Journal of Nusantara Studies 2021, Vol 6(2) 318-339
Universiti Sultan Zainal Abidin
ISSN 0127-9386 (Online)
http://dx.doi.org/10.24200/jonus.vol6iss2pp318-339

USING GOOGLE SEARCH FOR ENGLISH GRAMMAR LEARNING

Mona Tavakoli

English Department, Isfahan (Khorasgan) Branch, Islamic Azad University, Iran.
E-mail: Mona.Tavakoli987@gmail.com

Received: 07.01.2021 Accepted: 30.05.2021

ABSTRACT

Background/Purpose: Second/foreign language learners face problems in different areas such as correct word usage, grammatical accuracy, and pronunciation fluency. This paper responds to one of these problems by investigating the impact of strategic Google Search on Iranian English as a foreign language (EFL) learners' grammar learning.

Methodology: Sixty Iranian intermediate EFL learners from a private English language institute in Isfahan, Iran were selected and randomly divided into two groups. To find which areas of grammar are most problematic among the participants, a multiple-choice grammar pretest which was validated by five English experts was given to them. Then 10 questions that most participants answered wrongly were selected as the most challenging ones. During 10 class sessions, the participants were taught how to select the correct choice through Google Search. In fact, each participant in the class had a laptop connected to the internet. The researcher taught them how to search on Google strategically and the participants found out that in Google sites there are some sentences which are grammatically wrong and they should not trust them. They learned how to search strategically for the correct choices. At the end of the sessions they answered a posttest containing different questions but in the same grammatical areas. The pretest and posttest both were conducted while the participants were connected to internet sites.

Findings: Data analysis was done through running t-test using SPSS software and statistically significant difference was revealed. The findings showed that those participants who were taught how to strategically

use Google Search performed better in the posttest. Therefore, the results revealed that correct Google Search had improved the Iranian intermediate EFL learners' grammar knowledge.

Contributions: This study has several implications for both language learners and teachers regarding the use of Google platform for English grammar learning. In addition, it contributes to the body of knowledge that strategic Google Search does not only improve the Iranian EFL learners' English grammar but also make them less dependent on teachers thus promoting autonomous learning.

Keywords: Google search, EFL learners, grammar learning, intermediate EFL learners, Iran, web-based instruction.

Cite as: Tavakoli, M. (2021). Using Google search for English grammar learning. *Journal of Nusantara Studies, 6*(2), 318-339. http://dx.doi.org/10.24200/jonus.vol6iss2pp318-339

1.0 INTRODUCTION

Grammar has long been a focus in EFL instruction and second language learning research. The on-going debate about the best way to teach grammar has significant influence on the development of language teaching practice. The concept of pedagogical grammars is intended to provide those involved in language teaching and learning with grammatical presentation of the language for the purpose of teaching and learning, syllabus construction, and materials development (Namaziandost & Çakmak, 2020; Chang, 2020). Hence, various perspectives, methods, and techniques for teaching grammar have emerged for ESL teachers to choose from in order to suit their own learners and classroom environment. Empowering students today to learn and become productive students requires educators to use approaches that engage them on a personal level with their learning. This can be achieved in a number of ways which include using technology, for which students are very familiar with, to express solutions to real-life problems they have identified. Studies looking at the use of computer-based grammar packages regularly compare the use of a computer-based method to a conventional teacher-directed method to determine which one is superior (Bibauw, Fran, & Desmet, 2015; Lochana & Deb, 2011). The use of web-based instruction in teaching and learning English significantly increases. The website, like other instructional materials, provides language teachers with a range of hyperlinked media documents and computer-mediated communication devices which they can help language learners in creating

meaningful tasks and using different materials (Ebrahimpour, Rajabali, Siamian, Rahbar, & Vahedi, 2019; Namaziandost, Alekasir, Hassan Mohammed Sawalmeh, & Miftah 2020; O'Dowd, 2021).

It is worth mentioning that grammar has been at the center of attention of CALL researchers and developers since the very beginning of the discipline. As early as in the behaviorist phase of language teaching methodology, restricted-focus drill-based software provided opportunities for individual practice of language elements. As Friðriksdóttir (2021) indicates, early CALL software "tended to mimic the approaches used in traditional grammar teaching that used artificial sentences with the student having to provide the correct answers, which could be checked by the program" (p. 59). Also, later on, in the communicative phase of CALL, computers were used to provide input for grammar acquisition in a more skill-balanced approach. To the present day, focus on grammar is one of the central issues for CALL specialists.

Given the long tradition of the use of computers in grammar instruction, it seems there are a multitude of computerized resources and tools to cater for all possible needs of learners as far as grammar acquisition is concerned. Teachers can freely use corpora and concordances, grammar checkers, authored self-study quizzes, or guide their students to one of many online grammar labs. However, not all of these approaches might be equally relevant in all culture contexts. As certain learners might be uneasy about or unsuccessful at rule-inferencing, individual grammar discovery, or automatic feedback interpretation, there is a need to use computer-assisted teacher-directed methods of grammar presentation. Enhancing the process of deductive rule explanation with the use of computers, as well as creating opportunities for learners' self-study practice in online environments are the necessary steps to be taken to provide a reasonable mixture of various modalities in grammar teaching.

The Internet has additionally been found to facilitate the development of language skills. Bárkányi (2021), for example, used the technology to teach reading and found that the interactive Web-based reading program which he used strengthened his participants' language skills and learning across diverse topic areas. Similar positive effects were observed in the integrative teaching of reading and writing. In a project called Web-based English language learning, P'Rayan (2003) discovered that there was improvement in his participants' reading and writing skills after they took part in various email exchanges, discussion forums and commenting activities based on the reading materials that were presented on the Internet. There were also studies done on

vocabulary acquisition through Internet-based instruction. Many of the studies showed that students learned more effectively when they were involved incidentally or directly in tasks and activities in the Internet-based learning environment (e.g., Armstrong, Tudor, & Hughes, 2021; Barrot, 2021; Chang, 2020; Christiansen & Els, 2021; Lee & Lu, 2021).

In a nutshell, search engines are helpful tools for everyone who wants to find answer to a question. It is most useful when it comes to answering questions as quickly as possible. While finding an answer in different books or asking someone is somehow time-consuming and you may not find the correct and related answer, search engines such as Google are the preferred go-to places in the era of smartphones.

It is assumed in this study that making information available through search engines has a positive effect on students' learning process. Definitely, a language learner with access to the Internet can quickly check the frequency of occurrence of any given phrase on the web by performing a simple search of the phrase in double quotation marks. The main purpose of the study is to examine two grammar teaching methods; the Web-based Instruction and Conventional Textbook Instruction (CTI). Regarding the mentioned points, this study tried to investigate if web-based language learning environment (the case of strategic google search) has any significant effect on Iranian EFL learners' English grammar. Thus, the following research question and null hypothesis was raised in this study:

RQ 1. Does Google Search have any effect on Iranian EFL learners' grammar learning?
H0 1. Google Search does not have any effect on Iranian EFL learners' grammar learning.

2.0 LITERATURE REVIEW

Most researchers concur that teaching grammar through integrative method is the perfect way to be utilized in teaching and learning English (Armstrong et al., 2021; Chang, 2020; Christiansen & Els, 2021). Since the Iranian educational system emphasizes the use of ICT in educational institutions, many teachers have incorporated technology, such as the WWW, into their teaching process. However, there have been insufficient studies conducted in Iran to provide teachers with a definitive response to the proper way in integrating the method.

There are a number of reasons why using the Internet can be a viable way to teach grammar. The Internet has a plethora of Websites, many of which offer grammar activities that are presented

in inventive and refreshing ways. For example, there is a resource on the Internet known as 'Grammar Safari' which places students on a 'scavenger-hunt' of online texts. Students immediately become involved in a data-driven, grammar consciousness raising activity. Such an activity can be argued to enable students to be proactive in their own learning.

Many online grammar exercises also offer interactive feedback that requires students to reflect on their answers. These exercises allow students to understand why their answers are correct or incorrect. Such exercises not only tell students why an answer is right or wrong, but also lead them to a greater understanding of grammatical rules as they are prompted to explore, think and decide on the direction of their own learning (Knight, Shibani, Abel, Gibson, & Ryan, 2020; Crossley, 2020). Furthermore, many grammar Websites offer supplementary exercises with immediate feedback to students. This includes "negative feedback" (Dollinger, Liu, Arthars, & Lodge, 2019, p. 8), which is considered as important in the learning of grammar.

One of the many advantages of using the Internet is to have various grammatical materials, which can suit language learners of various interests and language competence (Barrot, 2021; Ebadi & Rahimi, 2018; Galbraith & Baaijen, 2019). Students can choose to work on Web-based exercises either on their own or with the help of their teacher. Less proficient students can refer to notes available on Websites when needed while advanced students can tackle challenging tasks that are suitable for their level (O'Dowd, 2021). Thus, in mixed abilities classes, the use of the Internet can accommodate both beginners and advanced students (Namaziandost et al., 2020). The Internet also offers students access to up-to-date grammar materials. Contributors to these Websites are usually experts on the subject who also standardize and organize the materials for structured teaching (Suh, 2016). They provide extensive explanations and examples, which students can always refer to even without the supervision of the teachers.

2.1 Theorizing Web-Based Learning

Web-based learning can be described as education that happens merely through the Web, that is, with no tangible learning materials distributed among the students or direct face-to-face communication. Entirely online learning entails the use of e-learning resources in a distance education environment, with the Internet serving as the sole platform for both student learning and communication. Web-based learning provides the learners and educators the opportunity to view

information from anywhere and at any times effectively. The instructional tools, on the other hand, must be appropriately constructed to involve the students and enhance learning.

The majority of web-based language learning lessons are intended to navigate learners through knowledge or assist them to complete particular tasks. Asynchronous and synchronous communication technologies are the two main types of communication technologies. Sites, wikis, forums, and e-mail are examples of asynchronous activities. The premise is that students may participate in sharing thoughts or knowledge without being reliant on the participation of other learners simultaneously. Synchronous practices are those in which one or more people share

At certain time, learners need teachers or consultants to explain questions and give feedback (Lopez, 2014; Hong, Hwang, Liu, & Tai, 2020). Numerous users admire Google's user-friendly platform and high-speed search. The naturalness of language patterns is caused by the frequency of information on websites (Lee & Lu, 2021; Geluso, 2011; Sha, 2010; Moussalli & Cardoso, 2020). The essence of Web compilation is chaotic; however, Google Scholar, a corpus created by English native speakers or knowledgeable authors, has none of these flaws (Sha, 2010). Repeated exposures to intended information in time interval are effective to foster long lasting learning. Since Internet content is readily available, teachers should not merely give information and instead try to cultivate critical thinking, give freedom, and enhance learner’s own knowledge of patterns (Liu & Jiang, 2016; Wang, Yu-Ju, Tseng, Lin, & Gupta 2020; Wu, Witten, & Franken, 2017).

Creating computer-based learning environments for grammar instruction have been the focus of some CALL studies as well. Perez-Llantada (2009) recommends corpus-based grammar instruction exposing students to input and authentic grammar samples for them to identify and understand language aspects in real contexts. On the other hand, for Bloch (2009) integrating an interactive grammar interface and a concordancing site with the teaching of grammar and vocabulary in an L2 writing class is supposed to lead to increased grammar knowledge. Schulz (1996) highlights the need for a software-based approach, which will allow learners to have their text parsed for grammatical errors, so that, on the basis of the parse results (and student data that the program has), feedback will be given to the learner during an interaction between learner and computer. Finally, Baturay, Daloglu, and Yildirim (2010) promote the use of Web-based, multimedia annotated grammar environments, which will provide supplementary Web-based grammar revision material with audiovisual aids to enrich the contextual presentation of grammar

and interactive exercises such as gap-filling, combo-box, and drag-and-drop exercises. The present study continues the direction set by these authors, by taking a ready-made CALL grammar resource and finding its creative application in the curriculum.

Learners' perceptions and attitudes toward CALL applications have been explored in different research studies, with mostly positive results including increased motivation, promoted self-confidence, and improved language skills (e.g., Bibauw et al., 2015; Sagarra & Zapata, 2008; Wang & Wang, 2010). For instance, a large-scale study conducted by Wang, Chen, Tai, and Zhang (2021) to investigate student perspectives on the potential of the Web as a medium of language instruction found that Web-based learning was appealing for most learners. Furthermore, time flexibility, reinforced learning, privacy and wealth of information were listed to be the benefits of using Web for learning languages. In another study conducted by Suh (2016), 19 Korean EFL university students participated in computer-mediated writing classes in which they used the Web to search for information, wrote drafts, assessed peers' assignments via e-mail, and revised their work. Suh's (2016) results showed that students perceived CALL as an efficient writing method that stimulated their learning interest, allowed for easy and convenient information gathering, and exposed them to different English texts.

Furthermore, Taghizadeh and Hasani Yourdshahi (2020) investigated motivation and attitudes toward second language research involving 30 learners in an online language class, confirming that second language learners participating in online language courses were in favor of using CALL in L2 learning. Likewise, Sagarra and Zapata (2008) found that L2 courses incorporating CALL in combination with classroom instruction led both to significant learning gains in grammar and to learners' positive attitudes toward the use of the online workbook in terms of accessibility to the material, user-friendliness, and instant error feedback. In another research, Wang and Wang (2010) examined 112 Taiwanese EFL university students' perceptions of a cooperative CALL environment, concluding that the vast majority of students had positive attitudes toward the incorporated CALL class. They also reported improvements in English linguistic comprehension, associated content knowledge as well as motivation for EFL learning.

Despite mostly positive results of the reviewed studies in support of L2/FL technology enhanced courses or technologically enhanced activities, some negative impacts of CALL courses or activities were also reported. For example, in Strepp-Greany's (2011) research, more than half of the 358 L2 Spanish learners (52%) preferred traditional teacher-led, whole-class instruction to

technology-based, learner-centered learning, and the majority of the students (89%) felt that the presence of the teacher was totally essential to facilitate language learning. Furthermore, in 2020, Xu, Chiou, and You investigated the reasons why three L2 students dropped their blended language learning classes which combined face-to-face classroom instruction and computer-assisted language learning. They concluded that the reasons for dropping out were related to lack of support and connection between face-to-face instruction and CALL components, lack of print materials, and rejection of the computer medium. Based on these findings, it can be concluded that using CALL does not always lead to students' satisfaction. The effectiveness of this method of teaching is definitely ensured by specifically and carefully designed, well-organized CALL courses or programs with teacher guidance, material use and proper collaboration among classroom lectures and CALL (Habash, 2015; Xu, Chiou, & You, 2020; Sydorenko, Daurio, & Thorne, 2018).

Moreover, since technology has been a part of our daily life, our language also depends on technological enhancement, like audio, video recordings and even WWW resources (Kenning, 2007). Grammar plays an important role in language learning and many language instructors have attempted to incorporate technology into the learning process to improve students' knowledge in grammar. Some researchers attempted to get some insights on the impact of web-based learning on learners' performance in grammar classes. Al-Jarf (2019), for instance, examined the impact of online teaching on female freshmen college students' grammar improvement. Seventy-four learners who voluntarily participated in the online English course were assigned to the experimental group, while 164 female freshman college participants were assigned to the control group, which received conventional face-to-face grammar instruction. The results revealed that the two classes had significant differences in their comprehension of English grammar. Al-Jarf (2019) concluded that the online grammar instruction helps in students' achievement in their English course.

Another study was done by Frigaard (2016) who focused on grammar teaching and web-based environment. High school students took part in the study and their performance on Spanish vocabulary, grammar, and listening was investigated after they completed language lab tasks. After analyzing the data, the results revealed that students preferred to learn vocabulary and grammar in the classroom, but not listening skills. Thus, the results showed that the environment has a major impact on language acquisition.

Ghorbani and Ebadi (2020) investigated the impact of instructor feedback in mobile-assisted language learning (MALL) on the grammatical development of English as a foreign language (EFL) learners. The participants of this quasi-experimental study included 40 female EFL learners randomly selected from the English learning chat groups on Telegram, an online instant messaging application. Dialang, a free web-based language proficiency test, was used to assess the learners' grammatical knowledge as pre-test on the basis of which the participants in the experimental group were categorized into 15 chat groups, each including the instructor and two participants of the same level of proficiency in English grammar. A paired samples t-test was utilized to analyze the quantitative data. The results indicated that using chats in Telegram led to a significant development in learners' grammatical accuracy in the experimental groups.

The impacts of learning passive voices in three different English classes were investigated by Ashikin Yusof and Saadon (2012), who used three different teaching strategies: traditional face-to-face, integrative (conventional and web-based materials), and web-based learning. It also sought to examine the influence of gender in each method of instruction and to figure out the appropriate way to learn grammar. The pretest-posttest study was conducted in a public university and it involved 93 semester two students (52 females and 41males). All groups were exposed to one mode of teaching only for four weeks. The results indicated that there is significant difference in both tests for all modes used. Furthermore, it was found that gender did not give any effect on the students' performance in the posttest when each mode of teaching was applied. Lastly, the integration method was found to be the best method to be used among all the three teaching modes.

Kruk (2018) investigated the effectiveness of using online activities and a browser-based virtual world in teaching the second conditional in English. The participants were 27 Polish senior high school students who were randomly assigned to one of two groups: treatment (N = 13) or control (N = 14). A grammar test was performed before (pre-test) and after the treatment (immediate posttest and two delayed posttests), as well as a background questionnaire and an assessment sheet, and the data was evaluated quantitatively. The findings demonstrated that the experimental learners benefited from the instruction with the benefits being visible not only immediately after the treatment but also after four and eight weeks later.

In a blended language learning context, Wang (2019) examined learner perceptions of a CALL variable. Over one semester, 52 Taiwanese college students attended instructional

classroom sessions and completed weekly online tasks in the form of immersive web-based activities. Their learning performance was measured by means of two computer-based language assessments at the mid-point and final part of the semester. A computerized survey completed at the end of the semester to elicit learners' perceptions of the interactive web-based exercises. The findings reported on the survey revealed that participants perceived the interactive web-based exercises as interesting but only modestly so. This was probably attributable to the difficulty level of the created exercises and a lack of diverse exercise formats. Even so, having easy access, receiving instant feedback, allowing multiple attempts, and enabling self-paced learning were mentioned as benefits of the constructed exercises. More notably, the majority of the participants reported the effectiveness of these exercises in improving their reading comprehension and vocabulary leaning. This confirmed language assessment results that demonstrated significant gains in reading comprehension and vocabulary knowledge.

Reviewing the literature so far, the impact of web-based learning on different language skills and sub-skills did not receive enough attention it deserves. Moreover, limited studies in Iranian context have been done in this regard. Thus, this study was conducted to investigate the impact of a web-based language learning environment (the case of strategic Google Search) on Iranian intermediate EFL learners' grammar development.

3.0 METHODOLOGY

3.1 Participants

The sample of the study consisted of 60 Iranian female students between the ages of 17 and 19 years old. They were selected among 110 students from a private English language institute in Isfahan, Iran. All of them were at intermediate level of proficiency in English based on the results of Oxford Quick Placement Test (OQPT). The participants were selected based on non-random sampling; that is, the students were accepted based on a criterion - their scores on the OQPT. All the participants were female and native speakers of Persian. The learners were randomly divided into two groups; one experimental group and one control group.

3.2 Instruments

A proficiency test was used as the first tool in the current research to homogenize the participants. This test was OQPT which was answered by all the participants of the current study (see Appendix

A). It helped the researcher to select the intermediate students; those who scored between 40 to 47 were determined as the intermediate level.

A researcher-made grammar pre-test, which was developed based on the students' course book, was the second and most important instrument for gathering information to address the question posed in the present study (Family and Friends 2). It included 40 multiple-choice items. Based on the method of the study the questions should be a little beyond the participants' knowledge that can force them to search the web to find the answer; therefore, the questions were at upper intermediate level. The test was piloted on a comparable population rather than the experimental and control groups to ensure that it was both valid and reliable. The aim of this piloting was to schedule the test, determine item complexity and item discrimination, and calculate the test reliability. A period of 40 minutes was considered to be sufficient for the students to complete the test.

According to Hatch and Farhady (1981), the degree to which a test yields reliable outcomes when conducted under identical circumstances is referred to as reliability. As a result, the fundamental principle of test reliability is consistency of outcomes. The grammar pre-test was given to one pilot group to see how reliable it was. The grammar test was piloted on 30 intermediate students who were split into two groups: experimental and control. Kudar-Richardson Reliability Coefficient (K-R 21 Formula) was used to measure the reliability of the test which was 0.89.

Validity, unlike reliability, which is merely a mathematical parameter, is a matter of degree that strongly relies on the test's eccentricities. The degree to which a test measures what it claims to assess is referred to as validity (Farhady, Ja'farpur, & Birjandi, 1994). The test was validated by a group of English experts, who concluded that the test was valid because it measured what it was intended to measure.

A grammar post-test was used as the third instrument in this research. The study's post-test was based on a modified version of the pre-test. In terms of form and number of items, the post-test has almost the same features as the pre-test. The only distinction between this test and the pre-test was that the order of questions and options were modified to prevent recalling the pre-test responses. It was given to the students to aid the researcher in determining the efficacy of the intervention on their grammar learning. Since the post-test was identical to the pre-test, it was deemed valid and reliable (the reliability and validity of the pre-test were reported above). It should

be noted that when taking the pre-test and post-test, all of the participants were linked to the internet in order to search for a response.

3.3 Data collection Procedures

In the first step, 60 Iranian EFL learners from a private English language institute in Isfahan, Iran were selected. After administering OQPT test, 60 intermediate students out of 110 were chosen as the target population of the study. Then, they were randomly divided into two equal groups- one experimental group and one control group. They were pre-tested by a researcher-made grammar test. After answering the pretest, 10 questions that most participants answered wrongly were selected as the most challenging ones. Then, the treatment was practiced on both groups. During 12 class sessions the experimental group (EG) received treatment on how to select the correct choice through Google Search. The participants found out that in Google sites there are some sentences which are grammatically wrong and they should not trust them. They learned how to search correctly for the correct choices. On the other hand, the control group (CG) received grammar instruction without Internet access and they were taught through Conventional textbook Instruction (CTI). The instruction lasted 12 sessions of 60 minutes. In the first two sessions, the OQPT and the pre-test were administered respectively; in nine sessions, the students received the treatment, and in the last session, the post-test was administered to determine the impact of the treatment on the participants' grammar skill.

3.4 Data Analysis

The EG and CG were first compared through a grammar pretest at the outset of the study to see how they performed in terms of the variable under investigation (i.e. grammar). At the end of the instructional period, the two groups' performances on the grammar posttest were also compared, using independent-samples t test. The results of pretest and posttest analyses are presented in what follows.

4.0 RESULTS

First of all, independent-samples t test was conducted to compare EG and CG learners' pretest scores. The results of this analysis are presented in Table 1.

Table 1: Results of Independent-Samples t Test Comparing EG and CG Learners' Pretest Scores

	N	Mean	*Std.* Deviation	*t*	*df*	*Sig.* (2-tailed)
CG	30	15.11	2.17	-1.09	58	.36
EG	30	14.62	1.93			

As it can be seen in Table 1, on the grammar pretest, the CG learners (M = 15.11) and their EG counterparts (M = 14.62) were not found to be significantly different since the p value under the Sig. (2-tailed) column corresponding to this comparison was larger than the significance level (.36 > .05). This parity between the two groups at the outset of the study enabled the researcher to attribute the putative subsequent differences between the two groups to the instruction to which they were exposed. Figure 1 also shows the rough equality of the two groups in relation to their grammatical knowledge.

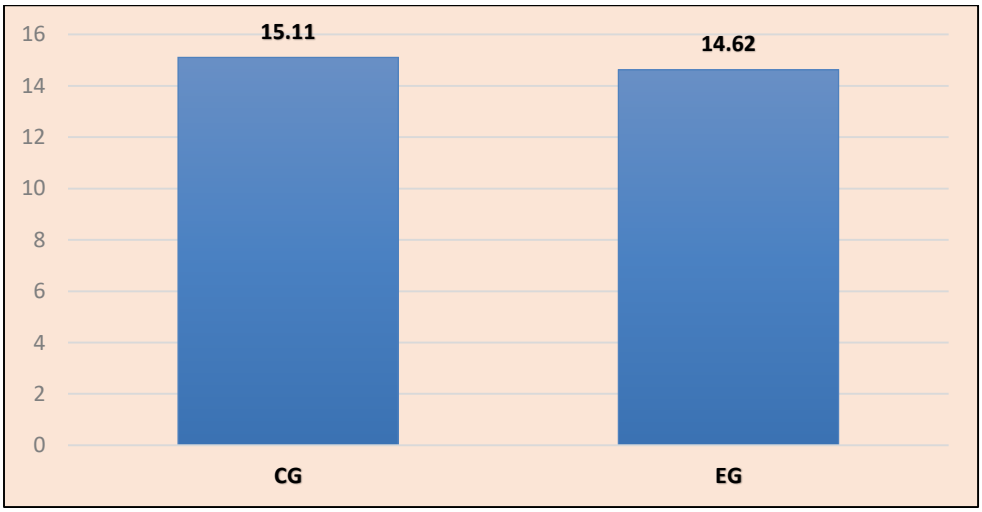

Figure 1: EG and CG Learners' Pretest Mean Scores

It could be seen in Figure 1 that on the pretest, the two groups were almost equal with respect to their performance on grammar test. The researcher then made sure that any subsequent differences between the two groups would be due to the instruction they would receive.

Like what was done for analyzing the data obtained from the grammar pretest, an independent-sample t test was conducted to analyze the mean of both groups on grammar posttest. Table 2 presents the results of the analysis for the two groups' posttest scores.

Table 2: Results of Independent-Samples t Test Comparing EG and CG Learners' Posttest Scores

	N	Mean	*Std.* Deviation	*t*	*df*	*Sig.* (2-tailed)
CG	30	21.96	2.81	-8.59	58	.000
EG	30	25.37	1.64			

Table 2 reveals that after instruction, the two groups appeared to differ significantly with respect to their grammar posttest scores as the EG learners (M = 25.37) could significantly outperforms the CG learners (M = 21.96). Figure 2 shows the difference between the EG and CG learners in relation to posttest grammar scores.

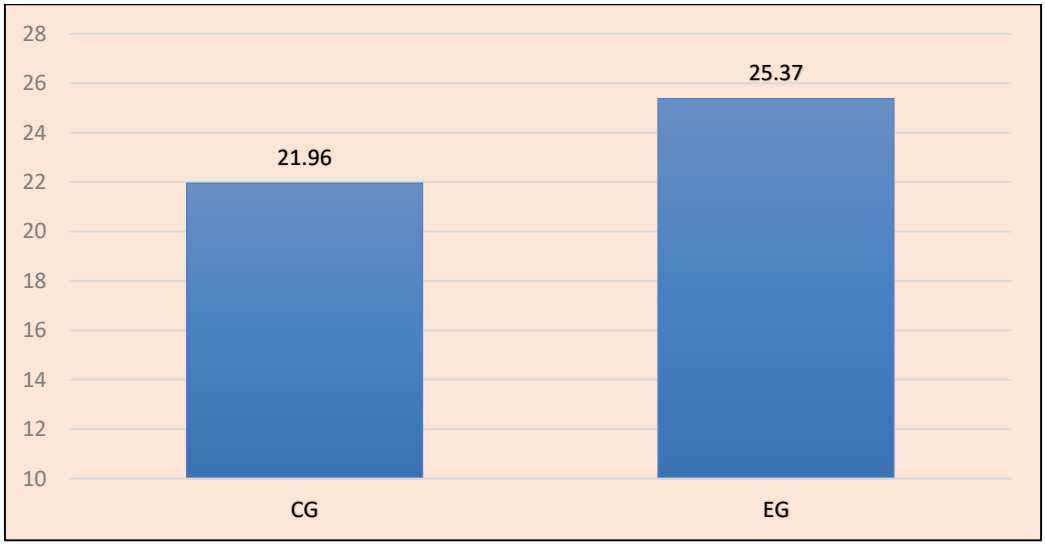

Figure 2: EG and CG Learners' Posttest Mean Scores

It could be clearly seen in Figure 2 that the CG and EG learners were significantly different with reference to their grammar posttest scores, and that the EG learners had a significantly better performance than the CG learners. This boils down to the conclusion that the treatment provided

for the EG learners (i.e., Google Search) helped them to enhance their grammatical knowledge significantly.

5.0 DISCUSSION

Based on the results of the present study, the experimental group had better performance than the control group on the post-test. After analyzing the data, it was revealed that both experimental and control groups had almost the same scores on the pre-test but their scores on the post-test were different. Thus, the findings of the study suggest that the Internet is an effective medium in teaching and learning grammar as there is a significant mean difference in the gain scores of the two groups. This outcome is parallel to that of Al-Jarf's (2019) study, which also shows that students who were exposed to online grammar instruction integrated with face-to-face instruction fared better than those who only received face-to-face instruction. Students obviously cannot learn grammar just by listening to lectures or by studying the theory of grammar (Godwin-Jones, 1998). They must practice the language. Through the study, the experimental group was found to provide opportunities for knowledge construction as the students experimented with the grammatical items visually presented to them in the online environment. It also offered the students a myriad of practices from the grammar websites to test their grammar knowledge. They were also allowed to practice repeatedly and independently at their own pace. With these self-directed tasks they learned to explore, discover and make choices regarding their own learning processes. In doing so, their skills of independent learning were developed through their interaction with the explanation given and the feedback received (Singhal, 1997).

Moreover, as the researcher observed, the students of the experimental group were very eager to learn grammar through the web. The Google Search was very interesting to the students; they listened to the teacher eagerly while the teacher taught them how to search strategically. The effectiveness of using web-based language learning was obvious in the students' post-test. In fact, web-based language learning helped the experimental group improve their English grammar. Since after instruction the two groups differed significantly on grammar posttest, it clearly shows the merits of Google such as providing easy and high-speed search to check correct grammatical choices, encountering with a huge number of natural, repeated, up-to-date language patterns which foster long lasting learning, cultivating learner's critical thinking, increasing independency and

self-confidence. In fact, the treatment had been beneficial and helped learners enhance their grammatical knowledge significantly. Therefore, the research null hypothesis was safely rejected.

According to Hegelheimer and Fisher (2006), students may face difficulties in writing because they lack knowledge of grammar and vocabulary. Although there are unavoidable limitations (e.g., difficulties in controlling various variables in the experiment group and the control group) in this kind of comparative study, the findings of the study support the view that Internet-based instruction is beneficial not only for learning certain grammatical items but also in developing language use in the written form. Therefore, the Internet should be utilized in ESL classrooms to improve writing skills. Utilizing the Internet in language classrooms can be effective in developing grammatical knowledge as well as improving the writing skills of ESL students. The Internet has an important role in ensuring students' active involvement in the learning process and in enhancing language learning experience itself. It is a potentially effective teaching tool for the learning of grammar and its application. Finally, the Internet holds a promising future for both language teachers and students as it serves as a conduit for information exchange in the target language and fosters the transmission and reception of linguistic knowledge.

The findings of this study are consistent with prior research studies that reported the positive effect of web tasks/exercises on L2/FL learning (e.g., Ghorbani & Ebadi, 2020; Wang, 2014, 2019; Wang & Wang, 2010; Sagarra & Zapata, 2008). Moreover, it is evident that learners' overall positive performance in the created exercises, combined with significantly enhanced academic achievement, will lead to increased participation in web-based exercises. Continuous use of technology-enhanced activities that offer quick and easy access, instant feedback, and multiple attempts without time limit would in turn lead to more learning gains.

In the current study, the participants in the experimental group were more motivated to learn English grammar than those in the control group. These supervisions are in line with Lochana and Deb (2011) as well as Richards and Rodgers (2001). The latter claim that the learners' progress in completing the task in a web-based environment can increase motivation. According to Lochana and Deb (2011), web-based training encourages learners in developing proficiency and motivation. This may help the motivated students perform better in test. Furthermore, learners who participated in web-based activities had greater interactions with their peers and learned grammar more efficiently. This is another proof to substantiate Lopez's (2014) claim that completing activities

related to the learners' language course in a web-based environment motivates them to learn more quickly and cooperatively.

Several comparative research studies that compared the efficacy of web-based or online learning against traditional learning (conventional ways of learning), but not in Iranian context, support the findings of this research (e.g. Habash, 2015; Kim, 2015; Ngampornchai & Adams, 2016). These studies indicated a major difference between conventional and web-based learning in terms of student outcomes.

6.0 CONCLUSION, LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

The present study examined the effect of a web-based language learning environment (i.e., strategic Google Search) on Iranian EFL learners' grammar improvement. After the implementation of the instruction, the experimental group outperformed the control group with a statistically significant difference. This study showed that web-based language learning has a significant impact on students' grammar development where it can help the learners to cope with their grammar problems. Since students who were exposed to web-based instruction had better grammar performance after the treatment, teachers should take this into consideration. They are recommended to apply these strategies in the classroom and they are required to encourage the students, especially those who have limited exposure to use these strategies. Having all this information as a whole, this study could be considered helpful and innovative in EFL learners' learning enhancement. Regarding the results of this study, there are some other useful implications for teachers, learners, and researchers. Availability of internet and having access to different valid information provide a self-check, easy, and fast way for learners to make them independent and increase their curiosity and self-confidence. Moreover, frequency of information in websites may lead to the learning of different aspects of language such as form of sentences, grammar, vocabulary, idiom, and collocation.

During the time of this study the researcher faced some drawbacks. Due to time limitation, only 60 participants were included in this research. This study was conducted on female students and the male students were not included. Also, the treatment duration was short. This research was limited to Iranian EFL students, but it could be replicated in other EFL and ESL contexts. Since the current study focused on Iranian intermediate EFL students, its findings should be generalized

with caution to all language learners. Another limitation is that the study included only participants that were 17 to 19 years old. So, the results cannot be generalized to the other age groups.

Further research can be done replicating this study in a new context: i) on language learners of different proficiency level, age, and nationality; ii) on a larger sample of participants having more groups with more time interval; and iii) examining effects of Internet use on other aspects of language learning and teaching.

REFERENCES

Al-Jarf, R. (2019). The effects of online grammar instruction on low proficiency EFL college students' achievement. *The Asian EFL Journal Quarterly, 7*(4), 1-19.

Armstrong, V. O., Tudor, T. R., & Hughes, G. D. (2021). Course retention in community colleges: Demographics, motivation, learning style, and locus of control. *American Journal of Distance Education, 35*(1), 32-47.

Ashikin Yusof, N., & Saadon, N. (2012). The effects of web-based language learning on university students' grammar proficiency. *Procedia - Social and Behavioral Sciences, 67*(1), 402–408.

Bárkányi, Z. (2021). Motivation, self-efficacy beliefs, and speaking anxiety in language MOOCs. *ReCALL, 33*(2), 143-160.

Barrot, J. S. (2021). *Social media as a language learning environment: A systematic review of the literature (2008-2019)*. Computer Assisted Language Learning.

Baturay, M. H., Daloglu, A., & Yildirim, S. (2010). Language practice with multimedia supported web-based grammar revision material. *ReCALL, 22*(3), 313-331.

Bibauw, S., Fran¸ C. T., & Desmet, P. (2015). Dialog-based CALL: An overview of existing research. In F. Helm, L. Bradley, M. Guarda, & S. Thoueesny (Eds.), *Critical CALL – Proceedings of the 2015 EUROCALL conference* (pp. 57–64). Researchpublishing.net.

Bloch, J. (2009). The design of an online concordancing program for teaching about reporting verbs. *Language Learning & Technology, 13*(1), 59-78.

Chang, Y. (2020). The effect of ambiguity tolerance on learning English with computer-mediated dictionaries. *Computer Assisted Language Learning, 33*(8), 960-981.

Christiansen, I. M., & Els, R. (2021). The CALL of Zulu: Reflections on the development of a computer-assisted language learning package. *Computer Assisted Language Learning, 34*(3), 246-269.

Crossley, S. (2020). Linguistic features in writing quality and development: An overview. *Journal of Writing Research, 11*(3), 415–443.

Dollinger, M., Liu, D., Arthars, N., & Lodge, J. (2019). Working together in learning analytics towards the co-creation of value. *Journal of Learning Analytics, 6*(2), 10–26.

Ebadi, S., & Rahimi, M. (2018). An exploration into the impact of WebQuest-based classroom on EFL learners' critical thinking and academic writing skills: A mixed-methods study. *Computer Assisted Language Learning, 31*(5/6), 617–651.

Ebrahimpour, A., Rajabali, F., Siamian, H., Rahbar, F., & Vahedi, M. (2019). The effect of social networks on the scientific research relations, prospectiveness, creativity and satisfaction of scientific position. *International Journal of Medical Research & Health Sciences, 5*(7S), 413–418.

Farhady, H., Ja'farpur, A., & Birjandi, P. (1994). *Testing language skills from theory to practice.* The Organization for Researching and Composing University Textbooks in the Humanities.

Friðriksdóttir, K. (2021). The effect of content-related and external factors on student retention in LMOOCs. *ReCALL, 33*(2), 128-142.

Frigaard, A. (2016). Does the computer lab improve student performance on vocabulary, grammar, and listening comprehension? http://eric.ed.gov/PDFS/ED476749.pdf.

Galbraith, D., & Baaijen, V. M. (2019). Aligning keystrokes with cognitive processes in writing. In E. Lindgren & K. Sullivan (Eds.), *Observing writing* (pp. 306–325). Brill.

Geluso, J. (2011). Phraseology and frequency of occurrence on the web: native speakers' perceptions of Google-informed second language writing. *Computer Assisted Language Learning, 26*(2), 144–157.

Ghorbani, N., & Ebadi, S. (2020). Exploring learners' grammatical development in mobile assisted language learning. *Cogent Education, 7*(1), 1-14.

Habash, M. (2015). Learning English vocabulary using mobile phones: Saudi Arabian EFL teachers in focus. *European Scientific Journal, 11*(5), 446–456.

Hatch, E., & Farhady, H. (1981). *Research design and statistics for applied linguistics.* Rahnama Publications.

Hong, J., Hwang, M., Liu, Y., & Tai, K. (2020). *Effects of gamifying questions on English grammar learning mediated by epistemic curiosity and language anxiety.* Computer Assisted Language Learning.

Kenning, M-M. (2007). *ICT and language learning. from print to the mobile phone.* Palgrave MacMillan.

Kim, H. S. (2015). Emerging mobile apps to improve English listening skills. *Multimedia-Assisted Language Learning, 16*(2), 11–30.

Knight, S., Shibani, A., Abel, S., Gibson, A., & Ryan, P. (2020). AcaWriter: A learning analytics tool for formative feedback on academic writing. *Journal of Writing Research, 12*(1), 141–186.

Kruk, M. (2018). The use of internet resources and browser-based virtual worlds in teaching grammar. *Teaching English with Technology, 14*(2), 52-67.

Lee, J. S., & Lu, Y. (2021). *L2 motivational self system and willingness to communicate in the classroom and extramural digital contexts.* Computer Assisted Language Learning.

Liu, D., & Jiang, P. (2016). Using a corpus-based lexicogrammatical approach to grammar instruction in EFL and ESL contexts. *The Modern Language Journal, 93*(1), 61–78.

Lochana, M., & Deb, G. (2006). Task based teaching: Learning English without tears. *Asian EFL Journal, 8*(3), 140-154.

Lopez, J. (2014). Introducing TBI for teaching English in Brazil: Learning how to leap the hurdles. In B. L. Leaver & J. R. Willis (Eds.), *Task-based instruction in foreign language education* (pp. 83-95). Georgetown University Press.

Moussalli, S., & Cardoso, W. (2020). Intelligent personal assistants: Can they understand and be understood by accented L2 learners? *Computer Assisted Language Learning, 33*(8) 865-890.

Namaziandost, E., & Çakmak, F. (2020). An account of EFL learners' self-efficacy and gender in the Flipped Classroom Model. *Education and Information Technologies, 25*(2), 4041–4055.

Namaziandost, E., Alekasir, S., Hassan Mohammed Sawalmeh, M., & Miftah, M. Z. (2020). Investigating the Iranian EFL learners' attitudes towards the implementation of e-portfolios in English learning and assessment. *Cogent Education, 7*(1), 1856764.

Ngampornchai, A., & Adams, J. (2016). Students' acceptance and readiness for E-learning in Northeastern Thailand. *International Journal of Educational Technology in Higher Education, 13*(34), 1-13.

O'Dowd, R. (2021). Virtual exchange: Moving forward into the next decade. *Computer Assisted Language Learning, 34*(3), 209-224.

P'Rayan, A. (2003). The web-based English language learning (WELL) project at the Kigali Institute of Science, Technology and Management. In B. Morrison (Ed.), *Directions in CALL: Experience, experiments and evaluation* (pp. 97-115). The Hong Kong Polytechnic University.

Perez-Llantada, C. (2009). Textual, genre and social features of spoken grammar: A corpus-based approach. *Language Learning & Technology, 13*(1), 40-58.

Richards, J. C., & Rodgers, T. (2001). *Approaches and methods in language teaching*. Cambridge University Press.

Sagarra, N., & Zapata, G. C. (2008). Blending classroom instruction with online homework: A study of student perceptions of computer-assisted L2 learning. *ReCALL, 20*(2), 208–224.

Schulz, R. A. (1996). Focus on form in the foreign language classroom: Students' and teachers' views on error correction and the role of grammar. *Foreign Language Annals, 29*(1), 343-364.

Sha, G. (2010). Using Google as a super corpus to drive written language learning: A comparison with the British National Corpus. *Computer Assisted Language Learning, 23*(5), 377–393.

Strepp-Greany, J. (2011). Student perceptions on language learning in a technological environment: Implications for the new millennium. *Language Learning & Technology, 6*(1), 165–180.

Suh, J. (2016). Effectiveness of CALL writing instruction: The voices of Korean EFL learners. *Foreign Language Annals, 35*(6), 669–679.

Sydorenko, T., Daurio, P., & Thorne, S. L. (2018). Refining pragmatically-appropriate oral communication via computer-simulated conversations. *Computer Assisted Language Learning, 31*(1-2), 157-180.

Taghizadeh, M., & Hasani Yourdshahi, Z. (2020). Integrating technology into young learners' classes: Language teachers' perceptions. *Computer Assisted Language Learning*, *33*(8), 982-1006.

Wang, C., Yu-Ju, L., Tseng, W., Lin, Y. T. R., & Gupta, K. C. L. (2020). On the effects of 3D virtual worlds in language learning – A meta-analysis. *Computer Assisted Language Learning*, *33*(8), 891-915.

Wang, N., Chen, J., Tai, M., & Zhang, J. (2021). Blended learning for Chinese university EFL learners: Learning environment and learner perceptions. *Computer Assisted Language Learning*, *34*(3), 297-323.

Wang, Y. (2014). Developing and evaluating an adaptive business English self-learning system for EFL vocabulary learning. *Mathematical Problems in Engineering, 3*(3), 1–7.

Wang, Y. H. (2019). Use of interactive web-based exercises for English as a foreign language learning: Learners' perceptions. *Teaching English with Technology, 14*(3), 16-29.

Wang, Y., & Wang, C. (2010). Exploring EFL Taiwanese university students' perceptions of a collaborative CALL environment. *Lecture Notes in Artificial Intelligence, 6*(4), 421-432.

Wu, S., Witten, I. H., & Franken, M. (2017). Utilizing lexical data from a web-derived corpus to expand productive collocation knowledge. *ReCALL*, *22*(1), 83–102.

Xu, Y., Chiou, S., & You, M. (2020). Effects of improving the interactive design of a Chinese character learning system on the learning performance of Chinese as foreign language students. *Computer Assisted Language Learning*, *33*(8), 916-935.