

Effects of Flipped Model of Instruction on Reading Comprehension and Attitude of Iranian Non-English Majors: A Mixed-Method Study

Efectos del modelo invertido de instrucción en la comprensión lectora y la actitud de estudiantes iraníes de lenguas no inglesas: Un estudio de métodos mixtos

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Received: February 7, 2025 / Accepted: December 4, 2025

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Abstract

The current study examined the effect of the flipped instructional model on the reading comprehension skills and attitudes of non-English major university students. To achieve these goals, 80 freshmen who enrolled in the General English course during the second semester of the academic year 2022-2023 at the Islamic Azad University of Babol were randomly selected and equally assigned to two groups: experimental and control. The former received flipped instruction, whereas the latter attended the regular face-to-face class. At the end of the study, an independent-samples t-test was conducted, and the results indicated that the experimental group outperformed the control group on the post-test. Additionally, the students' attitudes were measured using a validated self-report questionnaire, and frequency analyses indicated that participants had a positive view of the pedagogical intervention.

Furthermore, a semi-structured interview was used to gather qualitative data. The thematic analysis revealed that flipped teaching enhanced reading comprehension skills and attitudes through advocating personalized and collaborative learning, and student engagement. These findings underscore the potential of the flipped instruction model to enrich EFL academic contexts and empower struggling learners, positioning it as a viable and impactful instructional strategy.

Keywords: Academic EFL context, attitude, English as a foreign language, English language teaching, flipped model of instruction, higher education, reading comprehension, struggling readers

Resumen

El presente estudio mostró el efecto del modelo invertido de instrucción en las habilidades de comprensión lectora de estudiantes universitarios, cuyo programa no era el de inglés, y sus actitudes hacia dicho modelo. Para lograr estos objetivos, 80 estudiantes de primer año, que se inscribieron en el curso de inglés general durante el segundo semestre del año académico 2022-2023 en la Universidad Islámica Azad de Babol, fueron seleccionados al azar y asignados equitativamente en dos grupos: experimental y de control. Los primeros recibieron el modelo de instrucción invertida, mientras que los segundos asistieron a la clase presencial regular. Al final del estudio, se realizó una prueba t para muestras independientes y los resultados indicaron que el grupo experimental superó al grupo de control en la prueba posterior. Además, la actitud de los estudiantes se midió con un cuestionario validado de autoinforme y los análisis de frecuencia indicaron la visión positiva de los participantes hacia la intervención pedagógica. Además, se utilizó una entrevista semiestructurada para recopilar datos cualitativos. El análisis temático reveló que la enseñanza invertida mejoró las actitudes, las habilidades de comprensión lectora al promover el aprendizaje personalizado y colaborativo y la participación de los estudiantes. Estos hallazgos resaltan el potencial del modelo de instrucción invertida para enriquecer los contextos académicos de inglés como lengua extranjera y empoderar a los estudiantes con dificultades, posicionándolo como una estrategia de instrucción viable e impactante.

Palabras clave: Contexto académico del inglés como lengua extranjera (EFL), actitud, inglés como lengua extranjera, enseñanza del inglés, modelo invertido de instrucción, educación superior, comprensión lectora, lectores con dificultades.

Resumo

O presente estudo examinou o efeito do modelo de ensino invertido nas habilidades de compreensão leitora de estudantes universitários cujos programas acadêmicos não eram relacionados ao inglês, bem como suas atitudes em relação a esse modelo. Para alcançar esses objetivos, 80 estudantes do primeiro ano, matriculados no curso de inglês geral durante o segundo semestre do ano acadêmico de 2022-2023 na Universidade Islâmica Azad de Babol, foram selecionados aleatoriamente e distribuídos de forma equilibrada em dois grupos: experimental e controle. O grupo experimental recebeu o modelo de ensino invertido, enquanto o grupo de controle participou das aulas presenciais tradicionais. Ao final do estudo, realizou-se um teste t para amostras independentes, e os resultados indicaram que o grupo experimental obteve desempenho superior ao grupo de controle no pós-teste. Além disso, a atitude dos estudantes foi medida por meio de um questionário validado de autorrelato, cujas análises de frequência revelaram percepções positivas em relação à intervenção pedagógica. Também foi utilizada uma entrevista semiestruturada para coletar dados qualitativos. A análise temática mostrou que o ensino invertido aprimorou as atitudes e as habilidades de compreensão leitora ao promover aprendizagem personalizada e colaborativa, além de maior engajamento estudantil. Esses achados destacam o potencial do modelo de ensino invertido para enriquecer contextos acadêmicos de inglês como língua estrangeira e apoiar estudantes com dificuldades, consolidando-o como uma estratégia instrucional viável e impactante.

Palavras-chave: Atitude, contexto acadêmico de EFL, modelo de sala de aula invertida, compreensão de leitura, leitores com dificuldades, inglês como língua estrangeira, ensino de inglês, ensino superior. contexto acadêmico de inglês como língua estrangeira, modelo de ensino invertido, compreensão leitora, leitores com dificuldades, inglês como língua estrangeira, aprendizagem de inglês.

Introduction

Advanced technologies have led to drastic changes in all aspects of life in the 21st century (Alghasab & Alvarez-Ayure, 2021; El-Sway, 2018), and education is no exception.

In Iran, English is studied as a foreign language (FL). However, to access the latest scientific advancements and scholarly journals across several fields, a strong level of reading comprehension is essential. Unfortunately, many university students find it challenging and stressful to cope with the academic reading tasks assigned to them (Bahrami & Rahimy, 2020; Bahrami & Rahimy, 2022; Karimi & Hamzavi, 2017; Khabir et al., 2022; Sin & Siahpoosh, 2020).

Information and Communication Technology (ICT) is an inseparable component of the Flipped Model of Instruction (FMI) due to its frequent use of pre-recorded audio/video educational clips or files as supplementary teaching materials shared online before class time (Bergmann & Sams, 2014; Enfield, 2013; Lee & Wallace, 2018).

In sum, the FMI has emerged as a promising pedagogical approach to encourage more student-centered learning experiences. Thus, the following probing questions were proposed in the current study to investigate the FMI further and contribute to the growing body of research on this innovative pedagogical model:

Q1: How does using the FMI affect the reading comprehension skills of Iranian non-English majors?

Q2: How do Iranian non-English majors perceive the flipped model of instruction?

Literature Review

Reading comprehension is a multifaceted cognitive process that includes decoding, interpreting, and understanding written texts (Bernhardt, 2011; Enciso, 2015; Grabe & Stoller, 2011).

The next key term is attitude, which generally refers to an inclination or predisposition. In educational contexts, this construct encompasses motivation, interest, self-efficacy, and value perception (Bakkaloğlu & Pilten, 2023). According to Anggriawan et al. (2023), a positive attitude has an important role in language learning because it "affects someone's decisions, behaviors, and attempts when facing challenges" (p. 24).

In EFL contexts, there are two major trends in probing the effectiveness of the FMI: its effects on a specific language skill or subskill, and learners' satisfaction or attitude towards it (Bin-Hady & Hazaea, 2022). Previous studies have positively reported the effects of the FMI in improving different areas of language learning, such as reading comprehension (Abaeian & Samadi, 2016; Abbasian & Azeez, 2021; Karimi & Hamzavi, 2017; Khabir et al., 2022; Sin & Siahpoosh, 2020), inferential skills (Samiei & Ebadi, 2021), writing drafts and organizing ideas (Adas & Bakir, 2013; Alghasab, 2020; Elfatah & Ahmed, 2016), listening comprehension (Ahmad, 2016; El-Sway, 2018; Namaziandost et al., 2019), speaking performance (Abdullah et al., 2019), pronunciation (Bin-Hady & Hazaea, 2022), grammatical accuracy (Mahmudi, 2020), communicative competence (Wang & Liu, 2018); pragmatic competence (Wafa & Altakhaineh, 2019), metacognitive development (Shi & Huang, 2018), student performance, learning, and engagement (Fahim et al., 2020), linguistic self-confidence (Leis, 2016), and vocabulary learning (Alnuhayt, 2018). However, there are still controversies in research findings when the FMI is used in contexts with marked cultural differences (Al-Ghamdi & Al-Bargi, 2017; Leis, 2016), different subject matters (Du, 2018), and different levels of language proficiency and educational background (Alnuhayt, 2018; Namaziandost et al., 2020; Nicholes, 2020). Generally, intermediate EFL learners were reported to benefit more overall in comprehension from the FMI than upper-intermediate learners (Abaeian & Samadi, 2016; Abbasian & Azeez, 2021), whereas some studies reported no such difference (Nicholes, 2020; Sin & Siahpoosh, 2020). Asaka et al. (2018) concluded that the FMI cannot be conclusively a necessarily effective means for improving EFL learner's overall comprehension skills. Hung (2015), on the contrary, asserted that the FMI improves EFL students' academic performance in general. Table 1 summarizes the previous studies.

Table 1. Summary of the previous studies

Skill/Attitude Studies	Reported Findings	Authors
Reading comprehension	Improvement	Abaeian & Samadi (2016); Abbasian & Azeez (2021); Karimi & Hamzavi (2017); Khabir et al. (2022); Sin & Siahpoosh (2020)
Inferential skill	Improvement	Samiei & Ebadi (2021)
Writing drafts and organizing ideas	Improvement	Adas & Bakir (2013); Alghasab (2020); Elfatah & Ahmed (2016)
Listening comprehension	Improvements	Ahmad (2016); El-Sway (2018); Namaziandost et al. (2019)
Speaking performance	Improvement	Abdullah et al. (2019)
Pronunciation	Improvement	Bin-Hady & Hazaea (2022)
Grammatical accuracy	Improvement	Mahmudi (2020)
Communicative competence	Improvement	Wang & Liu (2018)
Pragmatic competence	Improvement	Wafa & Altakhaineh (2019)
Metacognitive skills	development	Shi & Huang (2018)
Student performance, learning, and engagement	Improvement	Fahim et al. (2020)
Linguistic self-confidence	Improvement	Leis (2016)
Vocabulary learning	Improvement	Alnuhayt (2018)
Limitation/ controversy Sources	Cultural differences	Al-Ghamdi & Al-Bargi (2017); Leis (2016)
	subject matter differences	Du (2018)
	Proficiency levels / educational background differences	Alnuhayt (2018); Namaziandost et al. (2020); Nicholes (2020)
Level comparison	Intermediate > Upper-intermediate in comprehension	Abaeian & Samadi (2016); Abbasian & Azeez (2021)
	No clear differences	Nicholes (2020); Sin & Siahpoosh (2020)
General conclusions	FMI not necessarily conclusive	Asaka, et al. (2018)
	FMI improves overall academic performance	Hung (2015)

In sum, as Abdelshaheed, (2017) mentions, “the number of the systematic studies investigating the effectiveness [of the FMI] as higher education teaching model is limited and small” (p. 98), so great caution must be considered when implementing FMI. The current study builds on previous research by integrating the FMI into a reading course for basic level readers.

Most of the previous Iranian researchers who focused on EFL learners at public schools or private English institutes were limited to studying male (Hashemifardnia et al., 2018) and female students (Karimi & Hamzavi, 2017; Sin, & Siahpoosh, 2020) separately, due to the educational policy of separate classes for students prior to the higher education level. Furthermore, studies with Iranian university students were less frequent or limited to content classes, so this study aimed to fill some gaps and target non-English majors, with the hope of shedding light on gray areas of the FMI, particularly in an academic EFL context.

Method

Participants

Eighty students were selected from the whole population of non-English major first-year students who had enrolled for the compulsory General English course. The study took place at the Islamic Azad University of Babol during the second semester of the academic year 2022-2023.

The selected party included undergraduate non-English majors from both genders whose age ranged from 18 to 25.

Materials

The reading materials were selected from the second edition of Reading for General English (Pourgive et al., 2010).

Instruments

A reliable and validated pre-and post-test, questionnaire, and a semi-structured interview were used to collect the data. The test included 20 multiple-choice items. The Cronbach Alpha coefficient of the test was 0.82, indicating good internal consistency and reliability.

In addition, to determine the participants' perceptions toward using the FMI, a four-point Likert-scale, closed-ended questionnaire was given to the experimental group to self-report at the end of the pedagogical intervention. The 13-item questionnaire was previously used by AL-Ghamdi and Al-Bargi (2017); the researcher modified it to meet their requirements to probe the role of the pedagogical intervention in students' reading comprehension and engagement in class activities. Moreover, the Cronbach's Alpha stability coefficient of the questionnaire was .763, which indicated acceptable amount of reliability and stability.

Procedure

The study utilized a quasi-experimental, explanatory mixed-method design incorporating pre-and post-tests with a control group (Creswell & Creswell, 2023). This design ensured methodological rigor by combining both quantitative and qualitative data gathering and analysis, and allowing a profound investigation of the complex relationships between the variables under investigation, as well as the mechanisms through which flipped teaching may influence the students' reading comprehension skills and attitudes.

Before the pedagogical intervention, both groups were pre-tested through a reading comprehension test to set the baseline of comparison.

First, they were introduced to the FMI through teacher explanations. An online group was created on IGAP, an Iranian messaging and communication platform that allows the creation of private groups to exchange messages, materials, and educational activities.

The flipped class consisted of two stages: the pre-class stage, including online pre-reading tasks, and the in-class stage, consisting of while-reading and post-reading activities. The pre-class stage began two days before the class. On the first day, a picture was shared as a prompt to introduce the topic and start discussions. This was done to encourage brainstorming and activate their prior knowledge. Finally, the students were told to choose the best comments shared on the IGAP group.

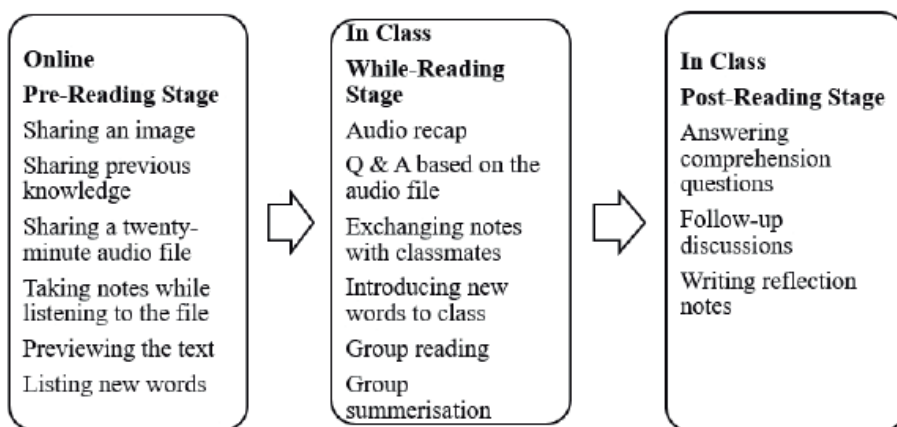
On the second day of flipping, a twenty-minute, topic-related audio clip was shared with the group. It was taken from English podcasts. The instructor provided the necessary modifications regarding the length of the clips and added further explanations. The students were asked to take notes while listening to the audio files and bring their notes, questions and comments to class for further discussions. They were also told to pre-view the text and prepare a list of new words with short English definitions, synonym or antonyms.

Each class initiated with a brief recap of the pre-class materials, highlighting the key points and concepts.

For the while-reading stage, the class was divided into small groups, and each was assigned to read, highlight key words, and summarize one paragraph of the passage. Then, the groups were told to exchange their summaries and provide feedback on each other's work, offering constructive criticism or suggestions for further improvement.

In the post-reading stage, the students answered the comprehension questions, followed by further discussion and debate. Finally, they were asked to write a short reflection note on the passage. The procedure is illustrated as follows:

Figure 1. The three stages of the flipped class



On the contrary, no online group was made for the control class, and the students were not given any tasks to become familiar with the topics before attending the class. In other words, the same tasks, materials, and steps were used except for the preparatory online component to ensure consistency in the tasks and assessments necessary for a fair comparison.

Finally, the post-test was administered to both groups. Afterwards, the questionnaire was distributed, and the experimental group was asked to share their opinions about the flipped class.

Results

Quantitative Analyses

Regarding the first research question, "How does using the FMI affect the reading comprehension skills of Iranian non-English majors?", the pre-test descriptive statistics were evaluated to see the potential differences in the learners' reading comprehension

skills between the experimental and control groups before the pedagogical intervention. Table 2 indicates the descriptive statistics of the pre-test for the experimental (flipped) and the control (non-flipped) classes.

Table 2. Descriptive statistics of the pre-test

	Class	N	Mean	Std Deviation
score	exp	40	6.53	1.01
	con	40	6.53	1.21

Table 2 indicates that the mean scores of both groups for the pre-test were the same, and the standard deviations were close.

The Kolmogorov-Smirnov (Berger & Zhou, 2014) test was conducted to determine if the data followed a normal distribution (Table 3).

Table 3. Kolmogorov-Smirnov test of normality of data

	class	Kolmogorov-Smirnov ^a		
		Statistic	df	Sig.
scorepost	f	.210	40	.103
	n	.247	40	.103

As Table 3 shows, $df(78) = 0.103$, $p < .05$; the p-value is greater than .05, which indicates that the data was normally distributed; therefore, an independent sample t-test can be run to investigate the effects of the pedagogical intervention. Table 4 indicates the descriptive statistics of the post-test.

Table 4. Descriptive statistics of the post-test

	class	N	Mean	Std. Deviation	Std. Error Mean
scorepost	f	40	18.40	.955	.151
	n	40	12.05	.904	.143

For the post-test, the mean and standard deviation scores of the experimental group equal 18.40 and .955; the control group values are 12.05 and .904, respectively. Table 5 shows the next step is running an independent sample t-test to find out whether the mean difference between the two groups is statistically significant.

Table 5. Independent sample t-test results

F		Levene's Test for Equality of Variances		t-test for Equality of Means						
				df	Sig.	Mean	Std. Error	95% Confidence Interval of the Difference		
		Sig.	t					Lower		
scores	Equal variances assumed	1.508		30.52	78	.000	6.35	.20	5.93	
	Equal variances not assumed			30.52	77.76	.000	6.35	.20	5.93	

A two-tailed independent sample t-test was conducted to compare the post-test reading comprehension mean scores of the flipped ($M = 18.40$, $SD = 9.55$) and non-flipped ($M = 12.05$, $SD = 9.04$) classes. The results indicate a statistically significant difference between the two groups, $t(78) = 30.52$, $p < .05$, with the experimental group scoring significantly higher than those in the control group. The effect size was moderate (Cohen's $d = .078$).

Considering the second research question, "How do Iranian Non-English majors perceive the flipped model of instruction?", frequency analyses were used to analyze the questionnaire data. Table 6 shows the descriptive statistics of EFL students' attitudes towards the FMI.

Table 6. Descriptive statistics for EFL students' attitude on the FMI

Item	N	Minimum	Maximum	Mean	Std. Deviation
1. I participate and engage myself more in learning in the flipped classroom.	22	3	4	3.68	.477
2. The flipped classroom helps me to effectively cooperate with my classmates.	22	3	4	3.91	.294
3. The flipped classroom enables me to manage my own learning activities.	22	3	4	3.55	.510
4. The flipped classroom facilitates more communication between me and my teacher and classmates.	22	3	4	3.68	.477
5. I become an active learner in the flipped classroom.	22	3	4	3.68	.477
6. I think the time and effort I spend in the flipped classroom is worthwhile.	22	3	4	3.55	.510
7. The flipped classroom facilitates my personalized learning.	22	3	4	3.68	.477
8. The flipped classroom provides me with more opportunities to communicate in English.	22	3	4	3.73	.456
9. The flipped classroom provides me with more opportunities to practice and improve my reading skill.	22	3	4	3.95	.213
10. The flipped classroom provides me with more opportunities to deepen my understanding of the text.	22	3	4	3.45	.510
11. I feel more motivated to participate in class after listening to the audio files.	22	3	4	3.45	.510
12. I am not satisfied with this flipped learning experience.	22	4	4	4.00	.000
13. The flipped classroom should be used more often in teaching the English language.	22	3	4	3.50	.512
14. I prefer to listen to the teacher in class.	22	3	4	3.50	.512
Valid N (list wise)	22				

Table 6 illustrates the means of the questionnaire's directional items ranged from 3.40 to 4.00, revealing a positive view towards the use of the FMI. The participants found the FMI engaging and helpful in enhancing their reading comprehension skills. Regarding the two non-directional items, all the participants expressed their satisfaction with the FMI ($M=4$) and the majority asserted their preference for the flipped class over the traditional one ($M=3.5$), which strongly supports the non-English major's positive view towards the FMI in an EFL academic context.

Qualitative Analysis

The semi-structured interviews were conducted with a subset of four students randomly chosen from each group. The interviewees were addressed as E1, E2, E3, E4 for the experimental group and C1, C2, C3, and C4 for the control one.

After gathering the qualitative data, the recordings were transcribed and translated into English. The next step was reading and re-reading them to immerse in the data and gain a holistic picture of the learners' experience and viewpoints. The interviewees referred to three common themes regarding the impact of the FMI on their reading comprehension skills and attitudes. The first one was personalized learning. E4 described the FMI effects this way:

The FMI provided me with an opportunity to go on learning with my own speed. I could listen to the shared files several times, practice the difficult parts as much as I needed, and become familiar with the topic ahead of class, which made it easier for me to take part in class activities and follow-up discussions and debates. Compared to the traditional, teacher-centered, lecture-based classes I had in the past, the FMI was a more productive experience and turned me into a more competent and confident English reader.

Unlike the experimental group, the control group interviewees reported difficulties keeping up with the class pace, as they did not have preparatory materials to help them stay on track. They also complained about the heavy class workload that resulted in losing interest or concentration. C2 described the situation this way:

Compared to the previous traditional lecture-based classes, I sometimes felt I was falling behind because the class pace was too fast for me to adjust. Moreover, it was challenging to keep up with all the tasks and participate in all the class activities and discussions. I frequently felt lost, and unprepared.

The second theme mentioned by the interviewees was the collaborative, student-centered nature of the FMI compared to the competitive, teacher-centered traditional ones. E3 referred to the importance of these features of the FMI:

Traditional classes were based on teacher lectures. All you had to do was listening passively and taking notes. It was common to lose concentration and get bored in such classes. However, the collaborative activities of the flipped class made the learning more effective and enjoyable.

Interestingly, the control group interviewees also favored the collaborative, student-centered nature of their classes but faced challenges due to the lack of any preparatory phase. C4 explained the situation as follows:

I liked the idea of collaborative activities, but I occasionally struggled to contribute to group works and take part in class discussions. It was challenging to keep up with my classmates who seemed more comfortable, particularly during the group works.

Finally, the experimental group interviewees found the FMI more engaging, and less threatening, or stressful, compared to the traditional classes. According to E3:

The FMI made me more engaged with the reading materials. Getting prepared beforehand and then discussing and applying the concepts in class helped me to understand the texts better and stay interested.

The control group interviewees highlighted their challenges in engaging with the text due to "the fast pace of the class" (C3 & C2) and "heavy loads of in-class tasks" (C1 & C4).

Discussion

The FMI's positive effects may be due to its engaging and collaborative nature (Dong, 2023). Research by Alghasab and Alvarez-Ayure (2021) characterizes collaboration as "high mutuality, including reciprocal feedback, sharing ideas, considering the proposals of others, seeking and giving help and feedback, and explaining and elaborating" (p. 3), an outcome that is at the heart of academic literacy and the key to successful instruction and learning.

Meanwhile, the FMI promotes personalized learning (Bin-Hady & Hazaea, 2022). As Du (2018) points out, students become "the controllers of learning progress" (p. 9) in a flipped class. Also, it allows teachers to provide their students with customized guidance and personalized recommendations, which "increases the productivity of the class" (Abbasian & Azeez, 2021, p. 102).

In addition, it enables teachers to make more efficient use of class time. Since learning initiates outside class, there is enough time to clarify any misunderstandings or answer questions arising while reviewing the online resources. This allows teachers

to focus on more challenging concepts and have enough time for practical activities that reinforce and deepen learning. The FMI teaches us that students learn better independently and cooperatively.

Even though the existing literature portrays promising horizons for the FMI, teachers should bear in mind that inserting technology into traditional classes per se does not guarantee positive results. Consequently, great care should be taken regarding the quality of materials provided to students before class and the guidance, supervision, and support provided by the instructor during class (Dong, 2023). In other words, the FMI is not only about including technology but also about the course objectives and requirements. (Hamamah & Delijar, 2020).

Overall, research findings suggest that educators in EFL contexts should consider incorporating the FMI as an effective way to help the learners. However, further research is required to explore the generalizability of the results of these findings across different populations and settings, as well as to investigate the long-term effects of the FMI on student learning outcomes.

Conclusion

The current study was conducted to further investigate the effects of the FMI in boosting non-English major students' reading comprehension skills and attitude in an EFL academic context.

Considering the demographic features of the participants, this study extended the scope of previous studies, which primarily focused either on native speakers and content classes in L1 or on English majors in L2 or FL educational contexts. Additionally, including participants from both genders ensured that the findings were representative of a more diverse, naturalistic student population and could be generalized to a broader audience across various educational settings.

Furthermore, the findings led to a more holistic view on the impacts of FMI on learning. While the investigation of its effects on reading comprehension enhancement indicated its positive impact on the cognitive aspect of learning, the examination of students' attitudes highlighted its important role in strengthening the affective dimension.

Unlike previous studies using video clips, the current study used audio files as the flip tool to preview the content of the passage before class. The idea was to provide the students with accessible learning material that could be listened to on-the-go. Since the audios contained no visual clues, students had to rely on their ears to interpret what they heard. Additionally, the recorded material improved their pronunciation,

listening, and speaking skills, as well. This motivated them to read the texts aloud in class and participate in follow-up discussions and debates. Finally, engaging with the material through different modalities improved their overall comprehension skills and retention of the content.

The results also revealed that the FMI could significantly improve the reading comprehension test scores of non-English majors, regardless of gender. This finding is consistent with previous research findings reporting benefits on reading comprehension (Abaeian & Samadi, 2016; Karimi & Hamzavi, 2017; Khabir et al., 2022; Samiei & Ebadi, 2021) as well as other communicative skills (Elfatah & Ahmed, 2016; El-Sway 2018; Mahmoudi, 2020; Namaziandost, et al., 2019). Thus, the FMI has the potential to enhance language-learning skills across diverse educational contexts.

Furthermore, based on the Likert-scale questionnaire data, it was concluded that the respondents held a positive view of the FMI. This is also in line with the previous survey studies implemented either self-report questionnaires (Abdullah et al., 2019; AL-Ghamdi & Al-Bargi, 2017; Asaka, et al., 2018; Bin-Hady & Hazaea, 2022; Hamamah & Delijar, 2020; Karimi & Hamzavi, 2017; Mehring, 2017; Mujtaba Asad et al., 2022; Namazidost et al., 2020), or semi-structured interviews (Fahim et al., 2020; Samiei & Ebadi, 2021). Thus, it should be well received by pedagogical policy makers, syllabus designers, material developers, and educators, and inserted into the educational programs to satisfy the needs and interests of Generation Z, who has grown up with digital technologies

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How to reference this article: Bahrami, S. (2025). Effects of Flipped Model of Instruction on Reading Comprehension and Attitude of Iranian Non-English Majors: A Mixed-Method Study . *GIST – Education and Learning Research Journal*, 31(31). <https://doi.org/10.26817/16925777.1954>