Journal of English Language Teaching and Learning

University of Tabriz

Volume 17, Issue 35, 2025

Investigating the Impact of Flipped Classroom Instruction on ESP Students' Reading Comprehension: students' attitudes in the spotlight

Hooshang Khoshsima (Corresponding Author)

English Language Department, Chabahar Maritime University, Chabahar, Iran. E-mail: khoshsima2002@yahoo.com

Ali Beikian

English Language Department, Chabahar Maritime University, Chabahar, Iran. E-mail: a_beikian@cmu.ac.ir

Bahroz Mawlood

English Language Department, University of Guilan, Rasht, Iran. E-mail: baroz.mawlood@gmail.com

ARTICLE INFO:

Received date:
2025.01.01
Accepted date:
2025.02.03

Print ISSN: 2251-7995
Online ISSN: 2676-6876

Keywords:

Active Learning, English for Specific Purposes (ESP), Flipped Classroom, Reading Comprehension, Students' Attitudes

Abstract

The flipped classroom model has gained traction in language education; however, its application within English for Specific Purposes (ESP) remains underexplored. The present study investigates the impact of flipped classroom instruction on ESP students' reading comprehension with a focus on their attitudes toward the model. Adopting a quasi-experimental methodology, the study utilized pretest and posttest assessments alongside a 15-item Likert-scale questionnaire to gather data. The research sample comprised 21 second-semester ESP students from Guilan University majoring in Cellular and Molecular Biology, who engaged in a 10-week intervention. Pre-class preparation included instructional videos and reading materials, while classroom activities centered on group discussions and practical problem-solving tasks. Findings demonstrated a substantial enhancement in posttest scores, validating the approach as effective for improving reading comprehension. The survey results revealed highly positive student attitudes, particularly in terms of engagement, autonomy, and collaborative learning. These findings highlight the potential of the flipped classroom model to address the unique academic requirements of ESP students by blending discipline-specific resources with interactive learning strategies.

Citation: Khoshsima, H; Beikian, A. & Mawlood, B. (2025). Investigating the Impact of Flipped Classroom Instruction on ESP Students' Reading Comprehension: Students' Attitudes in the Spotlight. *Journal of English Language Teaching and Learning*, 17 (35), 209-226. DOI: 10.22034/elt.2025.65251.2732

Introduction

Flipped classrooms have emerged as a transformative approach in education, particularly within the field of language learning. This instructional model has gained significant attention for its potential to modernize teaching methods, aligning with the evolving needs and preferences of learners while fostering academic achievement (Abbasian & Azeez, 2021; Ardi et al., 2023). At its essence, the flipped classroom model shifts part of the instructional process to pre-class activities, allowing students to interact with learning materials before attending in-person sessions (Diningrat et al., 2023).

In practice, this model employs various digital tools and resources to facilitate preparatory learning outside the classroom. Students are given access to instructional content, such as video lectures, audio clips, slideshows, written materials, and interactive online exercises (Abedi et al., 2019; Al-Assaf et al., 2022; Yu, 2022). These materials allow learners to review concepts at their convenience, paving the way for active participation and collaborative learning during classroom interactions. Consequently, the teacher's role transitions from delivering lectures to facilitating activities aimed at reinforcing and expanding students' understanding. These activities may include group discussions, problem-solving exercises, interactive sessions, and practical applications of concepts learned beforehand (Fahmi et al., 2020; Özpinar et al., 2016).

The flipped classroom model offers numerous advantages. Research highlights benefit such as increased learner engagement, improved academic outcomes, enhanced autonomy in learning, stronger teacher-student relationships, and opportunities for critical reflection and deeper exploration of knowledge (Putri & Nurkhamidah, 2023). Studies have also shown its effectiveness in improving various educational outcomes, including better academic achievement (Jafarigohar et al., 2019; Khosravani et al., 2020), increased learner confidence (Kenna, 2014), enhanced engagement and performance (Shamsuddin, 2020), improved reading comprehension (Chavangklang & Suppasetseree, 2018), greater student motivation (Gustian et al., 2023), and strengthened self-directed learning skills (Cuong et al., 2020).

Despite the growing body of research on flipped classrooms, much of the focus has been on general English as Foreign Language (EFL) settings (e.g., Abu Zaid, 2020; Haghighi et al., 2019; Karimi & Hamzavi, 2017; Shahnama et al., 2021). However, limited attention has been paid to its application in English for Specific Purposes (ESP), where reading comprehension differs significantly from general EFL reading. Unlike general English, ESP reading requires learners to engage with discipline-specific texts, comprehend technical vocabulary, and interpret complex structures relevant to their academic or professional fields. These demands necessitate specialized instructional approaches tailored to the linguistic and cognitive challenges of ESP learners. Addressing this gap is critical, as ESP students require instructional methods that align with their specialized needs. This research addresses a critical gap by investigating the impact of flipped classroom instruction on the reading comprehension abilities of Iranian ESP students. The study is structured around two key research questions:

1. Does flipped classroom instruction affect ESP students' reading comprehension when compared to conventional teaching approaches?
2. What are the attitudes of ESP students toward the flipped classroom model?

By addressing these questions, the study aims to deepen understanding of flipped classrooms and their capacity to enhance academic performance within ESP contexts. The findings are expected to contribute valuable insights into both theoretical frameworks and practical teaching methodologies.

Review of the Related Literature

The flipped classroom, often referred to as the "inverted classroom," "blended learning," or simply "the flip," represents a transformative teaching methodology designed to optimize the use of classroom time and enrich the overall learning experience (Bergmann & Sams, 2012). This innovative approach departs from traditional educational models by shifting the delivery of instructional content to a pre-class phase. During this stage, students independently engage with resources such as videos, textual readings, and podcasts, fostering a self-paced learning environment outside of the physical classroom (Al-Abdullatif, 2020). By utilizing digital platforms, educators can distribute these materials efficiently, enabling students to interact with the content at their convenience and at a pace suited to their individual learning needs. This preparatory phase allows students to acquire foundational knowledge before attending class, setting the stage for more interactive and collaborative learning experiences during classroom sessions.

Classroom time in the flipped model is reimagined as a space for dynamic, student-centered activities. Instead of passively receiving information through lectures, learners participate in group discussions, collaborative problem-solving exercises, and peer-to-peer interactions. Within this framework, the teacher transitions from the role of a primary knowledge provider to that of a facilitator, guiding students as they work through activities and clarifying complex concepts from the pre-class materials (Jabri et al., 2022; Prieto et al., 2021). This shift not only redefines the classroom experience but also empowers students to take a more active role in their education, fostering critical thinking and deeper understanding.

The pedagogical shift inherent in the flipped classroom model offers numerous benefits. By offloading direct instruction to pre-class stages, the approach allows educators to repurpose classroom time for engagement-driven, hands-on learning activities (Crothers et al., 2017). This structure enables students to progress at their own pace outside of class, reducing the pressure often associated with real-time content delivery, while teachers gain additional opportunities to focus on interactive and individualized instruction during class time (Fard et al., 2022). Furthermore, the integration of technology in flipped classrooms enhances teacher-student communication, facilitates rich classroom discussions, and encourages the adoption of a diverse array of instructional strategies, catering to varying learning styles and preferences (Keskin, 2022; Rajabi et al., 2021; Ayçiçek & Yelken, 2018).

Central to this model is the shift from teacher-centered to student-centered learning, prioritizing flexibility and active student involvement. In the flipped classroom, the teacher's primary role is to guide discussions, supervise collaborative activities, and provide feedback, rather than merely transmitting knowledge. Conversely, students assume greater responsibility for their learning by preparing for class in advance and actively engaging with peers and the instructor during sessions. This structure contrasts sharply with traditional lecture-based teaching, where the majority of classroom time is spent on content delivery, often leaving little

room for application or practice (Aljarrah et al., 2021; Kanat & Kozikoğlu, 2018). Flipped classrooms, by fostering active participation and creating a seamless connection between pre-class and in-class activities, enhance knowledge retention and promote a more cohesive and integrated learning process (Talan & Batdi, 2020).

A substantial body of research supports the effectiveness of flipped classrooms, particularly in improving reading comprehension. For instance, Yuvita et al. (2022) conducted a study involving 39 university students divided into experimental and control groups. Their findings demonstrated that students in the flipped classroom group significantly outperformed their peers in traditional learning environments in terms of reading comprehension. Similarly, Wulandari et al. (2022) explored the impact of the flipped classroom on 65 senior high school EFL students, observing notable improvements in reading comprehension when the approach was paired with the Jigsaw IV strategy. Both studies underscore the model's capacity to enhance learners' understanding by combining independent study with collaborative activities.

In the specific realm of ESP, flipped classroom models have also shown promising results. Hasanah and Arifani (2020) conducted a quasi-experimental study with 86 accounting students, dividing them into experimental and control groups. The experimental group engaged with pre-class video resources via Telegram, while the control group received traditional instruction. Their findings revealed significant improvements in the reading comprehension of students in the flipped classroom group. Similarly, Hashemifardnia et al. (2018) explored the effectiveness of flipped classrooms among Iranian junior high school students over an eight-session intervention. The study concluded that the flipped model led to markedly better reading comprehension compared to conventional methods.

Further support for the model comes from Abbasian and Azeez (2021), who investigated its impact on elementary and intermediate EFL learners in Erbil, Kurdistan. Their results confirmed that flipped instruction significantly enhanced students' reading comprehension skills. These findings resonate with broader research emphasizing the efficacy of the flipped classroom model in fostering learner engagement and improving comprehension across diverse educational and cultural settings.

Collectively, existing research underscores the substantial potential of flipped classrooms to revolutionize teaching and learning practices. By fostering active student engagement and improving comprehension, this instructional approach has demonstrated its ability to address diverse learning needs across both general and specialized disciplines. Despite these promising outcomes, a notable gap persists regarding its application within specific educational contexts, such as ESP. While the flipped classroom model is widely recognized for its adaptability and effectiveness, further exploration is needed to understand how it can be optimized to meet the highly specialized linguistic and academic requirements of ESP students. This gap points to the need for continued research to evaluate the nuanced implementation and broader implications of flipped classrooms in these contexts.

Research Methodology

Design

This research utilized a fully quantitative approach to evaluate the impact of flipped classroom instruction on the reading comprehension of ESP students and their attitudes toward this

teaching model. The study adopted a One-Group Pretest-Posttest Design, a quasi-experimental framework in which outcomes are assessed twice: once before and once after participants, selected non-randomly, are exposed to the intervention. The methodology included two key phases: a quasi-experimental phase measuring the intervention's impact via pretest and posttest comparisons, and a survey phase gathering quantitative data through a 15-item Likert-scale questionnaire.

Participants and Sampling

The study involved a total of 21 ESP students in their second semester of study at Guilan University, majoring in Cellular and Molecular Biology. All participants were selected based on their similar proficiency levels in reading comprehension, which were verified using scores from standardized English language tests conducted before the study. This step ensured that the sample was relatively homogeneous, reducing variability that could affect the study's outcomes. The participants' ages ranged from 18 to 23 years, and Persian was identified as their native language, making them a linguistically and culturally consistent group for this research.

A convenience sampling technique was employed for participant selection, primarily due to the ease of access to students within the academic environment. Although this non-random sampling method might restrict the ability to generalize the findings to broader populations, it proved advantageous for conducting a focused investigation into the flipped classroom instructional model in the specific setting of Guilan University. This approach allowed the researchers to address the practical challenges of sample accessibility while ensuring that the study design remained feasible and aligned with its objectives. Additionally, the choice of a localized sample facilitated a deeper understanding of the pedagogical implications for similar educational contexts, highlighting the applicability of flipped classrooms in targeted academic environments.

Instruments

The study utilized three primary instruments to collect data, each tailored to measure different dimensions of the research objectives:

A) Reading Comprehension Test A (Pretest): To establish participants' initial reading comprehension levels, a standardized assessment was administered before the intervention began. This test comprised 30 multiple-choice questions based on three carefully selected reading passages. The questions were designed to evaluate a range of reading skills, including the ability to identify main ideas, draw inferences, and comprehend vocabulary in context. Administering this pretest provided a clear baseline for comparison with post-intervention performance, enabling the researchers to measure the effect of the flipped classroom model with greater precision.

B) Reading Comprehension Test B (Posttest): Following the intervention, a posttest was conducted to determine the extent of improvement in participants' reading comprehension abilities. This test was structurally and thematically parallel to the pretest, ensuring an equivalent level of difficulty and alignment with the course content. Both tests were reviewed and validated by a panel of three experts in Teaching English as a Foreign Language (TEFL) to ensure they accurately reflected the curriculum and were appropriate for the participants'

proficiency levels. Each participant was given 45 minutes to complete the assessment, providing a standardized time frame to reduce variability in results due to external factors. This rigorous design ensured that changes in scores could be attributed to the intervention with a high degree of confidence.

C) Likert-Scale Questionnaire: To explore students' attitudes toward the flipped classroom model, the researchers developed a custom 15-item questionnaire in Persian. This instrument was designed to capture a comprehensive range of attitudes toward the instructional model, covering areas such as engagement, satisfaction, perceived benefits, and potential challenges. A five-point Likert scale was employed, with responses ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). To enhance the questionnaire's reliability and validity, a panel of three TEFL specialists reviewed the items for clarity, relevance, and alignment with the study's objectives. Additionally, the instrument underwent a pilot test with five second-semester students who were representative of the target population. Their feedback led to several refinements, such as rephrasing items and simplifying complex terms to improve comprehensibility. The finalized questionnaire achieved a Cronbach's alpha score of 0.85, signifying a high level of internal consistency. For ease of distribution and accessibility, the questionnaire was administered via the Porsall platform, allowing participants to respond online.

Treatment in the Flipped Classroom

The intervention was conducted over 10 weeks and incorporated two primary phases aimed at maximizing student engagement and fostering a comprehensive learning experience:

A) Pre-Class Preparation: The pre-class phase was designed to provide students with the foundational knowledge required for active participation in classroom activities. During this stage, learners were granted access to a variety of instructional resources through an e-learning platform. These materials included video lectures, assigned readings, and interactive online content tailored to introduce and reinforce essential concepts. Students were expected to engage with these resources independently, dedicating approximately 1.5 hours each week to self-paced learning. To ensure accountability and track their progress, quizzes and activity logs were employed. These tools allowed the instructor to monitor students' engagement with the materials, identify areas requiring further clarification, and tailor subsequent in-class sessions accordingly. This preparatory phase emphasized autonomy and set the stage for deeper exploration of the content during class.

B) In-Class Activities: The classroom sessions were structured to transform the learning environment into a hub of collaboration and interaction. Rather than focusing on direct instruction, these sessions were dedicated to group-based tasks that encouraged active participation and critical thinking. Activities included group discussions, where students analyzed and debated the pre-class material, as well as problem-solving exercises that applied the concepts in practical, real-world scenarios. Additionally, guided reading activities were conducted to further refine comprehension and application skills. The instructor's role during these sessions shifted from being a primary content deliverer to serving as a facilitator. This involved observing group interactions, providing constructive feedback, and encouraging peer-to-peer learning. By fostering a supportive and interactive classroom atmosphere, the in-class

phase enabled students to consolidate their understanding of the pre-class material, bridge knowledge gaps, and develop higher-order thinking skills.

Data Collection Procedure

The data collection process was meticulously designed to ensure reliability and validity in capturing the study's key metrics. This multi-step approach systematically evaluated participants' reading comprehension and their attitudes toward the flipped classroom model. The steps are outlined as follows:

A) Pretest Administration: At the outset, a pretest was conducted to establish the participants' initial reading comprehension levels. This assessment was administered under standardized conditions to ensure uniformity and minimize external variables that could influence performance. The pretest served as a benchmark, enabling the researchers to accurately measure the effectiveness of the instructional intervention by comparing it with posttest results.

B) Instructional Phase: For 10 weeks, participants underwent flipped classroom instruction designed to improve their reading comprehension skills. The intervention was structured to include two key components: pre-class and in-class activities. During the pre-class phase, learners independently engaged with instructional materials, such as video lectures and reading texts, made available through an online platform. These resources introduced core concepts and allowed students to prepare for active engagement in the classroom. The in-class phase focused on collaborative and interactive activities, including discussions, problem-solving exercises, and guided reading tasks, which reinforced and applied the knowledge gained during pre-class preparation.

C) Posttest Administration: After the instructional phase, a posttest was administered to measure the participants' progress in reading comprehension. The posttest was designed to mirror the structure and difficulty level of the pretest, ensuring comparability of results. Both the pretest and posttest were evaluated using standardized rubrics, which provided consistent and objective grading criteria across all participants.

D) Questionnaire Distribution: To gather data on students' attitudes toward the flipped classroom model, a Likert-scale questionnaire was distributed online through the Porsall platform. This digital delivery method ensured accessibility and ease of participation. The distribution strategy incorporated direct links sent via email and social media.

Ethical Considerations

The research was conducted in strict accordance with ethical standards, prioritizing the rights of all participants. Before their involvement, participants were provided with detailed information regarding the study's objectives, procedures, and potential benefits. Participation was entirely voluntary, with the option to withdraw at any point without any consequences. To safeguard privacy, all data were anonymized, and findings were presented only in an aggregated form to prevent the identification of individual participants.

Data Analysis Procedure

The data collected for this study were meticulously analyzed using IBM SPSS Statistics Version 26. Both descriptive and inferential statistical approaches were utilized to

comprehensively evaluate the impact of the flipped classroom intervention and students' attitudes toward this instructional model. These methods ensured a detailed and reliable interpretation of the findings:

A) Analysis of Reading Comprehension Tests:

To assess the effectiveness of the flipped classroom intervention on students' reading comprehension, a paired-sample t-test was conducted. This statistical test compared pretest and posttest scores, allowing for an evaluation of whether the observed changes in reading comprehension were statistically significant. Prior to conducting the test, assumptions such as normality and homogeneity of variances were thoroughly assessed using appropriate diagnostic tests (e.g., the Shapiro-Wilk test for normality). Meeting these assumptions validated the use of the t-test, ensuring that the results were reliable and minimizing the risk of bias. The paired-sample t-test not only revealed the mean difference in scores but also provided insights into the consistency of the intervention's impact across participants, thus reinforcing the validity of the study's conclusions.

B) Analysis of Questionnaire Responses:

To explore students' attitudes toward the flipped classroom model, descriptive statistics were applied to the data gathered from the Likert-scale questionnaire. Frequencies and percentages were calculated to determine the distribution of responses across various levels of agreement or disagreement for each item. Additionally, mean scores were computed for each questionnaire item to summarize overall trends in students' attitudes. This approach enabled the identification of key dimensions such as engagement, autonomy, and satisfaction. The analysis also highlighted any recurring patterns or challenges that may suggest areas for improvement in the flipped classroom implementation.

Results

This section outlines the key findings of the study, focusing on the effects of flipped classroom instruction on the reading comprehension abilities of ESP students and their attitudes toward this pedagogical approach. The results are organized into two primary subsections. The first subsection evaluates the impact of the flipped classroom intervention on reading comprehension by analyzing and comparing pretest and posttest scores. The second subsection delves into students' attitudes toward the flipped classroom methodology, as captured through their responses to a Likert-scale questionnaire. To provide a comprehensive analysis, both descriptive and inferential statistical methods are employed in the presentation of the results.

Impact of Flipped Classroom Instruction on ESP Students' Reading Comprehension

The first research question focused on assessing whether the implementation of flipped classroom instruction resulted in notable enhancements in the reading comprehension abilities of ESP students compared to traditional teaching methods. The descriptive statistics for the participants' pretest and posttest performance are summarized in Table 1. The mean pretest score was recorded as 14.43 (SD = 4.17), which increased to a mean posttest score of 18.67 (SD = 1.10). Furthermore, both the median and mode scores exhibited an upward shift, progressing from 16 in the pretest to 19 in the posttest. This consistent improvement across various statistical measures indicates that the flipped classroom intervention had a positive

effect on students' reading comprehension skills, as evidenced by the enhanced outcomes observed in the posttest.

Table 1. *Descriptive statistics of pretest and posttest*

		Pretest	**Posttest**
Number	Valid	21	21
	Missing	0	0
Mean		14.4286	18.6667
Median		16.0000	19.0000
Mode		16.00	19.00
Standard Deviation		4.16619	1.09924

The observed increase in the mean score, along with the reduced standard deviation in the posttest results, provides strong evidence of the flipped classroom model's efficacy in enhancing students' reading comprehension abilities. The lower variability in posttest scores suggests that the improvement was consistent across participants, indicating that the instructional approach was effective for learners with diverse initial proficiency levels. This aligns with educational research that underscores the benefits of active and collaborative learning strategies, which are central to the flipped classroom methodology. By integrating independent, self-paced pre-class preparation with hands-on, interactive in-class activities, this approach fosters meaningful and effective learning experiences for students.

The data presented in Table 2 illustrates the frequency distribution of participants' pretest scores. The most frequently occurring score was 16, representing 33.3% of the sample, followed by a score of 17, observed in 19.0% of participants. The overall range of scores, spanning from 2 to 18, highlights the diverse baseline reading comprehension levels of the students before the intervention began. This wide variation underscores the importance of implementing adaptable teaching methods, such as the flipped classroom, which can accommodate a range of learner abilities and support progress across the spectrum of proficiency.

Table 2. *Frequency and percentages of pretest scores*

		Frequency	**Percent**
Valid	2.00	1	4.8
	4.00	1	4.8
	12.00	2	9.5
	13.00	1	4.8
	14.00	1	4.8
	15.00	2	9.5
	16.00	7	33.3
	17.00	4	19.0
	18.00	2	9.5
	Total	21	100.0

The variation in pretest scores highlights the diverse reading comprehension abilities of participants at the beginning of the study. This range of proficiency underscores the importance of adopting an instructional method that can effectively address differing skill levels. The

flipped classroom model, with its focus on individualized pre-class preparation, is particularly suited for accommodating such diversity. Additionally, the relatively high pretest scores achieved by some participants (e.g., 16 and 17) suggest that the sample possessed a foundational level of reading comprehension, providing a solid basis for further improvement through the intervention.

Table 3 displays the frequency distribution of posttest scores. The most common score was 19 (33.3%), followed by 20 (23.8%). In contrast to the pretest results, the posttest scores are concentrated at the upper end of the scale, illustrating a marked improvement in reading comprehension across the participant group.

Table 3. *Frequency and percentages of posttest scores*

		Frequency	Percent
Valid	16.00	1	4.8
	17.00	2	9.5
	18.00	4	19.0
	18.50	2	9.5
	19.00	7	33.3
	20.00	5	23.8
	Total	21	100.0

The change in score distribution from the pretest to the posttest provides strong evidence that the flipped classroom intervention significantly enhanced participants' reading comprehension skills. The clustering of scores at the higher end of the range suggests that the majority of students benefited from this instructional approach. These findings align with the theoretical principles underlying the flipped classroom, which emphasize active learning and collaborative problem-solving as drivers of deeper cognitive engagement. The results further support the conclusion that this method is particularly effective for developing advanced comprehension skills, as demonstrated by the consistently high posttest scores.

To evaluate whether the flipped classroom model had a statistically significant effect on the reading comprehension of ESP students, a paired-samples t-test was employed. This statistical method compared pretest and posttest scores to analyze the mean difference between the two measurements. The test assessed the significance of the observed improvement in students' performance following the intervention. Table 4 presents the detailed results, including the mean difference, standard deviation, t-value, p-value, and the 95% confidence interval for the difference.

Table 4. *Paired samples test for pre- and posttest scores*

		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	Pretest-Posttest	-4.2381	3.6077	0.7873	-5.8803	-2.5959	-5.383	20	0.000

The findings presented in Table 4 reveal a substantial improvement in participants' reading comprehension performance following the implementation of the flipped classroom model. The analysis demonstrated a mean difference of -4.238 (SD = 3.608) between pretest and

posttest scores, with a t-value of -5.383 and a p-value of 0.000, signifying a statistically significant outcome at the $p < 0.05$ level. Additionally, the 95% confidence interval for the mean difference, ranging from -5.880 to -2.596, further validates the robustness and reliability of these results.

These findings provide a clear and affirmative response to the first research question: flipped classroom instruction effectively enhances the reading comprehension skills of ESP students when compared to traditional teaching methods. The observed increase in posttest scores, coupled with reduced variability, underscores the strengths of this instructional approach. By combining preparatory pre-class activities with engaging, interactive classroom sessions, the flipped model not only supports the development of deeper comprehension but also encourages active participation among learners. The evidence strongly positions the flipped classroom as a powerful and effective pedagogical tool for improving academic outcomes in ESP education.

Students' Attitudes Toward Flipped Classroom Instruction

The second research question focused on understanding the attitudes of ESP students toward the flipped classroom model. To collect detailed insights, a tailored Likert-scale questionnaire was employed, designed to evaluate various aspects of this instructional approach. The questionnaire targeted key areas such as engagement, satisfaction with the learning process, and the challenges students encountered while participating in flipped classroom activities. This tool provided a structured means of assessing students' attitudes and experiences with this innovative teaching strategy.

Table 5 summarizes the responses to each questionnaire item using a five-point Likert scale, with response categories ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The table presents the frequency of responses for each item and calculates mean scores to capture overall trends in students' attitudes. These data offer valuable perspectives on critical factors such as comprehension, motivation, interaction, and collaborative learning experiences. In the table, SD = Strongly Disagree, DA = Disagree, NO = Neutral, A = Agree, and SA = Strongly Agree. These categories allow for a clear and systematic presentation of student responses, facilitating the interpretation of trends across multiple dimensions.

Table 5. *Distribution of responses across Likert scale levels and mean scores for questionnaire items*

Item	SD (1)	DA (2)	NO (3)	A (4)	SA (5)	Mean Score
Improving understanding of subject matter	0	1	2	10	8	4.5
Increasing motivation to learn	1	1	3	9	7	4.4
Enhancing engagement in class discussions	0	1	2	11	7	4.6
Providing helpful out-of-class video lectures	0	0	1	8	12	4.7
Improving the ability to apply learned concepts	1	2	3	9	6	4.3
Boosting confidence in problem-solving skills	2	3	4	7	5	4.2
Encouraging responsibility for independent learning	0	1	2	10	8	4.6
Preferring flipped learning over traditional methods	3	4	5	6	3	4.1
Positively impacting academic performance	0	1	2	10	8	4.5
Adding value through in-class activities	0	0	1	9	11	4.8
Improving collaboration with peers	2	3	4	8	4	4.3
Encouraging comfort in asking questions	1	2	3	10	5	4.4
Enhancing time management skills	1	3	4	7	6	4.2
Making learning more engaging	0	1	2	10	8	4.6
Increasing interest in the subject matter	0	1	2	10	8	4.5

The data presented in Table 5 highlights a predominantly positive perception of the flipped classroom model, as evidenced by the high mean scores and the concentration of responses in the "Agree" and "Strongly Agree" categories across most items. The highest-rated statement, "Adding value through in-class activities," achieved a mean score of 4.8, underscoring the significance students placed on the collaborative and interactive nature of in-class sessions, which they found more beneficial than traditional lectures. Similarly, the item "Providing helpful out-of-class video lectures" received a mean score of 4.7, indicating the effectiveness of the pre-class preparation phase in supporting students' independent learning and comprehension of course materials.

Other highly rated items, such as "Enhancing engagement in class discussions" (mean score = 4.6) and "Encouraging responsibility for independent learning" (mean score = 4.6), further affirm that the flipped classroom environment facilitated active participation and fostered an atmosphere conducive to autonomous learning. These findings are consistent with constructivist learning theories, which prioritize active student involvement and a learner-centered approach. Additionally, "Improving understanding of subject matter" (mean score = 4.5) and "Increasing interest in the subject matter" (mean score = 4.5) reflect the model's success in making course content more engaging and accessible for students.

While overall feedback was highly positive, certain areas showed slightly lower mean scores. For example, "Boosting confidence in problem-solving skills" and "Enhancing time management skills," both with mean scores of 4.2, suggest that while students acknowledged some improvements in these areas, the impact was not as pronounced compared to other dimensions. These results may indicate a need for additional support or targeted activities to further develop these specific skills within the flipped classroom framework.

The response distribution also offers valuable insights. For most items, the majority of responses clustered in the "Agree" and "Strongly Agree" categories, reflecting a general pattern of satisfaction. However, a small proportion of responses in the "Neutral," "Disagree," and "Strongly Disagree" categories suggests that a minority of students encountered challenges or had preferences that differed from the flipped classroom model. These outliers may highlight individual differences in learning preferences or adaptability to the model.

In conclusion, the findings strongly indicate that students appreciated the flipped classroom model for its ability to enhance engagement, promote self-directed learning, and provide meaningful learning experiences both inside and outside the classroom. The consistently high mean scores across most items affirm the instructional model’s effectiveness in improving learning outcomes and overall satisfaction among students.

Discussion

This study was designed to investigate the influence of flipped classroom instruction on the reading comprehension of ESP students and their overall attitudes toward this innovative teaching method. The findings provide important insights into the potential of the flipped classroom model as an effective pedagogical tool, particularly in the specialized context of ESP education. In this section, the results are critically discussed concerning prior research, with an emphasis on identifying factors that contribute to aligned or divergent findings across studies.

The Impact of Flipped Classroom Instruction on ESP Students’ Reading Comprehension

The study findings demonstrated a significant improvement in reading comprehension among ESP students, as evidenced by statistically higher posttest scores compared to pretest results. These results align with a substantial body of research that highlights the effectiveness of the flipped classroom model in fostering academic achievement. For example, Yuvita et al. (2022) and Wulandari et al. (2022) reported similar outcomes in their respective studies involving university and senior high school EFL learners. Both studies underscored the role of flipped instruction in enhancing comprehension by combining structured pre-class preparation with interactive in-class engagement, a theme that resonates with the current research.

In the context of ESP education, these findings are consistent with those of Hasanah and Arifani (2020), who observed significant gains in reading comprehension among accounting students exposed to flipped classroom instruction. Similarly, Hashemifardnia et al. (2018) found that junior high school students in Iran benefited greatly from this approach, particularly when pre-class materials were tailored to the learners' specific academic needs and classroom activities were carefully designed to reinforce those materials. These parallels reinforce the adaptability and effectiveness of the flipped classroom model in addressing the unique challenges faced by ESP students.

However, not all studies have reported consistent outcomes. For instance, Abbasian and Azeez (2021) found that flipped classrooms produced only marginal improvements in reading comprehension for intermediate-level EFL students. This discrepancy may stem from differences in instructional design. Unlike Abbasian and Azeez's study, which may have relied on generalized materials, the current research integrated discipline-specific content tailored to the learners' academic context. This tailored approach likely enhanced both the relevance and engagement of the instruction. Furthermore, the structured and interactive in-class activities employed in this study provided the necessary scaffolding to bridge gaps in comprehension, a feature that may have been underemphasized in comparative research.

Another notable comparison can be drawn with Fahmi et al. (2020), who highlighted the pivotal role of technological tools in flipped classroom settings. The use of high-quality video lectures and interactive online resources in the current study aligns with Fahmi et al.'s findings, underscoring how technology fosters a dynamic, self-paced learning environment. The results also resonate with Talan and Batdi's (2020) broader conclusion that the success of flipped instruction depends on active engagement and a seamless integration of pre-class and in-class learning experiences.

Taken together, these findings affirm the flipped classroom model as an effective strategy for improving reading comprehension, particularly for ESP students. The ability to customize materials and incorporate active learning activities positions the flipped classroom as a powerful instructional method. When implemented with careful planning, the model appears to surpass traditional teaching methods in promoting comprehension and higher-order thinking skills.

Students' Attitudes Toward Flipped Classroom Instruction

The study's questionnaire results revealed overwhelmingly positive attitudes toward the flipped classroom model. Students expressed high levels of satisfaction with various aspects of the instructional approach, as reflected in consistently strong mean scores across most

questionnaire items. The item "Adding value through in-class activities" received the highest mean score (4.8), emphasizing the importance students placed on collaborative and interactive sessions. Similarly, the high rating for "Providing helpful out-of-class video lectures" (mean = 4.7) highlighted the effectiveness of the pre-class preparation phase in supporting independent learning. These findings are consistent with prior research by Kenna (2014) and Gustian et al. (2023), both of which emphasized the motivational benefits of combining self-paced learning with dynamic classroom engagement.

Other high-scoring items, such as "Enhancing engagement in class discussions" (mean = 4.6) and "Encouraging responsibility for independent learning" (mean = 4.6), further demonstrate the model's success in creating an engaging and autonomous learning environment. These findings align with those of Crothers et al. (2017) and Prieto et al. (2021), who emphasized the role of flipped classrooms in fostering active participation. Similarly, the model's capacity to promote learner autonomy is supported by research from Kozikoğlu (2019) and Fard et al. (2022).

Despite the overwhelmingly positive feedback, some areas received relatively lower mean scores, such as "Boosting confidence in problem-solving skills" and "Enhancing time management skills" (both mean = 4.2). These results suggest that while the flipped classroom model successfully addresses many aspects of learning, some students may require additional support to fully develop these skills. This observation aligns with Al-Abdullatif (2020), who found that some learners struggle with the self-regulatory demands of flipped instruction. Addressing these challenges through targeted interventions, such as workshops on time management or more structured pre-class tasks, could further enhance the model's effectiveness.

A slight divergence from studies such as Diningrat et al. (2023) is also noteworthy. While Diningrat et al. reported universal improvements across all learning dimensions, the current study's nuanced findings suggest that certain areas, such as adaptability and self-regulation, may require additional focus. This highlights the importance of tailoring flipped classroom models to accommodate individual differences in learning preferences and abilities.

Conclusion

This research examined the influence of flipped classroom instruction on the reading comprehension skills and attitudes of ESP students, utilizing a robust quantitative design to generate comprehensive insights. The study consisted of two key phases: a quasi-experimental component, which compared pretest and posttest scores to measure the intervention's impact, and a survey phase that employed a Likert-scale questionnaire to capture students' attitudes toward the flipped classroom model. Results demonstrated that the flipped classroom model led to marked improvements in students' reading comprehension, as reflected in statistically significant increases in posttest scores. Furthermore, students conveyed overwhelmingly positive attitudes toward the model, highlighting the value of its focus on engagement, learner autonomy, and the integration of pre-class preparation with interactive in-class learning activities. These findings emphasize the effectiveness of the flipped classroom in addressing the unique academic and linguistic demands of ESP students.

The broader implications of these findings span both theoretical and practical domains. From a theoretical perspective, this study reinforces the growing body of evidence supporting flipped classrooms as an effective pedagogical strategy, particularly in specialized contexts such as ESP. The results underscore the importance of combining independent, self-paced pre-class study with collaborative and active in-class sessions, fostering deeper understanding and active learner participation. Practically, the findings provide educators and academic institutions with actionable insights into how innovative teaching models like the flipped classroom can be used to enhance student outcomes. The enthusiastic reception from students highlights the potential of this approach to improve educational experiences, particularly in environments requiring customized content and methodologies tailored to specific learner needs.

Despite the positive outcomes, the study is not without limitations. The small sample size, along with the use of convenience sampling, restricts the generalizability of the findings to larger or more heterogeneous populations. Additionally, the study's focus on a single institutional context limits its ability to capture the diverse experiences of ESP students in different educational settings or disciplines. Another limitation lies in the exclusive emphasis on reading comprehension, which does not consider the potential benefits of the flipped classroom model for other language skills, such as listening, speaking, or writing. Furthermore, the reliance on self-reported data from questionnaires introduces the possibility of response bias, which could affect the accuracy of students expressed attitudes toward the intervention.

To address these limitations, future research should prioritize the inclusion of larger and more diverse participant samples, potentially spanning multiple institutions and cultural contexts. Longitudinal studies that track the sustained effects of flipped classroom instruction over time would provide valuable insights into its long-term impact on student performance and attitudes. Expanding the scope of the investigation to include additional language skills would offer a more comprehensive understanding of the flipped model's potential benefits. Moreover, integrating advanced technologies, such as adaptive learning systems or immersive tools like virtual and augmented reality, could further optimize the flipped classroom experience by personalizing instruction and enhancing learner engagement. By exploring these areas, future studies can contribute to the continued refinement of flipped classroom practices, ensuring their effectiveness in meeting the complex and varied needs of ESP students and other specialized educational contexts.

References

Abbasian, M. & Azeez, I. (2021). The effect of using flipped class on teaching reading comprehension at Cihan University. *Cihan University-Erbil Journal of Humanities and Social Sciences*, 5, 101-105. https://doi.org/10.24086/cuejhss.v5n1y2021.pp101-105

Abedi, P., Keshmirshekan, M. H., & Namaziandost, E. (2019). The comparative effect of flipped classroom instruction versus traditional instruction on Iranian intermediate EFL learners' English composition writing. *Journal of Applied Linguistics and Language Research*, 6(4), 43-56. https://doi.org/10.32861/ellr.59.164.172

Abu Zaid, K. (2020). The use of the flipped classroom strategy to improve the level of achievement and maintain the impact of learning in the Western music grammar course for students of the faculty of

specific education in Qena. *International Journal Of Education And Learning Research*, *3*(2), 36-43. https://doi.org/10.21608/ijelr.2020.181871

Al-Abdullatif. M., A. (2020). Investigating self-regulated learning and academic achievement in an eLearning environment: The case of K-12 flipped classroom. *Cogent Education*, 7(1). https://doi.org/10.1080/2331186x.2020.1835145

Al-Assaf, M. N., Al-Wazzan, M. K., & Al-Marayat, H., S. (2022). The effect of using the strategy of flipped class on teaching Arabic as a second language. *Theory and Practice in Language Studies*, 12(4), 684-690. https://doi.org/10.17507/tpls.1204.08

Aljarrah, A., Ababneh, M., Karagozlu, D., & Ozdamli, F. (2021). Artificial intelligence techniques for distance education: A systematic literature review. *TEM Journal*, 10(4), 1621-1629. https://doi.org/10.18421/tem104-18

Ardi, P., Sari, R., Hidayat, L. E., Dewi, O. T. S. D., & Cahyono, B. Y. (2023). In-service EFL teachers' well-being during online teacher professional development program in Indonesia: An ecological perspective. *Studies in Linguistics, Culture, and FLT*, 11(2), 26-45. https://doi.org/10.46687/UUHH4920

Ayçiçek, B., & Yanpar Yelken, T. (2018). The effect of the flipped classroom model on students' classroom engagement in teaching English. *International Journal of Instruction*, 11(2), 385-398. https://doi.org/10.5539/elt.v9n9p166

Bergmann, J., & Sams, A. (2012). *Flip your classroom: reach every student in every class every day* (1st ed.). International Society for Technology in Education. https://www.scirp.org/reference/referencespapers?referenceid=1791200

Chavangklang, T., & Suppasetseree, S. (2018). Enhancing Thai EFL university students' reading comprehension through a flipped cooperative classroom. *International Journal of Social Sciences*, 4(3), 238-261. https://dx.doi.org/10.20319/pijss.2018.43.238261

Crothers, A.J., Bagg, J. and McKerlie, R. (2017) The flipped classroom for pre-clinical dental skills teaching - a reflective commentary. *British Dental Journal*, 222(9), 709-713. https://doi.org/10.1038/sj.bdj.2017.409

Cuong, T. Q., Chung, P. K., & Yen, N. T. L. (2020, January). Check for updates, Incorporating Digital" Technology" and Mobile Learning Application in Teacher Education in VNU, Hanoi. In *Intelligent Computing Paradigm and Cutting-edge Technologies: Proceedings of the First International Conference on Innovative Computing and Cutting-edge Technologies (ICICCT 2019), Istanbul, Turkey, October 30-31, 2019* (Vol. 9, p. 158). Springer Nature. https://doi.org/10.1007/978-3-030-38501-9_16

Diningrat, S., Setyosari, P., Ulfa, S., & Widiati, U. (2023). The effect of an extended flipped classroom model for fully online learning and its interaction with working memory capacity on students' reading comprehension. *Journal of New Approaches in Educational Research, 12*(1), 77-99. https://doi.org/10.7821/naer.2023.1.1073

Fahmi, R., Friatin, L., & Irianti, L. (2020). The use of the flipped classroom model in reading comprehension. *Journal of Applied Linguistics and Literacy,* 4(1), 77-94. Retrieved 24 December 2024 from https://jurnal.unigal.ac.id/jall/article/view/3138

Fard. R., Z., Shahrokhi. M., & Talebinezhad. M. (2022). Flipped classroom approach in ESP Courses: Focus on ESP students' critical thinking and engagement. *Journal of Foreign Language Research*, 12(1), 74-93. https://doi.org/10.5220/0009019102260236

Gustian, K., Aridah, A., & Rusmawaty, D. (2023). The benefits of flipped classroom model for EFL learners. *Journal on Education*, 5(4), 13918-13935. https://doi.org/10.31004/joe.v5i4.2411

Haghighi, H., Jafarigohar, M., Khoshsima, H., & Vahdany, F. (2019). Impact of the flipped classroom on EFL learners' appropriate use of refusal: achievement, participation, perception. *Computer Assisted Language Learning*, 32(3), 261-293. https://doi.org/10.1080/09588221.2018.1504083

Hasanah, I., & Arifani, Y. (2020, September). The effect of flipped classroom toward ESP students reading comprehension. In *Proceedings of the Borneo International Conference on Education and Social Sciences (BICESS 2018)* (pp. 226-236). https://doi.org/10.5220/0009019102260236

Hashemifardnia, A., Namaziandost, E., & Shafiee, S. (2018). The effect of implementing flipped classrooms on Iranian junior high school students' reading comprehension. *Theory and Practice in Language Studies*, 8(6), 665-673. https://doi.org/10.17507/tpls.0806.17

Jabri. A., B., Alzakwani. A., Alzeedi. M., Gabarre. S., & Gabarre. C. (2022). Enhancing foreign language reading comprehension with a peer tutored online flipped classroom approach. *Asian Journal of Language, Literature and Culture Studies*, 5(1) 18-32. Retrieved 24 December 2024 from https://journalajl2c.com/index.php/AJL2C/article/view/77/153

Jafarigohar, M., Khoshsima, H., Haghighi, H., & Vahdany, F. (2019). Incorporation of flipped learning into EFL classrooms: Performance and perception. *Iranian Journal of English for Academic Purposes*, 8(3), 1-14. Retrieved 30 January 2025 from

Kanat, F., & Kozikoğlu, İ. (2018). The relationship between 8th-grade secondary school students' motivational strategies, attitudes, and academic achievements concerning English learning. *Journal of Language and Linguistic Studies*, 14(3), 253-268. Retrieved 24 December 2024 from https://www.jlls.org/index.php/jlls/article/view/1022/402

Karimi, M., & Hamzavi, R. (2017). The effect of the flipped model of instruction on EFL learners' reading comprehension: Learners' attitudes in focus. *Advances in Language and Literary Studies*, *8*(1), 95-103. https://doi.org/10.7575/aiac.alls. v.8n.1p.95

Kenna, D.C. (2014). *A study of the effect of the flipped classroom model on student self-efficacy*.[Master's Thesis, North Dakota State University of Agriculture and Applied Science]. North Dakota State University.

Keskin, D. (2022). Implementation of flipped model in EFL reading classrooms. *Turkish Online Journal of Distance Education*, 24(3), 261-279. https://doi.org/10.17718/tojde.1132888

Khosravani, M., Khoshsima, H., & Mohamadian, A. (2020). On the effect of the flipped classroom on learners' achievement, autonomy, motivation and WTC: Investigating learning and learner variables. *Journal of English Language Teaching and Learning*, 12(25), 175-189. https://doi.org/10.22034/elt.2020.10680

Kozikoğlu, İ. (2019). Analysis of the studies concerning flipped learning model: a comparative meta-synthesis study. *International Journal of Instruction*, 12(1), 851-868. https://doi.org/10.29333/iji.2019.12155a

Özpinar, I., Yenmez, A. A., & Gökçe, S. (2016). An application of the flipped classroom method in the instructional technologies and material development course. *Journal of Education and Training Studies*, 4(12), 213-226. https://doi.org/10.11114/jets. v4i12.1934

Prieto, A., & Barbarroja. J., & Alvarez. S., & Corell. A. (2021). Effectiveness of the flipped classroom model in university education: a synthesis of the best evidence. *Revista de Educación*, 391, 149-177. https://doi.org/10.4438/1988-592X-RE-2021-391-476

Putri. J., & Nurkhamidah. N. (2023). The implementation of flipped classroom to develop students' reading skill. *Journal of Teaching and Education,* 5, 156-170. https://doi.org/10.30650/ajte.v5i1.3509

Rajabi, P., Mahmoodi, K., & Hosseini, S.A. (2021). Flipped classroom model and its impact on Iranian EFL learners' classroom anxiety and listening performance. *Computer-Assisted Language Learning Electronic Journal (CALL-EJ),* 22(3), 1-16. Retrieved 24 December 2024 from https://old.callej.org/journal/22-3/Hosseini-Rajabi-Mahmoodi2021.pdf

Shahnama, M., Ghonsooly, B., & Shirvan, M. E. (2021). A meta-analysis of the relative effectiveness of flipped learning in English as second/foreign language research. *Educational Technology Research and Development*, 69(3), 1355-1386. https://doi.org/10.1007/s11423-021-09996-1

Shamsuddin, B., A. (2020). *Effects of persuasive technology with segmenting principle in mobile flipped classroom on university students' performance, engagement, and perceived motivation.* [Doctoral Dissertation. Universiti Sains Malaysia]. https://erepo.usm.my/items/5ffb5e9b-806c-4b76-b5bd-ced8507b0f9e/full

Talan, T., & Batdi. V. (2020). Evaluating the flipped classroom model through the multi-complementary approach. *Turkish Online Journal of Distance Education,* 21(4), 31-67. https://doi.org/10.17718/tojde.803351

Wulandari, D. D., Munifatullah, F., & Yufrizal, H. (2022, February). Flipped classroom model to enhance students' reading comprehension. In *67th TEFLIN International Virtual Conference & the 9th ICOELT 2021 (TEFLIN ICOELT 2021)* (pp. 46-51). Atlantis Press. https://doi.org/10.2991/assehr.k.220201.008

Yu, Z. (2022). Sustaining student roles, digital literacy, learning achievements, and motivation in online learning environments during the COVID-19 pandemic. *Sustainability*, 14(8), 4388. https://doi.org/10.3390/su14084388

Yuvita. Y., Sulistyaningsih. E., 'Ulhaq. *D., N.* (2022). The Effect of Flipped Classroom Model Towards Students' Reading Comprehension. In The 2nd International Conference on Social Science, Humanities, Education and Society Development (ICONS 2021). *Advances in Social Science, Education, and Humanities Research*, 629, 165-172. https://doi.org/10.2991/assehr.k.220101.025