

Flipped Learning in a General English Course: Learner Performance across Personality Traits, Ambiguity Tolerance, and Willingness to Communicate

Ahmadreza Eghtesadi Roudi^{1*}

Mohammad Pazhouhesh²

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Abstract

Flipped learning is one of the recent teaching methods in which teaching takes place outside the classroom, and class time is reserved for practicing and consolidating learning under the supervision of the teacher. Various studies in the world and Iran have examined the effectiveness of flipped learning in teaching English, but these studies have been conducted either in the context of schools and private language institutes, or with English language college students. This study examines the performance of 182 general English students at Farhangian University of Mashhad. Based on the results of paired and independent t-tests and repeated measures multivariate analysis of variance, flipped learning improves students' learning in a general English course. In addition, personality traits and tolerance of ambiguity do not affect the effectiveness of flipped learning. Moreover, the willingness to communicate, although statistically significant, does not meaningfully influence the effectiveness of flipped learning due to the small

* Corresponding author

¹ Department of English Language Teaching, Farhangian University, Mashhad, Iran; a.r.eghtesadi@cfu.ac.ir, a.r.eghtesadi@gmail.com

² Department of English Language Teaching, Farhangian University, Mashhad, Iran; m.pajohesh@cfu.ac.ir

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effect size which is around 3%. The findings imply that flipped learning can be one of the ways to increase the effectiveness of general language teaching regardless of learner characteristics such as personality, ambiguity tolerance, and willingness to communicate.

Keywords: ambiguity tolerance, effectiveness, flipped learning, general English, personality, university, willingness to communicate

Introduction

Quality education is the ultimate goal of all those involved in this process, and in recent decades with the advent and availability of technology to the public, educationists and technologists have attempted to take more advantage of the possibilities technology can offer to improve education (Jensen et al., 2015). In addition to the effect information technology has exerted on mainstream education, it has also provided new patterns and models of education for language teaching, which have provided unique and wonderful opportunities to improve language learning (Alemi & Khatooni, 2021).

One common problem that almost all teachers have is the time management to achieve an effective balance between lecturing and active learning strategies (Kim et al., 2018). Flipped classroom model is an attempt to respond to such challenges by devoting more time to active learning in the classroom using a blended learning approach (Hung, 2015; Strayer, 2012). In flipped classroom model, the direct teaching presented to the whole class changes into interactive personalized teaching which occurs outside the classroom, and hence the classroom becomes a dynamic and interactive learning environment to consolidate learning (Kaviani et al., 2018). As Jiang et al. (2020) maintain, flipped classroom due to its great potentials has gained great momentum in language teaching especially in foreign and second language teaching contexts.

Review of the Related Literature

The theoretical underpinnings of flipped learning and changing the traditional role of home and the school can be attributed to active learning,

peer learning, collaborative learning, problem-based learning, and cooperative learning (Izadi et al., 2020; Kaviani et al., 2018; Kheirābādi, 2017). Bergmann and Sams (2012) are known as two chemistry teachers who promoted flipped learning internationally after they flipped their classroom in response to the request of some students who had skipped a class in 2007. Although they flipped their chemistry class, they believe that flipped learning can meet the needs of learners in different classes and subject matters, such as math, science, social studies, foreign languages, and physical education. Leis et al. (2015), however, believe that the founder of flipped learning, who first used the term "flip" is Baker (2000). At the same time when Baker was flipping his graphic design class in Cedarville College, Lodge also was following the same procedure in his economics class at the University of Miami, but he called his technique "inverted classroom" (Lage et al., 2000).

In the flipped or inverted classroom, the lesson arrangements are reversed. In traditional classrooms, the teacher provides the instruction in the classroom, and students do exercises outside the classroom to consolidate learning. In the flipped classroom, the teacher provides the students with the educational content in the form of text, PowerPoint slides, or educational clips and videos before the class is held, and in the class, students do tasks and exercises to consolidate the learning under the supervision of the teacher (Hung, 2015; Reidsema et al., 2017; Zou et al., 2020). In such an atmosphere, the role of the teacher changes from a sage on the stage to a guide by the side (Baker, 2000; Muzyka & Luker, 2016) who helps to motivate learners, offers guidance, and gives feedback on learners' performance (Zou et al., 2020). It is worth noting that although in recent years, with the widespread availability of technology for teachers, technology is generally considered as part of flipped learning, as Bergmann and Sams (2012) and Moffett (2015) argue, flipped learning is not limited to technology use, and even if students are asked to read a chapter of a book before coming to class, the class can be flipped.

Advantages and Challenges of the Flipped Classroom

The first advantage of flipped learning is that it personalizes the

learning experience, and allows learners to learn at their own pace at a convenient time and place (Afrilyasanti et al., 2016; Chen Hsieh et al., 2017). This is an advantage because it is difficult to personalize the education in a traditional classroom without technology and computers, and one of the important benefits of the technology-supported flipped classroom is the opportunity to provide individual feedback and to personalize education (Davies et al., 2013).

Another advantage of flipped learning in foreign language teaching is that it moves the classroom from a teacher-centered to a learner-centered one, and makes it possible for the teacher to implement a communicative approach. Moreover, the flipped classroom allows the implementation of cooperative methods of language teaching, and different styles of the learners can be taken into account (Afrilyasanti et al., 2016; Egbert et al., 2014; Herreid & Schiller, 2013; Mehring, 2015).

Flipped learning also helps learners' thinking processes before class by providing opportunities for lower-level thinking skills, such as knowledge and comprehension, and provides the opportunity for learners to improve higher-order thinking skills in the classroom through activities that require cognitive processes such as application and analysis (Hung, 2015; Mehring, 2015; Moffett, 2015).

Learners' autonomy and their active participation in learning are two other advantages of the flipped classroom. However, a highly motivated teacher who is willing to spend a lot of time preparing materials, and able to encourage learners to take responsibility for learning is an important prerequisite for flipped classroom success (Kim et al., 2018; Moffett, 2015).

Another challenge of the flipped classroom, which is perhaps the most important challenge for the teacher, is that preparing the videos is a time-consuming process and it may be hard to encourage learners to prepare in advance (Afrilyasanti et al., 2016; Bergmann & Sams, 2012; Herreid & Schiller, 2013; Jiang et al., 2020; Leis et al., 2015). Related to teachers' concern about students' preparation before the class meeting, (Mehring, 2015) recommends that teachers prepare interactive videos so that learners need to answer

questions at unpredictable points on the video, and send the answers to the teacher prior to the class as evidence of watching the video. Kaviani et al. (2018) have also suggested sing short quizzes at the beginning of the class to encourage learners to watch videos or study the content that has already been provided to them before coming to the class. All in all, despite these challenges, the benefits of flipped classrooms outweigh its difficulties (Leis et al., 2015).

Jiang et al. (2020) refer to the lack of a systematic pedagogical approach as another challenge for the flipped classroom. They believe the theoretical foundation of the flipped classroom is mainly anecdotal, and although the flipped classroom is claimed to pave the way for developing learners' higher-order thinking skills through in-class activities, it is conceptualized mainly on the knowledge transmission paradigm.

Empirical Background of the Research

Research on the Effectiveness of Flipped Learning. A number of studies in Iran and the world have examined the implementation and effect of flipped learning. In the field of English language teaching, Kheirābādi (2017) in a study with tenth- graders that examined the effect of the flipped classroom on learning grammar found no significant difference between the performance of learners in the traditional and flipped classrooms. However, he reported more positive students' perceptions and higher levels of motivation in the flipped classroom. Afzali and Izadpanah (2021) have also shown the positive effect of the flipped classroom on the motivation and participation of intermediate and upper-intermediate language learners in a grammar class.

Abdullah et al. (2021) have also reported that the flipped classroom improved students' motivation in a speaking class with Omani English students. The study of Sahragard et al. (2020) also showed that the flipped classroom had a positive effect on the writing skill of IELTS candidates. In another study conducted with Japanese English students (Leis et al., 2015), the results showed a positive effect of flipped learning on students' writing skills. The participants in that study spent more hours writing, and they both produced longer compositions and made better progress compared to the pre-test. Other studies

in other contexts and countries have shown the effectiveness of flipped learning on writing performance (Afrilyasanti et al., 2016; Ekmekci, 2017).

Studies have also shown the positive effect of flipped learning on listening comprehension in English language classes (Ahmed, 2016). Farsi et al. (2020) also studied the effect of flipped learning on reading comprehension of a group of intermediate and upper-intermediate language learners and found that the flipped learning class students, regardless of their language proficiency level, surpassed traditional teaching class students in reading comprehension.

Chen Hsieh et al. (2017) also reported the positive effect of the flipped classroom on the learning of English idioms by Taiwanese students. As they maintain, flipped learning also improved students' motivation and activity in the classroom. In a study by Hung (2015), Taiwanese English students also performed better in the English communication skills flipped classroom, and had a higher participation rate in the class. Moreover, in examining the effect of flipped learning in an undergraduate testing course with English language teaching students, Eghtesadi Roudi (2020) has also reported the positive effect of the flipped classroom on students' performance on questions that require higher-order thinking skills.

Eghtesadi Roudi (2020) also examined the role of personality traits and successful intelligence in the flipped classroom and reported no significant effect of personality traits. Kim (2017) also studied the relationships between personality traits and Korean students' performance in a flipped classroom and found no significant relationship. In another study with elementary Jordan fifth-graders, Hussain et al. (2017) found no significant relationship either. Kim et al. (2018), however, in a study with Korean college students found a positive effect of thinking personality style on students' performance in the flipped classroom.

Due to the lack of studies on the effectiveness of reverse education at the university level and due to the fact that teaching general English to students of other majors who often lack a good English background is one of the challenges of teaching English in universities, and since class time for general English courses is not often enough to pay attention to all students, this study

examined the effectiveness of flipped learning in a general English course at Farhangian University of Mashhad. Moreover, since the results of previous research on the effect of personality traits are conflicting, and theoretically, at least, it is expected that students with some personality traits such as extroversion may prefer learning in the class environment among friends and classmates, this study also intended to assess the effect of personality on flipped learnings. In addition, Willingness To Communicate (WTC) is another personality factor that has been found to influence success in second language learning (Brown, 2014). In the case of flipped learning, it is also speculated that since learners need to be active in the class and communicate with peers and the teacher, their WTC might play a role. The relationships between the flipped classroom and WTC have received other researchers' attention too, but the previous research has focused on the effect of flipped learning on learners' WTC (Chang & Lin, 2019; Hung, 2017; Khosravani et al., 2020; Mohammadi et al., 2019; Zarrinabadi et al., 2021), and have reported inconsistent results. Therefore, this study will examine the effect of learners' WTC on the effectiveness of flipped learning.

Another feature of flipped learning is that learners receive the educational materials a week before the class and watch or read them individually. In case there are any problems or ambiguities, they need to wait for the class meeting to ask their questions and resolve the ambiguities. Therefore, another cognitive style (Brown, 2014) that seems to be important in the effectiveness of flipped learning is ambiguity tolerance, which is defined as "the tendency to perceive ambiguous situations as desirable" (Budner, 1962, p.29). Benjamin et al. (1996) define an ambiguous situation as one in which the individual is provided with information that is too complex, inadequate, or apparently contradictory. The relationship between ambiguity tolerance and flipped classroom has not been dealt with in previous research (Jiang et al., 2020; Zou et al., 2020). Therefore, this study seeks to answer the following research questions:

1. Is flipped learning more effective than traditional teaching in general English classrooms?

2. Does the time of presenting flipped learning (at the beginning/end of the semester) influence its effectiveness?
3. Is there a relationship between students' personality traits, ambiguity tolerance style, willingness to communicate, and their performance in flipped and traditional classrooms?

Method

Participants

In this study, which was conducted in the second semester of the 2018-2019 academic year, five undergraduate general English classes in the two campuses of Shahid Beheshti and Shahid Hasheminejad of Farhangian University of Mashhad were selected through cluster sampling to participate in the research. These classes included 182 students, 49% of whom were males (N = 89). In terms of field of study, 54% of the participants (N = 98) were studying math or sciences and the rest were students of humanities. The age of students ranged from 19 to 21 years.

To conduct this study, 3 instructors of Farhangian University, comprising two men and one woman, collaborated with the researchers. All collaborating instructors had Ph.D. degrees in English Language Teaching and had 20 to 30 years of English language teaching experience.

Instruments

In the research, two achievement tests, a mid-term test, and a final test were used to assess the performance of the participants. Each of the tests consisted of 50 different forms of questions including multiple-choice, short-answer, and essay questions that assessed the knowledge of the meaning of words and collocations, grammar, and reading comprehension. Each of the researchers constructed one of the two tests, and then the test was reviewed by the other researcher. It was then given to three fellow instructors to confirm the form and content of the test and its compliance with the concepts taught (content validity) and the principles of test construction.

In addition to these tests, three questionnaires were also administered

to the participants. The questionnaires include Eysenck's (1964) Personality Inventory, Ambiguity Tolerance Scale (Budner, 1962), and Willingness To Communicate Scale (Baghaei, 2013). The Eysenck's Personality Inventory includes 57 yes-no items which measure two independent personality dimensions of extroversion-introversion (24 items) and neuroticism-stability (24 items). Nine items on the inventory are also falsification items which show the social desirability in completing the inventory. Baraheni (1976) reported the Cronbach's alpha reliability of the three components of the Persian inventory to be 0.69 for neuroticism, 0.77 for extroversion, and 0.47 for lie items. The Cronbach's alpha reliability of the overall Eysenck's Personality Inventory in this study was 0.68, and the reliability indices of neuroticism and extroversion were 0.84, and 0.71, respectively.

The ambiguity Tolerance Scale (Budner, 1962) has 16 items on a 7-point Likert scale which measures the tendency to perceive ambiguous situations as desirable. The Cronbach's alpha reliability of the scale as reported by Budner (1962) was 0.62. For the purpose of this study, the Persian version of the scale was used. In the manual, the reliability of the Persian scale is 0.84. In this study, the reliability of the total Ambiguity Tolerance Scale was 0.69.

The Willingness To Communicate Scale was developed and validated by (Baghaei, 2013). The scale includes 22 items on a 5-point scale. In addition to the total score, the scale also measures three components of willingness to communicate with native English speakers, willingness to communicate with non-native foreigners, and willingness to communicate in the classroom. The reliability of the total scale was reported to be 0.98 (Baghaei, 2013). In this study, the reliability of the total WTC Scale was 0.95.

Procedure

After random selection of the classes to participate in the study, the instructors were informed of the purpose of the study and were invited to cooperate in the project. Since, as already stated, flipping the classroom can be a time-consuming challenge for both teachers and learners, and many teachers may prefer to flip only some sessions of their classes, and even many of the

studies on flipped classrooms even flipped part of the course (Afzali & Izadpanah, 2021; Chen Hsieh et al., 2017; Fazlali et al., 2018; Liu, 2017), it was decided to study the effect of the time of flipping the classes, and therefore the classes were divided into two groups. Group 1 which included 3 classes were taught through flipped learning techniques from the onset of the term up to the mid-term exam, and then there were taught traditionally up to the end of the term. For Group 2, the order was reversed, i.e., they were first taught through traditional methods and then through flipped techniques.

To implement the flipped learning, since as Zou et al. (2020) maintain untrained instructors and poor video quality can reduce the effectiveness of the flipped approach, the first researcher in the study prepared instructional videos for each session and handed them to the instructors a week before the class. This also intended to make it possible to compare the performance of different classes. In addition, the instructors were trained on what they needed to do in the class after students watched the videos and did the outside-class activities. Students were required to watch the videos outside the classroom. According to the recommendations of researchers in this field (Liu, 2017; Talbert, 2017; Zainuddin & Attaran, 2016), the length of educational videos was short and between 15 and 20 minutes. In preparing the videos, words and vocabulary were first taught based on the principles of vocabulary teaching. Then, depending on the type of lesson in that session, one of the skills of reading or a grammatical point was taught or the text of the lesson was taught and analyzed step by step. In the instructional videos, when students needed to think or do something, for example, if students were asked to find a pronoun reference in the text or identify the topic sentence or the main idea of a paragraph, they were asked to stop the video and find the answer or do the activity and then watch the rest of the video. They were then asked to do the exercises before attending the class.

In the classroom, students first asked their questions and possible problems, and then students were given a short written or oral quiz to ensure they were watching the videos. Students were then grouped and asked to review the answers to the exercises with their classmates and to discuss their

answers. If there was disagreement among the students in a group about the answer to a question, the whole class was asked to comment on it, and finally, if necessary, the instructor would provide the necessary explanations. Most of the class time was devoted to various exercises to consolidate learning. For example, students were asked to form new sentences individually using the words they had learned and share them with other classmates in the group and check their accuracy, or if the grammatical point of that session was about the use of one of the English tenses, students were asked to write sentences about themselves using that tense and review them in the same way in the group. The instructor also helped the groups and students to solve problems in the group that they could not solve alone. Instructors were asked to keep the teaching method and classroom activities as similar as possible.

In traditional classes, each instructor taught vocabulary, grammar, and reading comprehension skills in the classroom, and students were required to do exercises outside the classroom.

Results

Prior to analyzing the data to answer the research questions, since three professors taught the classes, an ANOVA test was run to check the effect of professors. According to the results of the analysis of variance test, professors had no significant role ($p > 0.05$) in flipped learning results (Table 1), and therefore the data could be analyzed with no concern for professors as an intervening variable.

Table 1

ANOVA for the role of instructors

	Sum of Squares	df	Mean Square	F	p
Flipped Learning	160.42	2	80.21	1.16	0.35

To answer the first research question about the effectiveness of flipped learning, first, descriptive statistics of the scores resulting from flipped and traditional classrooms were calculated and the normality of the distribution of

scores was examined (Table 2).

Table 2

Descriptive statistics of flipped and traditional classes

	No	Mean	SD	Skewness	Kurtosis
Flipped -Total	182	43.88	8.31	0.01-	0.06
Traditional-Total	182	41.24	8.62	0.54-	0.1-
Flipped-Midterm	127	45.36	7.94	-0.50	-0.17
Flipped-Final	55	43.85	8.45	0.17	0.31
Traditional-Midterm	127	44.45	7.29	-0.65	0.24
Traditional-Final	55	39.85	8.80	-0.45	-0.11

Due to the values of skewness and kurtosis (<1), and the large sample size, the distribution of scores was close to normality and therefore a paired t-test was run to examine the effectiveness of flipped learning (Table 3).

Table 3

Paired samples and independent samples t-tests to compare flipped and traditional scores

Paired samples t-test to compare flipped and traditional scores						
	Paired differences			t	df	p
	Mean	SD	SE of Means			
Flipped-Traditional Total	2.67	8.03	0.59	4.42	181	0.00
Independent t-tests to compare independent groups						
	F	p	t	df	Mean difference	p
Midterm flipped-traditional	2.11	0.14	-0.84	179	1.10	0.14
Final flipped-traditional	0.37	0.53	3.79	179	5.25	0.00
Flipped midterm-final	0.40	0.52	-1.23	180	-1.65	0.22
Traditional midterm-final	1.88	0.17	-3.39	180	-4.59	0.00

According to the results of the paired samples t-test in Table 3 ($t = 4.42$, $df = 181$, $p < 0.5$), the difference between the means of the two types of teaching methods is significant, and referring to Table 2, it appears that flipped learning with a difference of 2.64 points was more effective than traditional teaching.

Since in this study a counterbalanced design was used (Figure 1), to answer the second research question on the effect of time order on flipped learning effectiveness, four independent t-tests were run.

Figure 1

Counterbalanced design of the study



Before performing the test, the normality of the data distribution was checked, which was confirmed based on the magnitudes of skewness and kurtosis and the large size (Table 2).

As Table 2 indicates, the highest mean belongs to the midterm flipped learning. That is, the group that was taught in flipped learning from the beginning to the middle of the semester had the highest performance, followed by the group that was taught traditionally from the beginning of the semester to the middle of the semester. The results of independent samples t-tests in Table 3 also show that on the midterm exam there is no significant difference between the flipped and traditional groups, while on the final exam, there is a significant difference between the two groups. In other words, flipped learning is more effective than traditional teaching only if it is offered in the second half of the semester.

In order to answer the third research question about the role of personality traits, cognitive style of ambiguity tolerance, and willingness to communicate in the performance of learners in flipped and traditional classes, since flipped and traditional scores were obtained from the same group and there were three independent variables, a repeated measures multivariate analysis of variance was run.

The results of repeated measures MANOVA (Table 4) showed that the type of teaching method had a significant effect on the performance of the students on tests (Wilks' Lambda = 0.88, $p < 0.05$; $F = 18.09$, $p < 0.05$). But the

interaction of the teaching method with none of the independent variables was significant. The effect size also shows that 11% of the difference between the two sets of scores is due to the teaching method.

Table 4

The results of repeated measures MANOVA

<i>Multivariate Test Results</i>							
Effect		Value	F	H df	Error df	p	Effect Size
Method	Wilks' Lambda	.88	18.09	1	134	.000	.11
Method*WTC	Wilks' Lambda	.99	.21	1	134	.64	
Method*AT	Wilks' Lambda	1.00	.05	1	134	.81	
Method*Personality	Wilks' Lambda	.98	.68	3	134	.56	
<i>Between-Group Tests</i>							
Source	Type III Sum of Squares	df	Mean Square	F	p	Effect Size	
Willingness to communicate	695.85	1	695.85	6.07	.01	.04	
Ambiguity tolerance	22.81	1	22.81	.19	.65		
Personality traits	243.84	3	81.28	.70	.54		

Finally, the test of between-group effects (Table 4) shows that only the independent variable of willingness to communicate has a statistically significant effect on students' performance in traditional and flipped learning classes ($F = 6.07$, $df = 1$, $p < 0.05$). But the effect size of the WTC is 0.04, i.e., only 4% of the variance in the flipped and traditional scores can be counted for by this variable, which is considered a weak effect size (Pallant, 2010).

To ensure that despite its statistical significance, willingness to communicate does not have a logically meaningful relationship with flipped and traditional scores, a Pearson correlation test was run (Table 5).

Table 5*Correlation between willingness to communicate and flipped and traditional Scores*

		Flipped	Traditional
Willingness to communicate	Pearson Correlation	.183*	.095
	p	.019	.225
	N	164	164

As shown in Table 5, only the correlation between WTC and flipped learning was significant ($p < 0.05$). However, the magnitude of the correlation coefficient is very low ($R = 0.18$) and the square of the correlation coefficient is 0.03, i.e., WTC and flipped scores have only 3% of common variance, which confirms the results of low effect size. In other words, although this relationship is statistically significant, logically it is not meaningful.

Discussion

This study provided several findings which demand an explanation. According to the results of this study, flipped learning is effective in improving general English learning. This finding is consistent with theoretical discussions about the effectiveness of the flipped classroom (Baker, 2000; Bergmann & Sams, 2012; Kim et al., 2018; Lage et al., 2000; Strayer, 2012). Students' better performance on tests based on the flipped classroom is also consistent with the results of other studies conducted in the field of English language teaching and flipped learning (Ahmed, 2016; Chen Hsieh et al., 2017; Ekmekci, 2017; Farsi et al., 2020; Leis et al., 2015; Sahragard et al., 2020). However, it should be noted that previous studies on the effectiveness of flipped learning were done either with English language college students or with students of private language schools who are usually more motivated to enroll in foreign language classes and therefore the findings of this study on the effectiveness of flipped learning in general English class at the university level is a new finding. The results of this study also confirm the results of previous studies conducted in the university environment to learn other English courses, such as the study by Eghtesadi Roudi (2020).

Findings of the study on the effectiveness of flipped learning and

students' better performance are also with the findings of other studies conducted in the academic context in Iran with college students of other disciplines (Golzari & Attaran, 2016; Kaviani et al., 2018; Toofaninejad et al., 2019), and also with the results of studies conducted in Iran and with the pupil population (Badeleh et al., 2019; Esmaeilifar et al., 2006; Pourghaz et al., 2020). However, the findings are not consistent with the finding of Kheirābādi (2017) that flipped learning was not effective in an English grammar class at the school level.

The effectiveness and superiority of flipped learning over traditional teaching found in this study and other studies may be due to the benefits of this method mentioned earlier in this paper and confirms the Leis et al.'s (2015) view that the benefits of flipped learning outweigh the challenges the implementation of this method provides for the teacher.

Another finding of this study is that flipped learning is effective if it is implemented in the second half of the semester. This is also a new finding because in previous studies the variable of time of implementation has not been considered. Even though the counterbalanced design was used by Chen Hsieh et al. (2017), they did not examine the effect of the design. This finding may be because students may become more sensitive to learning as they approach the end of the term and exam time, and may therefore watch the videos more carefully or more frequently outside the classroom, and in the classroom also they may pay more attention to the activities.

The final finding of the study is that personality traits, ambiguity tolerance, and willingness to communicate do not play a role in the effectiveness of flipped learning. Ambiguity tolerance and willingness to communicate have not been studied in previous studies (Jiang et al., 2020; Zou et al., 2020), and therefore the findings of this study are new. But Eghtesadi Roudi (2020) examined the role of personality in the effectiveness of flipped learning and reports that personality has no effect on the effectiveness of flipped learning, which is consistent with the findings of this study. Hussain et al. (2017), who examined the role of personality in the effectiveness of flipped learning with the same questionnaire used in this study, also did not report a

role for personality traits. Kim (2017) also examined the role of personality traits in the flipped classroom and did not report any relationship. Kim et al. (2018) examined the role of personality factors in the performance of Korean students and found that thoughtful students performed better. Of course, the personality questionnaire they used was different from the questionnaire used in this study.

The finding that the majority of the studies report no significant relationships between personality traits of learners and the effectiveness of flipped learning in English language teaching classes indicates that flipped learning can be practiced with different groups of learners with different personality characteristics.

The finding of no effect of WTC and ambiguity tolerance on flipped learning may indicate that the flipped classroom can be used for different groups of learners irrespective of their WTC and ambiguity tolerance. The conflicting reports of previous research on the effect of the flipped classroom on WTC may indicate that the flipped classroom can even be used to improve learners' WTC. However, since this study investigated the role of ambiguity tolerance and WTC in flipped learning for the first time, the finding of no relationships, needs to be interpreted more cautiously, and more research should shed light on such relationships.

Conclusion

To summarize, in this study, different classes taught by different professors were examined. However, the instructional videos were made by one person to be the same for all classes, and different instructors were asked and instructed to follow the same procedure in the face-to-face part of the flipped classroom, and hold the same traditional classes as much as possible. The results of the comparison of instructors showed that the instructors had no role in the effectiveness of the flipped classroom. Though the rather large sample size is among the strength of this study (Jiang et al., 2020), to be more confident about the results, future studies can compare the flipped and traditional methods in different classes taught by one teacher.

The results of this study indicate important suggestions for general English instructors. Given the effectiveness of flipped learning, this method can be a good alternative to traditional teaching methods where the whole teaching process and to a large extent the learning takes place in the classroom. Due to the limited hours of general English classes, the large classes of this course, and the relatively weak base of many students in English, which makes it impossible for the teacher to pay individual attention to each student in the class, flipped learning can be used to personalize education because it allows students with different backgrounds to watch instructional videos as many times as need and use the class time for problem-solving and consolidating learning.

The results of the study also reassure teachers that they can use flipped learning in different general English classes, regardless of the personality traits and perhaps other individual characteristics of students such as tolerance of ambiguity and willingness to communicate.

There are also implications for further research. In this study, to control the effect of time of presenting flipped instruction, different groups were taught both in flipped and traditional methods using a counterbalanced experimental design, which is an outcome-based approach. Future studies, as Jiang et al. (2020) also noted, can use qualitative designs to study the process of learning in detail. In addition, the effectiveness of flipped learning can be compared with other active teaching methods such as cooperative learning.

Future studies could also examine the role of time spent on learning on results. For example, in future studies, each session a quiz can be given to traditional or other teaching groups based on the things taught in previous sessions, so that students can devote time to learning. This way, it can be found whether the amount of time spent in the flipped classroom is the influencing factor or the quality and the way time is spent is also important.

Another suggestion for future studies is to examine the role of flipped learning in the ability of general English students to answer questions at different cognitive levels. Other individual characteristics of students such as learning styles can also be studied.

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