

Flipped classroom strategy and Saudi secondary students' grammar proficiency

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ABSTRACT

This study investigated the impact of FC on Saudi secondary school students' grammar proficiency. The participants in this study were 61 Saudi female students from the second level of secondary school. The participants were divided into two groups: the control group consisted of 30 students, and the experimental group consisted of 31 students. The control group was taught using the traditional method of instruction, while the experimental group was taught using FC. The data collection instrument was a pretest and posttest that were designed by the researchers. The pretest was administered at the beginning of the intervention, and the posttest was administered after a period of four weeks. The data from the pretest and posttest were analyzed quantitatively. The findings of the study revealed that FC did not have a significant impact on students' performance in grammar. There was no statistical difference between the scores of the students in both groups in the posttest. This study contributes to the existing literature on FC by providing evidence that FC does not have a significant impact on students' performance in grammar. One *explanation* is the potential mismatch between the self-directed nature of online education and the level of maturity and discipline typically expected from high school students. Also, other factors, such as the quality of the instructional materials and the teacher's pedagogical skills, may be more important than FC in improving students' grammar proficiency.

Keywords: flipped classroom; blended learning; EFL; grammar; teaching strategies; Saudi Arabia

INTRODUCTION

Language learning theorists and educators have developed a variety of teaching methods and approaches based on language acquisition and learning theories. These methods aim to help learners effectively acquire a second or foreign language (L2/FL) and achieve optimal performance (Basal, 2015; Gelan et al., 2018; Khoiriyah, 2021; Lee & Martin, 2019). One such teaching strategy is the Flipped Classroom (FC) strategy, which is a type of Blended Learning (Bergmann & Sams, 2012). In FC, the roles of the teacher, student, classroom, and home change. The classroom becomes a place for discussion and exercises, while the home becomes a space for learners to acquire knowledge and learn. This strategy has been shown to be effective in increasing students' engagement, allowing teachers to know more about their students, and facilitating collaborative learning (Chang, 2023; Hassell, 2022; Strelan et al., 2020).

Grammar is an inseparable part of any language system. It is the set of rules that govern how words change their form and combine with other words to make sentences. Grammar is related to the way words work together and guides language speakers in

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constructing sentences. Every person who communicates using a certain language can become aware of its grammar even without explicit instruction. Therefore, it is important to pay considerable attention to grammar teaching strategies in English language classes (Hinkel, 2016; Pawlak, 2021). This study investigated the impact FC on Saudi secondary school students' grammar proficiency.

FC is one of the four models of the Rotation pedagogical Model of Blended Learning (Staker & Horn, 2012). Credit is largely attributed to Aaron Sams and Jonathan Bergmann, who were high school chemistry teachers when they started using recorded lectures in 2006 (Bergmann & Sams, 2012). FC, also known as the inverted classroom, is a student-centered learning approach. Stickler (2022) defines FC as "a pedagogy that uses synchronous interaction mainly to discuss concepts and theories learned outside of the classroom" (p. 66). In FC, teachers prepare lesson content for students to learn before class, and then the teacher and students engage in discussion and activities during class time (Abeysekera & Dawson, 2015). FC is associated with active learning, which is a teaching method that engages students in the learning process. Andrews et al. (2011) define active learning as any instructional method that engages students in the learning process. They argue that active learning has positive outcomes, such as improved student engagement, understanding, and retention. Berrett (2012) notes that FC has been expanding in recent years as a way to improve teaching and learning. Berrett argues that FC can help students be more active in the learning process by requiring them to prepare for class outside of class.

In traditional classrooms, teachers are the sole source of information, transmitting knowledge to passive recipients—the students. Students typically listen, take notes, and participate as required. After the lesson, the teacher assigns homework and projects for students to complete outside the classroom. However, this dynamic changes in FC. In FC, students are exposed to new content and materials before they receive traditional instruction to increase their autonomy (Cabugsa, 2022). Students learn at home, at their own pace, and participate in activities during class time (Bergmann & Sams, 2012; Rajeh, 2023). Teachers' roles shift from being providers to facilitators, and students become active participants and learners instead of mere recipients (Al-Harbi & Alshumaimeri, 2016; Means et al., 2013; Nurkamto et al., 2019). Learning new content before in class instruction allows students to develop their skills and enhance their knowledge. Additionally, FC creates an environment where students can discuss and deepen their understanding with classmates and teachers, as well as receive feedback (Marsh, 2012; Oraif, 2018). In addition, FC also helps learners develop technological skills, which are essential requirements in the 21st century (Han, 2022). This is to say that FC is a flexible approach to teaching that can be adapted to different subjects and different learning styles. It is a promising method for improving student engagement and learning outcomes (Bergmann & Sams, 2012; Khazaie & Ebadi, 2023; Means et al., 2013).

The findings of FC research are contradictory. Vitta and Al-Hoorie (2023) conducted a meta-analysis of 56 language learning reports involving 61 unique samples and 4,220 participants to assess the effectiveness of FL in second language teaching. They found that FC outperformed traditional classrooms, with a large effect size. However, the effect had high heterogeneity and was influenced by publication bias, which reduced the effect size. Reports from non-SSCI-indexed journals tended to show larger effects compared to indexed journals, conference proceedings, and theses. They also found that the impact of FC did not significantly differ by age but varied based on the proficiency level, indicating higher effectiveness with higher proficiency. Alhamami and Khan (2019) conducted a study comparing traditional and FC approaches, discovering their equal effectiveness in improving the reading skills of Level 1 students. The research indicated that students held more favorable attitudes towards the FC approach than the general public. Notably, post-test results displayed no significant difference between the two treatments, reinforcing the notion that both traditional and FC methods could be equally potent in enhancing students' reading skills. In another study, Hao (2016) surveyed 387 middle school 7th graders to assess their readiness for FC in EFL classrooms. The study found that five dimensions contribute to FC readiness: learner control and self-directed

learning, technology self-efficacy, motivation for learning, in-class communication self-efficacy, and doing previews. The study also found that personal characteristics and individual circumstances, such as language beliefs, student perceptions of teacher characteristics, the availability of outside-school support and resources, learning performance, study time and net-surfing time, can affect FC readiness.

The study could potentially provide evidence that FC does not have a significant impact on secondary students' performance in grammar. This could inform teachers and educational policymakers about the effectiveness of FC in improving student learning. The study could potentially identify one potential explanation for the lack of impact of FC on students' grammar proficiency: the potential mismatch between the self-directed nature of online education and the level of maturity and discipline typically expected from high school students. This could help teachers and educational policymakers develop strategies to address this mismatch (Alhamami & Khan, 2019; Marsh, 2012; Vitta & Al-Hoorie, 2023; Yu & Gao, 2022). The study could potentially suggest that other factors, such as the quality of the instructional materials and the teacher's pedagogical skills, may be more important than FC in improving students' grammar proficiency. This could help teachers and educational policymakers focus on these factors when designing and implementing FC programs. Overall, the study has the potential to make a significant contribution to the literature on FC. The findings of the study could inform teachers and educational policymakers about the effectiveness of FC in improving student learning. The study could also help to identify factors that may influence the effectiveness of FC. Effective participation in online learning environments necessitates students to demonstrate intrinsic motivation, assume responsibility for completing online activities, approach online learning with earnest dedication, and exhibit a strong sense of independence and self-motivation.

This study is anticipated to yield potential noteworthy contributions to the existing academic discourse concerning the efficacy of FC pedagogical model, particularly within the specific realm of Saudi secondary school education. Theoretically, the result of this study is expected to shed some light on the field of Computer-Assisted Language Learning (CALL). By delving into the anticipated impact of FC on the grammar proficiency of 61 Saudi female students situated at the second level of secondary education, this research is poised to uncover valuable insights into the potential effects of FC on language learning outcomes. More specifically, this quantitative study seeks to address the effects of utilizing the flipped classroom (FC) approach on the grammatical proficiency of secondary school students in Saudi Arabia.

METHOD

Context and Sample

English is a mandatory foreign language in Saudi Arabia, with instruction from primary to university levels. McGraw-Hill, an American educational materials provider, supplies the English language learning textbooks used in the country. Different series are used for different educational tiers: the "We Can" series for primary levels, the "Super Goal" series for intermediate levels, and the "MegaGoal" series for secondary levels. Beyond compulsory education, English becomes an elective subject in Saudi universities. Additionally, it serves as the primary medium of instruction for specific disciplines such as engineering and computer sciences, highlighting its significance beyond linguistic acquisition and its integration into higher education pathways (Alhamami, 2023).

This study was carried out in the southern part of Saudi Arabia. The participants were students from the Elementary and Secondary School for Girls, specifically in their second year of secondary school. These students were divided into two tracks: the general track and the business track. All participants were Saudi nationals, born and raised in Saudi Arabia, sharing Arabic as their first language (L1). They were enrolled in the general education program and received instruction from Saudi English language teachers who

employed the *MegaGoal 2.2* textbook. The age range of the participants was 16 to 17 years, and they were categorized as EFL learners. The study's focus encompassed grammar lessons from two chapters, conducted during the sixth and ninth weeks of the second semester in the academic year 1444 AH-2023 AD.

The sample consisted of 61 female students from the second year of secondary school at the Elementary and Secondary School for Girls. The selection of the second year was based on recommendations from certain teachers who noted that first-year students often grapple with anxiety and unfamiliarity in relation to the new level and subjects. Furthermore, they are required to perform well and decide on their chosen educational track. Moreover, third-year students have to take the Qiyas exam and apply for college, which might influence their performance. To mitigate these potential influences, the study focused on the second year of secondary school. The chosen school was deliberately selected for several reasons: its proximity to the first researcher's location for easy accessibility, possession of two classes facilitating sample distribution, and the teacher's familiarity with FC methodology, particularly after the emergence of the COVID-19 pandemic.

Research Design

This research employs a quasi-experimental research design (McKinley & Rose, 2019) with the aim of establishing a causal relationship between the independent variable (IV), which is the impact of the FC approach, and the dependent variable (DV), which pertains to the grammar proficiency of secondary school students in Saudi Arabia. Moreover, the participants were initially divided into two distinct classes—Class A and Class B—by the school administration, and alterations to these groupings were not feasible. All the participants are Saudi females ($n = 61$). The control group comprised 30 students from the business administration track, whereas the experimental group encompassed 31 students from the general track. Both groups were instructed by the same teacher, adhered to an identical syllabus, utilized the *MegaGoal 2.2* textbooks, and engaged in five English classes per week.

Procedures

First, the first researcher obtained a facilitation of researcher's mission form from the Department of Education in Abha, Saudi Arabia. On January 3rd, the first researcher visited the Elementary and Secondary School for Girls and met with the vice principal and the English language teacher of the second level of the secondary school. The purpose and procedures of the study were explained to them, and they discussed the school policy and how the test would be administered. On January 8th, the pretest was conducted in the third class and was invigilated by the first researcher and the English language teacher. After the pretest, the links of the grammatical lessons and the interactive activities were sent to the teacher to be reviewed and to be shared with her students in the experimental group that would be taught using FC. Two days prior to the grammar lessons, the teacher shared the links of the grammar videos and the interactive activities with her students in the experimental group via the Madrasati platform. During class, the teacher initiated the lesson by asking those who opened the links and prepared for the lesson. The teacher and the students then proceeded to work on activities in the student book and the workbook. The stages of FC followed by the teacher were as follows: Pre-class stage (at home): The teacher uploads the links of the videos and the interactive activities. Students watch the videos and do the interactive activities to self-assess their understanding of the grammatical rules and familiarize themselves with the types of activities. Students prepare their questions to be asked during the class. During class stage (at school): The teacher makes a quick revision and asks questions to ensure that every student has watched the videos and done the interactive activities. Students work in groups and/or pairs to do the activities and explain what they have learned to their group and/or partners. The teacher in this stage works as a facilitator monitoring the class and helping students if they are facing any difficulty or having questions or concerns. The teacher gives students some tasks from the workbook as homework. Post-

Class stage (at home): Students do the tasks assigned by the teacher to be discussed in the next class.

On the other hand, students in the control group were taught using the traditional method of instruction. On January 30th, at the end of four weeks, students took the posttest, the same pretest, invigilated only by the English language teacher.

Instrument

The pretest and posttest were developed by the researchers to assess the students' understanding of the grammar lessons covered in two chapters of the course book *MegaGoal 2.2*. The tests included a combination of close-ended and open-ended questions, totaling twenty-two items. The first question, which was the easiest, consisted of fourteen multiple-choice items. These items assessed the students' ability to apply and analyze four grammatical rules: adjective order, too and enough, gerunds as subjects, and superlative + present perfect. The second question focused on the ordering of five adjectives. This question assessed the students' understanding and analysis skills. The third question involved rewriting a sentence. This question assessed the students' understanding skills. Each correct answer was awarded one mark, making the test out of twenty-two marks in total.

The grammatical rules covered in Unit 3 are adjective order, too and enough. The learning objectives for these rules are: to know that in English, adjectives come before nouns, to know that in English, no more than three adjectives are usually used at one time, and two are the most common, and describe some classroom objects. The grammatical rules covered in Unit 4 are gerunds as subjects and superlative + present perfect. The learning objectives for these rules are to: know that a gerund is the -ing form of a verb used as a noun and know that a gerund phrase is a gerund used with other words, give examples of sports that end with -ing such as swimming and cycling, practice finding examples of gerunds in their textbook, know that using the superlative with the present perfect is very common in English, and practice some activities of the superlative with the present perfect. Note that the learning objectives were derived from *MegaGoal 2.2 teacher's guide*.

Due to time constraints, a pilot study was not conducted for the pretest and posttest. However, in order to ensure the validity and the reliability of the test items, a questionnaire was designed by the researcher. The criteria for validity and reliability were based on suggestions provided by [Brown \(2010\)](#) in his book "Language Assessment: Principles and Classroom Practices." The questionnaire consisted of 10 statements related to the validity and reliability of the test, along with one open-ended question for teachers to provide suggestions. It was hand-delivered to one English language teacher and sent via WhatsApp to three other English language teachers for their review of the test and its items, as well as to evaluate its appropriateness. These teachers had over ten years of experience teaching English at the secondary school level. They agreed that the test was suitable for the grammar lessons, the students' level, and aligned with the evaluation guidelines provided by the Ministry of Education. In addition, the teachers provided some feedback on the test, which was incorporated into the final version. For example, they suggested that one of the questions be made more specific, and that another question be made more challenging. The feedback from the teachers was helpful in ensuring that the pretest and posttest were valid and reliable measures of the students' understanding of the grammar lessons.

Videos and Activities

Five videos were selected from YouTube, with lengths ranging from four to eleven minutes. The videos were carefully reviewed by both the first researcher and the language teacher to ensure that they were suitable for the students and the lessons. The language used in the videos was kept simple, and they included multiple examples. Additionally, the videos were transcribed in Arabic.

Regarding the activities, they were selected from English language learning websites that offer interactive learning activities. These activities were thoroughly reviewed by both

the researcher and the teacher. They were specifically chosen from ESL learning resources, allowing students to receive immediate feedback and independently identify any errors they may have made. These activities were designed to help students practice the grammatical rules that they learned in the videos. They were also designed to be engaging and interactive, so that students would stay motivated and engaged in the learning process.

RESULTS AND DISCUSSION

The data derived from both the pretest and posttest were subjected to analysis using Microsoft Excel and JASP (Jeffreys's Amazing Statistics Program). Descriptive analytical methods, encompassing computations of the mean and standard deviation (SD), were administered to scrutinize the connection between the independent variable (IV), which pertains to the influence of the FC, and the dependent variable (DV), signifying the grammar proficiency of secondary school students in Saudi Arabia. Furthermore, a t-test analysis was executed to delve deeper into this established relationship. The tests were graded manually, then students' scores were coded into Microsoft Excel then exported JASP. The correct answer was given one mark and the incorrect answer was given zero.

The Pre-test Results

The pretest was conducted to ensure that the control and experimental groups were comparable and to establish a baseline for measuring the impact of FC on the grammatical performance of second-year secondary school students. An independent samples t-test was conducted to identify any statistically significant differences between the mean scores of the control and experimental groups in the pretest. The pretest was carefully designed to align with the learning objectives of the two units under study. The results of the t-test showed that there was no statistically significant difference between the mean scores of the control and experimental groups in the pretest, $t(60) = -0.403$, $p = 0.686$. This suggests that the two groups were comparable at the outset of the study. The homogeneity assessment is crucial as it establishes a balanced starting point for assessing the influence of the FC approach on grammatical performance across both groups. This means that any differences in grammatical performance between the two groups at the end of the study can be attributed to the FC approach, rather than to any preexisting differences between the groups. In addition to the t-test, the mean and standard deviation of the pretest scores were also calculated. The mean score for the control group was 4.36, and the mean score for the experimental group was 4.16. The standard deviation for both groups was 2.67 and 2.07, respectively. The mean scores for both groups were relatively close, indicating that the two groups were comparable in terms of their grammatical knowledge at the outset of the study. The standard deviations were also relatively similar, suggesting that the two groups were also comparable in terms of their variability in grammatical knowledge. The outcomes of this analysis are presented in the [Table 1](#).

Table 1. The result of independent sample t-test results for the pretest

Group	No.	Mean	St. Deviation	t Value
Control Group	30	4.36	2.671	-0.403
Experimental Group	31	4.16	2.067	

Post-test Results

An independent samples t-test was conducted to identify any statistically significant differences between the mean scores of the control and experimental groups in the posttest. The posttest was carefully designed to align with the learning objectives of the two units under study. The results of the t-test showed that there was no statistically significant difference between the mean scores of the control and experimental groups in the posttest, $t(60) = -0.727$, $p = 0.471$. This suggests that the two groups performed

similarly in the posttest. However, it is noteworthy to acknowledge that there exists a distinct disparity in the mean scores attained by the control and experimental groups. Specifically, the mean score of the experimental group (12.60) was slightly higher than the mean score of the control group (11.64). This differential trend implies that the implementation of the FC approach may have yielded a positive influence on the grammar achievement of the students, albeit without attaining statistical significance. The mean scores for both groups were relatively close, indicating that the two groups performed similarly in the posttest. However, the mean score for the experimental group was slightly higher than the mean score for the control group. This suggests that the experimental group may have benefited slightly from the FC approach. The standard deviations for both groups were also relatively similar, suggesting that the two groups were also comparable in terms of their variability in grammatical performance. The results of the posttest analysis suggest that the FC approach did not have a statistically significant impact on the grammatical performance of second-year secondary school students. However, the results do suggest that the FC approach may have had a positive impact on the grammatical performance of students, albeit without reaching statistical significance. The results are presented in [Table 2](#).

Table 2: The result of independent sample t-test results for the posttest

Group	No.	Mean	St. Deviation	t-value
Control Group	30	11.64	6.306	-0.727
Experimental Group	31	12.60	5.739	

Discussions

This study looked at how the FC approach affected the grammar skills of second-year secondary school students in Saudi Arabia. The research question was: "How does using the FC approach affect the grammar skills of Saudi secondary school students?" The findings of the study showed that using the FC approach did not make a statistically significant and positive difference to students' grammar grades. This means that the research's null hypothesis, which stated that there would be a statistically significant difference ($\alpha=0.05$) in the posttest scores between the experimental and control groups, with the experimental group scoring higher, was rejected. Instead, the alternative hypothesis, which stated that there would be no difference in the posttest scores between the two groups, was accepted. This means that the FC approach did not help students improve their grammar skills any more than the regular teaching method.

Other studies have also found that the FC approach does not always improve students' grammar skills. For example, [Al-Harbi and Alshumaimeri \(2016\)](#) studied 43 second-year female students in Saudi Arabia and found that FC did not make a significant difference to their grammar performance. [Alhamami and Khan \(2019\)](#) also found that FC was no better than traditional teaching methods at improving reading skills for Level 1 university students in Saudi Arabia. However, not all studies have found the same results. [Al-Naabi \(2020\)](#) studied 28 Omani university students and found that FC did help to improve their grammatical comprehension and usage. [Shaari et al. \(2021\)](#) also found that FC was effective in improving students' grammar skills. This suggests that the impact of FC on grammar proficiency is complex and depends on a variety of factors, such as the context in which it is implemented, the pedagogical strategies used, and the individual students involved. More research is needed to understand how these factors interact and affect the relationship between FC and grammar proficiency.

One potential negative of using online learning for high school students is that they may not take it as seriously as traditional classroom instruction. This is because online learning can be more self-directed, and students may be less likely to stay on task without the direct supervision of a teacher. Additionally, some students may find it difficult to stay motivated when learning online, especially if they are not used to it. As a result, they may not take responsibility for watching online learning videos and materials, and they may not learn effectively. There is some research to support this claim ([Jensen et al., 2015](#); [Lin et al., 2017](#); [Missildine et al., 2013](#)). Additionally, the students who took online

courses were more likely to report feeling bored and less likely to feel engaged in their learning than students who took traditional classroom courses. Of course, not all high school students will have difficulty learning effectively through online methods. However, it is important to be aware of the potential challenges that some students may face when learning online. If teachers are able to address these challenges, online learning can be a very effective way to deliver instruction to high school students. Online learning can be more difficult for students who have learning disabilities or who are not used to working independently. Students who are not motivated to learn may be more likely to procrastinate and to not complete their online assignments. Teachers need to be careful to design online learning activities that are engaging and that keep students on task. Teachers also need to provide regular feedback to students so that they can track their progress and make sure they are learning the material as it was strongly suggested by the previous research (Hung, 2015; Marca & Longo, 2017; Roux & Hamciuc, 2014; Shih & Huang, 2019). Overall, online learning can be a very effective way to deliver instruction to high school students. However, it is important to be aware of the potential challenges that some students may face and to take steps to address these challenges. With careful planning and implementation, online learning can be a great way to help high school students learn effectively.

The implementation of flipped classroom methodologies, which emphasize pre-class engagement with learning materials and subsequent in-class active discussions, may further accentuate the challenges stemming from this issue. While the flipped classroom model has shown promise in fostering student participation and critical thinking skills, its success heavily relies on students' commitment to the initial independent acquisition of content (Haghighi et al., 2019; Khoiriyah, 2021; Shih & Huang, 2019; Su Ping et al., 2019). The lack of self-driven online learning readiness among high school students could undermine the effectiveness of this approach, as the success of the in-class components hinges on the prerequisite comprehension gained through online engagement. Hence, it becomes imperative for educators and educational institutions to recognize the potential limitations of high school students' capacity to embrace online learning autonomously. Addressing this issue necessitates the cultivation of self-regulation skills and the provision of structured support mechanisms, such as teacher monitoring and guidance, to bridge the gap between students' learning behaviors and the demands of digital learning environments.

The findings of the study on the effectiveness of FC in improving grammar proficiency among Saudi second-year secondary school students are subject to certain limitations. The study relied solely on tests to assess student learning. While tests are a valuable tool for measuring student knowledge, they do not provide a comprehensive picture of student learning. Interviews and questionnaires could have been used to supplement the test data and provide a more holistic understanding of how FC impacted student learning. For example, interviews could have been conducted with students to get their feedback on the FC approach and how it helped them learn grammar. Questionnaires could have been distributed to students to assess their satisfaction with the FC approach and their perceived learning gains. The study was conducted in the middle of the second semester of the academic year. This limited the amount of time that the researchers had to prepare the teachers and students and develop the materials. As a result, the study may not have been as effective as it could have been.

Future research should allocate adequate time for these tasks. For example, researchers could start planning for the study in advance and develop the materials well in advance of the start of the study. They could also provide the teachers with more training on how to use FC effectively. The study focused on only two grammar lessons during a short period of time. It would be more beneficial to include more lessons for a longer period. This would allow the researchers to see if FC has a sustained impact on student learning. For example, the study could have included four grammar lessons over a period of two months. This would have given the researchers a better understanding of how FC impacts student learning over time. The pretest was administered before the teachers had received any training on FC. This may have biased the results of the study. The

posttest should have been administered immediately after the treatment period to get a more accurate measure of student learning. For example, the pretest could have been administered at the beginning of the semester and the posttest could have been administered at the end of the semester. This would have allowed the researchers to assess the impact of FC on student learning over the course of the semester. Despite the limitations of the study, the findings suggest that FC may not be an effective approach for improving grammar proficiency among Saudi second-year secondary school students. However, more research is needed to confirm these findings and to identify the factors that contribute to the effectiveness of FC.

CONCLUSION

The field of language education, especially EFL, has seen a proliferation of different teaching approaches aimed at facilitating language learning for ESL and EFL learners. Some of these strategies have demonstrated their efficiency in language teaching and learning, while others have shown mixed results. The main goal of the current study was to determine the impact of FC on EFL Saudi secondary school students in Abha. FC is a teaching strategy in which students learn the content outside of class, typically through videos or online modules, and then come to class to engage in activities and exercises that help them apply what they have learned. The study found that FC did not have a significant impact on students' achievements in grammar. This could be attributed to several factors, such as the timing of conducting the study and the choice of data collection instruments. The study was conducted in the middle of the academic year, when students were already under a lot of pressure to perform well in their exams. This may have made it difficult for them to focus on the FC lessons. Additionally, the study used a pre-test/post-test design, which is not always the most effective way to measure the impact of a teaching strategy. A better approach would have been to use a longitudinal design, which would have allowed the researchers to track students' progress over a longer period of time. Despite the limitations of the study, the findings provide some insights into the challenges of adopting modern and technological teaching strategies in EFL and ESL classrooms. First, it is important to ensure that students have the necessary technology and resources to access the FC lessons. Second, teachers need to be trained on how to use FC effectively. Third, it is important to carefully consider the timing of the study. Conducting a study in the middle of the academic year may not be the best time to assess the impact of a new teaching strategy. The current study provides a foundation for future research on the impact of FC on EFL learners. Future studies should address the limitations of the current study by using a longitudinal design and by ensuring that students have the necessary technology and resources to access the FC lessons. Additionally, future studies should investigate the factors that contribute to the effectiveness of FC, such as the quality of the FC lessons and the teacher's training.

CONFLICTS OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this paper.

AUTHOR CONTRIBUTIONS

AlQout, A.M.: Conceptualization (lead), methodology (lead), writing – original draft (lead), review (supporting), editing (supporting), securing funding. **Alhamami, M.:** Conceptualization (supporting), methodology (supporting), writing – original draft (lead), review (lead).

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