Impact of Fully-Immersive Teaching (FIT) vs. Conventional Communicative Language Teaching on the Articulation Skills of EFL Learners With Expressive Language Disorder (ELD)

Mojgan Khaki[1] , Hossein Heidari Tabrizi[2] *, Sajad Shafiee[3]

[1]Ph.D. Candidate in TEFL, Department of English, Isfahan(Khorasgan) Branch, Islamic Azad University, Isfahan, Iran

Mojgan.khaki96@gmail.com

[2]Associate Professor, Department of English, Isfahan(Khorasgan) Branch, Islamic Azad University, Isfahan, Iran

Heidaritabrizi@gmail.com

[3]Assistant Professor, English Department, Shahrekord Branch, Islamic Azad University, Shahrekord, Iran

s.shafiee@iaushk.ac.ir

ABSTRACT

Based on the tenets of the cognitive theory of multimedia learning, the purpose of this research was to investigate the impact of Fully-Immersive Teaching (FIT) vs. conventional communicative language teaching on the articulation abilities of Iranian EFL learners diagnosed with Expressive Language Disorder (ELD). Purposively choosing 36 Iranian pre-intermediate EFL learners who had mild to moderate levels of ELD, we used a quasi-Solomon four-group design and separated them into two experimental and two control groups. The intervention included twenty sessions of seventy minutes each and comprised of eighty microlearning speech exercises that were developed in VR by FIT. The participants in the control group were given instruction based on Communicative Language Teaching (CLT), which is an approach to language education. Both the OQPT and the Wechsler Individual Achievement Test (WIAT-III) were used in this study's pre-testing and post-testing procedures. The results showed that individuals who were instructed in accordance with FIT performed better than their colleagues who had been subjected to CLT in terms of articulation abilities. These skills included expressive vocabulary, oral word fluency, and sentence repeats. TEFL, therapeutic education, cognitive speech therapy, and instructional technology might all stand to gain from the outcomes.

Keywords: EFL learners, expressive language disorder, expressive vocabulary, oral fluency, sentence repetition

INTRODUCTION

Recently, with the advancements in educational technology and the lessons learned during the COVID-19 pandemic, therapeutic education gained a firm foothold by focusing on the integration of reaching academic objectives and obtaining significant enhancement in the challenging domains in which language learners with specific difficulties find it difficult to deal. This allowed therapeutic education to focus on the integration of reaching academic objectives and obtaining significant enhancement in the challenging domains. Virtual Reality (VR) infused teaching has been shown to be a feasible, beneficial, and engaging method in teaching educational materials that are applicable to be implemented in VR learning environments (Kay, 2020). This method is one of the emerging approaches to effective instruction that takes into consideration learners who are typically ignored, such as English as a Foreign Language (EFL) learners with learning disorders ranging from basic to complex ones. While the majority of the associated studies

considered the use of VR solutions in education primarily for neurological or developmental disorders such as autism or Asperger syndrome (Lahiri, 2020), less attention was paid to language or speech disorders such as Expressive Language Disorder (ELD), which makes learning a language a difficult and frustrating task among the many other things that sufferers have to deal with.

ELD is one of the most common speech disorders found in individuals all over the world. It can be identified by a number of specific non-mental symptoms, including being a late talker, being slow in the formation of long or complex sentences, and having difficulties in intonation, pronunciation, fluency, and expressing intentions (Kempton, 2022). According to Owens (2022), people who have ELD do not have any abnormalities in their articulation mechanism. This is in contrast to those who have Receptive Language Disorder (RLD), who may have minor articulation errors but have significant difficulties processing language. Although those who have ELD and RLD do not often have mental health issues, their counterparts who have been diagnosed with Mixed Receptive-Expressive Language Disorder (MRELD) have specific cognitive quotient deficits (Owens, 2020). The EFL learners with ELD were the focus of this research because it was hypothesized that they would be the greatest candidates to improve their challenges in learning English owing to the fact that their features were relatively simple when compared to those of their classmates with RLD or MRELD, who mostly struggled with understanding the English language.

Learning difficulties such as language and speech disorders such as ELD still need considerable research to propose theoretically well-founded instruments, to help at-risk learners deal with their symptoms (Xie et al. 2021). Although certain VR serious games have been found to be engaging and beneficial approaches in special education (Checa & Bustillo, 2020), this does not negate the fact that learning difficulties such as these still require considerable research. Aside from the educational games that are built into VR platforms, the ways in which the information is presented and the ways in which users are able to engage with the virtual reality environment are different when considering the VR authoring approaches. According to Jones et al. (2022), in general, there are three kinds of virtual reality authoring or delivering educational content using VR platforms: non-immersive virtual reality (VR), semi-immersive virtual reality (VR), and completely immersive virtual reality (VR) (Jones et al., 2022). The term "non-immersive VR" refers to the use of virtual technology in a computer-generated setting or in a 2D context in which the users are unable to interact directly with their surroundings. They are present in the virtual reality environment in the form of digital characters or avatars and interact with the virtual reality setting in a roundabout way.

The participants of a virtual reality experience that is only semi-immersive are transported to an other reality from the one in which they really exist, but they are restricted in their ability to move about and interact with the virtual setting. The majority of virtual reality (VR) instructional simulators fall into this category, which requires more complex software and hardware. The completely immersive virtual reality environment provides users with the most lifelike virtual reality experience possible. In this setting, users are free to walk about with fewer limitations than in the semi-immersive VR setting and may interact with the world directly via the digital depiction of their hands. Users are required to have Virtual-Reality Head Mounted Displays (VR-HMDs) in order to participate in this form of virtual reality authoring. VR-HMDs are high-end portable devices that are primarily developed for an immersive virtual reality experience. There are other kinds of virtual realities that are not classified as the primary kinds of VR authoring. One example of this is augmented reality (AR), which offers a constrained version of the virtual reality experience on transportable devices like mobile phones and tablets that have built-in cameras. Other examples of this kind of virtual reality include mixed reality and interactive fiction. Users are at danger of

experiencing a variety of unwelcome mental and physical symptoms if they make use of virtual reality (VR) technology, which should be made clear in this article.

FIT has a significant amount of potential to increase the occurrence of effective learning among a variety of different types of learners and across a variety of educational contexts, particularly for learners with special needs who have limited learning capacities (Anderson, 2019). This is primarily due to two critical reasons: (A) it positions learners in a realistic environment that is very similar to the real world and authentically presents the content, and (B) it engages the sensory channels or inputs as much as possible. According to Clark et al. (2011), managing cognitive load plays an important part in practical learning, particularly among students who have learning disorders. This can be accomplished by creating tasks with appropriate levels of difficulty (intrinsic load), improving the instructional design of educational materials (germane load), and preventing an unnecessary load on learning resources during instruction by dividing the additional amount into a variety of sensory inputs (extraneous load). In addition to the variables that have been described, the provision of a learning environment that is free from prejudice plays an essential part in enhancing the efficacy of education among the underserved group of students who have learning difficulties (Mamen, 2007).

This study is significantly different from the associated ones because of several reasons, such as (A) being interdisciplinary regarding the potential beneficial connections among TEFL, therapeutic education, and educational psychology, (B) selecting a quasi-Solomon four-group design to avoid pre-test sensitization, and increasing the chance of reaching generalizable outcomes, (C) choosing one of the overlooked communities of language learners with a common verbal difficulty, (D) considering the use of VR technology as an engaging and motivating instructional instrument with well-founded theoretical support, (E) developing a possibly reliable VR-authoring method to bridge the gap in the associated studies mainly in the domain of English learning, (F) implementing microlearning packages in VR-authoring the instructional to decrease the adverse physical and mental effects experienced by the participants as much as possible, and (G) using available VR devices which are user-friendly and purchasable even in less-developed or developing settings of educational technology such as the Middle East and North Africa (MENA) region.

LITERATURE REVIEW

Theoretical Background

- This research is backed by a variety of core theories, some of which are detailed below. These theories include the Cognitive Theory of Multimedia Learning (CTML), Cognitive Load Theory (CLT), Speech and Cognition Theory (SCT), and Assistive Learning Theory (AST). According to Kessy (2020), CTML claims that engaging diverse sensory inputs, such as seeing, hearing, and touching, enhances the possibility of successful learning. Furthermore, as the number of these channels rises, the process of appropriately constructing schemas increases as well. In addition, according to CLT (Mayer, 2020), effective learning may be achieved by using adequate learning resources at the same time that learning-related intrinsic load grows and learning-related extraneous load declines. According to Fiske (2020), the degrees of immersion in virtual reality technology are a significant factor in determining the success of employing associated instruments or platforms in benefitting users in terms of the educational content that is the primary concern. In this research, FIT was utilized to improve the potential advantages experienced by EFL learners with ELD in reference to their articulation abilities. These learners had lower levels of education than their peers.

Concerning SCT, Turk, and Shattuck-Hufnagel's 2020 study states that the ability to verbalize thoughts or ideas is influenced by the amount of learning resources used in the brain during the process of instruction and that the use of appropriate teaching methods or educational technology solutions is beneficial for learners with verbal disorders to not only decrease the amount of cognitive overload but also assist them in oral expression or verbal communication. When the AST (Kouroupetroglou, 2014) is the focal point, it highlights the fact that the use of certain instructional methods or approaches may promote learners' independence. This is an extremely important factor in the context of special education, in which learners cope with a variety of learning problems. When it comes to learning a language, AST is of the utmost importance since the majority of people who have speech difficulties need the assistance of their parents, instructors, or peers in order to communicate effectively with other people. In this research, FIT was utilized to lower the extra cognitive load. This was accomplished by putting EFL learners who had ELD in an educational setting that was realistic, genuine, and similar to the actual world. Additionally, their need for external help was reduced.

Related Research

Cobb et al. (2002) attempted to investigate the role of implementing a 2D virtual-reality environment in order to possibly benefit English native and non-native speakers in terms of their interaction skills. These skills include correct pronunciation, effective conversation engagement, the appropriate transmission of information, and most importantly, the ability to successfully communicate with one another, according to an experimental study. As the second most common language disorder among individuals in the United States, aphasia is the subject of this research. According to the findings, the therapy that was discussed was beneficial in improving people's ability to engage with one another while speaking English. The researchers noted the high levels of motivation that were present among the people who took part in the experiment since it was reflected in the participants' overall performance and the variety of interactional skills that they used. Aykac (2005) attempted to discover the benefits of utilizing Computer-Mediated Communication (CMC) voices and texts in a fundamental virtual-reality Single-user Environment (SUE) on the speaking skills of EFL learners. This research was conducted with the goal of determining whether or not the implementation of a 2D virtual-reality-based environment could have a positive impact on EFL learners' ability to communicate orally. Reading a variety of extracted English texts and seeing short video clips were two of the methods used to teach required speaking abilities to participants in the experimental group. After that, students had to converse with their classmates using voices and text, as well as complete a number of speaking exercises. The findings not only demonstrated the significant effects of the 2D virtual-reality-based platform on the speaking abilities of the Turkish EFL students, but they also confirmed the presence of higher motivation among the individuals in the experimental group regarding the utilization of the intervened learning environment. This was the case regardless of whether or not the learners were Turkish or English as a foreign language.

Brundage (2007) intended to evaluate the possible effects of the virtual-reality platform on stuttering among persons with a spectrum of mild to moderate language problems. Stuttering is one of the most prevalent features of individuals who have language disorders. Brundage's goal was to examine the potential impacts of the platform on stuttering. Individuals in the experimental group used specialized headsets and controllers to learn specific strategies to avoid stuttering. These strategies were based on brief 360-degree video clips that they watched while playing a game in which a fictional character stuttered and the individuals were required to assist him using the strategies they had learned. The participants in the

control group were given the same educational and therapeutic treatment as those in the experimental group; however, they were asked to collaborate with their classmates and provide assistance to one another based on the techniques that were presented to them by a therapist. The findings suggested that there was not a significant difference between the two groups, however the members of the experimental group did much better in terms of their ability to stammer while dealing with the fictitious character than their counterparts in the control group. Horvath et al. (2009) explored the impact of adopting a virtual-reality platform on several areas of oral communication among non-native aphasic English speakers. Aphasia is one of the language impairments that is most comparable to ELD. The participants in the experimental group were given the instructional material that was based on Everyday Life Activities (ELA), which is one of the user-friendly virtual-reality environments designed primarily for the sake of rehabilitation. According to the findings, the people who were part of the experimental group did much better than their counterparts who were in the control group. In addition to this, and more specifically, the participants in the experimental group fared better when it came to locating words and oral fluency, but the individuals in the control group performed better when it came to constructing whole sentences.

Umanski et al. (2010) developed a prototype for a virtual-reality-based game that focuses on speech motor skills and has rhythmic sounds that were created by artificial intelligence with the intention of assisting individuals who are not native English speakers but who suffer from speech difficulties. In the experimental group, individuals played the developed game in a semi-immersive virtual-reality learning environment that required participants to express their ideas verbally about a primary topic as they watched an example in the form of a short clip generated by the artificial intelligence engine based on a particular topic. Speech motor skills refer to a set of skills that include coming up with an idea, developing it, planning how to express it, and finally articulating it. Participants in the control group went through the process with the assistance of a doctor. They were exposed to the identical conditions. The findings provide insight into the efficacy of both strategies, indicating that there is no discernible gap between them. Ibanez et al. (2011) attempted to develop a virtual-reality environment to potentially improve verbal communication, problem-solving, negotiation, decision-making, and assertiveness. This was done in regard to the integration of situated and cooperative learning strategies to enhance interpersonal communication skills. Participants in the experimental group were required to take part in a semi-immersive game in order to obtain the instructional material regarding the enhancement of the aforementioned aspects of interpersonal communication skills and the completion of a series of predetermined tasks through collaboration with their peers. According to the findings, the individuals who took part in the experiment had superior performance in areas such as verbal communication, the ability to solve problems, the ability to negotiate, and the ability to make decisions. In terms of assertiveness, the people who were assigned to the control group performed much better.

Grechuta et al. (2016) used a virtual-reality-based Rehabilitation Gaming System (RGS) to examine the impact of intense language-action therapy on aphasic persons whose native tongue was English. The researchers focused their attention on the components of articulation skills when developing the RGS. RGS is a revolutionary way for activating multiple mental, oral, and movement systems while playing non-immersive virtual reality video games in the form of two-player teams. RGS was developed by researchers at the University of California, Santa Cruz. The findings provided insight into the participants' increases in expressive vocabulary, phrase repetition, and oral word fluency, all of which improved as a consequence of the intervention. In addition, the comments provided by the therapists indicated that RGS was a strategy that was both interesting and motivational in terms of enhancing the participants' articulation abilities. Heydari and Marefat (2023) attempted to examine the effects of a 3D virtual-reality platform on Iranian

EFL learners' speaking skills and improve the criteria for assessing oral performance in the virtual-reality learning environment. This was done with a concentration on the Iranian EFL learners' speaking skills and oral assessment frameworks in virtual-reality learning environments. The intervention consisted of a seventy-hour English-speaking lesson that was delivered to the people in the experience group based on a three-dimensional virtual character. In order to participate, the persons in the experience group were needed to wear special headphones. The results demonstrated that this method, which was based on virtual reality, was successful in improving the speaking abilities of EFL students.

The present research was carried out in an effort to discover an answer to the following question based on the connected studies that were evaluated in the aforementioned literature:

-

RQ. *Is there any significant difference between the effects of Fully-Immersive Teaching vs. conventional communicative language teaching on the articulation skills of Iranian pre-intermediate EFL learners with Expressive Language Disorder?*

METHODOLOGY

Design of the Study

The objectives of this study, the nature of the variables in focus, and the participants' characteristics required a strict design in examining the effectiveness of the intervention accompanied by mitigating the impacts of the intervening variables. Thus, the quasi-Solomon four-group design (Tashakkori et al., 2020; Van Engelenburg, 1999) was selected in which there are four groups, including G1 and G3, known as experimental groups that experience intervention or treatment and G2 and G4, known as the control groups. Examining the actual effectiveness of the treatment is done through a final comparison between G1 and G3, followed by G2 and G4. Figure 1 is a representation of the quasi-Solomon gour-group design.

Figure 1

Quasi-Solomon Four-group Design

Group	Baseline assessment (Pretest score)	Intervention	Endline assessment (Posttest score)
G1	O1	X	O2
G2	O3		O4
G3		X	O5
G4			O6

This study was conducted in a private speech-therapy consulting center placed in Tehran, Iran which was established with the aim of (a) benefiting individuals, mainly students who suffer from different language disorders such as ELD, and (B) conducting associated Speech-Language Therapy (SLP) research. The users of this center were primarily students who faced different issues in their academic careers, mainly because of ELD, RLD, stuttering, and Dysarthria. In addition, this establishment is equipped with various types of high-end equipment funded by different benefactors.

Participants

According to the objectives of this study, participants were required to have two qualities: first homogeneous levels of general English proficiency and second same levels of ELD. As the center in which this study was carried out offered different courses for learning various foreign languages, such as German, English, and French, prescribed by the language pathologist as a motivating way to enhance the articulation skills of the center users, determining the general English proficiency of them was not a complicated job. The participants who were purposefully selected due to their limited number were EFL learners that successfully passed the pre-intermediate level of the Oxford English File (Fourth Edition). While this was an indicator of their general English proficiency, an Oxford Quick Placement Test (OQPT) was also administered to ensure their proficiency levels in English. After determining their general English proficiency, it was necessary to check their ELD levels. As the center users with high levels of language disorders or speech difficulties were not appropriate candidates to take part in language learning courses because of their complicated verbal issues, only the ones with mild to moderate levels of language disorder were enrolled in language learning courses.

Similar to the previous procedure in which the participants' general English proficiency was confirmed in a two-stage process, again the ELD levels of the participants were examined with the help of a Speech-Language Pathologist panel using Alberta University Special Education Coding-Criteria (SECC), 2020/21. Considering the dropout rate, 36 Iranian pre-intermediate EFL learners with mild to moderate levels of ELD were purposively selected. The dropped-out participants were classified into voluntary and involuntary groups, and their withdrawal reasons were tracked to avoid attrition bias. Then, they were randomly assigned into the four groups across G1-G4. The participants in the experimental groups (G1 and G3) experienced FIT as the intervention, and the ones in the control groups (G2 and G4) underwent t conventional CLT method. Considering the ethical guidelines, specific codes of conduct in research in social science (Weinbaum et al. 2018) were followed during the selection of the participants and carrying out this study. It should be noted that while some participants were below 18 years old, their parents were informed considering their child's participation in this study.

Material

The material which was used in this study needed three requirements, first being in harmony with the study's objectives, which are focusing on speaking and articulation skills, second having the features to be VR-authored or implemented in the FIT, and third being in line with the participants' general English proficiency. After receiving feedback from a panel of speech-language pathologists and following the required features, the pre-intermediate book "Collins English for Life: Skills – Speaking," containing twenty sessions themed based on five general topics, was selected as the instructional material. Microlearning or learning nugget solution was picked for VR-authoring the material to avoid experiencing physical and mental adverse effects caused by VR technology. In this study, implementing microlearning was followed based on specific steps (Kohnke, 2023) in designing the material in focus.

Instruments

Oxford Quick Placement Test (OQPT)

The OQPT is a valid and reliable tool used across a significant number of studies to determine participants' general English proficiency, mainly to have a homogeneous group in terms of English proficiency. The OQPT that was developed in 2004 includes 60 items measuring grammar, vocabulary, and reading comprehension of the respondents, and its scoring range (Hill & Parry, 2014) is as follows: 0-17

(beginners), 18-29 (elementary), 30-39 (pre-intermediate), 40-47 (upper-intermediate), 48-53 (advanced), 54-60 (very advanced).

Virtual Reality Head Mounted Displays (VR-HMD)

VR-HMD is a display device worn on the head to experience the VR environment, usually used with one or two joysticks to move and interact with the environment. In this study, the participants in the experimental groups used VIVE Focus 3 VR-HMD to experience FIT.

Wechsler Individual Achievement Test III (WIAT-III) (Pre-test and Psot-test)

WIAT-III test is an international measure for different research purposes, especially regarding individuals with varying disorders of learning. It includes five significant subtests, namely (a) reading (essential reading or word reading, reading comprehension, reading fluency, pseudoword decoding, spelling, early reading skills, and oral reading fluency); (b) math (math problem solving, numerical operations, and math fluency); (c) listening (listening comprehension); (d) writing (alphabet writing fluency, sentence composition, essay composition); and (e) speaking and articulation (oral expression). The "oral expression" part of WAIT-III was used to measure participants' articulation skills according to different qualities. This part consists of three parts, including (a) expressive vocabulary or word retrieval ability measuring oral complexity, (b) oral word fluency or production of words measuring oral accuracy, and (c) sentence repetition or knowledge of oral syntax measuring oral fluency (Burns, 2010). In the expressive vocabulary part, the individuals are asked to say a word that best defines or describes a picture as long as they can in 1 minute. For the part of oral word fluency, the individuals are required to name as many things as possible belonging to a particular category within sixty seconds. Finally, for the last part-sentence repetition, the individuals are required to listen to specific sentences and repeat them while they increase in length and complexity. Considering validity, all of the words and sentences were extracted from the material under the supervision of an expert panel, including TEFL associate professors and language pathologists. In terms of intra-rater reliability, two participants in each group of the study were randomly selected and double-checked in terms of their performance in the WIAT-III and their achieved scores across pre and post-test phases.

Data Collection Procedure

The required data were collected across different steps. In step one, the required permissions for conducting this study were obtained from the heads of the speech and language consultation center and the language learning department. Although the participants had successfully passed the pre-intermediate level of an English learning course, in step two, their general English proficiency was reassessed by implementing OQPT. Similar to the previous procedure, as the participants who enrolled in English learning courses had mild to moderate levels of ELD, their levels of ELD were reevaluated with the help of an SLP panel and with the use of the Alberta University Special Education Coding-Criteria (SECC) 2020/21. Finally, 36 Iranian pre-intermediate EFL learners with mild to moderate levels of Eld were selected and were recruited into four groups, including two experimental groups (G1 and G3) and two control groups (G2 and G4). As it was mentioned, in this study, there are four groups; two of them as the experimental groups (G1 and G3) receive the treatment that is being taught the instructional material based on FIT, and two other groups as the control ones (G2 and G4) were taught the material according to the conventional CLT method. The participants in the experimental groups had access to VR-HMDs, and for the ones in the control groups, a DVD player was used to listen to the conversations and speech drills. There were twenty

70-minute sessions in the intervention phase in which each session was based on teaching one unit of the material across four learning nuggets; in those, one was distinguished for teaching the main lesson focusing on articulation or speaking skills, and three learning nuggets were allocated for practicing speech drills. The participants in the experimental groups experienced a fully-immersive 3D learning environment through VR-HMDs in which they were placed in a themed context according to the topic of the unit, for instance, street corner, school, museum, or café and after getting familiar with the targeted verbal skill they were required to perform a series of speech drills using what they learned. Participants in the control group underwent the same number of sessions but based on CLT. All participants' articulation skills were measured before and after the intervention. It is noteworthy to mention that to avoid the potential experience of the physical and mental adverse effects caused by VR technology, microlearning or learning nuggets were used for VR-authoring the material in the experimental groups. WIAT-III tests were used as the pre-test and post-test to evaluate the participants' articulation skills, including expressive vocabulary, oral word fluency, and sentence repetition. It should be mentioned that during the process of selecting participants and in some sessions of the intervention phase, an SLP panel helped researchers.

Data Analysis Procedure

The R statistical computing software, Systematic Analysis of Language Transcripts (SALT) software, and Sampling Utterances and Grammatical Analysis Revised (SUGAR) software were utilized to analyze the obtained data. Following the specific design used in this research, particular guidelines (Van Engelenburg, 1999) were followed. First, descriptive statistics were used to evaluate the score of the participants regarding articulation skills in the pre-test. After that, skewness and kurtosis values, the Shapiro-Wilk test, and the Kolmogorov-Smirnov test were calculated to check the assumption of normality and decide whether a parametric or non-parametric test should be used. Then, the homogeneity of variance was checked before conducting a one-way ANOVA to check if there was a significant difference between the participants in the pre-test. Further, descriptive statistics were used to have a quick outlook of the articulation scores in the pre-test and post-test. Next, the normality assumption was checked for the scores reached in the post-test. Finally, an unpaired t-test and a paired t-test were calculated to examine the effects of pre-test sensitization and the actual effectiveness of the intervention.

RESULTS

While the participants had successfully passed the pre-intermediate levels of English courses, it was necessary to recheck their general English proficiency to have homogeneous participants regarding their English proficiency. Thus OQPT was conducted as a valid and reliable instrument tapping respondents' proficiency in English. The outcomes of the descriptive statistics ($N=36$, $M=35.44$, $SD=1.71$) confirmed their pre-intermediate general English proficiency. In addition, the minimum ($MIN=32$) and the maximum score ($MAX=36$) were in the range of pre-intermediate English proficiency ($30<x<39$) (Hill & Parry, 2014). Besides, there was a range of 4 scores with a variance of ($\sigma 2=4$).

According to the design of this study, a statistical procedure (Tashakkori et al., 2020; Van Engelenburg, 1999) was followed to find the answer to the research question in focus. In this design, the pre-test was carried out only for the participants in one of the experimental groups (G1) and one of the control groups (G2). In the following, descriptive statistics with skewness and kurtosis values were calculated to check the participants' performance regarding each component of articulation skills, including expressive vocabulary,

oral word fluency, and sentence repetition in the pre-test. The skewness and kurtosis values were used as basic yardsticks to check the normality assumption. Table 1 indicates the associated results.

Table 1

Descriptive Statistics for Scores of Articulation Skills in the Pre-test

	G*	N	M	SD	Skewness	Kurtosis
Expressive Vocabulary	G1	9	11.22	.972	.502	-.009
	G2	9	11	1.000	.964	.786
Oral Word Fluency	G1	9	7.44	.882	.214	.144
	G2	9	7.33	1.000	.107	-.643
Sentence Repetition	G1	9	4.78	.833	.501	-1.275
	G2	9	4.89	.782	.216	-1.041

Note. * G stands for the group

As shown in Table 1, the results reveal that the values of skewness and kurtosis for expressive vocabulary (*G1=.502, -.009; G2= .964, .786*), oral word fluency (*G1= .214, .144; G2=.107, -.643*) and sentence repetition (*G1=.501, -1.275; G2=.216, -1.041*) were in the range of -2 and +2 confirming that the gathered results followed the assumption of normality (Llaudet & Imai, 2022). While the skewness and kurtosis values were in the suitable range, Kolmogorov-Smirnov and Shapiro-Wilk tests were used to ensure the results did not violate the normality assumption. Table 2 is a representation of the results for G1 and G2.

Table 2

Kolmogorov-Smirnov and Shapiro-Wilk Tests for Articulation-Skills Scores in the Pre-test

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	G	Statistic	df	Sig.	Statistic	df	Sig.
Expressive Vocabulary	G1	.257	9	.088	.903	9	.273
	G2	.278	9	.064	.853	9	.081
Oral Word Fluency	G1	.248	9	.116	.913	9	.338
	G2	.192	9	.200[a]	.917	9	.364
Sentence Repetition	G1	.269	9	.061	.808	9	.065
	G2	.223	9	.200[a]	.838	8	.060

Note. *. This is a lower bound of the true significance. a. Lilliefors Significance Correction

As seen in Table 2, all the significance values in the Kolmogorov-Smirnov test for the expressive vocabulary in G1 and G2 (*p =.088, p=.064*), oral word fluency in G1 and G2 (*p =.116; p=.200*), and sentence repetition in G1 and G2 (*p=.061, p=.200*) were above the critical alpha level (0.05). Moreover, all the significance values in the Shapiro-Wilk test for the expressive vocabulary in G1 and G2 (*p =.273, p=.081*), oral word fluency in G1 and G2 (*p =.338; p=.364*), and sentence repetition in G1 and G2 (*p=.065, p=.060*) were more than the critical level of alpha (*0.05*). Subsequently, based on the results, it can be concluded that the assumption of normality was followed. Thus, a parametric test had to be used to check if there was any significant difference between the groups across articulation skills. It should be mentioned that ANOVA was selected instead of ANCOVA for two reasons; first, the assumptions of ANOVA are far less than the complicated presuppositions for conducting ANCOVA. Second, the design of this study

considered the avoidance of pre-test sensitization; thus, conducting a factorial ANCOVA was unnecessary. As the ANOVA test considers the same variance among all the comparison groups, the homogeneity of variances assumption was examined. Table 3 reflects the related results for G1 and G2.

Table 3

Test of Homogeneity of Variances for Scores of Articulation Skills in the Pre-test

		Levine Statistic	Df1	Df2	Sig.
EV*	Based on mean	.060	1	16	.810
	Based o median	.000	1	16	1.000
	Based on the median with adjusted df	.000	1	16.000	1.000
	Based on trimmed mean	.022	1	16	.0883
OWF**	Based on mean	.193	1	16	.666
	Based o median	.118	1	16	.736
	Based on the median with adjusted df	.118	1	15.945	.736
	Based on trimmed mean	.186	1	16	.672
SR***	Based on mean	.236	1	16	.634
	Based o median	.211	1	16	.653
	Based on the median with adjusted df	.211	1	15.956	.653
	Based on trimmed mean	.235	1	16	.635

Note. * EV: Expressive Vocabulary, ** OWF: Oral Word Flency, *** SR: Sentence Repetition

As shown in Table 3, all the significant values were above the critical level (*0.05*); thus, the assumption of homogeneity of variances was not violated. After checking the required assumptions of normality and homogeneity of variances, a one-way ANOVA test was conducted to examine if there was any significant difference regarding the scores of the articulation skills in the pre-test. Table 4 demonstrates the related results for G1 and G2.

Table 4

One-way ANOVA Test for Scores of Articulation Skills in the Pre-test

		Sum of Squares	df.	Mean Square	F	Sig.
EV*	Between Groups	222	1	.222	.229	.639
	Within groups	15.556	16	.972		
	Total	15.778	17			
OWF**	Between Groups	.056	1	.056	.063	.806
	Within groups	14.222	16	.889		
	Total	14.278	17			
SR***	Between Groups	.056	1	.056	.085	.774
	Within groups	10.444	16	.653		
	Total	10.500	17			

Note. * EV: Expressive Vocabulary, ** OWF: Oral Word Flency, *** SR: Sentence Repetition

As displayed in Table 4, the significant values across the scores of articulation skills, namely expressive vocabulary (*p=.639*), oral word fluency (*p=.806*), and sentence repetition (*p=.774*) were more than the critical level of 0.05, confirming that there were no significant differences between the G1 and G2 groups considering the scores of articulation skill. In following the results of the articulation skills in the pre-test and post-test across all groups are presented. Table 5 indicates the associated descriptive statistics.

Table 5

Descriptive Statistics for Scores of Articulation Skills in Pre-test and Post-test

	Pre-test				Post-test							
	G1		G2		G1		G2		G3		G4	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
EV*	11.22	.972	11	1.000	14.33	1.000	10.89	.928	14.44	.726	11.11	.601
OWF**	7.44	.882	7.33	1.000	11.78	1.394	7.22	.441	12.33	1.323	12.33	1.236
SR***	4.78	.833	4.89	.782	6.44	1.130	4.67	.707	6.33	1.225	6.33	.782

Note. * EV: Expressive Vocabulary, ** OWF: Oral Word Flency, *** SR: Sentence Repetition

As revealed in Table 5, the participants in one of the experimental groups (G1), which had passed the pre-test, showed better performance in articulation skills after the intervention phase, including expressive vocabulary (*M=14.33, SD=1*), oral word fluency (*M=11.78, SD=1.39*), and sentence repetition (*M=6.44, SD=1.13*). On the other hand, the participants' performance in one of the control groups (G2) that experienced the pre-test did not reveal critical improvements in the post-test across articulation skills, namely expressive vocabulary (*M=10.89, SD=.928*), oral word fluency (*M=7.22, SD=.441*), and sentence repetition (*M=4.67, SD=.707*). Thus, according to the statistical procedures required by the design of this study to answer research questions, check the effects of pre-test sensitization, and examine the actual effectiveness of the intervention, a series of unpaired t-tests were computed regarding the scores of the articulation skills among the participants in all groups for the post-tests. To check if using the parametric test was an appropriate choice and to ensure the results of the post-tests followed the normality assumption, skewness and kurtosis values were calculated following the computation of Kolmogorov-Smirnov and Shapiro-Wilk tests. Table 6 shows the associated outcomes.

Table 6

Skewness, Kurtosis, and Tests of Normality for Scores of Articulation Skills in the Post-test

		Skewness	Kurtosis	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	G	Statistic	Statistic	Statistic	df	Sig.	Statistic	df	Sig.
Expressive Vocabulary	G1	.107	-.643	.192	9	.200*	.917	9	.364
	G2	.263	-1.018	.275	9	.068	.780	9	.072
	G3	1.501	1.467	.396	9	.061	.684	9	.084
	G4	.018	1.126	.351	9	.077	.781	9	.062
Oral Word Fluency	G1	.146	-1.060	.156	9	.200*	.938	9	.557
	G2	1.620	.735	.471	9	.085	.536	9	.066
	G3	-.370	-.315	.178	9	.200*	.936	9	.545
	G4	-1.114	.757	.340	9	.630	.839	9	.060
	G1	.176	-1.171	.208	9	.200*	.899	9	.248

Sentence Repetition	G2	.606	-.286	.272	9	.064	.805	9	.094
	G3	.233	-1.556	.195	9	.200*	.870	9	.122
	G4	.216	-1.041	.223	9	.200*	.838	9	.065

Note. *. This is a lower bound of the true significance. a. Lilliefors Significance Correction

As indicated in Table 6, all the values of skewness and kurtosis for expressive vocabulary across G1 (*.107, -.643*), G2 (*.263, -1.018*), G3 (*1.501, 1.467*), and G4 (*.018, 1.126*) were in the range -2 and +2; in addition, all the values of Kolomogrov-Smirnove and Shapiro-Wilk tests across G1 (*.200, .364*), G2 (*.068, .072*), G3 (*.061, .084*), and G4 (*.077, .062*) were more than the critical level of 0.05 confirming that the assumption of normality was not violated regarding the post-test scores of expressive vocabulary across four groups (Llaudet & Imai, 2022). Concerning the scores of oral word fluency across four groups, all the values of skewness and kurtosis for expressive vocabulary across G1 (*.146, -1.060*), G2 (*1.620, -.735*), G3 (*-.370, -.315*), and G4 (*-1.114, .757*) were in the range -2 and +2; in addition, all the values of Kolomogrov-Smirnove and Shapiro-Wilk tests across G1 (*.200, .557)*, G2 (*.085, .066*), G3 (*.200, .545*), and G4 (*.630, .060*) were more than the critical level of 0.05 confirming that the assumption of normality was followed regarding the post-test scores of oral word fluency among four groups (Llaudet & Imai, 2022).

With a focus on the scores of sentence repetition among four groups, all the values of skewness and kurtosis across G1 (*.176, -1.171*), G2 (*.606, -.286*), G3 (*.233, -1.556*), and G4 (*.216, -1.041*) were in the range -2 and +2; furthermore, all the values of Kolomogrov-Smirnove and Shapiro-Wilk tests across G1 (*.200, .248*), G2 (*.064, .094*), G3 (*.200, .122*), and G4 (*.200, .065*) were more than the critical level of 0.05 indicating that the normality assumption was followed regarding the scores of sentence repetition across four groups in the post-test (Llaudet & Imai, 2022). With the use of a parametric test, a series of unpaired sample t-tests were used to check the potential effects of the pre-test sensitization on the post-test scores across all groups and in terms of articulation skills. Besides, in this regard, it was possible to check the actual effectiveness of the intervention on the construct and sub-constructs in focus. Table 7 presents the mentioned results.

Table 7

Unpaired T-test for Articulation Scores in Post-test across All Groups

		t	Sig.(2tailed)	M Difference	Std. Error Diff.	Lower	Upper
EV	G1G2	7.575	<.001	3.444	.455	2.480	4.408
	G1G3	-.270	.791	-.111	.412	-.985	.762
	G1G4	8.286	<.001	3.222	.389	2.389	4.047
	G2G3	-9.051	<.001	-3.556	.393	-4.388	-2.72
	G2G4	-.603	.555	-.222	.369	-1.003	.559
	G3G4	10.607	<.001	3.333	.314	2.667	4.001
OWF	G1G2	9.345	<.001	4.556	.487	3.552	5.589
	G1G3	-.867	.399	-.556	.641	-1.914	.803
	G1G4	6.997	<.001	4.333	.621	3.017	5.650
	G2G3	-10.99	<.001	-5.111	.465	-6.096	-4.12
	G2G4	-.508	.618	-.222	.437	-1.150	.705
	G3G4	8.101	<.001	4.889	.603	3.610	6.168
SR	G1G2	4.000	.001	1.778	.444	.836	2.720

G1G3	-.316	.844	.111	.556	-1.067	1.289
G1G4	3.395	.004	1.556	.458	.584	2.527
G2G3	-3.536	.003	-1.667	.471	-2.666	-.667
G2G4	-.632	.536	-.222	.351	-.967	.523
G3G4	2.982	.009	1.444	.484	.418	2.471

Note. * EV: Expressive Vocabulary, ** OWF: Oral Word Flency, *** SR: Sentence Repetition

As displayed in Table 7, in each articulation skill, namely expressive vocabulary, oral word fluency, and sentence repetition, only the interactions of G1-G3 ($p>0.05$), which were experimental groups, and G2-G4 ($p>0.05$) that were control groups showed no significant differences, but all the other groups were significantly different from each other in terms of the articulation-skills scores in the post-test ($p<0.05$). Thus, it can be concluded that the pre-test sensitization was successfully controlled, and the intervention enhanced the participants' articulation skills in the experimental groups. It was necessary to use a paired sample t-test to compare the pre-test and post-test scores across G1 and G2 groups to check if the FIT significantly improved articulation skills among the Iranian pre-intermediate EFL learners with ELD.

Table 8

Paired T-test for the Scores of Articulation Skills across the Pre-test and Post-test

			Paired Differences							
						95% Confidence Interval of the Difference				
			M	SD	SEM	Lower	Upper	t	df	Sig. (2tailed)
G1	Pre-test	EV	3.111	1.537	.512	1.930	4.292	6.074	8	<.001
	Post-test	OWF	4.333	1.225	.408	-5.275	-3.392	-10.6	8	<.001
		SR	1.667	1.658	.553	.392	2.941	3.015	8	.017
G2	Pre-test	EV	.111	1.269	.423	-.865	1.087	.263	8	.799
	Post-test	OWF	.114	1.054	.351	-.921	.699	-.316	8	.760
		SR	.223	1.093	.364	-.618	1.062	.610	8	.559

As shown in Table 8, concerning the scores of the articulation skills, including expressive vocabulary ($p<.001$), oral word fluency ($p=<.001$), and sentence repetition ($p=.017$), there was a significant difference among the participants in G1 ($p<.05$) who experienced FIT between the pre-test and post-test. In addition, regarding the scores of the articulation skills, namely expressive vocabulary ($p=.799$), oral word fluency ($p=.760$), and sentence repetition ($p=.559$), there was no significant difference among the participants in G2 (p>.05) who were taught according to the mainstream CLT method between the pre-test and post-test. So, it can be concluded that FIT significantly enhanced all the articulation skills of the Iranian pre-intermediate EFL learners with ELD.

DISCUSSION

The results of the analysis of the data showed that there was a substantial difference between the effects of FIT and those of traditional teaching on the articulation abilities of Iranian pre-intermediate EFL students

who were learning English as a second language (ELD). These findings are congruent with those of Horvath et al. (2009), in which it was shown that the use of VR technology for the presentation of instructional content increased oral fluency as one of the components of articulation skills among Hungarian EFL learners who had moderate levels of aphasia. In order to get an accurate reading of a person's oral fluency, they are given a task in which they have one minute to identify the characteristics of a given category without being given any visual cues. According to Kostyk et al. (2022), using VR technology significantly improved semantic and episodic memory formation, which led to faster access to the retained schemata or memory resources. As a result, individuals were able to reflect on information more quickly in comparison to individuals who were not users of VR technology for a specific continuous time period. This could be a potential contributing reason accounting for the occurrence of enhanced fluency. In addition, it has been shown that those who have a greater capacity for semantic memory perform better on semantic connection tests, which were used extensively in this research and across previous studies in order to determine oral fluency (Noordman-Vonk, 2013).

The findings are likewise in agreement with those of Umanski et al. (2010), who discovered that learners of Slovenian English as a foreign language who had a variety of speech impairments improved from VR-infused training in the area of expressive vocabulary and articulation skills. An individual's expressive vocabulary is evaluated by a task in which they are supposed to describe a simple image devoid of any crucial intricacy or technical components by using only single words for as long as they can in the allotted period of time, which is sixty seconds. When compared to oral fluency, in which the rate of possible replies is restricted to the various forms of semantic linkages between words, the range of potential answers in expressive vocabulary is somehow limitless owing to the distinct point-of-views among different persons when it comes to describing an image. Based on what is pointed out by Yang et al. (2018), the acquired findings concerning the beneficial impact of VR technology on expressive vocabulary is tenable. In their study, utilizing virtual technology, especially immersive and completely immersive ones, boosted the creativity of the VR users. This lends credence to the findings about the good influence of VR technology on expressive vocabulary. Furthermore, it has been shown that greater levels of creativity are associated with improved semantic fluency and expressiveness in a second language (Fernandez-Fontecha, 2021). It is possible to draw the conclusion that the enhancement in expressive vocabulary and spoken word fluency brought about by VR technology may be attributed to a variety of different reasons.

The findings are explained based on a variety of scientific assertions, despite the fact that there was no other study in the published research that was comparable to this one about the good impacts that VR technology has on sentence repetition as one of the categories of articulation abilities. Individuals are asked to repeat certain phrases, ranging from simple to complicated ones, as many times as they can until they are unable to accurately recollect the sentence any more. This is how the sentence repetition task is carried out. According to Nastajus (2021), the use of virtual reality (VR) technology is advantageous in that it helps people improve their episodic buffers, which is a prerequisite for having a better capacity in terms of working memory. In addition, it was revealed that the phrase repetition task was a measure of episodic buffer and not true working memory (Klem et al. 2014). It is possible to draw the conclusion that virtual reality (VR) technology is useful in terms of enhancing episodic buffers, which ultimately findings in improved working memory and a greater number of repeated phrases while doing sentence-completion tasks. On the basis of scientific claims that were made by reputable research that were published in the relevant literature, it is possible to draw the conclusion that the function of VR technology and its

relationship with improvements in articulation skills among Iranian-intermediate EFL learners who suffered from ELD was proven.

CONCLUSION

According to the findings of this research, using a quasi-Solomon four-group design successfully removed pre-test sensitization, and utilizing FIT considerably boosted articulation abilities among Iranian pre-intermediate EFL learners with ELD in comparison to utilizing standard CLT. Both of these findings may be attributed to the use of FIT. In addition to an increase in users' expressive vocabulary, the findings of this research indicate that utilizing virtual technology, especially immersive and completely immersive versions of such technologies, may improve VR users' creative abilities. The findings of this research suggest that virtual reality (VR) technology may increase semantic and episodic memory development. This would result in quicker access to the preserved schemata or memory resources and would enable users to more rapidly reflect on knowledge. The findings show that virtual reality technology may strengthen episodic buffers, which would result in greater working memory. This is suggested by the improvements in phrase repetition that were seen. This research has important repercussions for both TEFL and therapeutic education and was one of the first studies of its kind in the field of education. The purpose of this study may be revisited in further research using distinct varieties of VR technology with a variety of language impairments, such as RLD or Dysarthria, serving as the primary emphasis.

References

Anderson, A. (2019). *Virtual reality, augmented reality and artificial intelligence in special education: a practical guide to supporting students with learning differences*. Routledge.

Aykac, M. (2005). *Students' and teachers' attitudes towards the use of computer-mediated communication voice & text chat as an instructional resource to improve speaking skills*. Bilkent Publication.

Brundage, S. B. (2007). Virtual reality augmentation for functional assessment and treatment of stuttering. *Topics in Language Disorders*, *27*(3), 254-271. https://doi.org/10.1097/01.TLD.0000285359.41168.f1

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

Cobb, S., Beardon, L., Eastgate, R., Glover, T., Kerr, S., Neale, H., & Wilson, J. (2002). Applied virtual environments to support learning of social interaction skills in users with Asperger's Syndrome. *Digital Creativity*, *13*(1), 11-22. https://doi.org/10.1076/digc.13.1.11.3208

Fernandez-Fontecha, A. (2021). The role of learner creativity in L2 semantic fluency. An exploratory study. *System*, *103(2)*, 102-116. https://doi.org/10.1016/j.system.2021.102658

Ffiske, P. T. (2020). *The immersive reality revolution: How virtual reality (VR), augmented reality (AR), and mixed reality (MR) will revolutionise the world.* Independent Publication.

Grechuta, K., Rubio, B., Duff, A., Oller, E. D., Pulvermuller, F., & Verschure, P. F. M. J. (2016). Intensive language-action therapy in virtual reality for a rehabilitation gaming system. *Pain Management, 9*(3), 243-252.

Hill, C., & Parry, K. (2014). *From testing to assessment: English an international language.* Cambridge.

Horvath, M., Dániel, C., Stark, J., & Lanyi, C. S. (2009). Virtual reality house for rehabilitation of aphasic clients. *Transactions on Edutainment, 14*(3), 231-239. https://doi.org/10.1007/978-3-642-11245-4_20

Jones, P., Osborne, T., Sullivan-Drage, C., Keen, N., & Gadsby, E. (2022). *Virtual reality methods: A guide for researchers in the social Sciences and humanities*. Policy Press.

Kay, L. (2020). *Therapeutic approaches in art education*. Davis Publication.

Kempton, K. (2022). *Supporting children with DLD: A picture book and user guide to learn about developmental language disorder*. Routledge.

Kessy, H. (2020). *Effect of multimedia instructional materials in open and distance learning*. Grin Verlag.

Klem, M., Melby-Lervåg, M., Hagtvet, B., Lyster, S. A. H., Gustafsson, J. E., & Hulme, C. (2015). Sentence repetition is a measure of children's language skills rather than working memory limitations. *Developmental Science, 18*(1), 146-154. https://doi.org/10.1111/desc.12202

Kohnke, L. (2023). Microlearning as a teaching and learning approach: using technology to design ESL/EFL microlearning activities. Springer.

Kostyk, A., Dessart, L., & Cowan, K. (2022). The reality of virtual experiences: Semantic and episodic memory formation in VR. *Virtual Reality and Mixed Reality, 14(6),* 213-217.

Kouroupetroglou, C. (2014). *Enhancing the human experience through assistive technologies and e-accessibility*. IGI Global.

Lahiri, U. (2020). *Design of virtual reality-based applications in autism intervention. A computational view of autism: Using virtual reality technologies in autism intervention.* Springer.

Llaudet, E., & Imai, K. (2022). *Data analysis for social science: A friendly and practical introduction*. Princeton University Press.

Mayer, R. E. (2020). *Multimedia learning*. Cambridge.

Nastajus, V. (2021). *Exploring the use of virtual reality in episodic memory research*. Leicester Publication.

Noordman-Vonk, W. (2013). *Retrieval from semantic memory.* Springer Science & Business Media.

Owens, E. R. (2022). *Language disorders: A functional approach to assessment and intervention in children.* Plural Publishing.

Sabry, F. (2022). *Virtual reality: Taking the concept of augmented reality to the next level by creating a fully computer-generated simulation of a different world.* One Billion Knowledge.

Tashakkori, A., Johnson, R. B., & Teddlie, C. (2020). Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences. Sage Publications.

Turk, A., & Shattuck-Hufnagel, S. (2020). *Speech timing: Implications for theories of phonology, phonetics, and speech motor control*. Oxford University Press.

Umanski, D., Kogovsek, D., Ozbic, M., & Schiller, N. O. (2010). Development of a voice-based rhythm game for training speech motor skills of children with speech disorders. *Disability, Virtual Reality and Associated Technologies, 19*(4), 255-262.

Van Engelenburg, B. (1999). Statistical analysis for the Solomon four-group design. *OMD Research, 14(*2), 1-37.

Weinbaum, C., Landree, E., Blumenthal, M. S., Piquado, T., & Gutierrez, C. I. (2018). *Ethics in scientific research: An examination of ethical principles and emerging topics.* Rand Publication.

Xie, B., Liu, H., Alghofaili, R., Zhang, Y., Jiang, Y., Lobo, F. D., & Yu, L. F. (2021). A review on virtual reality skill training applications. *Frontiers in Virtual Reality*, *2*(14), 56-69. https://doi.org/10.3389/frvir.2021.645153

Yang, X., Lin, L., Cheng, P. Y., Yang, X., Ren, Y., & Huang, Y. M. (2018). Examining creativity through a virtual reality support system. *Educational Technology Research and Development*, *66*(2), 1231-1254. https://doi.org/10.1007/s11423-018-9604-z

Biodata

Ms. Mojgan Khaki is a Ph.D. candidate of TEFL and lecturer at the Department of English, Isfahan (Khorasgan Branch), Islamic Azad University, Isfahan, Iran. Her research interests include Teaching Translation, Critical Discourse Analysis, and English Literature.
Email: *Mojgan.khaki96@gmail.com*

Dr. Hossein Heidari Tabrizi is an associate professor of TEFL and currently the head of the English Department at Islamic Azad University, Isfahan Branch, Isfahan, Iran. He is the director-in-charge of Research in English Language Pedagogy (RELP). His research interests include language assessment, translation studies, and critical discourse analysis.
Email: *heidaritabrizi @gmail.com*

Dr. Sajad Shafiee is an Assistant Professor of Applied Linguistics at the Department of English, Shahrekord Branch, Islamic Azad University, Shahrekord, Iran. He has published a good number of articles on testing and research issues in local and international journals. His research interests include testing, research, and materials development.
Email: *s.shafiee@iaushk.ac.ir*