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The Effect of Pre-class Content Delivery Techniques on Inferential Reading Comprehension: The Case of Flipped Classrooms

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Abstract

The present study explored the impact of various techniques of pre-class content delivery in flipped classrooms on Iranian EFL learners' inferential reading comprehension. In addition, the students' perceptions toward the flipped learning experience and WhatsApp application as the online platform for the delivery of course contents were rigorously examined. To this end, 72 homogeneous intermediate EFL learners from one language institute in Iran were randomly assigned into four equal groups. The techniques being evaluated in these four flipped classrooms were attending video conferencing meetings, listening to audio podcasts, watching PowerPoint slides, and the combination of all the aforementioned ones, respectively. To elicit the required data, multiple sources of instruments, including Nelson-Denny Reading Test (NDRT), reading comprehension pre-and post-tests and a semi-structured interview were used. The results of descriptive statistics demonstrated that while the participants' scores of all groups increased in the reading comprehension post-test, blending various techniques of pre-class delivery contributed most in improving the participants' performance. However, the increase in the final scores of the PowerPoint group was insignificant. The results of one-way ANOVA analysis demonstrated a significant discrepancy among the four groups after the treatment. Post hoc comparisons indicated that the significant difference only occurred between the blended and PowerPoint groups. The results of qualitative data showed that most interviewees favored learning English in a flipped learning environment and they were also satisfied with the quality of pre-class content delivery via WhatsApp. Based on the findings, the study also offers important implications for future research.

Keywords: EFL learners, flipped classroom, inferential reading comprehension, pre-class content delivery, WhatsApp app

1. Introduction

The issue of time management is undoubtedly one of the main challenges that most EFL teachers face, especially in traditional classrooms. The class time is often so restricted that it is somehow impossible for teachers to teach the contents of the textbook and ask learners to participate in collaborative or interactive learning activities. Thus, learners do not usually benefit from class time effectively because a great deal of time is allocated to teachers' lectures and explanation whereas students are mainly passive receptors of knowledge (Littlewood, 1999). In other words, students may receive inadequate "input, output, and interaction, particularly given the time constraints of a language class" (Spino & Trego, 2015, p. 3). Overall, traditional classrooms are ineffective in that the process of listening and then getting the information does not conform to today's learning demands (Brunsell & Horejsi, 2013).

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Flipped classroom model is a relatively new pedagogical approach that seems to promise to address such common concerns and problems of EFL educational contexts. In flipped classrooms, instructional contents are usually delivered online before class. Then, the class time is mainly devoted to learners' group interaction and problem-solving activities under the supervision and guidance of the teacher (Herreid & Schiller, 2013). On this account, the class atmosphere turns into a place where learners solve their problems, put forward their ideas, and participate in collaborative learning (Tucker, 2012).

Although many scholars have reported positive impact of flipped classrooms on students' learning outcomes in different areas (e.g., Abaeian & Samadi, 2016; Amiryousefi, 2017; Haghighi, Jafarigohar, Khoshsima, & Vahdany, 2018; Leis, Tohei, & Cooke, 2015; Moranski & Kim, 2016; Wang, An, & Wright, 2018), it seems there is a need for studies that rigorously compare specific characteristics of flipped classrooms with each other (Låg & Sæle, 2019).Thus, it is worthwhile to probe how flipped classrooms in EFL contexts work differentially while using various pre-class content delivery techniques or in-class activities.

Some studies have shown various techniques of learning instructional content out of class which is essential to the overall success of the flipped classroom model (e.g., Hamdan, McKnight, McKnight, & Arfstrom, 2013; DeLozier & Rhodes, 2016). However, there has been little research investigating the best techniques of content delivery at home (Jensen, Holt, Sowards, Ogden & West, 2018). To address this research gap, the present study aimed at examining the effectiveness of different techniques of pre-class content delivery including video conferencing meetings, audio podcasts, PowerPoint slides, and the mixture of them (blended) which, to the best of the researchers' knowledge, has not been examined, yet. In this study, the word *blended* refers to blending various techniques of pre-class content delivery. More specifically, the current study tried to find out whether delivering out-of-class content differently significantly affects the learners' inferential reading comprehension ability. In addition, students' perceptions toward the flipped learning experience in general and pre-class and in-class activities, in particular, were carefully investigated. To this end, therefore, responses to the following research questions were sought:

Research Question One: Are there any differences among various techniques of pre-class content delivery (i.e. video conferencing meetings, audio podcasts, PowerPoint slides, and the mixture of them) in improving Iranian EFL learners' inferential reading comprehension?

Research Question Two: What are the perceptions of Iranian EFL learners regarding the appropriateness of flipped classrooms in general and the effectiveness of pre-class content delivery and in-class activities in particular?

2. Literature Review

2.1. Flipped Classrooms

The terms inverted classroom or classroom flip emerged about the 2000s when Lage, Platt, and Treglia (2000) published their research under the title of the *inverted classroom.* In 2007, flipping the classroom has changed to a popular educational strategy as Bergmann and Sams started recording their lectures and posting them online on YouTube for those students who often miss the classrooms (Bergmann & Sams, 2012). Despite the infancy of flipped classrooms, most publications have cited that flipped classroom is a kind of blended learning (Abeysekera & Dawson, 2015; Bergmann & Sams, 2012). However, Staker and Horn (2012) clarified that flipped classrooms are a subcategory of blended learning and are not the same method. The flipped classroom can be well described by the four pillars of flipped learning model or FLIP which stands for *flexible environment*, *learning culture*, *intentional content* and *professional teacher* (Hamdan et al., 2013). In flipped classrooms, learners are expected to watch some videos or PowerPoint presentations at home to prepare themselves for follow-up activities in class; thus, in-class activities are integrated with pre-recorded videos or other kinds of prepared materials (Basal, 2015).

As Bergmann and Sams (2012) stated, the time is reorganized during face-to-face sessions in flipped classrooms. It means that after devoting some time to students' questions about the previous

instructions and resolving their misconceptions, students will work on some practical problems (Bergmann & Sams, 2012). In this regard, from the perspectives of Bloom's revised taxonomy, lower levels of cognitive work such as *remembering* and *understanding* are accomplished outside the classroom while higher-order levels including *applying*, *analyzing*, *evaluating*, and *creating* are achieved in class with the help of instructors and peers (Anderson et al., 2001). Thus, pre-class activities which focus on lower-level cognitive skills can pave the way for in-class activities that work on higher-level cognitive skills (Kim, Park, Jang, & Nam, 2017).

2.2. Theoretical Background of Flipped Classrooms

The flipped classroom model is well-substantiated by different theoretical principles. First, flipping the classroom is a framework in which *personalized* education is realized since students receive the information based on their own specific individual needs (e.g., Basal, 2015; Bergmann & Sams, 2012). In other words, *individualized* and *differentiated* kind of instruction is encouraged in flipped classrooms (Flumerfelt & Green, 2013). Second, as Bishop and Verleger (2013) stated, this approach is also supported by a range of theories in the field of educational psychology such as *cooperative learning*, *peer-assisted learning*, *problem-based learning*, and *active learning*.

Finally, the flipped classroom is *constructivist* since students are not passive recipients of information but rather are actively engaged in the learning process (Reidsema, Kavanagh, Hadgraft, & Smith, 2017). In other words, flipped learning gives students a sense of agency and autonomy to take responsibility for some parts of their learning (Leis & Brown, 2018). Furthermore, learning in flipped classrooms occurs through scaffolding and the process of peer interaction which also resonates well with "Vygotsky's socio-cultural theory" or "social constructivism" (Soltanpour & Valizadeh, 2018).

2.3. Benefits and Drawbacks of Flipped Classrooms

To date, previous studies have acknowledged several advantages of flipped classrooms. The flipped classroom model provides learners with sufficient time to learn the materials at their own pace and also gives them some opportunities to deal with the instructional content based on their preferred learning style (Roehl, Reddy, & Shannon, 2013). In these classrooms, students can pause and rewind lectures at home which help them review the difficult and ambiguous parts (Bergmann & Sams, 2012). In other words, learners can improve at their own speed, obtain information at any time, and employ class time more effectively (Fulton, 2012). In sum, according to Boucher, Robertson, Wainner, and Sanders (2013), this model is useful in that learners have more time to communicate and explain, comprehend concepts well, and hence engage in additional learning objectives.

Whereas the proven benefits of flipped classrooms are well-documented, some limitations in these classrooms should be addressed. Flipping the classroom suffers from some drawbacks such as poor quality of videos, improper conditions for watching videos, inability to inspect comprehension, and hence providing proper feedback if required (Milman, 2012). However, these drawbacks do not stem from the theoretical underpinnings of flipped classroom but from the practical aspects that can be moderated or even prevented if proper preparation, planning, and implementation are provided. Another disadvantage of flipped classrooms is that students cannot pose their questions immediately after the contents are delivered (Bergmann & Sams, 2012). As Roach (2014) stated, finite availability of the internet connection or inappropriate technology are among other barriers to flipped learning. Furthermore, he warned that overreliance on video lectures would return the lecturing style back into the normal classrooms (Roach, 2014). However, Turan and Akdag-Cimen (2019) maintained that the results of previous studies have shown that the benefits of flipped classrooms generally outweigh their drawbacks.

2.4. Pre-class Content Delivery in Flipped Classrooms

In the era of globalization, the widespread advancement of Information and Communication Technology (ICT) has affected many educational fields in general and language teaching and learning in particular. As Schwienhorst (2008) stated, ICT-based language learning environments

provide students with opportunities to reflect, interact, and engage with their learning process. Furthermore, as Stockwell (2013) stated, incorporating new technologies into language learning contexts has a significant role in increasing L2 learners' intrinsic motivation, leading to improving learners' performances.

Technology also plays a significant role in creating and delivering of online presentations (Blumenfeld et al. 1991). Since the late 1990s, different online instructional technologies such as *Web CT* and *Blackboard* have increasingly emerged encouraging teachers to deliver many course contents online outside the classroom (Lage et al, 2000). More importantly, due to the unexpected and rapid growth of the Covid-19 pandemic situation since ٢٠١٩, most educational systems worldwide have been decided to urgently transition to online distance education (e.g., Dhawan, 2020; Zboun & Farrah, 2021).

In the current study, the *WhatsApp* application was used as the medium for delivering content materials before class. WhatsApp is a well-known social media that provides a fast, convenient, cost-effective, and confidential mode of communication between teachers and learners (Tawiah, Nondzor, & Alhaji, 2014). In this regard, this study is also formed under the basis of mobile-assisted language learning (MALL). Based on the findings of previous studies, MALL increases language learning motivation (Kim, Rueckert, Kim & Seo, 2013) and promotes collaboration and interaction (Goh, Seet, & Chen, 2012). On the other hand, mobile learning sees learners as participants who are creative and communicative rather than passive consumers (Alexander, 2004). On the other hand, the idea of learning content before the class might be well in harmony with cognitive load theory (CLT). According to this theory, learning stops when learners' working memory is overloaded (Clark, Nguyen, & Sweller, 2011). Previous studies have shown that pre-class activities in the flipped classroom can help reduce the cognitive load (Abeysekera & Dawson, 2015; Clark et al., 2011). In flipped classrooms, teachers can help students control their cognitive load by adapting pre-class activities to students' diversity (Abeysekera & Dawson, 2015).

In addition, cognitive load can be decreased if learners have enough prior knowledge to accomplish a particular task since recalling this previous knowledge needs nominal cognitive resources (Van Merriënboer & Sweller, 2005). Furthermore, Abeysekera and Dawson (2015) concluded that students can handle the cognitive load of complex materials by controlling the pace of their learning outside the class. Thus, the step-by-step constructivist model of flipped classrooms lets the students control their working memory more successfully rather than the traditional model of instruction (Abeysekera & Dawson, 2015).

2.5. Flipped Classrooms in EFL Contexts

During the last decade, several researchers have examined flipped classroom from different dimensions to complement and refine the previous studies and findings (e.g., Amiryousefi, 2017; Chen Hsieh, Wu, & Marek, 2017; Doolly, & Sadler, 2020; Ekmekci, 2017; Haghighi et al., 2018; Mohammadi, Barati, & Youhanaee, 2019; Namaziandost, Rezaei, Etemadfar, & Alekasir, 2020; Öztürk & Çakıroğlu, 2021; Vaezi, Afghari, & Lotfi, 2019; Webb, & Doman, 2019). Generally speaking, the results of these studies mainly indicated that the participants of the flipped group significantly outperformed those in the conventional group in the post-test. Moreover, they had not only more meaningful and positive collaborations and partnerships during interactive classroom activities but they were also more actively engaged with the course materials outside the class. It was also observed that the perceptions of the participants toward the use of flipped classrooms were mainly positive as compared with conventional courses.

The current study was actually inspired by two different studies: the one by Moravec, Williams, Aguilar-Roca and O'Dowd (2010) and the study by Jensen et al. (2018). Moravec et al. (2010) aimed at discovering whether there were any significant differences between students' performances taught via narrated PowerPoint videos versus worksheets outside the class. Eventually, they observed that both types of pre-class content delivery were equally effective as coupled with the same in-class activities. Later, Jensen et al. (2018) examined three strategies of pre-class content learning including interactive online tutorials, video lectures, and textbook-style

readings. As opposed to the findings by Moravec et al. (2010), different strategies of pre-class content learning played a significant role in students' success in a way that video lecture was the most effective one in the final assessment performance compared with interactive or textbook-style readings. Jensen et al. (2018) suggested that more research should be done on the effectiveness of video lectures compared with other techniques of pre-class content delivery.

This study was a response to the call by Jensen et al. (2018) for further research in the area of various techniques of pre-class content delivery in flipped classrooms to broaden the pedagogical understanding of which technique is the most favorable one for delivering content out of the class. However, there are some differences between the Jensen et al. (2018) study and the present one. First of all, this study tried to compare other different techniques of pre-class content delivery, namely video-conferencing meetings, audio podcasts, PowerPoint slides, and the mixture of them. Secondly, the researchers in the current study drew upon Lo and Hew's (2017) theoretical framework for implementing a flipped classroom model (See Figure 1). Furthermore, the striking feature of this study was that it carefully scrutinized the efficacy of the *WhatsApp* application as the online platform for delivering the course contents outside the classroom. Next, this study used a study time log to measure the students' engagement with the instructional materials before the class. Finally, a semi-structured interview was carried out to qualitatively analyze the students' perceptions toward the flipped learning experience and the quality of pre-class online activities and in-class collaborative activities.

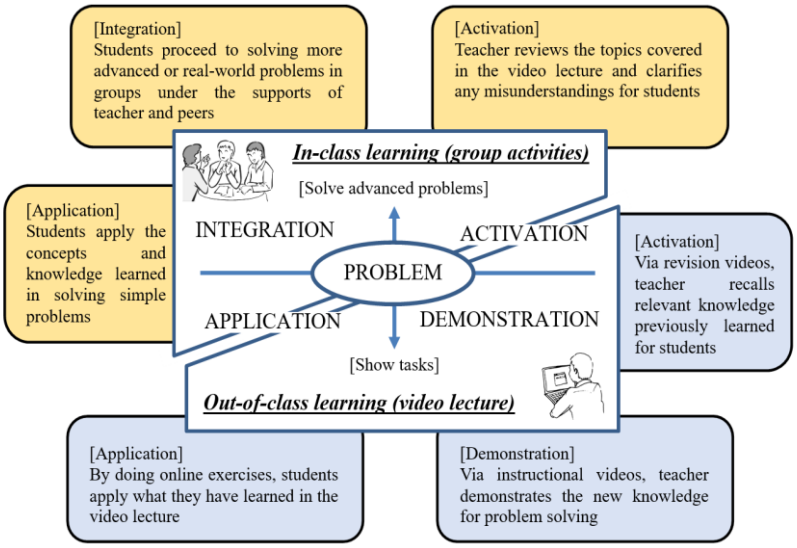

Figure 1: Overarching design framework of flipped classroom.By Lo, & Hew (2017)

3. Method

3.1. Participants

The participants of the study were selected out of 81 intermediate Iranian students who had registered for the Pre-IELTS reading course at Adineh Language Institute in Mashhad in June 2020. At the outset of the course registration, the students were informed that they would be taught through a novel online instructional method which encouraged them to take part in this study. Participation in flipped classrooms was voluntary and they were free to choose between conventional and flipped classes. On the other hand, the institutional administrators were eager to examine the productivity of this manner of instruction and hence offered their strongest support and cooperation during the study.

Based on their results on two proficiency tests known as Oxford Quick Placement Test (OQPT) and Nelson-Denny Reading test (NDRT), a total of 72 homogeneous intermediate students took part in the study. The remaining ones who had either lower or higher levels of proficiency

were withdrawn from the study, and they were placed in other conventional classes of the institution. Then, the participants were randomly assigned to four 18-member experimental groups. All the participants were female and their ages ranged from 18 to 42, with an average age of 26 (M=26.36, SD =0.64). In addition, the participants had already studied English for at least six years at university, high school, and English institutes.

3.2. Instruments

Oxford Quick Placement Test (OQPT): OQPT (UCLES, 2001) was administered to examine the participants' homogeneity in terms of their general proficiency. It included 60 multiple-choice items covering grammar, vocabulary, and reading comprehension (UCLES, 2001). The participants' responses were scored on a scale of 60 points so each correct response received one point. The internal consistency of the test was measured in the pilot study with 28 intermediate EFL learners and it was found to be acceptable as indicated by Cronbach's alpha coefficient of 0.88.

Nelson-Denny Reading Test (NDRT): The comprehension subtest of the Nelson-Denny Reading Test (Form I) (Fishco, 2018) was also administered to scrutinize the reading proficiency of the participants. The comprehension section of the NDRT is mainly applied to evaluate the reading comprehension skills of adolescents and adults in the United States (Coleman, Lindstrom, Nelson & Gregg, 2010). It consisted of seven reading passages with 36 comprehension questions, each with five answer choices. According to the test publisher report, the comprehension subtest of this test has reliability coefficients of 0.85 to 0.95. Meanwhile, the results of the pilot study revealed that the test obtained an alpha coefficient of 0.86 for the current study.

Reading Comprehension Test: The teacher-made reading comprehension pre-test and post-test were two other important instruments that were used prior to and after the treatment. Each test included 20 multiple-choice items following four passages with topics related to those of the students' textbook (i.e. *Active Skills for Reading 3*) (Anderson, 2013). Both of these tests focused on evaluating the students' ability in answering inferential reading comprehension questions. Drawing upon Burns, Roe, & Ross (1996), the inferential questions included items such as inferring the main idea of the text, finding implicit cause and effect relationships, locating referents of pronouns or adverbs, recognizing omitted words, distinguishing the author's goal in the text, and making conclusions.

The Cronbach's alpha reliability indices for the pre-and post-tests of reading comprehension were 0.80 and 0.82, respectively. Furthermore, the content validity of the test was evaluated by four experts in the field with more than ten years of teaching and testing experience. Interview: To gauge the participants' views about the flipped learning experience and the treatment they had received, a semi-structured interview was employed (See Appendix A). It contained ten questions developed by the researchers drawing upon the relevant literature. Four experts in the EFL field examined the efficacy and appropriateness of the interview questions to improve their face validity.

3.3. Data Collection Procedure

Before embarking upon the treatment, all four independent groups took a reading comprehension pre-test to ensure that they were at similar levels of reading comprehension. Furthermore, some explanatory points were provided about the flipped classroom and how the program would proceed. As it was mentioned earlier, the WhatsApp application was used as the online platform in the current study. In this regard, the teacher created a separate WhatsApp group for each class and added the participants to it. Since the participants were highly familiar with this application, they did not need any special training on its functionality.

In the next phase, the treatment process began for twelve sessions. All contents and learning activities were created in alignment with the course objectives. Whereas in-class activities and assessments were identical in all classes, the delivery technique of pre-class contents differed by treatment. Drawing upon Lo and Hew's (2017) overarching framework of flipped classrooms, the researchers designed a flowchart for both the pre-class online activities phase and the in-class activities phase that could be applied in each session (See Figure 2).

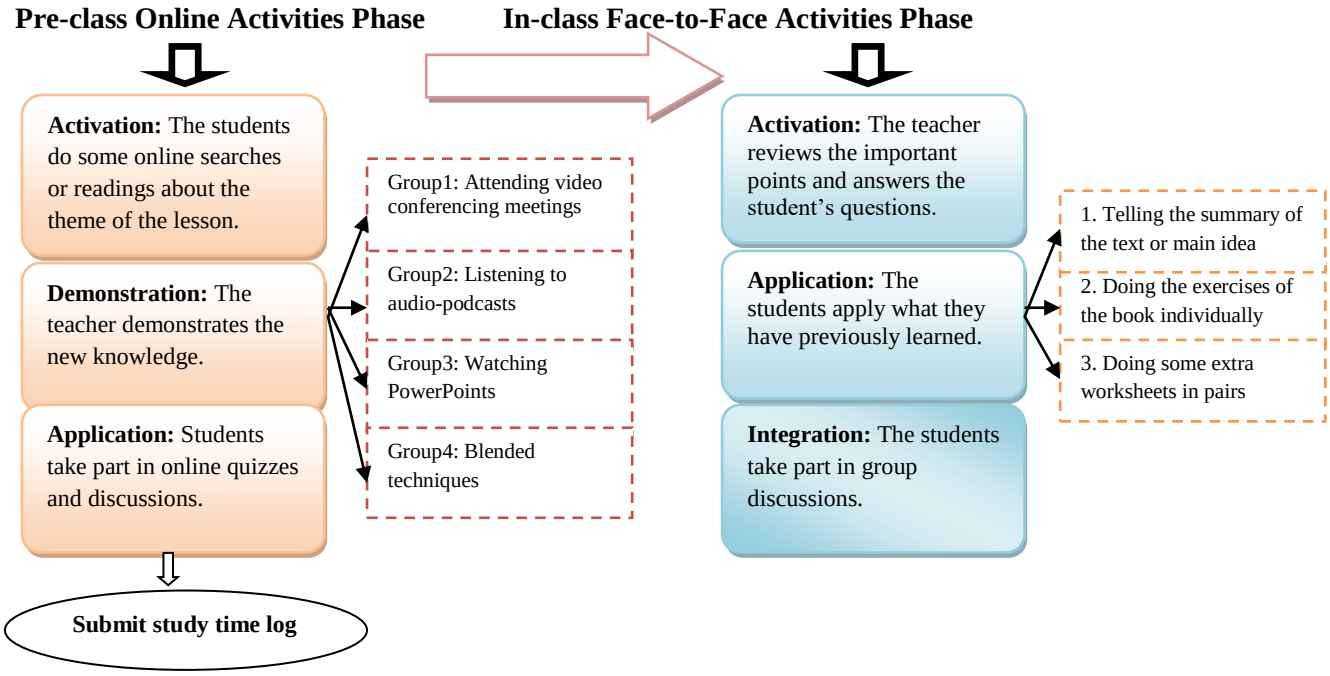

Figure 2: The flow of teaching and learning activities in each session

Pre-class online activities phase: Pre-class activities for each session included three phases of *activation, demonstration,* and *application* which were accomplished a few days before the class via WhatsApp. After activating the students' previous knowledge, the teacher tried to demonstrate the new knowledge via a different technique for each class. The first group was required to attend pre-determined video conferencing meetings through WhatsApp. The duration of each online session was about 20 minutes in which the teacher explained the main points of the unit. It should be considered that the live lectures did not include any additional technologies such as video, slide media, or PowerPoint presentations.

On the other hand, the second group did not attend any online meetings but they were only presented with the audio version of the same conversations that were posted in the WhatsApp group before the class. The third group received the written and graphical format of the same materials through PowerPoint presentations. In the last group, the teacher provided learners with various techniques of content delivery including video conferencing, audio podcasts, and PowerPoint slides in a way that besides attending video conferencing sessions, the participants received the materials in the format of audio podcasts and PowerPoint slides.

The application section for each class included some follow-up questions about the contents of the materials being taught. The teacher posted these questions in the group immediately after the instruction and the participants were given some time to answer the assigned questions. Moreover, the participants could also discuss the contents, share their ideas, or ask their classmates to assist them. The participants had been sufficiently encouraged to be actively involved in the WhatsApp group, knowing that their activities would have positive grades. In addition, they were asked to keep time logs and then submit them to the teacher upon the completion of each session. The time log included one reflection question which guided the participants to self-monitor the amount of time they had spent on learning the given materials and answering the assignments out of the class.

In-class face-to-face activities phase: Class time was mainly devoted to pre-class concept elaboration and application activities. It should be noted that pre-class materials were not reproduced during class to motivate the participants to rely upon their online assignments for course preparation. During face-to-face classroom sessions, the participants went through the *activation, application,* and *integration* phases, respectively. In the first step, the teacher reviewed the content

of materials being presented before the class, briefly. He also answered the participants' questions and explained the misunderstood points.

For the next step, the participants would apply what they had previously learned whether in pairs, groups, or individually. First, two or three participants were nominated to present a summary of reading passages or read parts of the text aloud and tell its main idea. Then, they would answer the exercises of the textbook individually and exchange their answers. Acting as a guide or facilitator, the teacher always walked around the class to answer the participants' questions, give feedback, or provide some assistance. Following that, they were divided into pairs to answer some worksheets which contained 10 to 12 questions based on the content of the reading passages. In the last step, the teacher posed some questions which motivated the participants to discuss the topic.

Once all the treatment sessions had been covered, all groups took the follow-up post-test. The post-test aimed at examining the observed change in the learners' reading comprehension ability of all groups. Furthermore, five participants in each group were volunteered to take part in the follow-up online interview. The interviews, lasting for approximately 10 to 20 minutes, were conducted online through WhatsApp video call meetings. It should be noted that all interviews were recorded and then transcribed verbatim for subsequent qualitative analysis.

3.4. Data Analysis

To analyze the quantitative data, the collected data were entered into SPSS (version 20) and analyzed via different statistical procedures. Descriptive statistics such as mean and standard deviations were estimated to summarize the data. Then, the one-way analysis of variance (ANOVA) was administered to see if there were any significant differences among the four groups after the treatment. After comparing the observed F with the critical F value, a post hoc Scheffe test represented the exact locations of the significant treatments.

The qualitative analysis of the research was also done by the examination of the participants' interview transcripts. In this stage, data from each recorded interview was transcribed and coded to make the themes emerge. In other words, the data was reduced to manageable chunks to interpret the data and provide some meanings to the participants' words (Marshall & Rossman, 1989).

4. Results

This section presents the participants' achievements of four independent flipped classrooms, each representing a different technique of pre-class content delivery. Furthermore, the students' perceptions toward flipped learning experience and the online platform are provided.

4.1. Performance of the Participants on Reading Comprehension Pre-Test

To understand whether the four groups were homogenous concerning their reading comprehension ability, descriptive statistics along with one-way ANOVA were run to compare the means of all four groups prior to the treatment. The comparison of the mean scores of the four groups indicated that the four groups gained similar scores in terms of their reading comprehension ability before the intervention (See Table 1). Moreover, the results of descriptive statistics along with the one-way ANOVA indicated that there were not any significant differences among the mean scores of the four groups on the pre-test of reading comprehension test ($F(3.68)=0.049$, $P=0.985>0.05$) (See Table 2).

Table 1: Descriptive Statistics for the Results of Four Groups on Pre-test

Reading Type	M	N	SD
Video conferencing	15.83	18	2.06
Podcast	16.00	18	1.81
PowerPoint	16.05	18	1.62
Blended	15.94	18	1.73
Total	15.95	72	1.77

Table 2: One-way ANOVA of Pre-test of Four Groups

ANOVA					
Reading	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.48	3	.16	.049	.985
Within Groups	224.38	68	3.30		
Total	224.87	71			

4.2. Comparison of Different Techniques of Pre-class Content Delivery

The main aim of the study was to determine whether there were significant differences among different techniques of pre-class content delivery in developing Iranian EFL learners' inferential reading comprehension. To find out the effect of different interventions on the four groups, the descriptive statistics were run whose results are displayed in Table 3.

Table 3: Descriptive Statistics for the Results of Four Groups on Post-test

Reading Type	M	N	SD
Blended	18.05	18	1.25
Video Conferencing	16.94	18	1.62
Podcast	16.83	18	1.38
PowerPoint	16.50	18	2.06
Total	17.08	72	1.68

As it can be seen in Table 3, the result of descriptive statistics indicated that the blended group had the highest mean (M=18.05) in the post-test. Coming second was the video conferencing group (M=16.94), followed closely by the podcast group (M=16.83). The last group related to the PowerPoint group which had the lowest mean (M=16.50). Thus, the results revealed that while all techniques of pre-class content delivery promoted the students' performances on the post-test, the blended group contributed most to the learning outcomes.

To see whether or not the differences among the means were statistically different, the one-way ANOVA procedure was run. The results of Table 4 indicated that there was a significant discrepancy among the four experimental groups concerning their reading comprehension ability ($F(3, 68) = 3.15$, $P = 0.030 < 0.05$). In other words, at least two of these groups were significantly different in terms of post-test scores.

Table 4: One-way ANOVA of Post-test of Four Groups

ANOVA					
Reading	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	24.61	3	8.20	3.15	.030
Within Groups	176.88	68	2.60		
Total	201.50	71			

To locate the exact places of differences among the means of the four groups, a post hoc Scheffe's test procedure was conducted, which yielded the following results (See Table 5). Post hoc comparisons indicated that the differences among the videoconferencing, podcast, and PowerPoint groups were not statistically significant. In addition, the blended group did not differ significantly from the videoconferencing as well as podcast groups. On the contrary, it revealed that the blended group performance differed significantly from the PowerPoint group since the obtained value was smaller than 0.05 (p=0.047). Thus, the participants in the blended group significantly outperformed the participants in the PowerPoint group.

Table 5: Scheffe Test of Differences across the Groups

Multiple Comparisons						
Reading Scheffe (I) Type	(J) Type	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
Blended	Videoconferencing	1.11	.53	.243	-.43	2.65
	Podcast	1.22	.53	.171	-.31	2.76
	PowerPoint	1.55*	.53	.047	.01	3.09
Videoconferencing	Blended	-1.11	.53	.243	-2.65	.43
	Podcast	.11	.53	.998	-1.43	1.65
	PowerPoint	.44	.53	.877	-1.09	1.98
Podcast	Blended	-1.22	.53	.171	-2.76	.31
	Videoconferencing	-.11	.53	.998	-1.65	1.43
	PowerPoint	.33	.53	.943	-1.20	1.87
PowerPoint	Blended	-1.55*	.53	.047	-3.09	-.01
	Videoconferencing	-.44	.53	.877	-1.98	1.09
	Podcast	-.33	.53	.943	-1.87	1.20

*. The mean difference is significant at the 0.05 level.

4.4. Perceptions of Flipped Classroom Experience

This part provides a summary of the main important findings based on the interviewees' responses to the interview questions. First, the majority of the interviewees showed a positive attitude toward the flipped learning experience. Second, they were totally satisfied with pre-class content delivery via WhatsApp due to three main factors including *materials availability, repetition,* and *flexibility.* On the other hand, they believed that the follow-up exercises and discussions in the WhatsApp group were among the most effective parts of out-of-class activities. The responses of some participants can be found below.

> S3: "*If I have a choice, I'll prefer the flipped classroom model since it's more enjoyable, engaging, and unique than traditional classes.*"
>
> S7: "*The teacher focused on the main important points necessary for learning and since it was not very long, it was not boring and time-consuming.*"
>
> S13: "*I could learn anywhere and anytime I liked. I could take my cell phone and go somewhere silent to learn the materials. In that way, I could focus on them without any distraction or the noise of other peers or classmates.*"
>
> S4: "*As we discussed in the WhatsApp group, we could learn more from our peers or we could ask our problems, etc.*"
>
> S5: "*The exercises posted in the group encouraged us to thoroughly engage with learning the materials*."
>
> S16: "*It was less stressful to talk about my ideas in the group rather than in front of my peers in class.*"

They also added that they fully engaged with previous online activities since they were not only repeated in face-to-face sessions but were also required for answering the assigned questions. Although they generally favored flipped pre-class activities through WhatsApp, they were faced with some problems or challenges. Most of the students' dissatisfaction is divided into three general themes as *slow internet connection, high workload and responsibility,* and *losing distraction while learning*.

> S18: "*Since we live in a suburban area, the internet speed is not always high. In spite of that, it was possible to control or manage the problems related to the internet.*"

S1: "*It was a demanding process. I had to spend a lot of time preparing for class and thus it was somehow hard or challenging how to plan my time to do all pre-class activities*."

S14: "*I sometimes got distracted or interrupted by different ads, chat messages, or calls coming while I was using my smartphone*".

There was a general agreement that they enjoyed the in-class activities as it was developed for flipped classrooms. They mentioned that the exercises logically arranged from simple tasks to more complicated ones while aiming at complementing the previous out-of-class activities. They also explained that due to their previous knowledge of the topic, they were so confident and relaxed in class, and hence, they could engage more in class discussions. Overall, all the participants found in-class activities as effective, joyful, and friendly experiences with lots of collaboration, community, and creativity. Some of the main comments are quoted below:

S9: "*The in-class activities were really advantageous because I could solve my problems through doing different in-class activities.*"

S19: "*Doing the exercises and assignments collaboratively in class was more enjoyable than doing them individually outside the class*."

S6: "*The teacher designed various interactive activities which helped us to work on the new knowledge in practice*."

S20: "*I was more confident in class since I could understand the ideas of others regarding the topic of discussions. As a result, I had more opportunity to interact and express my opinions.*"

5. Discussion

The current study sought to explore the impact of different techniques of pre-class content delivery on Iranian EFL learners' inferential reading comprehension. The four techniques being evaluated in this study were videoconferencing, audio podcast, PowerPoint slides, and a mixture of all the aforementioned ones. In addition, the students' perceptions toward the flipped classroom model and the quality of pre-class and in-class activities were thoroughly scrutinized.

The first notable finding of this study was that EFL learners in all flipped classrooms performed notably better on the post-test than they did on the pre-test of reading comprehension. It suggested that different techniques of pre-class content delivery helped develop the participants' reading comprehension. However, it was found that while watching PowerPoint improved the learners' scores in the reading comprehension post-test, the amount of increase was minimal and insignificant.

Second, it was observed that the blended group had the best performance in the reading comprehension post-test, indicating that learning the contents via the mixture of various techniques of delivery improved learners' performances most significantly compared with using them individually. Third, the results of the ANOVA showed a significant discrepancy among the four groups in terms of the effectiveness of their pre-class content delivery techniques. However, Post-hoc comparisons revealed that the only significant difference in participants' performances occurred between the blended and PowerPoint groups. Finally, the results of qualitative data showed that most participants appreciated the flipped classroom model and they also perceived WhatsApp as a convenient platform for delivering content outside the classroom.

There might be various reasons for such significant findings. Notwithstanding the different techniques of pre-class content delivery, the improvement of the participants' scores of all groups after the treatment might relate to the nature of flipped classrooms in which students become well prepared before the class and hence they have more meaningful interaction and collaboration during in-class activities

The superiority of the blended group over the other groups can be validated by referring to previous research. First, as Mayer (2001) stated, all multimedia messages are not equally effective which suggests that using various media might lead to more successful results as one fills the gaps

of others. Second, students perform better in classrooms in which different modalities of learning are provided (Mattis, 2015). It might also certify the earlier evidence that different techniques of delivery can work on separate depths of learning as classified by Bloom's Taxonomy (Anderson et al, 2001). As a result, it might be inferred that delivering content through various techniques or media will lead to deeper learning of them. It also supports previous findings that students' interest and performance will improve when the information is delivered in a variety of ways (Lage et al., 2000).

From the theoretical point of view, using various techniques of instruction is in parallel with *differentiated* instruction in which the same materials are taught using a variety of instructional strategies. Moreover, it supports the *individualized* instruction in which instructional contents or media, as well as the pace of learning, are tailored to meet the abilities and interests of each learner. It is also in line with Gardners' (1993) multiple intelligence theory since it considers the specific modalities of human intelligence.

In addition, students with different learning styles might benefit from learning contents through blending various techniques of content delivery. As Lage et al. (2000) explained, flipped courses allow students with different learning styles to use a method or methods that are best for them. Similarly, Rajabi, Mahmoodi, & Hosseini (2021) emphasized the benefits of blending different teaching methods being modified based on learners' specific characteristics or abilities. In other words, it reinforces what Zaidel and Luo (2010) said that for effective teaching and learning, instruction should be adapted to the diverse learning preferences of the students.

However, it is important to note that the amount of discrepancy among the participants' post-test scores of the blended group compared with those of the video conferencing and podcast groups was non-significant. The obtained result might be explained by referring to the idea of cognitive load theory. From the standpoint of extraneous cognitive load, employing additional resources or nonessential activities might cause some learning or understanding problems (Kirschner, 2002). In this regard, it is necessary to design effective instructional materials and procedures without imposing unnecessary cognitive overload on students' mental capacity (Van Merrienboer, & Sweller, 2005). Furthermore, some flipped classrooms that employed various modalities of pre-class learning activities did not lead to better achievement of learners (e.g., Clark, 2015; DeSantis, Van Curen, Putsch, & Metzger, 2015).

The observed results might support the findings of Jensen et al. (2018) who reported that various strategies of pre-class content teaching significantly differed from each other. They found that the participants of the video lecture group had the best performance on the final assessment compared with those of the other two groups (i.e. interactive online tutorials and textbook-style readings). On the other hand, the results are contrary to Moravec et al.'s (2010) study in which no significant differences were found between students' performances taught via narrated PowerPoint videos versus worksheets outside the class.

The reason that the participants of videoconferencing group slightly outperformed in the post-test compared with the podcast group might be well explained by what Teng and Taveras (2004) said that video conferencing assists learners to arrive at a deeper understanding of the course contents since synchronous dialogues can trigger more interaction and feedback about the course content. Besides, being able to see and watch each other can develop learners' engagement and enjoyment (Knapp, 2018). Our result might corroborate Ramadhanty and Puspitaloka's (2020) qualitative research which revealed the positive experiences of participants toward attending Zoom meetings and WhatsApp discussions in a flipped reading comprehension classroom.

On the other hand, the positive effect of listening to podcasts in flipped classrooms might be clarified by what Mayer and Moreno (2003) reported that students learn better when words are presented as narration rather than as narration and on-screen text which makes a redundancy effect. Moreover, using podcasts is convenient, helpful, and appealing for learners (Evans, 2008). The findings of the current study seem to be consistent with research by Greish, Al Nehayan, and Hendawy (2017) who investigated the effects of using pre-designed podcasts in flipped classrooms.

This study revealed that podcasts are effective tools for students to better learn General Chemistry lessons.

Finally, the minimal and insignificant effectiveness of watching PowerPoint before class can be elucidated by the idea that PowerPoint is considered as a passive form of presentation in which simplistic thinking is encouraged (Tufte, 2006). Furthermore, conveying the ideas is difficult in PowerPoint instructions due to limited interactions among the presenter and audience (Driessnack, 2005; Norvig, 2003). More importantly, as the results of Nouri and Shahid's (2005) study revealed, the use of PowerPoint does not affect students' long-term memory and its' impact on short-term memory depends on other factors including the topic and the students' preferred representation styles. The results of this study are in accord with prior research (e.g., Amare, 2006; Apperson, Laws & Scepansky, 2008; Bartsch & Cobern, 2003; Shallcross & Harrison, 2007) which reported the students' poor performance as a result of PowerPoint instructions.

Regarding the students' positive perceptions toward flipped classrooms, our results confirm the previous findings which showed that the majority of students had positive perceptions of the flipped classroom so as they preferred the flipped classroom model over the traditional lecture-based instructions (e.g., Al-Harbi & Alshumaimeri, 2016; Basal, 2015; Haghighi et al, 2018; Karimi & Hamzvi, 2017; Mehring, 2016; Oki, 2016; Roach, 2014; Wu, Yang, Chen Hsieh, & Yamamoto, 2019).

The majority of interviewees perceived flipped learning as sort of flexible since it lets them learn at their own pace and time which corroborates that of Hung (2015) who mentioned that flipped classrooms are acquisition-rich and flexible environments in which all the needs of students can be satisfied. Parallel to this finding, Marks (2015) maintained that the flexible nature of flipped classrooms meets various needs of students with different skills and abilities since it provides learners with extra time out of the class. On the other hand, this flexibility in flipped classrooms makes a stress-free learning environment for students (Adnan, 2017).

The analysis of the interview questions revealed that participants faced some problems such as high responsibility and workload outside the class. This would be consistent with previous studies showing that learners considered flipped learning experience as being very time-consuming and burdensome with heavy homework outside the classroom (e.g., Chen, Wang, Kinshuk, & Chen, 2014; Findlay-Thompson & Mombourquette, 2014; Tune, Sturek & Basile, 2013; Xiu, Moore, Thompson, & French, 2019). However, it is one of the benefits of the flipped classroom that encourages learners to be completely responsible outside the classroom which hence lets them be actively involved with the learning materials and tasks (Chen Hsieh et al., 2017).

Regarding the usefulness of in-class activities, our results seem to be consistent with Findlay-Thompson and Mombourquette (2014) who found that the participatory nature of in-class activities helps learners be actively involved during face-to-face sessions which can improve their practical activities. It is also in agreement with the research conducted by Yu and Wang (2016) who reported that flipped classrooms provide an interactive environment through which learners actively cooperate to learn from one another. In sum, flipped classrooms can develop some important aspects such as learner involvement and self-regulation as well as deep learning and reflection on group interactions (Rajabi et al., 2021).

6. Conclusion and Implications

In general, the findings of the present study include several pedagogical implications. First, the flipped classroom model, learning contents online prior to class and then taking part in different practical and participatory activities in face-to-face sessions, is effective in developing EFL learners' reading comprehension skills. In contrary to online learning systems, the flipped classroom provides a comprehensive fusion of both face-to-face and technology-based learning situations in which various collaborative and scaffolding activities can be implemented. Therefore, it seems that the integration of flipped classrooms into our educational systems leads to enhancing the quality of language learning. Second, the findings reveal that while all techniques of pre-class

content delivery are effective, blending various modalities of them contribute most to better understanding the contents and hence achieving better results. Furthermore, when learners are taught before the class, the students are more prepared, confident, and engaged during in-class activities.

Third, the flipped classrooms create a socially interactive environment in which learners can use the language more collaboratively and communicatively. Through flipped learning, learners can not only take ownership of their own learning, but they can also benefit from their teacher's or peers' assistance and cooperation. Fourth, flipped classrooms encourage learners to become more independent and self-directed in learning. In this manner, learners become more engaged with materials and activities and thus they process the new information more deeply compared with traditional classrooms. Fifth, due to the novelty of flipped learning experience, teachers are expected to support and facilitate the students' learning process by answering their immediate questions and providing appropriate feedback. Finally, the WhatsApp application proved to be an appropriate and useful instructional tool for language learning without requiring extensive technological skills or expertise.

Although the findings of the current study can productively enrich the existing research, some limitations need to be carefully considered in future studies. To start with, the present study was conducted on the researchers' own students. So, this study should be replicated with other participants to confirm that the obtained results are not affected by the researchers' biases. Next, due to some limitations caused by Coronavirus pandemic satiations, the sample size was not big enough and hence, the generalizability of the results should be done with caution. Furthermore, some variables such as learners' gender and proficiency level were not considered in this study. Thus, future researchers are recommended to use a larger sample of participants with different proficiency levels and gender.

On the other hand, the present study was carried out only in one language institute in Mashhad and hence, further research is needed in other institutes and universities to compare the results. More importantly, important psychological factors such as anxiety, motivation, personality traits, and learning styles were not considered. In this regard, other studies should be conducted while considering these factors to find further results.

Due to the existence of various techniques and strategies for delivering contents out of the class, future studies in this area could focus on different techniques other than those being evaluated in this study. Furthermore, the present study was narrowed to evaluate the effect of different techniques of pre-class content delivery in flipped classrooms on inferential reading comprehension skills. Thus, this study paves the way for more thorough studies in the future to investigate the effect of techniques of flipped pre-class content delivery on other language skills including listening, speaking, and writing.

As a result, the findings of this study imply that teachers or educational administrators should adopt alternative curricula infused with different technological media which could support students with various abilities or learning styles and also provide them with additional opportunities for meaningful collaborations with the instructor or peers. In other words, the results suggest that teachers should liberate themselves from the traditional ways of teaching and instead try to incorporate new approaches of teaching such as the flipped classroom model. However, it should be regarded that the success of flipped classrooms depends on how well both teachers and students can pedagogically understand their new roles and identities as well as the new ideology and concept of learning.

References

Abaeian, H., & Samadi, L. (2016). The effect of flipped classroom on Iranian EFL learners' L2 reading comprehension: Focusing on different proficiency levels. *Journal of Applied Linguistics and Language Research, 3*(6), 295-304.

Abeysekera, l., & Dawson, P. (2015). Motivation and cognitive load in the flipped classroom: definition, rationale and a call for research. *Higher Education Research & Development, 34* (1), 1-14. https://doi.org/10.1080/07294360.2014.934336

Adnan, M. (2017). Perceptions of senior-year ELT students for flipped classroom: A materials development course. *Computer Assisted Language Learning, 30*(3–4), 204–222. https://doi.org/10.1080/09588221.2017.1301958

Alexander, B. (2004). Going nomadic: Mobile learning in higher education. *EDUCAUSE Review, 39*(5), 23-38.

Al-Harbi, S.S. & Alshumaimeri, Y.A. (2016). The flipped classroom impact in grammar class on EFL Saudi secondary school students' performances and attitudes. *English Language Teaching*, *9*(10), 60-80. http://dx.doi.org/10.5539/elt.v9n10p60

Amare, N. (2006). To slideware or not to slideware: Students' experiences with PowerPoint vs. lecture. *Journal of Technical Writing & Communication, 36*(3), 297-308. https://doi.org/10.2190/03GX-F1HW-VW5M-7DAR

Amiryousefi, M. (2017). The incorporation of flipped learning into conventional classes to enhance EFL learners' L2 speaking, L2 listening, and engagement. *Innovation in Language Learning and Teaching, 13*(2), 147-161. https://doi.org/10.1080/17501229.2017.1394307

Anderson, N. J. (2013). *Active skills for reading (3rd Ed.).* Boston, MA: National Geographic Learning.

Anderson, L. W., Krathwohl, D. R., Airasian, P. W., Cruikshank, K. A., Mayer, R. E., Pintrich, P. R., Raths, J., & Wittrock, M. C. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives*. New York: Longman.

Apperson, J.M., Laws, E.L. & Scepansky, J.A. (2008). An assessment of student preferences for PowerPoint presentation structure in undergraduate courses. *Computers & Education, 50*(1), 148-153. http://dx.doi.org/10.1016/j.compedu.2006.04.003

Bartsch, R.A. & Cobern, K.M. (2003). Effectiveness of PowerPoint presentations in lectures. *Computers & Education, 41*(1), 77-86. http://dx.doi.org/10.1016/S0360-1315(03)00027-7

Basal, A. (2015).The implementation of a flipped classroom in foreign language teaching. *Turkish Online Journal of Distance Education, 16*(4), 28-37. https://doi.org/10.17718/tojde.72185

Bergmann, J., & Sams, A. (2012). *Flip your classroom: Reach every student in every class every day*. Washington, D.C.: International Society for Technology in Education.

Bishop, J., & Verleger, M. A. (2013, June). *The flipped classroom: A survey of the research.* Paper presented at 120th ASEE Annual Conference & Exposition, Atlanta, Georgia. https://doi.org/10.18260/1-2--22585

Blumenfeld, P.C., Soloway, E., Marx, R.W., Krajcik, J.S., Guzdial, M. & Palincsar, A. (1991). Motivating project-based learning: Sustaining the doing, supporting the learning. *Educational Psychologist, 26*(3-4), 369-398. https://doi.org/10.1080/00461520.1991.9653139

Boucher, B., Robertson, E., Wainner, R. & Sanders, B. (2013). "Flipping" Texas State University's physical therapist musculoskeletal curriculum: Implementation of a hybrid learning model. *Journal of Physical Therapy Education, 27*(3), 72-77. https://doi.org/10.1097/00001416-201307000-00010

Brunsell, E., & Horejsi, M. (2013). Flipping your classroom in one "take." *The Science Teacher, 80*(3), 8-8. https://www.jstor.org/stable/43557763

Burns, P. C., Roe, B. D. & Ross, E. P. (1996). *Teaching reading in today's elementary School (6th edition)*. Boston: Houghton Mifflin.

Chen, Y., Wang, Y., Kinshuk, & Chen, N. S. (2014). Is FLIP enough or should we use the FLIPPED model instead? *Computers and Education, 79*, 16-27. https://doi.org/10.1016/j.compedu.2014.07.004

Chen Hsieh, J. S., Wu, W. C. V., & Marek, M. W. (2017). Using the flipped classroom to enhance EFL learning, *Computer Assisted Language Learning, 30*, (1-2), 1-21. https://doi.org/10.1080/09588221.2015.1111910

Clark, K. R. (2015). The effects of the flipped model of instruction on students' engagement and performance in the secondary mathematics classroom. *Journal of Educators Online, 12*(1), 91-115. https://doi.org/10.9743/JEO.2015.1.5

Clark, C.R, Nguyen, F., & Sweller, J. (2011). *Efficiency in learning: Evidence-based guidelines to manage cognitive load*. New York: Wiley & Sons.

Coleman, C., Lindstrom, J., Nelson, J. M., Lindstrom, W., & Gregg, N. (2010). Passageless comprehension of the Nelson-Denny Reading Test: Well above chance for university students. *Journal of Learning Disabilities, 43*, 244-249. https://doi.org/10.1177/0022219409345017

DeLozier, S.J., & Rhodes, M.G. (2016). Flipped classrooms: a review of key ideas and recommendations for practice. *Educational Psychology Review*, 1-11. https://doi.org/10.1007/s10648-015-9356-9

DeSantis, J., Van Curen, R., Putsch, J., Metzger, J. (2015). Do students learn more from a flip? An exploration of the efficacy of flipped and traditional lessons. *Journal of Interactive Learning Research, 26*, 39–63. https://eric.ed.gov/?id=EJ1048614

Dhawan, S. (2020). Online learning: A panacea in the time of COVID-19 crisis. *Journal of Educational Technology Systems, 49* (1), 5-22. https://doi.org/10.1177/0047239520934018

Dooly, M., & Sadler, R. (2020). "If you don't improve, what's the point?" Investigating the impact of a "flipped" online exchange in teacher education. *ReCALL, 32*(1), 4–24. https://doi.org/10.1017/S0958344019000107

Driessnack, M. (2005). A closer look at PowerPoint: Feature article. *Journal of Nursing Education, 44*(8), 347-347. https://doi.org/10.3928/01484834-20050801-03

Ekmekci, E. (2017). The flipped writing classroom in Turkish EFL context: A comparative study on a new model. *Turkish Online Journal of Distance Education (Tojde), 18*(2), 151–167. https://doi.org/10.17718/tojde.306566

Evans, C. (2008). The Effectiveness of M-Learning in the form of podcast revision lectures in higher education. *Computers & Education, 50*(2), 491-498. https://doi.org/10.1016/j.compedu.2007.09.016

Findlay-Thompson, S., & Mombourquette, P. (2014). Evaluation of a flipped classroom in an undergraduate business course. *Business Education and Accreditation, 6*(1), 63-71.

Fishco, V.V. (2018). *Nelson-Denny Reading Test: Examiner's manual, forms I and J*. Austin: PRO-ED, Inc.

Flumerfelt, S. & Green, G. (2013). Using lean in the flipped classroom for at risk students. *Educational Technology & Society, 16*, 356-366.

Fulton, K. (2012). Upside down and inside out: Flip your classroom to improve student learning. *Learning & Leading with Technology, 39*(8), 12-17. https://doi.org/10.1177/003172171209400205

Gardner, H. (1993). *Multiple intelligences: The theory in practice.* New York: Basic Books.

Goh, T. T., Seet, B. C., & Chen, N. S. (2012). The impact of persuasive SMS on students' self-regulated learning. *British Journal of Educational Technology, 43* (4), 624-640. https://doi.org/10.1111/j.1467-8535.2011.01236.x

Greish, Y.E., Al Nehayan, M. and Hendawy, E. (2017). Enhancing learning experience of general chemistry using pre-designed podcasts and flipped classroom methodology. *International Journal for Innovation Education and Research, 5*(7), 40-48. https://doi.org/10.31686/ijier.vol5.iss7.757

Haghighi, H., Jafarigohar, M., Khoshsima, H., & Vahdany, F. (2018). Impact of flipped classroom on EFL learners' appropriate use of refusal: achievement, participation, perception. *Computer Assisted Language Learning*, *32* (3), 1-33. https://doi.org/10.1080/09588221.2018.1504083

Hamdan, N., McKnight, P., McKnight, K., & Arfstrom, K. M. (2013). *A review of flipped learning.* Arlington, VA: Flipped Learning Network.

Herreid, C. F., & Schiller, N. A. (2013). Case studies and the flipped classroom. *Journal of College Science Teaching*, *42*(5), 62–66.

Hung, H. (2015). Flipping the classroom for English language learners to foster active learning, *Computer Assisted Language Learning, 28* (1), 81-96. https://doi.org/10.1080/09588221.2014.967701

Jensen, J. L., Holt, E. A., Sowards, J. B., Ogden, T. H., & West, R. E. (2018). Investigating strategies for pre-class content learning in a flipped classroom. *Journal of Science Education and Technology*, *27*, 523-535. https://doi.org/10.1007/s10956-018-9740-6

Karimi, M., & Hamzavi, R. (2017). The effect of flipped model of instruction on EFL learners' reading comprehension: Learners' attitudes in focus. *Advances in Language and Literary Studies* (*ALLS), 8*(1), 95-103. https://doi.org/10.7575/AIAC.ALLS.V.8N.1P.95

Kim, J., Park, H., Jang, M., & Nam, H. (2017). Exploring flipped classroom effects on second language learners' cognitive processing. *Foreign Language Annals, 50*(2), 260-284. https://doi.org/10.1111/flan.12260

Kim, D., Rueckert, D., Kim, D.-J., & Seo, D. (2013). Students' perceptions and experiences of mobile learning. *Language Learning & Technology, 17*(3), 52-73. http://llt.msu.edu/issues/october2013/kimetal.pdf

Kirschner, P. A. (2002). Cognitive load theory: Implications of cognitive load theory on the design of learning. *Learning and Instruction, 12*(1), 1–10. https://doi.org/10.1016/S0959-4752(01)00014-7

Knapp, N. F. (2018). Increasing interaction in a flipped online classroom through video conferencing. *Tech Trends: Linking Research & Practice to Improve Learning*, *62*(6), 618-624. https://www.learntechlib.org/p/190356/

Låg, T., & Sæle, R. G. (2019). Does the flipped classroom improve student learning and satisfaction? A systematic review and meta-analysis. *AERA Open, 5*(3), 1-17. https://doi.org/10.1177/2332858419870489

Lage, M. J., Platt, G. J., & Treglia, M. (2000). Inverting the Classroom: A Gateway to Creating an Inclusive Learning Environment. *The Journal of Economic Education, 31*, 30-43. https://doi.org/10.1080/00220480009596759

Leis, A., Brown, K. (2018). Flipped learning in an EFL environment: Does the teacher's experience affect learning outcomes? *The EuroCALL Review, 26* (1), 3-13. https://doi.org/10.4995/eurocall.2018.8597

Leis, A., Tohei, A. A., & Cooke, S. (2015). The effects of flipped classrooms on English composition writing in an EFL environment. *International Journal of Computer-Assisted Language Learning and Teaching (IJCALLT), 5*(4), 37-51. https://doi.org/10.4018/IJCALLT.2015100103

Littlewood, W. (1999). Defining and developing autonomy in East Asian contexts. *Applied Linguistics, 20*(1), 71-94. https://doi.org/10.1093/applin/20.1.71

Lo, C. K., & Hew, K. F. (2017). Using "First Principles of Instruction" to design secondary school mathematics flipped classroom: The findings of two exploratory studies. *Educational Technology & Society, 20*(1), 222-236.

Marks, D. B. (2015). Flipping the classroom: Turning an instructional methods course upside down. *Journal of College Teaching & Learning, 12*, 241-248. https://doi.org/10.19030/tlc.v12i4.946

Marshall, C., & Rossman, G. B. (1989). *Designing qualitative research*. Newbury Park, CA: Sage.

Mattis, K. (2015). Flipped classroom versus traditional textbook instruction: Assessing accuracy and mental effort at different levels of mathematical complexity. *Technology, Knowledge and Learning, 20*(2), 231-248. https://doi.org/10.1007/s10758-014-9238-0.

Mayer, R. (2001). *Multimedia learning*. Cambridge Cambridge University Press.

Mayer, R. E., & Moreno, R. (2003). Nine ways to reduce cognitive load in multimedia learning. *Educational Psychologist, 38,* 43-52. https://doi.org/ 10.1207/S15326985EP3801_6

Mehring, J. (2016). Present research on the flipped classroom and potential tools for the EFL classroom. *Computers in the Schools, 33*(1), 1-10. https://doi.org/10.1080/07380569.2016.1139912

Milman, N. (2012). The flipped classroom strategy: What is it and how can it be used? *Distance Learning, 9*(3), 85-87.

Mohammadi, J., Barati, H., & Youhanaee, M. (2019). The effectiveness of using flipped classroom model on Iranian EFL learners' English achievements and their willingness to communicate. *English Language Teaching, 12*(5), 101- 115. https://doi.org/10.5539/elt.v12n5p101

Moranski, K. & Kim, F. (2016). 'Flipping' lessons in a multi-section Spanish course: Implications for assigning explicit grammar instruction outside of the classroom. *The Modern Language Journal, 100*(4), 830-852. https://doi.org/10.1111/modl.12366

Moravec, M., Williams, A., Aguilar-Roca, N., & O'Dowd, D. (2010). Learn before lecture: a strategy that improves learning outcomes in a large introductory biology class. *CBE-Life Sciences Education, 9*(4), 473-481. https://doi.org/10.1187/cbe.10-04-0063

Namaziandost, E., Rezaei, Z., Etemadfar, P., & Alekasir, S. (2020). Implementing a flipped model of instruction in the EFL listening classroom: Impact on comprehension. *Journal on English as a Foreign Language, 10*(2), 385-401. https://doi.org/10.23971/jefl.v10i2.2065

Norvig, P. (2003). PowerPoint: Shot with its own bullets. *The Lancet, 362*, 343–344. https://doi.org/10.1016/S0140-6736(03)14056-1

Nouri, H., Shahid, A. (2005). The effect of PowerPoint presentations on student learning and attitudes. *Global Perspectives on Accounting Education, 2* (1), 53-73.

Oki, Y. (2016). Flipping a content-based ESL course: An action research report. *Hawaii Pacific University TESOL Working Paper Series, 14*, 62–75.

Öztürk & Çakıroğlu, 2021. Flipped learning design in EFL classrooms: Implementing self-regulated learning strategies to develop language skills. *Smart Learning Environments, 8*(2), 1-20. https://doi.org/10.1186/s40561-021-00146-x

Rajabi, P., Mahmoodi, K., & Hosseini, S.A. (2021). Flipped classroom model and its impact on Iranian EFL learners' classroom anxiety and listening performance. *Computer-Assisted Language Learning Electronic Journal (CALL-EJ), 22*(3), 1-16.

Ramadhanty, S. & Puspitaloka, N. (2020). EFL students' experiences in a flipped reading comprehension classroom. *Ethical Lingua: Journal of Language Teaching and Literature, 7*(2), 381-388.

Reidsema, C., Kavanagh, L., Hadgraft, R., & Smith, N. (2017). *The flipped classroom: Practice and practices in higher education*. Singapore: Springer.

Roach, T. (2014). Student perceptions toward flipped learning: New methods to increase interaction and active learning in economics. *International Review of Economics Education, 17*, 74-84. https://doi.org/10.1016/j.iree.2014.08.003

Roehl, A., Reddy, S.L., & Shannon, G.J. (2013). The flipped classroom: An opportunity to engage millennial students through active learning strategies. *Journal of Family & Consumer Sciences, 105*(2), 44-49. https://www.learntechlib.org/p/154467/

Schwienhorst, K. (2008). CALL and autonomy: Settings and context variables in technology-enhanced language environments. *Independence, 43*, 13–15.

Shallcross, D. E., & Harrison, T. G. (2007). A secondary school teacher fellow within a university chemistry department: the answer to problems of recruitment and transition from secondary school to university and subsequent retention? *Chemistry Education Research and Practice, 8*(1), 101-104. https://doi.org/10.1039/B6RP90023B

Soltanpour, F. & Valizadeh, M. (2018). A flipped writing classroom: Effects on EFL learners' argumentative essays. *Advances in Language and Literary Studies, 9*(1), 5-13. https://doi.org/10.7575/aiac.alls.v.9n.1p.5

Spino, L. A., & Trego, D. (2015). Strategies for flipping communicative language classes. *CLEAR News, 19*, 1–5.

Staker, H., & Horn, M. B. (2012). *Classifying K-12 blended learning*. Mountain View, CA: Innosight Institute.

Stockwell, G. (2013). Technology and motivation in English language teaching and learning. In E. Ushioda (Ed.), *International perspectives in motivation: Language learning and professional challenges* (pp. 156– 175). Basingstoke, UK: Palgrave Macmillan. https://doi.org/10.1057/9781137000873_9

Tawiah, Y.S., Nondzor, H.E., & Alhaji, A. (2014). Usage of WhatsApp and voice calls (phone call): preference of polytechnic students in Ghana. *Science Journal of Business and Management, 2* (4), 103-108. https://doi.org/10.11648/j.sjbm.20140204.11

Teng, T. L., & Taveras, M. (2004-2005). Combining live video and audio broadcasting, synchronous chat, and asynchronous open forum discussions in distance education. *Journal of Educational Technology Systems, 33*(2), 121-129. https://doi.org/10.2190/XNPJ-5MQ6-WETU-D18D

Tucker, B. (2012). The Flipped classroom: Online instruction at home frees class time for learning. *Education Next, 12*(1), 82-83.

Tufte, E. R. (2006). *The cognitive style of PowerPoint: Pitching out corrupts within (2nd ed.)*. Cheshire, CT: Graphics.

Tune, J.D., Sturek, M., & Basile, D. (2013). Flipped classroom model improves graduate student performance in cardiovascular, respiratory and renal physiology. *Advances in Physiology Education*, *37*, 316-320. https://doi.org/10.1152/advan.00091.2013

Turan, Z., Akdag-Cimen, B. (2019). Flipped classroom in English language teaching: A systematic review. *Computer Assisted Language Learning*, *32*, 1-17. https://doi.org/10.1080/09588221.2019.1584117

University of Cambridge: Local Examinations Syndicate, (2001). *Quick placement test: Paper and pen test*. Oxford: Oxford University Press.

Vaezi, R., Afghari, A., & Lotfi, A. (2019). Investigating listening comprehension through flipped classroom approach: Does authenticity matter? *Computer-Assisted Language Learning Electronic Journal (CALL-EJ)*, *20*(1), 178-208. https://doi.org/10.22108/ARE.2019.114131.1382

Van Merriënboer, J. J. G., & Sweller, J. (2005). Cognitive load theory and complex learning: Recent developments and future directions. *Educational Psychology Review, 17*(2), 147-177. https://doi.org/10.1007/s10648-005-3951-0

Wang, J., An, N., & Wright, C. (2018). Enhancing beginner learners' oral proficiency in a flipped Chinese foreign language classroom. *Computer Assisted Language Learning*, *31*(5-6), 490-521. https://doi.org/10.1080/09588221.2017.1417872

Webb, M., & Doman, E. (2019). Impacts of flipped classrooms on learner attitudes towards technologyenhanced language learning. *Computer Assisted Language Learning, 33* (3), 1-35. https://doi.org/10.1080/09588221.2018.1557692

Wu, W. V., Yang, J. C., Chen Hsieh, J. S., & Yamamoto, T. (2019). Free from demotivation in EFL writing: The use of online flipped writing instruction. *Computer Assisted Language Learning, 33*(4), 353–387. https://doi.org/10.1080/09588221.2019.1567556

Xiu, Y., Moore, M. E., Thompson, P., & French, D. P. (2019). Student perceptions of lecture-capture video to facilitate learning in a flipped classroom. *Tech Trends, 63*(4), 369-375. https://doi.org/10.1007/s11528-018-0293-6

Yu, Z., & Wang, G. (2016). Academic achievements and satisfaction of the clicker-aided flipped business English writing class. *Educational Technology & Society*, *19*(2), 298-312.

Zaidel, M. & Luo, X. (2010). Effectiveness of multimedia elements in computer supported instruction: Analysis of personalization effects, students' performances and costs. *Journal of College Teaching & Learning*, *7*(2), 11-16. https://doi.org/10.19030/tlc.v7i2.84

Zboun, J.S. & Farrah, M. (2021). Students' perspectives of online language learning during corona pandemic: Benefits and challenges. *Indonesian EFL Journal*, *7*(1), 13-20. https://doi.org/10.25134/ieflj.v7i1.3986

Appendix A: Flipped Classroom Experience Interview

Q1. How did you generally perceive the flipped classroom model?
Q2. Did you find the pre-class content delivery helpful?
Q3. What problems did you face during pre-class online activities?
Q4. Did you find the materials clear?
Q5. What was the most effective part of pre-class online activities?
Q6. Did you take part in online discussions before class?
Q7. What percentage of pre-class lessons did watch or listen to?
Q8. Did you find the class activities helpful in complementing pre-class online activities?
Q9. Did you enjoy the class activities as implemented or would you prefer the traditional classroom?
Q10. Was there another type of in-class activity you would have liked?