
RESEARCH ARTICLE

Investigating the Effect of a Flipped Grammar Classroom Model On Moroccan EFL Secondary School Students: Students' Grammar Performance, Perceptions and Student-Related Challenges 2024

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ABSTRACT

This study investigates the effect of a flipped classroom model on EFL secondary school students' performance in grammar. The study also sought to measure students' perceptions of this flipped classroom and student-related challenges faced in this new learning environment. For the purpose of the study, a pretest-posttest quasi-experimental design was carried out. The experiment lasted for three weeks in which two intact classes (grade 12) from Al Mansour Dahbi upper secondary school in Sidi Kacem were selected for the study. The first class was assigned to the experimental group (n=34) while the second class was assigned to the control group (n=34). The experimental group students were taught through the flipped classroom model and the control group students were taught using the traditional classroom model. A pre-post grammar test was administered to measure students' performance in the four grammar topics which were selected from the student textbook "Gateway 2 To English". After the experiment, a 5-point Likert scale questionnaire was used to investigate the experimental group students' perceptions of the flipped classroom videos and, the in-class activities, and student-related challenges. The findings of the pre-post grammar test indicated that experimental group students significantly outperformed the control group students. Regarding experimental group students' perceptions and the challenges they faced in the flipped classroom, it was found that most students developed a strong positive attitude towards the flipped approach.

KEYWORDS

Flipped learning; scaffolding; formative assessment; secondary school; Morocco

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1. Introduction

The study investigates the flipped classroom as a new approach to teaching English as a Foreign Language (EFL) in Almansour Eddahbi school. For many years, educators have been struggling to find new ideas and methods to enhance students' learning and help them achieve better in their studies. For instance, Black and William (2009) focused on examining the effectiveness of formative assessment in promoting students' learning; Soleimani et al. (2014) claimed that using mobile technology can result in good learning outcomes; Valiandes (2015) investigated the impact of differentiated instruction on students learning. However, according to the literature, all teaching approaches or methods have been found to have their pros and cons regarding their effectiveness in the classroom. No single teaching method has been proven to promote students' performance significantly due to students' different learning abilities (Potter, 2013). For instance, the learner-centered methods such as constructivism, in which students work collaboratively to build new knowledge require students to invest more time to deal with workload in this active learning environment. Potter (2013:5) stated that "even the most intellectually gifted students will need to invest more time in a constructivist course". Thus, struggling learners may find it even more challenging to learn in that demanding learning context. On the other hand, the teacher-centered methods such

as direct instruction are considered more beneficial to struggling learners who need more support and individualized instruction from the teacher (Stover et al., 2017). Therefore, a new teaching approach that can make use of effective instructional methods should be considered to help students with different learning abilities perform better.

No doubt, recent advancements in communications technology and the gradual integration of different technological tools in the classroom have played a significant role in changing the classroom from being traditional to modern. In the past few years, students have benefited from both online and face-to-face instruction. Many studies have reported students' active involvement in the learning process and positive attitudes toward the blended learning environment (Alsowat, 2016; Evseeva and Solozenko, 2015; Vo et al., 2017). However, the need to adapt education to the fast-changing world and to deal with the challenges teachers face in the classroom such as diversity, mixed ability classes, absenteeism, time constraint has rendered the traditional blending of technology and teaching methods ineffective. For this reason, in 2007 some educators and practitioners like Bergmann and Sams started to make use of the learning and teaching methods that are evidenced in the literature to promote students' learning and the new technological tools to meet the learning needs of different students. Thus, the flipped classroom approach to teaching and learning has emerged as a new innovative strategy that effectively blends technology and the best instructional methods and techniques to enhance students learning (Boelens et al., 2017; Vo et al., 2017).

Most studies attribute the dynamicity created in the flipped learning environment to the time gained as a result of delivering lessons to learners using recorded videos outside the classroom (Karimi and Hamzavi, 2017; Hao, 2016). That is, students come prepared and ready to solve problems and share information with their peers in class (Yilmaz, 2017). In fact, teachers have opportunity to devote classroom time to formatively assess their students, scaffold and differentiate instruction to meet different students learning needs (Tutancu and Aksu, 2018). No doubt, the implementation of these teaching techniques in the traditional classroom has become difficult due to time constraints and the heterogeneity of the classrooms (De Jager, 2017).

Therefore, this current study was conducted at AlMansour Eddahbi school. The application of this model to the teaching of grammar in the EFL classroom is considered an innovative teaching strategy to improve students' grammatical performance. Problem of the study

Many students failed to grasp the grammatical concepts in the traditional classroom despite the efforts teacher made to simplify the tasks and help them practice the grammar points.

Research questions

Exposing students to the flipped learning approach may enhance students' grammar performance. In short, this action research attempts to find answers to the following research questions:

- a- To what extent can flipped learning enhance Moroccan EFL students' grammatical performance?
- b- What are Almansour Eddahbi secondary school students' perceptions of the flipped classroom?
- c- Are there any challenges EFL students face in the flipped classroom?

2. Literature Review

The flipped classroom is defined as a new instructional strategy that uses communication technology to inverse the traditional classroom (Abdelfatah and Ahmed, 2016; Butt, 2014). That is, outside the classroom the learners are introduced to new knowledge or content by the instructor through the use of technological tools such as recorded videos, online learning platforms, forums, etc. to help students better understand the new material and during class time students are given more opportunity to interact with the teacher and their colleagues to construct meaning (Ayçiçek and Yanpar, 2018; Boyraz and Ocak, 2016). The main purpose of flipping learning is to enable students to learn new material at home and do more practice in class under the instructor's guidance and supervision (Hao, 2016; Tutancu and Aksu, 2018).

As can be noticed, teachers also hold the responsibility of guiding and supporting students in their learning experience.

2.1 The role of the flipping teacher

Most researchers agree that the roles of teachers and students in the flipped classroom have undergone significant changes. According to Evseeva and Solozhenko (2015), to promote collaborative learning and problem solving in the flipped classroom the teacher is required to play the role of a facilitator and supporter who provide assistance to students with different learning needs. Teachers are held responsible for their students' learning as they have "to monitor students' work and identify problems as students practice the skills" (Smith et al., 2018:80). Shifting the role of the teacher from a content-deliverer and source of knowledge to a guide on the side will make learners more autonomous and "the learning process more efficient" (Evseeva and Solozhenko, 2015).

2.2 The roles of the learners in the flipped classroom

In the flipped classroom, learners are responsible for their own learning outside the classroom as they need to view the videos and do some tasks before coming to class (Abd et al., 2016). Also, students become active participants in the construction of meaning instead of being dependent on their teacher regarding the information presented to them (Al-harbi and Alshumaimeri, 2016). Doubtless, changing the roles of both teachers and students in the flipped classroom has made the learning environment more learner-centered and the teacher focuses more on maximizing students learning. Bergmann and Sams (2012) pointed out that the flipped classroom gives teachers sufficient time to individualize and differentiate instruction and "guide students through the vast ocean of information" to help students reach good learning outcomes.

2.3 Students' performance in the flipped grammar classroom

Many experimental studies have investigated the positive impact of the flipped classroom approach on EFL students' learning outcomes. For example, Al-harbi and Alshumaimeri (2016) investigated 43 Saudi EFL students' performance in grammar. They reported that students taught through the flipped classroom strategy were slightly better than students taught in the traditional classroom. Likewise, El-Bassuony (2016) examined the effectiveness of the flipped model in increasing students' achievement in grammar. In her study, a pre- post-test design was used to compare the scores of the experiment group and the control group students. The experiment was conducted on 49 first year secondary school students in Egypt. The results showed that students' grammar performance in both writing and speaking improved significantly in the flipped classroom. Students' interaction in the classroom to construct meaning under the teacher's guidance was instrumental in bringing about good performance results. These positive results were also supported by Li et al.'s (2017) experimental study which investigated the effect of the flipped approach on students' grammar performance. The findings revealed the flipped learning environment increased students' success and achievement. It was found that the learning gains were attributed to the variety of resources the teacher prepared to enrich the flipped grammar classroom and increase students' motivation. They also found that students in the traditional grammar classroom felt bored because the teacher was the primary source of knowledge and the only assessor of the learning process, which marginalized students and made them passive recipients of knowledge (Li et al., 2017).

Although most of the previous experimental studies support the flipped classroom model, some studies have not found significant impacts. For instance, Cabi (2018) reported that flipping the classroom did not bring any significant positive learning outcomes, but 'there was even a small decrease observed in the mean scores of the students taught through FC' (Cabi, 2018:213). For this reason, disagreement on the impact of the flipped approach on students' academic achievement requires more experimental studies to provide concrete data regarding its effectiveness.

2.4 EFL students' perceptions of the FCM

Previous research studies measuring students' perceptions of flipped classroom instruction depicted positive feedback. For instance, a study conducted by Santikarn and Wichadee (2018) found that ESL learners had positive opinions towards flipped learning. Also, Unal and Unal (2017) also listed some benefits of flipped learning such as good learning outcomes and students' positive views towards the flipped classroom. Similarly, Sheralin and Pudim (2017) measured students' perceptions towards the flipped classroom strategy. They revealed that EFL learners liked the flipped classroom grammar because of the learning opportunities it provided to help them to improve their grammar performance. Furthermore, Webb and Doman (2016) evaluated the impact of the FCM on EFL learners' grammar performance and their attitudes. The study was conducted on 64 students from three different countries: Macau, China and the USA. A five-point Likert scale grammar survey was used to examine experimental students' satisfaction with the flipped approach. The findings of the survey revealed positive opinions towards the flipped learning methodology. Flipping learning was rewarding for experimental students as their grammar scores improved significantly.

3. Methodology

3.1 Context and participants

This research study was a three-week experiment conducted on 68 students studying English as a Foreign Language (EFL) in Al Mansour Dahbi public secondary school in Sidi Kacem in the first semester of the 2023-2024 academic year. The participants were at the final stage of secondary education (grade 12). Since students were studying in their assigned classes, the random distribution of participants to two groups was unfeasible. Therefore, convenience sampling was used. Both classes were informed of the research procedure. After that, the researcher randomly assigned one of the two classes to the experimental group (n=34) and the other to the control group (n=34). The flipped classroom and the traditional classroom consent forms were then distributed to the experimental group and the control group respectively. The participants in both groups were taught by the same researcher.

3.2 Pre-post-test quasi-experimental design

This design is used when the random assignment of participants to the experimental group and control group is unfeasible (Campbell and Stanley, 1963). Therefore, it is considered the most appropriate design in school settings where students are already assigned to their classes (Creswell, 2014). In this design, all groups are given a pre-test before the treatment and a post-test at the end of the study to examine the cause-and-effect relationship between the independent variable and the dependent variable. Also, the researcher selects the experimental group and control group from the population that share the same characteristics to create equivalent groups in an attempt to increase internal validity (Cohen et al., 2007).

3.3 Descriptive research design

The survey research approach, a sub-category of descriptive research, is mainly used to describe the perceptions, attitudes, opinions etc. of a group of participants selected for the study (Cohen et al., 2007). The two main instruments used to gather data are questionnaires and interviews. In this study, a closed-ended Likert scale questionnaire was administered to measure experiment group students' perceptions of the flipped classroom and the challenges they may have faced in the new learning environment.

3.4. Instruments and materials

The researcher used two instruments to collect data; a pre-posttest and a five-point Likert scale questionnaire. The test was designed to measure students' grammar performance in the four grammar topics which were selected from the student textbook "Gateway 2 To English". These topics included the simple past and the past perfect from Unit One and relative pronouns and gerund and infinitive from Unit two. Using the pre-test and post-test design was meant to compare students' proficiency level in grammar before and after the experiment in order to show the cause-and-effect relationship between flipped learning and traditional learning (independent variables) and students' performance in grammar (the dependent variable).

The pre-post-test included 32 questions as shown in table (3.1) below.

Table (3.1): General description of the test.

Grammar topics	No. of questions	Types of questions	No. of items	Marks
Past simple	1	a. Circle the right answer	4	4
	1	b. Put the verbs into the past simple	4	4
Past perfect	1	a. Choose the right answer from the given list	4	4
	1	b. Put the verbs into the past perfect	4	4
Relative pronouns	1	a. Choose the correct answer	4	4
	1	b. Correct the underlined relative pronouns	4	4
Gerund and infinitive	1	a. Choose the right answer	4	4
	1	b. Fill in the correct form	4	4
Total	8	8	32	32

As for the survey questionnaire, it was composed of two sections. The first section that measured students' perceptions of the flipped classroom model was composed of two parts. The first part consisted of 7 items targeting students' perceptions of the FC videos while the second part included 9 items examining students' perceptions of the FC in-class activities. As for the second section, it included 6 items; it investigated the challenges experiment group students faced in the flipped classroom. Each item had 5 response categories that ranged from strongly agree (5) to strongly disagree (1). It is worth mentioning that the items related to students' perceptions and student-related challenges were identified after reviewing

previous studies on the FCM (Alnuhayt, 2018; Ayçiçek and Yanpar, 2018; Alsowat, 2016; Sherralyn and Pudín, 2017; Alharbi and Alshumaimeri, 2016; Webb and Doman, 2016; Schulter et al., 2014; Smith et al., 2018).

3.5. Procedure

To examine the effect of the flipped classroom model on students' grammar performance, students' perceptions of flipped learning and the challenges students may face in the new learning context, four grammar topics were selected from the English textbook "Gateway 2 To English" designed specifically for grade 12 students. After administering the pre-test, the experiment group students were taught using the flipped model, while the control group students were taught using the traditional model as described in this study. Both groups were taught by the researcher.

During the three-week experiment, four short video grammar lessons were created using the Screencast-O-Matic app. The videos were posted on Eliademy and sent to the participants via e-mails. They were short in duration (10 minutes) to keep students' attention and interest (Bergmann and Sams, 2012). After watching the videos, the experiment group students did the online assignments before coming to class. The students' completion of tasks was regularly monitored by the instructor to ensure all students in the experimental group were engaged in the flipped learning activities outside the classroom.

At the beginning of each class the teacher-researcher formatively assessed students' knowledge of the grammar structure learned outside the classroom. Based on the assessment results, the instructor immediately intervened to differentiate instruction and assist students (scaffolding) who needed more support and practice to catch up with their peers. All students were asked to do some tasks in groups to improve their understanding of the learned material. The control group students were taught using the traditional model. They were first introduced to the new grammar topic. Then, they did some practice to learn how to use the grammar structure. After that, they were formatively assessed to check their progress. They also worked in groups to do the tasks and negotiate the material. The details of the three-week experiment are given in Appendix A.

4. Data Analysis

After collecting data using a pre-post-test and a questionnaire, the SPSS 20 and Excel programs were used to provide a basic descriptive analysis of the pre- and post-test scores for the grammar topics and the questionnaire items. The students' responses were displayed in means, standard deviations and percentages in order to gauge their attitudes toward the flipped grammar classroom.

5. Results

a. Students' grammar performance

The pre-post-test design was used to compare the experiment group and control group students' proficiency level in the four grammar topics before the treatment and their learning performance at the end of the experiment. The tests results were analysed using independent samples t-test. The table below presents the statistical analysis of the pre-test results:

Table 5.1 Description of the experimental and control group students' pre-test results

	Group	N	Mean	Std. Deviation	t	df	p-value
Pre-test	Control	34	7.50	2.390	.906	66	.182
	Experimental	34	8.12	3.179			

*p>.05

As seen in table 5.1, the mean scores of the experimental and control group students in the pretest were (8.12) and (7.50) respectively. Though the pretest scores of the experimental group were slightly better than the control group, the analysis of the results depicted that there was not a statistically significant difference between the experimental and control group students in their grammar performance (p= .182). Therefore, the experimental and control groups were considered equivalent before the treatment.

After the three-week experiment, both groups were administered a post-test at the same time. It was composed of the same questions as the pre-test.

Table 5.2 Description of the experimental and control group students' post-test results

	Group	N	Mean	Std. Deviation	t	df	p-value	Effect size
Post-test	Control	34	13.94	2.295	.7981	66	.000	1.96
	Experimental	34	20.03	3.810				

*p<.05

As shown in table 5.2, the analysis of the results of the post-test revealed that the mean score of the experimental group was (20.03) while the mean score of the control group was (13.94). This depicts that the experimental group performed better than the control group.

To further examine the significance of the test results, the effect size (Cohen's d) was measured using the formula of Cohen's d and interpreted based on Cohen's d benchmarks as shown in the table (4.3) below.

Table 5.3 Cohen's d benchmarks and formula

Effect size	Use	Formula	Small	Medium	Large
Cohen's d	t-test	$d = \frac{M1 - M2}{SD \text{ pooled}}$	0,2	0.5	0.8

It was found that the effect size was (1.96), which is considered very large according to Cohen's d values.

To further explain the efficacy of the flipped classroom model on students' performance in the four grammar topics, Figure 1 and 2 below give more details about the experimental and control group students' mean pre-test and post-test scores for each grammar topic.

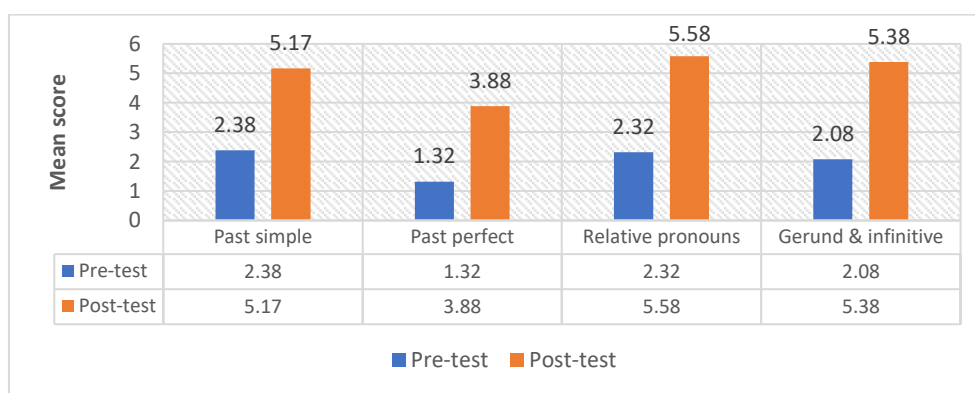


Figure 1: Mean pre-test and post-test scores for the grammar topics
(Experimental group)

Figure 1 shows that students in the experimental group significantly improved their performance in the four grammar topics. The highest mean score was (4.17) for the past simple and while the lowest mean score was (3.88) for the past perfect. Regarding the control group students' performance in the four grammar topics, they also made significant learning gains in grammar.

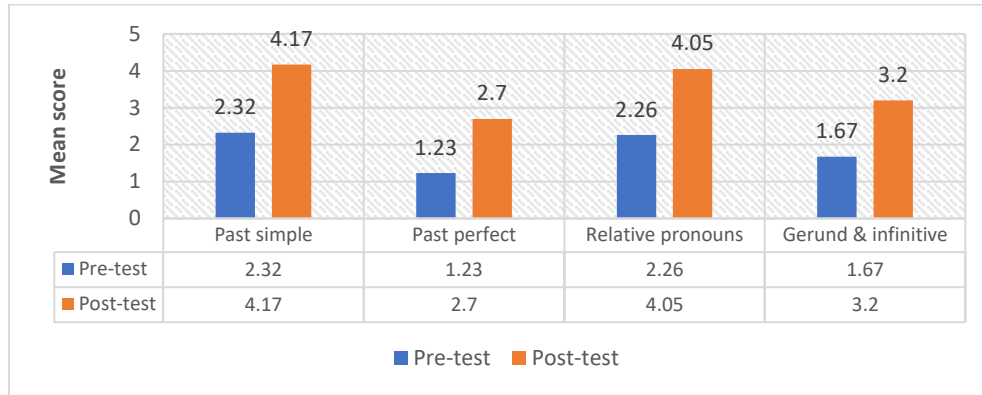


Figure 2: Mean pre-test and post-test scores for the grammar topics
(Control group)

Figure 2 shows that the simple past received the highest mean score (4.17) while the past perfect received the lowest mean score (2.7).

In short, though the experimental and control groups' mean post-test scores increased, the mean score for each grammar topic was in favour of the experimental group students.

b. Students' perceptions of the Flipped classroom

A 5-point Likert questionnaire was used to measure experimental group students' perceptions of the flipped classroom and the challenges they may have encountered in the flipped learning environment. It consisted of 22 items. The first section in the questionnaire (16 items) was concerned with students' perceptions of the flipped classroom and was divided into two parts. The first one (7 items) investigated the participants' perceptions of the video-recorded lessons viewed outside the classroom, while the second one (9 items) examined students' perceptions of the flipped classroom in-class activities. The second section measured student-related challenges. Since the data collected was quantitative in nature, a descriptive analysis of the items was provided. It included the percentages, means and standard deviations.

c. Students' perceptions of the flipped videos

In this part, seven items were designed to investigate students' perceptions of videos as a learning tool in the flipped classroom. The items were 1,2,3,4,5,6 and 7. The means of the participants' responses to these items ranged between (3.26) and (4.08) with standard deviations that ranged between (.96) and (1.18), indicating that most experimental group students developed strong positive attitudes towards the video-recorded lessons. Table 5.3 below shows the frequencies, percentages, means and standard deviations for each item.

Table 5.4 Descriptive statistics for the participants' perceptions of the videos after the experiment

Item		SA	A	N	D	SD	Mean/SD	Rank
1. The videos helped me prepare for my class in advance.	N	13	15	2	4	0	M=4.08	1
	%	38.2	44.1	5.9	11.8	0	SD=.96	
2. Watching the videos increased my confidence in doing the assignments individually and participating in in-class activities.	N	8	18	0	7	1	M=3.73	4
	%	23.5	52.9	0	20.6	2.9	SD= 1.13	
3. The video content was clear and easy to understand.	N	4	20	4	4	2	M=3.58	5
	%	11.8	58.8	11.8	11.8	5.9	SD= 1.04	
4. Watching the videos helped me learn grammar at my own pace.	N	11	15	3	4	1	M=3.91	2
	%	32.4	44.1	8.8	11.8	2.9	SD=1.08	

5. I enjoyed learning grammar through video lectures.	N	2	15	10	4	3	M=3.26 SD=1.05	7
	%	5.9	44.1	29.4	11.8	8.8		
6. The videos encouraged me to take more responsibility for my learning.	N	4	22	1	3	4	M=3.55 SD=1.18	6
	%	11.8	64.7	2.9	8.8	11.8		
7. Having access to the video lectures anytime and anywhere motivated me to learn grammar.	N	10	15	2	6	1	M=3.79 SD=1.14	3
	%	29.4	44.1	5.9	17.6	2.9		
Overall mean							3.70	

Table 5.4 shows that 44.1% and 38.2% of the participants agreed and strongly agreed that the video-recorded lessons used to introduce students to the grammar topics outside the class helped them prepare for their English class in advance. However, 11.8% of the respondents disagreed while 5.9% were not certain whether the videos helped them prepare for the class in advance. The mean for this item was ranked the highest (M=4.08). Also, most respondents agreed and strongly agreed that the videos increased their confidence in doing the tasks individually and participating in in-class activities (item 2, 23.5% strongly agreed and 52.9% agreed), helped them to learn grammar at their own pace (item 4, 32.4% strongly agreed and 44.1% agreed), encouraged them to be responsible for their own learning (item 6, 11.8% strongly agreed and 64.7% agreed) and that having access to the videos anytime motivated them to learn grammar (item 7, 29.4% strongly agreed and 44.1% agreed). The means and standard deviations for these items were (M= 3.73, SD= 1.13), (M= 3.91, SD= 1.08), (M= 3.55, SD= 1.18), and (M= 3.79, SD= 1.14) respectively. As regards the participants' understanding of the video content (item 3), 58.5% and 11.1% of the respondents agreed and strongly agreed that the videos were clear and easy to understand. However, the lowest mean score was 3.26 for item 5, indicating that 44.1% and 5.9% of the participants agreed and strongly agreed that they enjoyed learning grammar through the video lectures, 29.4% stated neither agree nor disagree while 11.8% and 8.8% disagreed and strongly disagreed that learning grammar through videos lectures was enjoyable.

In short, the overall mean of (3.70) provides strong evidence that most experimental group students had positive perceptions of the video-recorded lessons.

d. Students' perceptions of the FC in-class activities

In this part, the flipped classroom in-class activities proved to be highly appreciated by experimental group students. As seen in table (4.5) below, the participants' responses revealed that most of them had positive attitudes towards the flipped classroom in-class activities.

Table 5.5 showed that 55.9% and 38.2% of the participants agreed and strongly agreed that the in-class activities were engaging and interactive while only 2.9% were not sure about it and 2.9% disagreed that the in-class activities were engaging and interactive. This item received the highest mean (M=4.29, SD=.67). Also, a great majority of students agreed and strongly agreed that the in-class activities increased their communication with the teacher (item10, 70.6% agreed and 11.8% strongly agreed), improved their interaction with other students (item 11, 47.1% agreed and 41.1% strongly agreed), improved their performance in grammar (item12, 47.1% agreed and 32.4% strongly agreed), and increased their interest in learning grammar (item 16, 61.8% agreed and 23.5% strongly agreed). The means and standard deviations for these items were (m=3.79, SD=.91), (M=4.29, SD=.83), (M=3.94, SD=1.09), and (M=4.05, SD=1.14) respectively. Moreover, the participants reacted very positively to item 14, "doing the grammatical tasks using technology was enjoyable" (58.8% agreed and 32.4% strongly agreed). However, 5.9% of them stood irresolute and only 2.9% disagreed that doing the tasks using technology was enjoyable. 35.3% and 47.1% of the respondents agreed and strongly agreed respectively that teacher's use of short online assessments and assignments in class enhanced their understanding of grammar (item15). However, 11.8% remained unsure whether these short online assessments improved their understanding of grammar.

Table 5.5 Descriptive statistics for the participants' perceptions of the FC in-class activities.

Item		SA	A	N	D	SD	Mean/SD	Rank
8. The in-class activities were engaging and interactive.	N	13	19	1	1	0	M= 4.29 SD=.67	1
	%	38.2	55.9	2.9	2.9	0		
	N	8	18	1	6	1	M= 3.76	9

9. I enjoyed learning grammar in small group work activities.	%	23.5	52.9	2.9	17.6	2.9	SD=1.10	
10. The activities in class improved my communication with the teacher.	N	4	24	3	1	2	M=3.79	7
	%	11.8	70.6	8.8	2.9	5.9	SD=.91	
11. The in-class activities increased my interaction with other students	N	15	16	2	0	1	M=4.29	2
	%	44.1	47.1	5.9	0	2.9	SD=.83	
12. The in-class activities enhanced my performance in grammar.	N	11	16	3	2	2	M=3.94	6
	%	32.4	47.1	23.5	5.9	5.9	SD=1.09	
13. The grammar activities were varied and interesting.	N	4	25	1	2	2	M=3.79	8
	%	11.8	73.5	2.9	5.9	5.9	SD=.94	
14. Doing the grammatical tasks using technology (Kahoot, Plickers, etc.) was enjoyable.	N	1	20	2	1	0	M=4.21	3
	%	32.4	58.8	5.9	2.9	0	SD=.68	
15. Teacher's use of short online assessments and assignments in class improved my understanding of grammar.	N	16	12	4	1	1	M=4.20	4
	%	47.1	35.3	11.8	2.9	2.9	SD=.97	
16. The in-class activities increased my interest in learning grammar.	N	8	21	4	1	0	M=4.05	5
	%	23.5	61.8	11.8	2.9	0	SD=1.14	
Overall mean							4.01	

In short, the weighted mean score of the experimental group students' perceptions of the flipped classroom in-class activities was (4.01), indicating that the participants held strong positive attitudes towards the in-class activities.

e. Student-related challenges faced in the flipped classroom

There were six items (17, 18, 19, 20, 21, and 22) seeking to investigate the student-related challenges encountered in the flipped learning environment. Table 5.5 below depicts the frequencies, percentages, means and standard deviations of the experimental group students' responses to the six items.

Table 5.6 Descriptive statistics for the participant-related challenges in the FC

Item		SA	A	N	D	SD	Mean/SD	Rank
17. I had difficulty adapting to this new method.	N	1	6	3	18	6	M=2.35 SD=1.06	1
	%	2.9	17.6	8.8	52.9	17.6		
18. I felt overwhelmed by the videos and assignments at home.	N	2	8	2	16	6	M=2.52 SD=1.21	4
	%	5.9	23.5	5.9	47.1	17.6		
19. It was difficult to find time to watch the videos and do the assignment.	N	1	8	1	21	3	M=2.50 SD=1.05	6
	%	2.9	23.5	2.9	61.8	8.8		
20. I did not receive immediate support from the teacher outside of class	N	0	3	3	23	5	M=2.11 SD=.76	2
	%	0	8.8	8.8	67.6	14.7		
21. It was difficult to have access to the flipped content outside of class.	N	2	5	3	17	7	M=2.35 SD=1.15	7
	%	5.9	14.7	8.8	50	20.6		
22. Watching the videos more than once was time consuming.	N	4	10	3	12	5	M=2.47 SD=1.54	5
	%	11.8	29.4	3.8	35.3	14.7		
Overall mean							2.38	

Based on Table 5.6, the means and percentages show that a slight majority of students disagreed that they faced difficulties in the flipped classroom. 52% and 17.6% of the respondents disagreed and strongly disagreed that they had difficulty adapting to the flipped classroom model. 17% and 2.9% agreed and strongly agreed that it was hard for them to get used to the flipped classroom while 8.8% remained undecided. The mean score for this item was (2.35). Moreover, 50% and 20.6% disagreed and strongly disagreed that it was difficult to have access to the flipped content outside of class. Only 5% and 2% agreed and strongly agreed that accessing the flipped content outside of class was a real problem while 8.8% neither agreed nor disagreed. Furthermore, the majority of participants disagreed (61.8%) and strongly disagreed (8.8%) that it was difficult to find time to watch the videos and do the assignments (item 19). However, 23% and 2.9% agreed and strongly agreed that finding the time to watch the videos and do the tasks was a real issue, while 2.9% were indecisive. Also,

the participants disagreed (67.6%) and strongly disagreed (14.7%) that immediate support was not provided outside of class (item 20). Only 8.8% of them agreed that they did not receive immediate support and 8.8% were not sure about it. In regard to feeling overwhelmed by watching the videos and doing the assignments (item 18), 47.1% and 17.6% disagreed and strongly disagreed. However, 23% and 5.9% agreed and strongly agreed that the flipped classroom activities outside of class were overwhelming while 2.9% were unsure. Finally, 35.3% and 14.7% disagreed and strongly disagreed that watching the videos was time consuming (item 22) while 29.4% and 11.8% agreed and strongly agreed that watching the videos required much time. Only 3.8% of them neither agreed nor disagreed.

In sum, the overall mean was (2.39), indicating that a slight majority of the participants did not consider the flipped model a challenging experience. However, it was noted that a considerable number of the participants felt overwhelmed by the assignments (item 18, $n=10$) and the videos they had to watch more than once to understand the content (item 22, $n=14$). Given these learning difficulties in the flipped classroom model, some modifications are required to accommodate these struggling, unmotivated learners. Therefore, differentiating instruction outside the classroom by creating very short videos (5 minutes maximum) specific to these learners can encourage them to do the flipped learning activities. Also, the instructor can sometimes use the students' mother tongue to facilitate the linguistic input and make the content comprehensible to them prior to coming to class. During class time, these learners should be supported by the instructor (scaffolding) and their peers (cooperative learning) to help them to do the tasks within their zone of proximal development (Vygotsky, 1978). Doubtless, once these learners feel that they can perform the tasks successfully either individually or with the guidance of the instructor, their self-efficacy will be enhanced.

5. Implications of the study

In the context of this study, the results obtained from the pre-post grammar test and the questionnaire depicted that the flipped classroom model enhanced Moroccan EFL secondary school students' performance in grammar more than the traditional classroom model and that experimental group students developed strong positive attitudes towards the flipped classroom. As for the student-related challenges, a considerable proportion of the participants agreed they had encountered some difficulties in the flipped classroom.

6. Recommendations

The recommendations for practitioners focus on the practical details of how this work can be sustained. The following elements are essential:

1. Professional development for teachers to learn more about the flipped classroom model before applying it to the EFL classroom (Hao and Lee, 2016; Alnuhayt, 2018).
2. Provide training for students on the use of the online learning platform (Santikarn and Wichadee, 2018).
3. Make students understand that the flipped classroom will give them extra time in class to negotiate the learnt material.
4. Create a stimulating learning environment in which all students can learn and share information with confidence.
5. Flip only basic knowledge not higher order thinking skills so that students can "carry out self-study during their own time outside of the classroom for the easier and most basic learning materials" (Sun and Wu, 2016).
6. The school principals collaborate with teachers who want to implement the flipped classroom model in their schools and ensure that they are provided with the resources.

Future research should further investigate student-related challenges that hinder the learning process in the EFL flipped classroom such as the extra workload students have to deal with outside of class, lack of motivation, and difficulty adapting to this new learning environment. Additional long-term studies are also needed to assess how the learning gains reported in this study can be sustained.

7. Conclusion

To sum up, the study has provided empirical evidence that the flipped classroom model enhanced students' performance in grammar. Also, the research participants were satisfied with the flipped classroom and the instructional techniques and methods used. Therefore, based on the findings of the study, the flipped classroom can be considered as an effective pedagogical approach that can address the problems of time constraint and the heterogeneity of the EFL classrooms that teachers have to deal with in the traditional classroom (De Jager, 2017)

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