunciation of English as a Second Language (ESL). Comparative studies on the flipped classroom's impact on ESL learners' speaking skills in engineering students are scarce. To fill this gap, the current study adopts an experimental design to perform the study. The experimental study encompasses two distinct cohorts: the experimental and control groups. The experimental group received intervention through a flipped classroom model, and the control received treatment through a communicative language teaching approach only to enhance the speaking skills of ESL learners over the 8 weeks. One hundred and twelve participants were selected employing random sampling from a private college in India. Data collection involved using assessments conducted before and after the intervention activities. The results of the study indicated that each group exhibited significant progress in the speaking abilities of engineering students. Compared to the control group, the flipped classroom model exhibited a remarkable advantage in fostering the speaking skills of engineering students, particularly in fluency, accuracy, and pronunciation. The implications of this study hold considerable pedagogical relevance for individuals engaged in curriculum design, the development of training programs for prospective engineering students, the creation of educational materials, as well as all stakeholders involved in the field of engineering education.**

***Keywords*—flipped classroom model, English as a second language, speaking skills, engineering students**

I. Introduction

The international prominence of English as a lingua franca, particularly in pivotal domains such as commerce, science, and technological advancement, underscores its significant function in modern educational frameworks and professional development [1–3]. For students in engineering disciplines, proficiency in English is paramount not solely for academic success but also for career advancement and meaningful participation in the global labor market [4]. In contexts where English is learned as a Second Language (ESL), there exists a substantial demand for proficient language capabilities due to the necessity of conveying intricate technical information across linguistic divides [5]. Nonetheless, numerous learners encounter obstacles in acquiring proficient English-speaking competencies, encompassing fluency, precision, and pronunciation, which are vital for both scholarly and professional triumph [6, 7]. Conventional educational paradigms frequently fall short of addressing these requisite skills as they emphasize grammar and vocabulary through memorization techniques, which inadequately prepare students for authentic communicative encounters [8, 9]. Furthermore, the lack of immersive English-speaking environments intensifies these difficulties, impeding students' capacity to attain functional fluency [10]. There is a need to investigate novel teaching and learning approaches and modify curricular frameworks to more effectively prepare engineering students with the requisite linguistic competencies to fulfill the expectations of the global professional arena.

Enhancing English speaking proficiency among ESL students, especially within the engineering discipline, is of paramount importance; nevertheless, conventional instructional approaches frequently do not adequately cultivate these vital competencies [11, 12]. This study explores the flipped classroom model, an educational approach that shifts instructional content delivery outside of the classroom and focuses class time on interactive activities [13, 14]. It is posited that this model could enhance speaking skills more effectively than conventional communicative language teaching methods which generally emphasize teacher-centered instruction. Although flipped classrooms are widely studied in general education, specific studies into their impact on ESL engineering students' speaking abilities remain scarce [15]. This scarcity highlights the study's novelty and importance, seeking to offer insights on how flipped classrooms may better equip engineering students for the linguistically diverse and global professional environments they will encounter, thereby advancing educational goals of improving language proficiency in technical domains.

This study evaluates the Flipped Classroom Model (FCM) for enhancing ESL speaking skills in engineering students, essential for global workforce success. It influences Vygotsky's social constructivist theory, which highlights effective learning through social interactions and collaborative environments, exploring how interactive educational strategies can boost language proficiency [16–18]. The research utilizes Vygotsky's 'Zone of Proximal Development' (ZPD) concept to emphasize scaffolded learning's role in improving linguistic skills [19, 20]. By testing the hypothesis that learner-centered methods, which

promote active participation and practical engagement, can advance ESL speaking competencies in engineering, the study aims to provide insights into tailored pedagogical interventions that prepare students for the communicative demands of professional roles effectively.

Successfully implementing the flipped classroom model in ESL engineering education may transform teaching methods, curriculum design, and resource distribution [21]. Its flexibility suggests potential for broad application across disciplines, enhancing global ESL education and equipping students to meet career-related linguistic demands [22, 23]. This research addresses a critical gap in language learning strategies within technical fields, with potential to influence wider educational policies and practices. The outcomes may assist curriculum developers, policymakers, and instructors in crafting more effective language programs, thereby enhancing the communicative competence of graduates in the global workforce [24], underscoring the study's broad significance and impact.

II. Literature Review

A. Theoretical Framework

The theoretical foundation of this research is grounded in Vygotsky's social constructivist theory posits that learning is fundamentally a social process that is deeply influenced by interactions within the learning environment [16]. Central to this theory is the concept of the Zone of Proximal Development (ZPD), which Vygotsky [16] describes as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem-solving under adult guidance or in collaboration with more capable peers". This highlights the importance of learners engaging in tasks that challenge them slightly beyond their current abilities yet are achievable with appropriate guidance, reflecting the critical role of scaffolding provided by more knowledgeable others in the learning process [17]. Vygotsky's theory further emphasizes that language is a fundamental tool for cognitive development, learned through social interaction, which learners initially use collaboratively before mastering it for independent problem-solving [25].

B. Flipped Classroom Model

The Flipped Classroom Model (FCM) transforms traditional teaching approach by moving direct instruction online, freeing up classroom time for dynamic, student-centered activities like problem-solving, discussions, and project-based learning [12, 13, 22]. In this model, students independently absorb content via pre-recorded lectures and digital materials, then apply this knowledge in class, enhancing learning depth and material retention. This approach not only allows students to learn at their own pace but also shifts the teacher's role from information deliverer to learning facilitator, encouraging active learning, critical thinking, and higher engagement, leading to greater academic success [26–28]. The flipped classroom supports various learning styles with its adaptable methods and promotes peer collaboration, enhancing communication skills and community building among students [29, 30]. However, its effective implementation requires careful planning, strong infrastructure, and significant educator training to develop engaging content and manage classroom interactions [31, 32]. While the flipped model meets diverse educational needs and fosters an engaging environment, institutions must provide adequate support and resources to maximize its benefits [33]. This model is well-suited for modern educational reforms, enhancing both the teaching experience and learning outcomes.

Research identifies significant benefits of the flipped classroom model, including enhanced student-centered learning and autonomy, increased active engagement, and support for differentiated instruction to accommodate diverse learning paces and styles [34]. Students in flipped classrooms often report higher satisfaction and improved outcomes, enjoying the flexibility to learn at their own pace and receiving more personalized attention during class [35, 36]. This approach has also been shown to boost academic performance, particularly in test scores and critical thinking and problem-solving skills. However, the model has drawbacks, such as its dependency on technology, which can widen the educational divide for students lacking digital access [37]. Its success depends heavily on student motivation and preparedness; without these, the effectiveness of classroom activities drops significantly [38]. Teachers face challenges too, including the substantial effort required to create and update engaging online materials [26, 32]. Additionally, some students resist the flipped model, preferring traditional instruction and struggling with the self-directed aspects of the approach, which can impede their adjustment to active learning environments [11, 39].

Despite these challenges, the potential of the FCM to transform educational experiences is immense, particularly in fostering environments that cater to diverse learning needs and preparing students for collaborative and interactive professional settings [24, 27]. Educational institutions adopting this model should address technological and motivational barriers and provide adequate support and training for teachers to optimize the benefits of flipped learning [33, 40].

C. FCM in ESL Classroom

Abdullah *et al*. [41] examined the effectiveness of the Flipped Classroom Model (FCM) on reducing English as a Foreign Language (EFL) learners' anxiety in speaking performance at Buraimi University with 27 Omani undergraduate students. The research utilized a mixed-methods approach, where the Anxiety in English Speaking Performance Questionnaire (AESPQ) administered at three different stages pre, midway, and post the implementation of FCM which revealed significant reductions in anxiety levels. Qualitative data from focus group interviews and reflective journals supported these findings, indicating an overall decrease in anxiety and improved attitudes towards English speaking activities. The study highlights the effectiveness of FCM in reducing speaking anxiety and fostering a more engaging and supportive learning environment for EFL students. Similarly, Phoeun and Sengsri [42] analyzed the impact of integrating a flipped classroom with Communicative Language Teaching

(CLT) on the English-speaking abilities of undergraduate students at the Royal University, Cambodia. This mixed-method research, involving pre- and post-tests on speaking, grammar, and vocabulary along with observations of 21 freshmen, showed significant enhancements in students' speaking abilities and their attitudes toward learning English. The findings revealed that combining flipped instruction with CLT activities effectively improved both speaking skills and overall learning outcomes, suggesting that English language educators in Cambodia should adopt this integrated approach to optimize language learning. Furthermore, Öztürk and Çakıroğlu [43] analyzed the influence of integrating self-regulated learning approaches in a flipped classroom context on the advancement of foreign language capabilities using a quasi-experimental strategy. The analysis classified participants into two primary cohorts: an experimental team that practiced self-regulated learning strategies within a flipped classroom framework and a control team that took part in traditional flipped classroom methods. Findings indicated that the experimental cohort exhibited a notable enhancement in foreign language competencies, including speaking, reading, writing, and grammar; however, no significant discrepancies were noted in listening skills between the two groups. This study highlights the efficacy of self-regulated learning strategies in fostering holistic foreign language acquisition within flipped classroom environments. Additionally, Chen and Hwang [44] investigated the impact of a concept mapping-based flipped learning approach on the English-speaking performance, critical thinking awareness, and speaking anxiety of EFL students. In a quasi-experimental study with 72 learners in northern Taiwan, researchers found that concept mapping significantly improved English-speaking performance and critical thinking, and also reduced speaking anxiety. The study identified a positive correlation between concept mapping and both learning performance and critical thinking, alongside a negative relationship with speaking anxiety, indicating that concept mapping within a flipped learning environment effectively enhances EFL learners' speaking skills and reduces anxiety. Moreover, Wu and Wang [45] examined the integration of artificial intelligence with the flipped classroom model in English listening and speaking courses at Dalian University of Science and Technology. The study involved 31 English majors and utilized AI to simulate classroom scenarios over a 16-week period, resulting in significant improvements in students' self-management learning abilities and their English listening and speaking scores. The research also noted high student acceptance and increased engagement, which contributed to enhanced performance and deeper understanding of English. This underscores the potential of combining AI with flipped learning to optimize language learning outcomes.

Makruf *et al*. [46] investigated the effect of flipped learning on communicative competence among 40 English learners at UIN Raden Mas Said Surakarta, Indonesia, comparing flipped and non-flipped classrooms. The study found that students in flipped classrooms, who used Google Classroom for material delivery, significantly improved in communicative competence compared to those in non-flipped classrooms, as shown by Discourse Completion Tasks and Technology Acceptance Model questionnaires. Additionally, students reported positive views on the learning activities and the effectiveness of Google Classroom, highlighting the benefits of flipped learning in enhancing English communicative skills. Moreover, Fischer & Yang [47] examined the impact of synchronous online collaboration in a flipped classroom setting on oral English skills among 54 undergraduate business students at a Taiwanese university over 14 weeks. The study involved three groups: a Proposed Flipped Group (PFG) with synchronous activities, a Regular Flipped Group (RFG), and a Traditional Class (TC). Results showed that the PFG significantly outperformed both the RFG and the TC in oral English performance, with the TC also surpassing the RFG. This emphasizes the effectiveness of synchronous online activities in enhancing oral English skills in flipped classrooms. In addition, Kusuma *et al*. [48] studied the effects of incorporating e-portfolios within flipped classroom settings on students' speaking performance and learning engagement conducted at Universitas Pendidikan Ganesha in Indonesia. This study encompassed a sample of 63 twelfth-grade learners, who were systematically allocated into experimental and control groups. The study employed a comprehensive amalgamation of oral proficiency evaluations and structured interviews to facilitate data acquisition. The findings demonstrated that the integration of e-portfolios within flipped classroom paradigms markedly enhanced students' speaking competencies. Moreover, the participants manifested active engagement across behavioral, cognitive, and affective domains. Also, Hashemifardnia *et al*. [49] explored the effects of flipped instruction on speaking complexity, accuracy, and fluency (CAF) among 60 Iranian intermediate EFL learners using a quasi-experimental design. The study found that the experimental group, which received flipped instruction, significantly excelled over the control group in all CAF aspects. Additionally, participants in the experimental group reported positive responses to the flipped instruction, highlighting its benefits in enhancing speaking skills. These results confirm the effectiveness of the flipped classroom model in boosting speaking proficiency among Iranian EFL learners. Besides, Irianti *et al*. [50] investigated the flipped classroom model's impact on public speaking skills among 66 English Language Education students at a private Indonesian college. Their quasi-experimental study revealed that the model significantly enhanced public speaking performance, especially for students with higher critical thinking levels, compared to traditional teaching methods. This research demonstrates the flipped classroom's ability to effectively improve public speaking skills and foster critical thinking in a structured learning environment.

Adhami and Taghizadeh [51] investigated the integration of inquiry-based learning and computer-supported collaborative learning within a flipped classroom model, assessing its impact on the academic writing of railway engineering students at Iran University of Science and Technology. The study divided 61 undergraduate students into three groups: integrated flipped, conventional flipped, and traditional non-flipped. The integrated flipped group, utilizing Edmodo and Google Docs, significantly excelled in grammar and fluency. Additionally, this group reported enhanced engagement, motivation, and reduced anxiety

compared to traditional methods. Irianti *et al*. [50] explored the flipped classroom model's effect on public speaking performance, correlating with students' critical thinking levels. Their study of 66 students from a private college in Indonesia found that the flipped classroom significantly boosted public speaking skills, particularly when aligned with students' critical thinking capabilities. Fisher *et al*. [52] reviewed 40 primary studies on flipped learning for teaching EFL in higher education, noting both strengths and areas lacking robust evidence of effectiveness, with some promising results in idiomatic knowledge and higher-order thinking skills. Baig and Yadegaridehkordi [53] conducted a systematic review on flipped classrooms in higher education, emphasizing the essential role of educational technologies and interactive learning activities in enhancing learning outcomes. Fallah and Ghalibafan [54] assessed the flipped classroom's impact on language achievement among engineering students in Tehran, finding significant improvements in language skills and student attitudes toward flipped learning. These studies collectively highlight the flipped classroom's potential to enhance various educational outcomes through innovative, student-centered approaches. Moreover, Kanwal [55] found that students in the flipped classroom model showed significant improvements in English writing proficiency, particularly in the use of inflectional morphemes, compared to those in traditional classroom settings. These results highlight the flipped learning model's effectiveness in enhancing grammar skills among EFL students, with participants in the flipped classroom consistently achieving higher scores in grammar proficiency.

Santhanasamy and Yunus [56] conducted a systematic review across 39 studies assessing the flipped classroom model's effectiveness on ESL learners' speaking skills. Their findings showed major support for self-regulated learning, enhanced interactions between students and teachers, increased peer communication, and elevated student motivation through engaging, learner-centered activities. Notably, the review demonstrated that students in flipped classrooms often achieve superior speaking outcomes and improved academic performance compared to those in traditional settings, highlighting the model's ability to foster an active, supportive learning environment conducive to developing ESL speaking skills. Complementing this, Vitta and Al-Hoorie, [57] performed a meta-analysis on 56 studies involving 4,220 participants, which showed that the flipped classroom model significantly outperforms traditional approaches in L2 learning. This analysis found that flipped classrooms had a substantially higher effect size in enhancing language learning outcomes across various skills, although the impact varied depending on the learners' proficiency levels and the specific language skills being developed. Together, these studies underscore the pedagogical value of the flipped classroom in creating more effective language learning environments and enhancing learner engagement and performance in ESL and L2 contexts.

Although the flipped classroom model has been globally recognized for its success in enhancing language skills, there remains a significant research gap concerning its effects on the speaking skills including fluency, accuracy, and pronunciation of engineering students. This gap highlights the need for particular research to assess flipped classroom strategies specifically aimed at improving the speaking abilities of engineering students in ESL contexts.

III. Aims of the Study

The present study evaluates the effectiveness of the flipped classroom model in fostering the speaking abilities of engineering students engaged in English as a Second Language (ESL) learning. It particularly aims to analyze the impact of this pedagogical strategy on critical dimensions of language proficiency, encompassing fluency, accuracy, and pronunciation. Through the exploration of these elements, the study aspires to ascertain the potential of the flipped classroom for the enhancement of vital communicative competencies within an engineering educational framework, thereby furnishing significant insights for the advancement of ESL pedagogy tailored for prospective engineers. The efficacy of the flipped classroom model will be assessed through the following three research questions:

1) Does the flipped classroom model demonstrate a statistically significant advantage over the Communicative Language Teaching Approach in improving the speaking abilities such as fluency, accuracy, and pronunciation of engineering students?
2) How does the flipped classroom model, compared to the Communicative Language Teaching Approach impact the development of fluency, accuracy, and pronunciation among engineering students, as measured by pre-and post-tests?
3) To what extent does the flipped classroom model lead to significant improvements in fluency, accuracy, and pronunciation among engineering students compared to the Communicative Language Teaching Approach, as evidenced by post-test scores?

IV. Methodology

A. Participants and Sampling

The study included 112 first-year engineering students aged 19 to 21, enrolled at a private college in Greater Noida, India. These students were not majoring in English. The group comprised 88 males and 24 females. The participants belonged to different technical branches of Engineering. Their English proficiency levels of the participants ranged from beginner to intermediate, as determined during the pretest. Participants were allocated into two distinct groups: experimental and control, utilizing a process of random sampling following to the pretest. The sampling methodology entailed the selection of participants in a manner that afforded each individual an equivalent probability of being assigned to either group, thereby guaranteeing that the sample groups accurately reflected the characteristics of the larger population [58, 59]. All participants were native Hindi speakers with heterogeneous educational backgrounds. Consent was taken from each participant prior to the study. All participants had been learning English since childhood. None of the participants had traveled abroad for education, positioning English as a second language in their academic profiles.

B. Treatment

The treatment for both the experimental and control groups was delivered by the first author in a language lab, with each session lasting 1 hour and 40 minutes and occurring three days a week. This schedule spanned an 8-week period, providing exposure to the educational approaches: flipped classroom for the experimental group and communicative language teaching for the control group (see Fig. 1). This duration and frequency were carefully chosen to ensure adequate time for the students to engage deeply with the instructional methods and to practice and internalize the language skills targeted by the study.

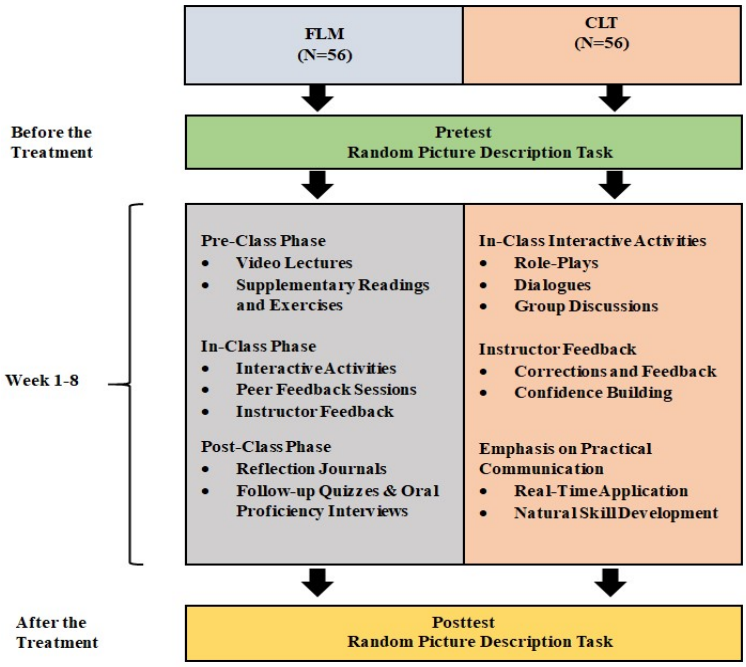

Fig. 1. The design of the study.

The treatment for the experimental group was based on the Flipped Classroom Model, aimed at enhancing their speaking skills in fluency, accuracy, and pronunciation. This model restructures the traditional teaching approach setting by moving direct instruction outside the classroom, thereby transforming class time into an opportunity for interactive and practical application of speaking skills. Initially, pre-class content delivery involved students watching video lectures that addressed key linguistic concepts and speaking techniques. This component supported self-guided learning, allowing students to engage with the material asynchronously and at their own pace outside of class [33, 60]. To supplement the videos, students completed related readings and practice exercises, preparing them to actively participate in class and effectively consume class time for practical learning activities [13, 61]. During class sessions, students engaged in interactive exercises such as role-plays, group discussions, and presentations employed to improve their speaking abilities within a supportive and feedback-rich setting. These activities were integral for students to practice and refine their language skills [62]. Peer feedback sessions were also incorporated, enabling students to give and receive feedback on pronunciation, accuracy, and fluency, which not only helped identify improvement areas but also promoted a collaborative learning atmosphere [63]. Instructors provided feedback during and after these activities, focusing on error correction and offering strategies to enhance speaking skills, which are essential for students to make precise improvements and apply feedback effectively [64]. In the post-class phase, students completed reflection journals to monitor and evaluate their speaking progress, aiding in the internalization of feedback and development of metacognitive skills necessary for language learning [65]. Follow-up quizzes and oral proficiency interviews further assessed their grasp and application of the taught concepts. These assessment tools were critical for providing feedback that helped students track their learning and allowed instructors to evaluate the effectiveness of instructional strategies [66]. Overall, the combination of reflection journals and targeted assessments cultivated a comprehensive learning environment that not only improved language comprehension but also ensured the practical application of language skills.

In the control group, treatment using the Communicative Language Teaching (CLT) approach focused on enhancing students' speaking skills in fluency, accuracy, and pronunciation through interactive and practical communication. Activities such as role-plays, dialogues, and group discussions simulated real-life scenarios, encouraging spontaneous use of English. This approach prioritizes effective communication with instructors providing corrections and feedback to maintain conversation flow and build language confidence. The goal was to improve students' ability to use English functionally in real-time interactions, embodying CLT's emphasis on language as a practical communication tool and fostering an environment where students can naturally develop their speaking skills.

The content was carefully chosen for experimental and control group based on its relevance to the speaking demands of engineering professionals, emphasizing terminology and communicative situations specific to engineering fields. This approach is supported by research indicating that content-specific language instruction significantly enhances

learning outcomes by making the material more applicable and engaging for students [67].

C. Tools

Data were collected through pretests and posttest at the start and end of the intervention, using the same conditions but different prompts to measure the impact of the interventions on participants' English-speaking skills. Participants in both the experimental and control groups were required to describe a randomly selected picture from a set of ten, within a three-minute timeframe, focusing on fluency, accuracy, and pronunciation. The sessions were recorded using a high-quality digital audio recorder to capture detailed aspects of each participant's speech. This consistent assessment approach across the tests ensured that changes in the participants' oral English skills were measured accurately.

D. Measures

The speaking performances of the participants were evaluated based on three dimensions: fluency, accuracy and pronunciation employing the assessment framework derived from Sun *et al*. [68] study. Before the commencement of the experiment, two evaluators underwent training to assess these particular components. Throughout the evaluation process, all audio-recordings were audio-recorded and successively assessed by two raters. Accuracy was assessed on a scale from 0 (incorrect/irrelevant) to 1 (correct/relevant). The process of assessing fluency involved counting the sentences produced, utilizing a scoring framework that varied from 0 (indicating no sentences), 1 (for a single sentence), 2 (for the creation of two to three sentences), and 3 (for the production of four or more sentences). Pronunciation was scored on how clear and comprehensible the spoken English was, from 0 (incomprehensible) to 1 (comprehensible). This structured and detailed evaluation method ensured assessment of each participant's speaking proficiency, providing robust and reliable results.

V. Data Analysis

The study's data analysis was conducted using SPSS 18.0, focusing on quantitative techniques. Initially, an Analysis of Variance (ANOVA) assessed differences between the experimental and control groups. Subsequent t-tests examined if there were significant improvements in speaking skills accuracy, fluency, and pronunciation from the pretest to the posttest for each group. Further, to explore the impact of the interventions, gains in scores for each speaking aspect were calculated for both groups, followed by subtract to analyze these changes from pretest to posttest, thereby evaluating the effectiveness of the interventions.

VI. Results

The analysis of variance conducted to address the first research question between the experimental and control groups focused on three measures: Accuracy, Fluency, and Pronunciation (Table 1). For Accuracy, the experimental group had a mean score of 13.86 (SD = 0.686) compared to the control group's mean of 14.4 (SD = 0.582), resulting in a non-significant F-statistic of 2.808 (p = 0.234), indicating that the intervention did not significantly affect accuracy. In contrast, Fluency scores were notably higher in the experimental group (Mean = 17.01, SD = 2.079) than in the control group (Mean = 10.26, SD = 0.887), with a significant F-statistic of 0.348 (p = 0.001), highlighting the intervention's effectiveness in improving fluency. Pronunciation scores showed minimal differences between the experimental (Mean = 11.07, SD = 1.198) and control groups (Mean = 10.53, SD = 1.313), with an F-statistic of 0.872 and a p-value of 0.498, suggesting no significant impact on pronunciation skills. Thus, while the intervention significantly enhanced fluency, it did not yield similar benefits for accuracy or pronunciation, pointing to the need for targeted strategies that specifically address various aspects of language proficiency within educational settings.

Table 1. Analysis of variance of the groups

Measures	Experimental Group		Control Group		F	*p*
	Mean	*SD*	Mean	*SD*		
Accuracy	13.86	0.686	14.4	0.582	2.808	0.234
Fluency	17.01	2.079	10.26	0.887	0.348	0.001*
Pronunciation	11.07	1.198	10.53	1.313	0.872	0.498

*Refers to the value which is statistically significant

Addressing the second research question regarding how the Flipped Classroom Model (Experimental) and the Communicative Language Teaching Approach (Control group) differentially affect outcomes across pre-tests and post-tests, the data revealed significant variations in mean scores for fluency, accuracy, and pronunciation between the two different teaching methods (see Table 2).

Fluency: According to the data, the mean fluency score in the Experimental group increased from 1.44 to 15.57, while in the Control group, it rose from 1.8 to 8.46. This substantial variation in mean scores demonstrates that the Flipped Classroom Model significantly enhances fluency more than the Communicative Language Teaching Approach.

Accuracy: The mean accuracy scores also varied significantly, with the Experimental group's scores rising from 4.86 to 9.00, compared to the Control group, which increased from 6.21 to 8.19. This variation indicates a more pronounced improvement in accuracy within the Experimental group, underscoring the effectiveness of the Flipped Classroom Model in fostering accurate language use.

Pronunciation: For pronunciation, the mean score in the Experimental group improved from 2.7 to 8.37, whereas in the Control group, it went from 3.33 to 7.2. The greater increase in the Experimental group's scores suggests a slightly more effective impact of the Flipped Classroom Model on enhancing pronunciation skills.

These variations in mean scores across fluency, accuracy, and pronunciation highlighted the Flipped Classroom Model's capacity to produce more significant improvements in language proficiency compared to the traditional Communicative Language Teaching Approach, aligning with the outcomes posed by the second research question. This

suggests that the interactive, student-centered learning environment of the Flipped Classroom is more conducive to developing comprehensive language skills.

Table 2. Descriptive statistics and T-test results, pretest, and posttest

Groups	Measures	Pretest Mean	*SD*	Posttest Mean	*SD*	*t*	*p*
Control Group	Accuracy	6.21	0.321	8.19	0.261	2.758	<0.014*
	Fluency	1.8	0.278	8.46	0.609	4.785	<0.001*
	Pronunciation	3.33	0.51	7.2	0.803	4.17	<0.001*
Experimental Group	Accuracy	4.86	0.303	9	0.383	5.532	<0.001*
	Fluency	1.44	0.431	15.57	0.639	10.262	<0.001*
	Pronunciation	2.7	0.304	8.37	0.498	4.117	<0.001*

*Refers to the value which is statistically significant

The analysis addressing the third research question of language proficiency gains demonstrated that the Flipped Classroom Model significantly outperforms the Communicative Language Teaching Approach in post-test results (see Table 3). In the experimental group, accuracy, fluency, and pronunciation showed gains of 4.14, 14.13, and 5.67 respectively. Comparatively, the control group, which employed traditional teaching methods, displayed smaller increases with gains of 1.98 in accuracy, 6.66 in fluency, and 3.87 in pronunciation. This substantial difference in outcomes, especially notable in the fluency measure where the experimental group's gain more than doubled that of the control group, clearly indicates that the Flipped Classroom Model leads to greater improvements in all aspects of language proficiency. These results affirmatively answer the research question, showcasing the Flipped Classroom Model's effectiveness in producing significant variations and enhanced gains in linguistic skills compared to the traditional approach.

Table 3. Significant variations and enhanced gains in linguistic skills across groups

Groups	Measures	Pretest Mean	Posttest Mean	Gain
Control Group	Accuracy	6.21	8.19	1.98
	Fluency	1.8	8.46	6.66
	Pronunciation	3.33	7.2	3.87
Experimental Group	Accuracy	4.86	9	4.14
	Fluency	1.44	15.57	14.13
	Pronunciation	2.7	8.37	5.67

VII. Discussion

The findings from the study indicate that the Flipped Classroom Model significantly improved language proficiency across all measures i.e., accuracy, fluency, and pronunciation when compared to the Communicative Language Teaching Approach. The Flipped Classroom Model not only yielded the most considerable gains in fluency, rising from 1.44 to 15.57 compared to the control's increase from 1.8 to 8.46, but also demonstrated superior improvements in accuracy, with a gain of 4.14 against the control's 1.98. Pronunciation enhancements were also more pronounced in the experimental group, improving from 2.7 to 8.37, in contrast to the control group's increase from 3.33 to 7.2. These results collectively affirm the Flipped Classroom Model's effectiveness in enhancing all key aspects of language proficiency more robustly than the traditional teaching approach.

The notable advancements observed with the Flipped Classroom Model can be ascribed to several fundamental components. The model's emphasis on autonomous pre-class preparation empowers students to interact with educational resources at their individual pace, which proves particularly beneficial for intricate language acquisition as it permits adequate time for cognitive processing and comprehension [69]. In the classroom setting, the emphasis transitions to participatory learning methodologies, which are exceedingly effective for enhancing fluency and pronunciation through immediate practice and prompt feedback from both peers and educators [70]. Moreover, the flipped classroom model fosters an elevated degree of student involvement and interaction, which empirical studies indicate are essential for language acquisition, especially in the enhancement of grammatical precision and skills [71]. The incorporation of technology within flipped classrooms additionally accommodates various learning preferences and offers visual and auditory materials that bolster language learning, particularly in the realm of pronunciation [72]. This pedagogical strategy guarantees a more enriching and interactive educational experience, leading to significant advancements across all facets of language proficiency. Furthermore, the cooperative aspect of classroom activities within the flipped classroom paradigm fosters profound learning experiences and enables learners to cultivate essential linguistic competencies in a supportive and interactive setting [73]. This integration of self-directed study with collaborative classroom engagements successfully narrows the divide between theoretical understanding and practical implementation, thereby further augmenting educational outcomes in areas such as fluency, accuracy, and pronunciation.

This study reveals the noteworthy performance of the Flipped Classroom Model, supplying considerable empirical validation for Vygotsky's social constructivist framework, which asserts that cognitive development is distinctly supported through social interaction [16]. This approach employs Vygotsky's notion of the zone of proximal development, suggesting that learners can attain superior results within a collaborative setting than when engaging in solitary work, a tenet that is fundamental to constructivist educational frameworks [19]. Notably, the cohort subjected to the experimental conditions displayed marked improvements in fluency, accuracy, and pronunciation. This outcome underscores how the Flipped Classroom Model fosters deeper linguistic and cognitive skills by promoting active engagement, critical thinking, and peer-to-peer exchanges that facilitate meaningful learning experiences [17, 74]. Such enhancements align with the theory's emphasis on

scaffolding provided by more knowledgeable others, which in the flipped context, are often peers as well as the teacher [75]. These interactions not only aid in the application of new knowledge but also in its retention and refinement, effectively demonstrating Vygotsky's assertion that higher-order functions develop first on a social level and later on an individual level [76]. The findings derived from this investigation, consequently, not only reinforce the significance of Vygotsky's theoretical framework within contemporary pedagogical approaches but also underscore the imperative of constructing educational settings that leverage the advantages of social interactions to enhance academic results [77–79].

The findings from this study strongly validate the efficacy of the Flipped Classroom Model in enhancing language proficiency across accuracy, fluency, and pronunciation, echoing a growing body of research that supports the effectiveness of flipped instructional environments in improving educational outcomes [13, 26]. This study's significant gains in fluency align with Hung's [15] observations that flipped classrooms provide substantial speaking practice during class, which is critical for language acquisition as supported by task-based learning theories [80]. Moreover, the improvements in accuracy and pronunciation noted in the experimental group are consistent with findings from Roehl, Reddy, and Shannon [24], who suggest that the preparatory activities characteristic of flipped learning allow for more efficient in-class sessions focused on skill refinement. This methodology leverages Vygotsky's [16] assertion within his social constructivist theory that deeper cognitive and linguistic development occurs through active, scaffolded participation in social contexts [17]. Additionally, the notable enhancements in pronunciation are corroborated by Lee and Wallace [81], who noted the benefits of personalized feedback possible in flipped classrooms feedback that traditional settings struggle to provide due to time constraints. This personalized teaching approach is effective in addressing individual linguistic needs, thereby enhancing pronunciation, a key component for language mastery emphasized by Derwing and Munro [6] who stress the importance of targeted pronunciation instruction.

Overall, these findings not only align with but also expand upon existing literature by demonstrating that the Flipped Classroom Model is highly effective across all fundamental language proficiency areas. This effectiveness suggests a scalable model for language education, reiterating the model's adaptability and potency in fostering substantial educational improvements [33]. Such outcomes strongly advocate for the integration of flipped learning strategies within language teaching methodologies, further cementing its role as a transformative educational practice.

VIII. Conclusion

The effectiveness of the Flipped Classroom Model (FCM) for enhancing English language proficiency among engineering students in ESL contexts has yielded significant insights. The results conclusively demonstrate that FCM, with its emphasis on pre-class preparation and interactive, student-centered classroom activities, significantly outperforms traditional teaching methods in developing key language skills. The research highlights the practical implications of these findings, suggesting that adopting the FCM can lead to substantial improvements in how engineering students communicate complex technical information. This is crucial for their success in the global workforce. The application of the FCM not only enhances students' linguistic abilities but also prepares them to effectively engage in the multicultural and multidisciplinary settings they are likely to encounter in their professional lives. Furthermore, the study's outcomes contribute to academic discourse by providing empirical support for a shift towards more dynamic and student-driven learning environments in technical education. The study additionally pinpoints prospective avenues for following analysis, particularly the examination of the Flipped Classroom Model's (FCM) influence on various cognitive and social competencies beyond mere language proficiency. Further investigations might assess the enduring ramifications of flipped learning on both academic and vocational achievement, and its efficacy across diverse cultural environments, thereby yielding more profound understandings of the universal relevance of this pedagogical framework. Furthermore, this study emphasizes the necessity for educational policymakers and curriculum designers to adopt more integrative and participatory methodologies in pedagogy. By integrating strategies such as the FCM, educational institutions can more effectively prepare students with the competencies essential for success in an increasingly intricate and interconnected global landscape.

In consideration of these results, it is advisable for institutions of higher education, especially those focused on technical and engineering fields, to implement and modify flipped classroom methodologies to improve their academic programs. This approach would not only synchronize teaching practices with modern pedagogical standards but also guarantee that students are sufficiently equipped to tackle the requirements and obstacles of their future professions. Future investigations should build upon the outcomes of this research by assessing the enduring impacts of the Flipped Classroom Model across a variety of educational contexts and disciplines to substantiate and extend its applicability. Furthermore, comparative analyses between diverse configurations of the flipped classroom and alternative innovative pedagogical strategies could yield profound insights into enhancing educational results. Research should also examine the particular elements of the flipped model that most significantly influence student engagement and academic performance, such as the use of digital resources and interactive classroom activities. Additional scrutiny of the effects on various student demographics, encompassing different age categories, learning preferences, and cultural contexts, would enhance our comprehension of the model's flexibility and inclusiveness. Lastly, the incorporation of qualitative methodologies such as interviews and focus group discussions could provide a more detailed understanding of the perceptions held by students and educators, thus facilitating more customized and effective applications of the flipped classroom methodology. This investigation serves as a foundational reference for subsequent research and discourse

on the evolution of instructional strategies within engineering education and beyond, establishing a benchmark for the innovative incorporation of communication skills into technical curricula. Such forward-thinking educational approaches are essential for fostering graduates who are not only technically skilled but also proficient communicators and collaborators in the global economy.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Dr. Sohaib and Farhan Ahmad supervised the whole research development and took the lead in writing the manuscript. Dr. Amir and Dr. Tamer Tawfik developed the theoretical formalism and wrote the manuscript with support from Dr. Sarfaraj, Wahaj Unnisa Warda and Dr. Farhan. All authors provided critical feedback and helped shape the research, analysis, and manuscript.

FUNDING

This study is supported via funding from Prince Sattam Bin Abdulaziz University project number (PSAU/2025/R/1447).

REFERENCES

[1] D. Crystal, *English as a Global Language*, Cambridge University Press, 2003.

[2] D. Graddol, "English next," British Council, 2006.

[3] S. Alam and M. Usama, "Does e-feedback impact minimizing ESL writing errors? an experimental study," *Int. J. Emerg. Technol. Learn.*, vol. 18, no. 4, pp. 156–169, 2023. https://doi.org/10.3991/ijet.v18i04.36349

[4] M. Modiano, *EIL, Native-Speakerism and the Failure of European ELT*, 2009.

[5] J. Jenkins, *English as a Lingua Franca: Attitude and Identity*, Oxford University Press, 2007.

[6] T. M. Derwing and M. J. Munro, "Second language accent and pronunciation teaching: A research-based approach," *TESOL Quarterly*, vol. 39, no. 3, pp. 379–397, 2005.

[7] G. O. Hellekjær, "Academic English reading proficiency at the university level: a Norwegian case study," *Reading in a Foreign Language,* vol. 21, no. 2, pp. 198–222, 2009.

[8] D. Larsen-Freeman, *Teaching Language: From Grammar to Grammaring*, Thomson Heinle, 2003.

[9] S. Alam, M. R, Karim, and F. Ahmad, "Process drama as a method of pedagogy in ESL classrooms: articulating the inarticulate," *Journal of Education Culture and Society*, vol. 11, no. 1, pp. 255–272, 2020. https://doi.org/10.15503/jecs2020.1.255.272

[10] M. Swain and S. Lapkin. "Task-based second language learning: The uses of the first language," *Language Teaching Research*, vol. 4, no. 3, pp. 251–274, 2000.

[11] M. J. Lage, G. J. Platt, and M. Treglia, "Inverting the classroom: A gateway to creating an inclusive learning environment," *The Journal of Economic Education*, vol. 31, no. 1, pp. 30–43, 2000.

[12] B. Tucker, "The flipped classroom," *Education Next*, vol. 12, no. 1, pp. 82–83, 2012.

[13] J. Bergmann and A. Sams, *Flip Your Classroom: Reach Every Student in Every Class Every Day*, International Society for Technology in Education, 2012.

[14] S. Alam, "Efficacy of mixed model instruction to improve English language skills of business management students: An experimental study," *Journal of Education Culture and Society*, vol. 15, no. 2, pp. 387–402, Sep. 2024. doi: 10.15503/jecs2024.2.387.402

[15] H. T. Hung, "Flipping the classroom for English language learners to foster active learning," *Computer Assisted Language Learning*, vol. 28, no. 1, pp. 81–96, 2015.

[16] L. S. Vygotsky, *Mind in Society: The Development of Higher Psychological Processes*, vol. 86, Harvard University Press, 1978.

[17] V. John-Steiner and H. Mahn, "Sociocultural approaches to learning and development: A Vygotskian framework," *Educational Psychologist*, vol. 31, no. 4, pp. 191–206, 1996.

[18] F. Ahmad and S. Alam, "Role of achievement motivation and metacognitive strategies use for defining self-reported language proficiency," *World Journal of English Language,* vol. 14, no. 6, pp. 77–86, 2024. https://doi.org/10.5430/wjel.v14n6p77

[19] S. Chaiklin, "The zone of proximal development in Vygotsky's analysis of learning and instruction," *Vygotsky's Educational Theory in Cultural Context*, vol. 1, no. 2, pp. 39–64, 2003.

[20] A. Walqui, "Scaffolding instruction for English language learners: A conceptual framework," *International Journal of Bilingual Education and Bilingualism*, vol. 9, no. 2, pp. 159–180, 2006.

[21] S. Alam, H. F. Albozeidi, B. O. S. Al-Hawamdeh, and F. Ahmad, "Practice and principle of blended learning in ESL/EFL pedagogy: strategies techniques and challenges," *International Journal of Emerging Technologies in Learning (ijet)*, vol. 17, no. 11, pp. 225–241, 2022. https://doi.org/10.3991/ijet.v17i11.29901

[22] J. Bishop and M. A. Verleger, "The flipped classroom: A survey of the research," in *Proc. 2013 ASEE Annual Conference & Exposition*, pp. 23–1200, 2003.

[23] S. Alam, M. Usama, Alam, M. Moshabbir, I. Jabeen, and F. Ahmad, "Artificial intelligence in global world: A case study of Grammarly as e-tool on ESL learners' of Darul Uloom Nadwa," *International Journal of Information and Education Technology,* vol. 13, no. 11, pp. 1741–1747, 2023. doi: 10.18178/ijiet.2023.13.11.1984

[24] A. Roehl, S. L. Reddy, and G. J. Shannon, "The flipped classroom: An opportunity to engage millennial students through active learning strategies," *Journal of Family and Consumer Sciences*, vol. 105, no. 2, p. 44, 2013.

[25] L. S. Vygotsky, "The genesis of higher mental functions," in J. V. Wertsch (Ed.), *The Concept of Activity in Soviet Psychology*, pp. 144–188, 1981.

[26] L. Abeysekera and P. Dawson, "Motivation and cognitive load in the flipped classroom: definition, rationale and a call for research," *Higher Education Research & Development*, vol. 34, no. 1, pp. 1–14, 2015.

[27] J. E. McLaughlin *et al*., "The flipped classroom: A course redesign to foster learning and engagement in a health professions school," *Academic Medicine*, vol. 89, no. 2, pp. 236–243, 2014.

[28] S. Alam, F. Ahmad, and Y. N. Biryukova, "Incorporating artificial intelligence and MALL strategies in EFL classrooms: Interactive pedagogical praxis," *Journal of Education Culture and Society*, vol. 15, no. 1, pp. 181–198, 2024. https://doi.org/10.15503/jecs2024.1.181.198

[29] J. L. Lambert, "Mathematics teachers' attitudes and intentions towards instructional videos as part of a flipped learning model," Doctoral dissertation, University of South Carolina, 2023.

[30] M. B. Gilboy, S. Heinerichs, and G. Pazzaglia, "Enhancing student engagement using the flipped classroom," *Journal of Nutrition Education and Behavior*, vol. 47, no. 1, pp. 109–114, 2015.

[31] S. Alam and A. Hameed, "Teaching concerns in higher education: impact of COVID-19 in pedagogy," *Journal of Education Culture and Society,* vol. 14, no. 1, pp. 318–332, 2023. https://doi.org/10.15503/jecs2023.1.318.332.

[32] R. Talbert and J. Bergmann, *Flipped Learning: A Guide for Higher Education Faculty,* Routledge, 2017

[33] C. Brame, "Flipping the classroom," Vanderbilt University Center for Teaching, 2013.

[34] N. Hamdan, P. McKnight, K. McKnight, and K. M. Arfstrom, "A review of flipped learning," *Flipped Learning Network*, 2013

[35] K. Fulton, "Upside down and inside out: Flip your classroom to improve student learning," *Learning & Leading with Technology*, vol. 39, no. 8, pp. 12–17, 2012.

[36] J. O'Flaherty and C. Phillips, 'The use of flipped classrooms in higher education: A scoping review," *The Internet and Higher Education*, vol. 25, pp. 85–95, 2015.

[37] C. F. Herreid and N. A. Schiller, "Case studies and the flipped classroom," *Journal of College Science Teaching*, vol. 42, no. 5, pp. 62–66, 2013.

[38] J. L. Jensen, T. A. Kummer, and P. D. D. M. Godoy, "Improvements from a flipped classroom may simply be the fruits of active learning," *CBE—Life Sciences Education*, vol. 14, no. 1, pp. 1–12, 2015.

[39] J. F. Strayer, "How learning in an inverted classroom influences cooperation, innovation and task orientation," *Learning Environments Research*, vol. 15, pp. 171–193, 2012.

[40] Z. Zainuddin and S. H. Halili, "Flipped classroom research and trends from different fields of study," *International Review of Research in Open and Distributed Learning*, vol. 17, no. 3, pp. 313–340, 2016.

[41] M. Y. Abdullah, S. Hussin, Z. M. Hammad and K. Ismail, "Exploring the effects of flipped classroom model implementation on EFL learners' self-confidence in English speaking performance," *Recent Advances in Intelligent Systems and Smart Applications*, vol. 295, pp. 223–241, 2021.

[42] M. Phoeun and S. Sengsri, "The effect of a flipped classroom with communicative language teaching approach on undergraduate students' English-speaking Ability," *International Journal of Instruction*, vol. 14, no. 3, pp. 1025–1042, 2021.

[43] M. Öztürk and Ü. Çakıroğlu, "Flipped learning design in EFL classrooms: implementing self-regulated learning strategies to develop language skills," *Smart Learning Environments*, vol. 8, no. 1, p. 2, 2021

[44] M. R. A. Chen, and G. J. Hwang, "Effects of a concept mapping-based flipped learning approach on EFL students' English speaking performance, critical thinking awareness and speaking anxiety," *British Journal of Educational Technology,* vol. 51, no. 3, pp. 817–834, 2020.

[45] S. Wu and F. Wang, "Artificial intelligence-based simulation research on the flipped classroom mode of listening and speaking teaching for English majors," *Mobile Information Systems*, vol. 2021, no. 1, 4344244, 2021.

[46] I. Makruf, H. R. Putra, P. S. Choiriyah, and A. Nugroho, "Flipped learning and communicative competence: an experimental study of English learners," *International Journal of Education in Mathematics, Science and Technology*, vol. 9, no. 4, pp. 571–584, 2021.

[47] I. D. Fischer and J. C. Yang, "Flipping the flipped class: Using online collaboration to enhance EFL students' oral learning skills," *International Journal of Educational Technology in Higher Education*, vol. 19, no. 1, p. 15, 2022.

[48] I. Kusuma, N. W. S. Mahayanti, L. D. S. Adnyani and L. G. R. Budiarta, "Incorporating e-portfolio with flipped classrooms: An in-depth analysis of students' speaking performance and learning engagement," *JALT CALL Journal*, vol. 17, no.2, pp. 93–111, 2021.

[49] A. Hashemifardnia, S. Shafiee, F. E. Rahimi and M. Sepehri, "Effects of flipped instruction on Iranian intermediate EFL learners' speaking complexity, accuracy, and fluency," *Cogent Education*, vol. 8, no. 1, 1987375, 2021.

[50] L. Irianti, A. Faridi, H. Pratama, and Suwandi, "Flipped classroom and critical thinking on public speaking class," *Cogent Education*, vol. 11, no. 1, 2315815, 2024

[51] N. Adhami and M. Taghizadeh, "Integrating inquiry-based learning and computer supported collaborative learning into flipped classroom: Effects on academic writing performance and perceptions of students of railway engineering" *Computer Assisted Language Learning,* vol. 37, no. 3, pp. 521–557, 2024.

[52] R. Fisher, Q. Tran and E. Verezub, "Teaching English as a foreign language in higher education using flipped learning/flipped classrooms: A literature review," *Innovation in Language Learning and Teaching*, vol. 18, no. 4, pp. 332–351, 2024. https://doi.org/10.1080/17501229.2024.2302984

[53] M. I. Baig and E. Yadegaridehkordi, "Flipped classroom in higher education: a systematic literature review and research challenges," *Int J Educ Technol High Educ*, vol. 20, no. 61, 2023. https://doi.org/10.1186/s41239-023-00430-5

[54] M. Fallah and M.S. Ghalibafan, "Language learning revolution: Flipped classroom approach for engineering students," *Teaching and Learning English for Specific Purposes*, vol. 1, no. 2, pp. 35–47, 2024. https://doi.org/10.22034/tlesp.2024.477923.1022

[55] A. Kanwal, "Examining the effect of flipped learning on proficiency in English writing grammar via inflectional morphemes," *Theory and Practice in Language Studies,* vol. 14, no. 4, pp. 1118–1126, 2024.

[56] C. Santhanasamy and M. M. Yunus, "A systematic review of flipped learning approach in improving speaking skills," *European Journal of Educational Research*, vol. 11, no. 1, pp. 127–139, 2022.

[57] J. P. Vitta and A. H. Al-Hoorie, "The flipped classroom in second language learning: A meta-analysis," *Language Teaching Research*, vol. 27, no. 5, pp. 1268–1292, 2023.

[58] A. Bryman, *Social Research Methods*, Oxford University Press, 2016.

[59] M. Usama, S. Alam, S. Tarai, and S. Banu, "The impact of rotation model on minimizing inflectional morphemes errors in English writing: A comparative study of error analysis," *Theory and Practice in Language Studies*, vol. 14, no. 2, pp. 307–318, 2024. doi: 10.17507/tpls.1402.01

[60] M. Usama, S. Alam, A. Hameed, F. Ahmad, and S. Iliyas, "Web-based vs. mixed mode instruction utilizing e-learning via LMS: A comparative study," *International Journal of Information and Education Technology*, vol. 14, no. 4, pp. 612–619, 2024. doi: 10.18178/ijiet.2024.14.4.2084.

[61] S. Alam, M. Usama, A. Hameed, and S. Iliyas, "Analyzing Facebook mobile usage: Efficacy and ESL learners writing proficiency," *International Journal of Interactive Mobile Technologies (iJIM),* vol. 18, no. 3, pp. 1–15, 2024. doi: 10.3991/ijim.v18i03.44959

[62] J. Hattie and H. Timperley, "The power of feedback," *Review of Educational Research*, vol. 77, no. 1, pp. 81–112, 2007.

[63] N. F. Liu and D. Carless, "Peer feedback: The learning element of peer assessment," *Teaching in Higher education*, vol. 11, no. 3, pp. 279–290, 2006.

[64] V. J. Shute, "Focus on formative feedback," *Review of Educational Research*, vol. 78, no. 1, pp. 153–189, 2008.

[65] D. A. Schön, *The Reflective Practitioner: How Professionals Think in Action*, Routledge, 2017.

[66] P.Black and D. Wiliam, "Assessment and classroom learning," *Assessment in Education: Principles, Policy & Practice*, vol. 5, no. 1, pp. 7–74, 1998.

[67] J. Jenkins, *English as a Lingua Franca in the International University: The Politics of Academic English Language Policy*, Routledge, 2013.

[68] Z. Sun, C. H. Lin, J. You, H. J. Shen, S. Qi and L. Luo, "Improving the English-speaking skills of young learners through mobile social networking," *Computer Assisted Language Learning*, vol. 30, no. 3–4, pp. 304–324, 2017.

[69] B. Beg, Amir, S. Alam, R. Kralik and W. U. Warda, "Investigating the efficiency of the rotation model in improving first-year undergraduate ESL learners 'writing: A quasi-experimental study," *World Journal of English Language,* vol. 15, no. 2, pp. 357–367, 2025. https://doi.org/10.5430/wjel.v15n2p357

[70] S. Alam, "Measuring the effects of mobile and social networking technology on the enhancement of English language skills: A comparative study," *International Journal of Interactive Mobile Technologies (iJIM)*, vol. 19, no. 1, pp. 79–92, 2025. https://doi.org/10.3991/ijim.v1 9i01.51427

[71] N. B. Milman, "The flipped classroom strategy: What is it and how can it best be used?" *Distance Learning*, vol. 9, no. 3, pp. 85–87, 2012.

[72] J. O'Flaherty and C. Phillips, "The use of flipped classrooms in higher education: A scoping review," *The Internet and Higher Education*, vol. 25, pp. 85–95, 2015.

[73] B. Tucker, "The flipped classroom," *Education Next*, vol. 12, no. 1, pp. 82–83, 2012.

[74] A. Kozulin, "Psychological tools: A socio-cultural approach to education," *British Journal of Educational Studies*, vol. 48, no. 3, pp. 316–319, 2000.

[75] C. E. Hmelo-Silver, R. G. Duncan and C. A, Chinn, "Scaffolding and achievement in problem-based and inquiry learning: A response to Kirschner, Sweller, and Clark 2006," *Educational Psychologist*, vol. 42, no. 2, pp. 99–107, 2007.

[76] J. P. Lantolf and S. L. Thorne, *Sociocultural Theory and the Genesis of Second Language Development*, Oxford: Oxford University Press, 2006.

[77] M. Ajmal, S. Maqbool, M. Pavlikova, S. Alam, and S. Banu, "Investigating teacher-student emotional dynamics in English language teaching: examining co-regulation techniques and their impact on learning outcomes," *World Journal of English Language*, vol. 15, no. 3, pp. 215–224, 2025. https://doi.org/10.5430/wjel.v15n3p215

[78] M. Swain and S. Lapkin, "Interaction and second language learning: Two adolescent French immersion students working together," *The Modern Language Journal*, vol. 82, no. 3, pp. 320–337, 1998.

[79] S. Alam, "Pedagogical implications in EFL classrooms: A reflective praxis of vocabulary strategies and techniques," *Journal of Language Teaching and Research*, vol. 14, no. 5, pp. 1422–1429, 2023. https://doi.org/10.17507/jltr.1405.31

[80] R. Ellis, *Task-Based Language Learning and Teaching*, Oxford: Oxford University Press, 2003.

[81] G. Lee and A. Wallace, "Flipped learning in the English as a foreign language classroom: Outcomes and perceptions," *TESOL Quarterly*, vol. 52, no. 1, pp. 62–84, 2018

Copyright © 2025 by the authors. This is an open access article distributed under the Creative Commons Attribution License which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited (CC BY 4.0).