PAPER NAME

Artikel An Account of EFL Learning.pdf

AUTHOR

Anna Gustina

WORD COUNT

9014 Words

CHARACTER COUNT

49474 Characters

PAGE COUNT

11 Pages

FILE SIZE

484.4KB

SUBMISSION DATE

Apr 11, 2023 1:29 PM GMT+7

REPORT DATE

Apr 11, 2023 1:30 PM GMT+7

● 14% Overall Similarity

The combined total of all matches, including overlapping sources, for each database.

- 10% Internet database
- Crossref database
- 9% Submitted Works database

- 11% Publications database
- Crossref Posted Content database

● Excluded from Similarity Report

- Bibliographic material
- Cited material
- Manually excluded sources

- Quoted material
- Small Matches (Less then 15 words)

Hindawi

Research Article

An Account of EFL Learners' Grammatical Knowledge and Motivation toward Learning in an Online Instructional Environment

Anna Gustina Zainal [ID],[1] **Sayed M. Ismail** [ID],[2] **Asiyat Akhmedovna Tagibova** [ID],[3,4] **Sa'ida Walid Al-Sayyed** [ID],[5] **Ismail Suardi Wekke** [ID],[6] **Eva Devi Sofyawati** [ID],[7] **Md. Zahidul Islam** [ID],[8] and **Mir Mohammad Farooq Haidari** [ID][9]

[1]*Department of Communication, University of Lampung, Bandar Lampung, Indonesia*
[2]*Prince Sattam Bin Abdulaziz University, Saudi Arabia*
[3]*Moscow State Institute of International Relations (MGIMO), Moscow, Russia*
[4]*Department of Sociology, Deputy President of the National Fund for Cultural Innovation of Russian Federation, Russia*
[5]*Department of English Literature and Translation, Al-Ahliyya Amman University, Amman, Jordan*
[6]*Graduate Program Institute Agama Islam Negeri (IAIN) Sorong, Sorong, Indonesia*
[7]*English Education Department, Institute Pendidikan Indonesia Garut, Indonesia*
[8]*Ahmad Ibrahim Kulliyyah of Laws (AIKOL), International Islamic University Malaysia (IIUM), P.O. Box 10, 50728 Kuala Lumpur, Malaysia*
[9]*Lecturer of Economic Faculty and Research Deputy of Taj University, Afghanistan*

Correspondence should be addressed to Mir Mohammad Farooq Haidari; mir.m.farooqhaidari@gmail.com

The current research was an attempt to compare the impacts of online English language learning and face-to-face English language learning on Iranian EFL learners' grammatical knowledge and their learning motivation. To this end, the Oxford Quick Placement Test (OQPT) was given to 81 Iranian EFL students, and 50 of them who were at the intermediate level were selected as the participants of the study. Then, they were randomly divided into two groups; one experimental group (EG) ($n = 25$) and one control group (CG) ($n = 25$). After that, both groups were pretested by a grammar test and a motivation questionnaire. After pretesting, the participants of the EG received the treatment through online instruction. On the other hand, the participants of the CG were taught the grammatical points through a face-to-face instruction. At the end of the treatment, both groups took the posttest of grammar and motivation. The EG outperformed the CG on both the grammar and motivation posttests, according to the findings of paired and independent samples *t*-tests. Implementing online instruction assisted Iranian EFL learners to enhance their grammatical knowledge and increase their learning motivation. The implications of this research can encourage teachers to use online learning methods in their classes.

1. Introduction

The recent advancements in technology have resulted in improvements in the quality of education in general and the study of English as a foreign language (EFL) in particular, in recent years. The generation of learners who were born and raised in the digital age has brought with them a plethora of unique learning settings and ways to learn English language. Khadabandeh [1] stated that technology is widely used in all aspects of life, including education. This has brought about changes in learning shapes that have moved away from conventional classroom educational environments and toward new kinds of learning environments that include electronic, digital, and online classes [2].

Khodabandeh [1] stated that technology is increasingly used in all parts of life, along with teaching.

As a result, technology is now a critical component of education, both in and out of the classroom. Technology is used in almost every language lesson. Learning a language may be made easier and more effective with the use of technology. With the use of modern technology, instructors may customize classroom activities to better serve their students' needs. Teachers increasingly rely on technology to make language learning more enjoyable for their students [3]. Technology, claim Bull and Ma [4], gives language students a wealth of materials at their fingertips. Students and teachers should be encouraged to use computer technology to locate necessary actions for language acquisition, according to Gençlter [5]. According to Clements and Sarama [6], students may benefit from the usage of appropriate technology resources. Computer-based language exercises, according to Harmer [7], help students learn to work together more effectively.

Likewise, according to Tomlison [8], computer-based activities offer students with quick access to knowledge and relevant resources. They go on to say that Internet-based resources encourage students to study further. Aside from that, Larsen-Freeman and Anderson [9] reinforced the viewpoint that technology offers instructional tools while also bringing learning experiences into the environment of the students. Numerous genuine resources may be made available to students via the use of technology, and students can be encouraged to continue their language learning journey [2, 10].

Learning English online with the use of technology may be beneficial for pupils. Online learning is a style of education in which students study in a virtual environment that is completely separated from their physical surroundings. An Internet-based learning environment that may bring together students from a variety of backgrounds and with a variety of viewpoints is known as online learning [11, 12]. According to Warschauer [13], involvement in online contexts inspires learners since they do not have to worry about making mistakes, as they would in a traditional classroom setting. When compared to face-to-face sessions, online courses encourage learners to collaborate more [14]. The flexibility in participation, accessibility, and convenience offered by online learning makes it a popular choice for a significant number of students. Furthermore, online learning will continue to be a significant component of higher education in the foreseeable future [15]. The reality is that, if you like it or not, technology is here to remain as a tool for education. When it comes to meeting the education, training, and retraining requirements of a rising information society, technology has emerged as an indispensable tool [2, 16, 17].

Using online instruction can increase the motivation of EFL learners. The term "motivation" refers to the driving force behind human behavior: "the reasons why individuals act and think in the ways that they do" ([18], p.1). A form of cognitive stimulation, according to Williams and Burden [19], is a stimulus that stimulates an individual to exert sustained intellectual and/or physical effort in order to attain an objective. Motivation has a vital part in influencing human behavior in everyday life, but it also plays a significant role in ensuring that students achieve success in school. This means that students' linguistic practices and attempts to acquire the target language are influenced by their L2 motivation, which is discussed more below [20]. The process of learning is intimately tied to one's level of motivation [21–23]. As a result, students who are more inspired may outperform than less-inspired counterparts [24]. With another way of saying it, if the students are motivated, they will most likely learn, and if they are not, they may be less keen to learn. This theory has obvious appeal and is supported by research [25–27].

Using online instruction can also develop EFL learners' grammar learning. The teaching of grammar as a major element of language plays a very important role in the learning and acquisition of a second language. It has been interpreted from a variety of views by a variety of contributors. "Grammar," according to Nunan [28], is "a collection of rules that explain how words should be arranged correctly at the sentence level" (p. 8). It has been described as "the principles by which words change their shapes and are integrated into sentences" according to a classic and straightforward viewpoint ([29], p. 705).

In recent years, there has been a growing interest in the importance of grammar in the instruction of the English language [30, 31]. The author (Azar [32] asserts that without grammar, we are limited to communicating meaning via individual words, sounds, visuals, and body gestures, and that grammar is a necessary element of language acquisition since it is the wearing that produces the fabric. Over the course of many years, a misunderstanding about the nature of grammar resulted in inefficient approaches to grammar training. It was common for grammatical rules to be viewed in isolation and taught out of context, making it difficult for pupils to apply what they had learned in real-world scenarios [33]. When teaching languages at that period, instructors failed to see that the ultimate purpose of the subject matter was language utilization or communication, rather than language usage or understanding of the subject matter.

The relevance of integrating norms and forms into various communicative activities is emphasized by Celce-Murcia et al. [33] since language is meant to facilitate communication. Language instructors, in particular, are always seeking for methods to make the learning process easier and faster for their students. As a result of this aspiration, many innovations and creative efforts in the area of foreign language education were made in the nineteenth century in an attempt to move language instruction away from its antiquated, arduous, and stagnant state.

This study intended to examine the effects of online learning on Iranian EFL learners' grammatical knowledge and their learning motivation. This study can be significant because it will work on a new topic. Internet-based distance learning, by its nature, has the potential to affect language learning because it radically changes the learning environment offered by physically separating the instructor from the learner. It seems that identifying the extent to which students utilize self-regulatory behaviors in Internet-based distance learning will provide valuable insight for the design and delivery of e-learning courses.

2. Review of the Literature

By increasing the technology in the educational system, the traditional form of education has been revolutionized. It leads the education toward modern technological-based learning and teaching process. Different kinds of technological tools have been developed because of the high demand for learners in higher education. Online learning is one of the most prominent innovations in the educational system. Online learning can be defined as the application of broadband Internet and computers in order to facilitate the learning and teaching process [34].

Pop [35] defined online learning as an online interaction between students and teachers. Accordingly, the courses are taught online even if the teacher and students are at the building. There are students' and their teachers' choices for instruction. Using online learning has enabled universities to solve geographical restrictions. Universities have been expanded to the global level. Students are not limited in choosing universities they can educate in a university wherever they desire. According to Shaba [36], online learning efforts will have a direct impact on the subsequent structure of universities on both a strategic and a technological level in the next decades. According to O'Hearn [37], current university institutions must be dynamic and adaptive, they must be able to accept new technologies in learning and widen the learning process to include a broader range of activities. Quality of online instruction requires teachers to be trained for online teaching to create students' satisfaction and a higher academic achievement [38, 39].

Using online learning is an effective way to develop EFL learners' motivation. As a very complicated psychological phenomenon, motivation includes the interaction of the neurological system with cognition and emotion, as well as the development of persistent personality qualities that enable individuals to interact with their environment. Individuals' needs are met via this psychological process, which, in turn, causes them to act in certain ways. Motivation is a driving force that initiates, encourages, drives, and maintains goal-directed behavior in the face of obstacles [40].

The Self-Determination Theory is one of the theoretical frameworks that help to explain why people do what they do (SDT hereinafter). SDT focuses on the management of an individual's human behaviors as well as the fact that each person's motivation is unique to him or herself. More specifically, this theory is concerned with how personal goals are incorporated and managed in the individual (self), therefore, strengthening him or her and allowing for optimal functioning. SDT emphasizes how concepts, attitudes, and aspirations are integrated as a result of the effect of multiple elements in the social context, owing to the fact that an individual's connection with the environment is never complete. Each individual manages his or her behavior in accordance with his or her psychological demands, and each individual is capable of doing so on a constant basis, moving from a wholly external viewpoint to an integrated and independent one [41].

Using online instruction is necessary to help EFL learners' grammar knowledge. Through the acquisition of grammatical knowledge, students are able to comprehend how to use words to convey complicated ideas and how to recognize unique literary influences, which helps them become more efficient readers. According to Cornwall [42], if students gain adequate grammatical knowledge, they will be able to write in a more organized manner. If students do not have a thorough understanding of grammar, they will almost surely make a number of grammatical errors whether writing or speaking [43]. For foreign learners, understanding grammar serves as the primary foundation for constructing sentences that may be employed in spoken communication in the English language [44]. As a result, if pupils do not understand how to construct and create sentences, they will find it difficult to communicate effectively in English. Grammar is also important since it is a means of improving linguistic correctness; the more precisely and accurately a message is transmitted, the lower the likelihood of misinterpretation and misunderstanding during communication. When there is a lack of grammatical competence, communicators are less likely to participate fully and freely, and communication is more likely to be unsuccessful [45]. There are a variety of elements that might influence language learners' approaches to language acquisition. Different characteristics, such as age, gender, level of competence in the target language, motivation, anxiety, aptitude, and cultural background, according to some studies, have an impact on the learners' use of language learning methodologies [46, 47].

Our study is rooted in constructivist theory and collaborative learning theory. Constructionist theory holds that students must form inner mental models in order to gain knowledge about the world. As a result, constructivism sees education as an active process in which students construct new concepts based on both their present and previous knowledge. It is important to note that constructivism may be divided into two subcategories: social constructivism and cognitive constructivism [48]. In order to change learners from passive consumers of information into active builders of knowledge, it is necessary to equip them with an adequate learning environment as well as proper learning instruments. The use of mobile devices provides learners with a unique chance to be active architects of knowledge by embedding them in a realistic situation and providing them with access to supporting resources [49]. Instances of constructivist activities with mobile technology include handheld games, collaborative podcasts, emails, and multimedia content [50].

Collaboration activities, according to Naismith et al. [49], are those that encourage learning via social engagement. Cooperative learning is a tremendous asset, particularly for online learning, since it enhances engagement and peer-communication in an environment where the learners will have the most influence on the outcome. Learners are empowered to study a language in cooperation with others through exchanging files, data, and offering ways of coordination without seeking to replace human-to-human interactions. This is particularly relevant to mobile learning. Through the usage of various Mobile-Assisted Language Learning (MALL) apps, mobile devices may be utilized in real-time to collaborate with others. Using their digital

devices, for example, EFL students may study in a collaborative environment by exchanging SMS messages, sharing music, data, and videos over Bluetooth, and discussing in groups using social media platforms such as Facebook.

Some empirical studies were performed to investigate the effects of online learning on English language learning. Mahmoudi [51] sought to explore the usefulness of online learning via smartphones on Iranian EFL learners' grammatical accuracy development. A number of 20 upper-intermediate male and female EFL learners were chosen as the population. The researcher selected two groups of upper-intermediate learners: one group consisting of (10) students was regarded as an EG, and the other also consisting of (10) students was considered as the CG. The conventional method was utilized in teaching grammar to the CG, while the online classroom was applied to the EG. To analyze the data, the frequency and percentage of each item in the questionnaire were computed using the SPSS. The results presented that there was a significant difference between the EG and the CGs and the EG who used the online instruction had better performances.

Al-Jarf [52] attempted to determine if the incorporation of online learning into face-to-face in-class grammar training had a substantial impact on the grammatical accomplishment of EFL freshmen college students in the United States. The research included two groups of first-year students: one group of freshmen and one group of sophomores. The findings revealed a statistically significant difference in grammatical understanding between the EG and CG groups. The online instruction helped the EG to enhance their English grammar.

As Mohammadi et al. [53] investigated the effects of an online discussion forum on students' writing abilities and attitudes toward English, they found that the forum had an influence. Doing so required a total of 60 students, all of whom had a concentration in English, to be placed in two groups: EG and CG. When it came time to write a five-paragraph essay, students had to participate in an asynchronous forum where they had to challenge their own ideas and get comments from the instructor based on a feedback form that had been pre-designed. It was shown that students' writing in the EG improved dramatically on both lexis and grammatical planes as a consequence of interacting with their peers' queries, sharing comments on their writing, and applying self-assessment procedures in order to correct their own work throughout the course of the semester. In addition, they had more favorable views about writing as a whole.

Memari [54] investigated the impact of synchronous and asynchronous E-learning on the teaching of grammar to English as a foreign language (EFL) students. It was decided to use two full classes of undergraduate students studying EFL at Farhangiyan University for the study. and everyone got therapy via either synchronous or asynchronous E-learning exercises, depending on their preference. The two groups were given an identical curriculum, which included dependent clauses, appositives, infinitives, and gerunds, as well as the same vocabulary. The understanding of the grammar of EFL learners was examined via the use of recognition and production tests. An ANOVA test with repeated measurements was used to compare the results of the two groups. In the study's findings, it was discovered that both types of E-learning had a significant impact on the language learners' mastery of grammar, as indicated by tests of recognition and production. The data also revealed that there was a statistically significant relationship between electronic modes and grammar recognition and production assessments, according to the researchers. In conclusion, it can be said that E-learning is beneficial, that synchronous learning is more successful for improving language learners' output, and that asynchronous learning is beneficial for enhancing the abilities and subskills that need reflection and understanding.

Using virtual and real classroom teaching of speech actions, Davarzani and Talebzadeh [55] evaluated the effects of Iranian EFL learners' pragmatic awareness and growth as a result of virtual and real classroom education. In order to do this, a quasi-EG study was established, and 57 EFL female language students at the intermediate level were recruited after undergoing a homogeneity test. All of the participants were randomly assigned to one of two EG groups (EGs): virtual classroom learning or real classroom learning. They went through the same process of pretest, intervention, and posttest, with the pertinent data being collected through the use of a PET test, a speech-act pretest, and similar posttests of speech acts. The data were analyzed using both the independent and paired-samples t-tests, as well as the chi-square test. When it comes to promoting pragmatic awareness among EFL students in the Iranian context, the findings showed that instruction of speech acts through both virtual and real classroom techniques can be beneficial; however, real classroom instruction of speech acts demonstrated to be more beneficial and significantly increased the pragmatic consciousness of Iranian EFL learners.

According to Aghajani and Zoghipour [56], the impacts of online self-correction, peer correction, and instructor correction on intermediate EFL learners' grammatical understanding in descriptive writing assignments were investigated. Three Telegram groups with a total of 20 students each were formed by selecting 60 subjects based on their results on the Nelson proficiency exam and dividing them into three groups with the same number of students: a peer-correction group, a self-correction group, and a teacher correction group. The pretest was provided in order to examine the participants' understanding of grammar. Following that, three Telegram groups with a total of 21 members (20 pupils plus 1 instructor) each were created. The instructor then lectured the students on the many grammatical concepts throughout the duration of approximately one academic term. The members were instructed to compose a response to the question in between 50 and 70 words and publish it on the group's Facebook page. Afterward, their works were rectified via a process of self-correction, peer-correction, and instructor correction, all of which were guided by the researcher's input. The researchers employed a pretest-posttest strategy to examine the progress of the learners before and after the use of three distinct types of treatment in the study. The ANOVA test was performed to determine if there were any statistically significant variations in grammatical knowledge between the intermediate EFL

participants who got mobile-assisted self-correction, peer correction, and teacher correction and those who did not get any of these interventions. Post hoc tests were also utilized by the researcher to identify the precise difference between the two correction approaches. Grammatical knowledge was the dependent variable, with the independent factors being online self-correction, peer-correction, and teacher-correction. The dependent variable was grammar knowledge. After reviewing the findings of the study, it was discovered that the significance level between self-correction and teacher-correction was the highest (sig. = 0.000), but that the significance level between peer-correction and teacher-correction was a little lower (sig. = 0.000), and that there was no significance between self-correction and peer-correction was not observed.

The COVID-19 pandemic makes education more difficult for EFL learners. It makes students learn English online but some students do not access sufficient facilities including high Internet, mobile, and tablet. On the other hand, some teachers are not totally familiar with online instruction. These problems make online instruction difficult for the students. Regarding the mentioned problems, this study is aimed at inspecting the effects of online learning on Iranian EFL learners' grammatical knowledge and their learning motivation. One question was posed based on this objective:

RQ. Does using online learning have a significant effect on Iranian EFL learners' grammatical knowledge and their learning motivation?

3. Method

3.1. Participants. The research included 50 Iranian EFL students from the Kyanfarda English institution in Ahvaz, Iran. They were chosen from a pool of 81 pupils based on their achievement on the Oxford Quick Placement Exam's English language proficiency test (OQPT). Participants with a band score of 37 to 47 were classified as intermediate pupils. The subjects were all male and ranged in age from 18 to 33 years. They were randomly assigned to one EG group ($n = 25$) and one CG group ($n = 25$).

3.2. Instrumentation. The OQPT was the first tool used in the present investigation, and it was used to homogenize the students before the other instruments were employed. It assisted the researchers in determining the degrees of proficiency of their subjects. This exam consisted of 60 multiple-choice questions that assessed the participants' reading, vocabulary, and grammatical skills. Based on the results of the aforementioned exam, 50 intermediate English as the foreign language students were selected to serve as the subjects of the current study.

The second instrument which was used in the current study to gather data was a researcher-made grammar pretest. This test helped the researchers to determine the EG and CGs' grammar knowledge before applying the treatment. The pretest included 20 items which were selected from the students' textbook. It should be noted that the items were about the grammar points including conditional sentences, tag questions, progressive tense, possessive adjec-

tives, and reflexive pronouns. The researchers calculated the reliability of the pretest through applying KR-21 ($r = .79$). Also, a panel of English instructors confirmed the validity of the pretest.

The third instrument was a grammar posttest which was the modified version of the pretest. The posttest consisted of 20 objective items, and all of its features, including the kind of items and the number of items, were the same as those of the pretest. The only difference between this exam and the pretest was that the sequence of the questions and options were switched in order to eliminate the learners' likely memory of the elements from the pretest. It was given to the students in order to assist the researcher in determining the efficiency of the teaching on their grammatical development at the conclusion of the therapy in both groups of students. Due to the fact that the posttest was a modified version of the pretest, it was deemed legitimate and trustworthy by the researchers.

For the fourth tool, a questionnaire taken from Gardner's [57] worldwide version of the "Motivation Test Battery" (MTB) was used to assess the motivation of the students participating in this research. The initial test battery consisted of 12 scales with a total of 104 items, which were then combined into six variables. Although there were 74 questions in total, the questionnaire items in the current study were focused on analyzing integrative motivation, instrumental motivation, attitudes toward learning settings, and learners' motivation, all of which were evaluated. The scale used in the questionnaire was a five-point Likert-type scale ranging from strongly disagree to strongly agree on all points. The validity of the MTB was confirmed by a group of English teachers, and the reliability of the MTB was assessed using the Cronbach alpha coefficient ($r = .83$). In this study, the MTB questionnaire was used twice: once as a pretest and once as a posttest. It is important to emphasize that the MTB questionnaire was used both times.

3.3. Data Collection Procedure. To do the present study, the researchers selected 50 homogenous (intermediate) male participants among 81 Iranian EFL students. Then, the researchers divided the participants into two equal groups of 25; one EG and one CG. After that, they administered a grammar pretest and a motivation pretest to evaluate the students' grammar knowledge and motivation before practicing the treatment. In the next step, the researchers taught the grammar points to the EG through using online instruction. Six lessons of grammar such as conditional sentences, tag questions, passive and active voice, progressive tense, possessive adjectives, and reflexive pronouns were taught to the participants online. Each part of the lesson was thought through the WhatsApp application, and all activities were done in this application. The teacher sent the explanations of each grammar lesson to the students online and then provided some examples for them to understand the lesson well. After teaching each lesson, some activities and practices were sent to the students, and they were required to do them and sent them back.

On the other hand, the participants of the CG were deprived of the online instruction. They were taught

traditionally; through a face-to-face fashion. The students attended the real class and the researcher taught the grammar points to them directly. The teacher explained the grammar points, and the students wrote them in their notebooks. Some examples were provided for them, and also, some grammar questions were raised, and the students were asked to answer them immediately. After teaching the grammar points to both groups, the posttest of grammar and motivation were administered to the participants to determine the impacts of the treatment on their grammar and motivation improvement.

4. Results

The results of the study are presented in the following tables.

Based on Table 1, the CG's mean score is 14.46, and the EG's mean score is 15.28. The close mean scores of both groups imply that they had the same grammar knowledge before the treatment.

The inferential statistics of the CG and the EGs in the pretest are depicted in Table 2. Since Sig (.31) is greater than (0.05), the difference between the groups is not significant at ($p < 0.05$).

The above table (Table 3) shows that the mean score of the CG is 16.32, and the mean of the EG is 18.56. It seems that the two groups got better scores on their posttest compared to their pretests.

Table 4 shows that there is a significant difference between the grammar posttests of the two groups since Sig (.00) is less than (.05), and it can be inferred that the EG respondents outperformed the CG respondents on the grammar posttest of the two groups.

The results of paired samples t-tests in the above table (Table 5) indicate that the Sig values of both groups are less than 0.05. Therefore, we can say that both groups had an improvement on their grammar posttests. In short, both groups developed on their posttests but the EG did better than the CG.

Table 6 displays the mean scores of the two groups on the motivation pretest. The mean scores of the CG and the EG are 128.08 and 130.20, respectively. They conducted similarly on their motivation pretests.

Given the facts shown in the preceding table (Table 7), it is not possible to conclude that there is a significant difference in the motivation pretests of the two groups, because Sig (.70) is more than 0.05.

Table 8 reveals that the mean score of the CG is 144.12, and the mean score of the EG is 245.12. It seems that EG performed better than the CG on their motivation posttest.

Based on the outcomes in Table 9, the difference between the motivation posttests of the two groups is statistically significant because Sig (.00) is smaller than (0.05), so, we can claim that the EG had better performance than the CG on the motivation posttest. This betterment can be ascribed to the online instruction.

As shown in Table 10, there is a remarkable difference between the motivation of pre- and posttests of the CG as Sig (.00) is less than 0.05. Similarly, the difference between the motivation pretest and the posttest of the EG is significant because the Sig value is smaller than 0.05.

5. Discussion and Conclusion

For answering the research questions, paired samples t-tests and independent samples t-tests were used and their results revealed both online instruction and face-to-face instruction had a positive effect on Iranian EFL learners' grammar knowledge and their motivation. The results also indicated that the online group had a better performance on their grammar and motivation posttests.

The results of the current study lend support to Mahmoudi [51] whose results showed that there was a significant difference between the EG and the CGs and the EG who had received an online instruction had better performance on their grammar posttest. Also, this study is advocated by Alhabbash et al. [58] whose findings depicted that there was statistically a significant difference in the level of speaking performance between the students who learned via online discussion and those who learned by a conventional method in favor of online discussion group.

Moreover, the outcomes of the present research are in agreement with Al-Jarf [52] who examined whether the incorporation of the online learning can significantly develop EFL students' grammar achievement. His results revealed that the online learning assisted EFL learners to improve their mastery of English grammar. In addition, the findings in this study are in line with Zarei and Asadi Amani [59] who inspected the influences of various online strategies on reading and vocabulary comprehension. Their study revealed that the online media group outperformed the CG.

Online instruction is a student-centered teaching method that utilizes online resources to facilitate information sharing outside the constraints of time and place among a network of students. This technique combines self-study with asynchronous interactions to enhance learning, and it can be applied to facilitate learning in traditional on-campus education, distance education, and continuing education. Online learning allows learners to have more freedom to carry out their learning process without the limitations of space and time [60]. These characteristics of instruction learning can be the reasons why the EG outflanked the CG.

The other explanation for the results of this study can be due to the fact that online learning can pave the way for the pupils to keep on education and perform their careers at the same time. Students can have their full-time job and study their lessons simultaneously. In addition, by using online learning, students have the freedom to learn at their own convenience, and they can easily access the curriculum from the comfort of their homes.

The other benefit of the online instruction that can be the reason why the EG outflanked the CG is the recording of all online classes and presenting them to the students. Some students might miss the fortune to be online in the special time or might not fully comprehend the lectures; they can simply use the recorded of the classes for several times in

TABLE 1: Descriptive statistics of the grammar pretests.

	Groups	N	Mean	Std. deviation	Std. error mean
Scores	CG	25	14.76	1.96	.39
	EG	25	15.28	1.64	.32

TABLE 2: Inferential statistics of the grammar pretests.

		Levene's test for equality of variances		t-test for equality of means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean difference	Std. error difference
Scores	Equal variances assumed	1.13	.29	-1.015	48	.31	-.52	.51
	Equal variances not assumed			-1.015	46.58	.31	-.52	.51

TABLE 3: Descriptive statistics of the grammar posttests.

	Groups	N	Mean	Std. deviation	Std. error mean
Scores	CG	25	16.32	1.37	.27
	EG	25	18.56	.916	.18

TABLE 4: Inferential statistics of the grammar posttests.

		Levene's test for equality of variances		t-test for equality of means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean difference	Std. error difference
Scores	Equal variances assumed	4.63	.03	-6.77	48	.00	-2.24	.33
	Equal variances not assumed			-6.77	41.79	.00	-2.24	.33

TABLE 5: Comparing the grammar pre- and posttests of each group (paired samples T-test).

		Paired differences					t	df	Sig. (2-tailed)
		Mean	Std. deviation	Std. error mean	95% confidence interval of the difference				
					Lower	Upper			
Pair 1	CG pre/post	-1.56	1.87	.37	-2.33	-.78	-4.16	24	.00
Pair 2	EG pre/post	-3.28	1.98	.39	-4.10	-2.45	-8.24	24	.00

order to learn more effectively, while in the conventional classes, students can only benefit from the classroom once, and they do not have the second opportunity when they are absent.

Learning online with other students assists in the improvement of language learning. The different online instruments are easily available, and most of the students can use them most of the time. These instruments can provide students with authentic interactions with other learners from different cultures that might not be available in face-to-face interactions. The Internet has made everything at hand in which it is possible to get any service or help online and with one click while we are at our homes.

The reason for the EG's better performance is that the students used technology incorporation and regarded it as an important part of their learning experience since it helped them to learn enjoyably and engagingly. This in part, is in line with Sahin-Kizil [61] who stated that online instruction

TABLE 6: Descriptive statistics of the motivation pretests.

	Groups	N	Mean	Std. deviation	Std. error mean
Scores	CG	25	128.08	20.45	4.09
	EG	25	130.20	18.53	3.70

TABLE 7: Inferential statistics of the motivation pretests.

		Levene's test for equality of variances		t-test for equality of means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean difference	Std. error difference
Scores	Equal variances assumed	.34	.55	-.38	48	.70	-2.12	5.52
	Equal variances not assumed			-.38	47.54	.70	-2.12	5.52

TABLE 8: Descriptive statistics of the motivation posttests.

	Groups	N	Means	Std. deviations	Std. error means
Scores	CG	25	144.12	24.40	4.88
	EG	25	245.12	47.29	9.45

TABLE 9: Inferential statistics of the motivation posttests.

		Levene's test for equality of variances		t-test for equality of means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean difference	Std. error difference
Scores	Equal variances assumed	3.68	.06	-9.48	48	.00	-101.00	10.64
	Equal variances not assumed			-9.48	35.93	.00	-101.00	10.64

TABLE 10: Comparing the motivation pre- and posttests of each group (paired samples T-test).

		Paired differences							
		Mean	Std. deviation	Std. error mean	95% confidence interval of the difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	CG pre/post	-16.04	22.49	4.49	-25.32	-6.75	-3.56	24	.00
Pair 2	EG pre/post	-114.92	46.08	9.21	-133.94	-95.89	-12.46	24	.00

can make the activities of the course supportive, engaging, inspiring, and capturing the attention of learners.

The use of online instruction can be appealing to students because it can engage them in learning outside of the classroom setting, it can encourage cooperative learning among students, it can encourage self-study among students, and it can help them to feel more confident about themselves and their abilities. The characteristics of the online teaching that were highlighted may have contributed to the EG outperforming the CG on the posttest. The results of this

study are in line with Wu et al. [62] who studied the effects of online EFL reciprocal actions on learners' motivation, confidence, and ability, concluding that online learning could increase the students' motivation, confidence, and language abilities.

This research investigated the effects of the online and face-to-face instructions on Iranian EFL learners' grammar knowledge and their learning motivation. The obtained findings of the present study indicated that both mentioned instructions were effective, but the online one was more effective than the face-to-face one on improving the motivation and grammar of EFL learners. Based on the results, we can conclude that incorporating the online instruction in Iranian EFL setting can be helpful for teachers and students to improve the quality of teaching and learning.

We can conclude that the online learning is a pivotal instrument that should be used to supplement the EFL face-to-face classes. It includes various activities and resources that if employed by the students and monitored by the teachers could improve the students' language achievement. As the world progresses, we need to use technology and synchronize ourselves with it. Regarding the importance of online learning, it is recommended that instructors and material designers implement it in classes in order to assist students to learn a foreign language more successfully.

On the whole, it can be inferred that diverse online tools may have considerable effects on the acquisition of different aspects of language. The employment of one online tool may not always result in the desired outcomes, as shown by this case study. Because all Iranian schools and institutes are not equipped with the Internet, computers, and other online tools, and because the speed of the Internet varies from place to place, and because some students do not have access to smartphones, tablets, and computers, a combination of online learning and face-to-face learning is recommended in Iranian settings, according to the World Bank.

6. Implications and Limitations of the Study

In order for Internet resources to be successfully integrated into language classrooms, both instructors and students must have a basic understanding of online media. This leads to the conclusion that instructors must first get acquainted with online learning resources before devoting a portion of their class time to instructing students on how to use these tools. A teacher may also encourage students to utilize more productive and effective online tools while discouraging them from using unproductive or less productive ones, depending on the objective of the learning activity. The outcomes of this research may assist instructors in their usage of both online learning methods and conventional methods in their classrooms.

The results of this study can encourage students to learn the lessons through using the online learning. Shy students can use online learning to improve their English language. Students may work at a time and at a location that is convenient for them and their learning requirements while using online learning resources. According to Chaney [63], online courses have the potential to provide additional possibilities

for students who live in small, rural, or poor socioeconomic school districts to enroll in courses that are otherwise unavailable in their local school district. Distance learning courses are a fantastic method for students to increase their educational possibilities while still remaining competitive in the ever-demanding world of higher education. The outcomes of the current study can make the syllabus developers cognizant of the importance of online learning in learning English language. Material developers are recommended to implement more online materials into the syllabus.

This study has its own limitations including the small number of participants which was due to the problem of availability of learners. Next studies are strongly offered to include more participants to increase the generalizability of their results. In addition, only males participated in this study; the results should be generalized to females with great care. Therefore, upcoming studies can work on female students. This study was conducted in a private language institute at the center of the city; similar topics are suggested to be worked in the rural areas that have less access to the technological-based instructional tools. Only quantitative data through a pre- and posttest design were used in this study, next researches are recommended to use interviews and observations to gather qualitative data to enrich the quality of their results.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that there is no conflict of interest.

References

[1] F. Khodabandeh, "Comparing learners' interactions in conventional and virtual classes of distance education university: examining two approaches of teaching grammar," *Journal of English language Teaching and Learning*, vol. 13, no. 27, pp. 265–294, 2020.

[2] I. Patra, T. A. Hashim Alghazali, E. G. Sokolova et al., "Scrutinizing the effects of e-learning on enhancing EFL learners' reading comprehension and reading motivation," *Education Research International*, vol. 2022, Article ID 4481453, 11 pages, 2022.

[3] M. R. Ahmadi and Guilan University, Guilan, Iran, "The use of technology in English language learning: a literature review," *International Journal of Research in English Education*, vol. 3, no. 2, pp. 115–125, 2018.

[4] S. Bull and Y. Ma, "Raising learner awareness of language learning strategies in situations of limited resources," *Interactive Learning Environments*, vol. 9, no. 2, pp. 171–200, 2001.

[5] B. Gençlter, "How does technology affect language learning process at an early age?," *Procedia - Social and Behavioral Sciences*, vol. 199, pp. 311–316, 2015.

[6] D. H. Clements and J. Sarama, "Strip mining for gold; research and policy in educational technology-a response to fool's

gold," *Educational Technology Review*, vol. 11, no. 1, pp. 7–69, 2003.

[7] J. Harmer, *The Practice of English Language Teaching*, Pearson, England, 2007, https://www.worldcat.org/title/practice-ofenglish-language-teaching/oclc/149005881.

[8] B. Tomlinson, *Materials Development in Language Teaching*, Cambridge University Press, 2009.

[9] D. Larsen- Freeman and M. Anderson, *Techniques and Principles in Language Teaching*, Oxford University Press, 2011.

[10] A. Gunasinghe, J. A. Hamid, A. Khatibi, and S. M. F. Azam, "The adequacy of UTAUT-3 in interpreting academician's adoption to e-learning in higher education environments," *Interactive Technology and Smart Education*, vol. 17, no. 1, pp. 86–106, 2019.

[11] K. Fartash, S. M. M. Davoudi, T. A. Baklashova et al., "The impact of technology acquisition & exploitation on organizational innovation and organizational performance in knowledge-intensive organizations," *Eurasia Journal of Mathematics, Science and Technology Education*, vol. 14, no. 4, pp. 1497–1507, 2018.

[12] J. Heidari, F. Khodabande, and H. Soleimani, "A comparative analysis of face to face instruction vs. telegram mobile instruction in terms of narrative writing," *Jaltcall Journal*, vol. 14, no. 2, pp. 143–156, 2018.

[13] M. Warschauer, "The death of cyberspace and the rebirth of CALL," *English Teachers' Journal*, vol. 53, pp. 61–67, 2000.

[14] P. Arabloo, F. Hemmati, A. Rouhi, and F. Khodabandeh, "The effect of technology-aided project-based English learning on critical thinking and problem solving as indices of 21st century learning," *Journal of Modern Research in English Language Studies*, vol. 7, pp. 56–69, 2020.

[15] R. A. Croxton, "The role of interactivity in student satisfaction and persistence in online learning," *Journal of Online Learning and Teaching*, vol. 1, no. 2, pp. 314–328, 2014.

[16] Z. L. Berge, "Barriers and the organization's capabilities for distance education," *Distance Learning*, vol. 4, no. 4, pp. 1–14, 2007.

[17] S. M. M. Davoudi, K. Fartash, V. G. Zakirova et al., "Testing the mediating role of open innovation on the relationship between intellectual property rights and organizational performance: a case of science and technology park," *Eurasia Journal of Mathematics, Science and Technology Education*, vol. 14, no. 4, pp. 1359–1369, 2018.

[18] Z. Dörnyei, *The Psychology of the Language Learner: Individual Differences in Second Language Acquisition*, Lawrence Eribaum Associates, Inc., Mahwah, 2005.

[19] M. Williams and R. L. Burden, *Psychology for Language Teachers*, Cambridge University Press, 1997.

[20] Z. Dörnyei, K. Csizer, and N. Nemeth, *Motivation, Language Attitudes and Globalization: A Hungarian Perspective*, Multilingual Matters, Clevedon, 2006.

[21] A. Madjid and M. Samsudin, "Impact of achievement motivation and transformational leadership on teacher performance mediated by organizational commitment," *Educational Sciences: Theory and Practice*, vol. 21, no. 3, pp. 107–119, 2021.

[22] E. Namaziandost, M. H. Razmi, S. A. Tilwani, and A. Pourhosein Gilakjani, "The impact of authentic materials on reading comprehension, motivation, and anxiety among Iranian male EFL learners," *Reading & Writing Quarterly*, vol. 38, no. 1, pp. 1–18, 2022.

[23] S. Siska, "Using film to increase motivation for speaking in English course classroom," *TELL-US Journal*, vol. 1, no. 2, pp. 51–57, 2015.

[24] K. D. De Bot, W. Lowie, and M. Verspoor, *Second Language Acquisition: An Advance Resource Book*, Routledge, New York, 2005.

[25] S. Bal-Taştan, S. M. M. Davoudi, A. R. Masalimova et al., "The impacts of teacher's efficacy and motivation on student's academic achievement in science education among secondary and high school students," *Eurasia Journal of Mathematics, Science and Technology Education*, vol. 14, no. 6, pp. 2353–2366, 2018.

[26] H. D. Brown, *Teaching by Principles: An Interactive Approach to Language Pedagogy*, Pearson Education, New York, 2001.

[27] H. Lee, S. Lee, J. Ko, and H. Bang, "Investigating the effects of course satisfaction and career decision-making efficacy on intrinsic motivation of undergraduates in beauty health major," *Educational Sciences: Theory and Practice*, vol. 21, no. 3, pp. 147–157, 2021.

[28] D. Nunan, *Task-Based Language Teaching*, Cambridge University Press, Cambridge, 2007.

[29] J. C. Richards and T. Rodgers, *Approaches and Methods in Language Teaching*, Cambridge University Press, 2003.

[30] R. Ellis, "Current issues in the teaching of grammar: an SLA perspective," *TESOL Quarterly*, vol. 40, no. 1, pp. 83–107, 2006.

[31] D. Newby, "Teaching grammar and the question of knowledge," in *Coherence of Principles, Cohesion of Competences: Exploring Theories and Designing Materials for Teacher Education*, A. B. Fennerand and D. Newby, Eds., pp. 1–11, European Centre for Modern Languages/Council of Europe Press, Graz/Strasbourg, 2006.

[32] B. Azar, "Grammar-based teaching: a practitioner's perspective," *TESL-EJ*, vol. 11, no. 2, pp. 1–12, 2007.

[33] M. Celce-Murcia, D. Brinton, and M. A. Snow, *Teaching English as a Second or Foreign Language*, National Geographic Learning, Boston, 2001.

[34] K. Banks, "E-learning and distance education differences," 2011, https://www.brighthub.com/education/online-learning/articles/76415.aspx.

[35] A. Pop, "Blended learning, e-learning and online learning: what's important?," 2016, https://www.distancelearningportal.com/articles/269/blended-learning-e-learning-andonline-learning-whats-important.html.

[36] G. Shabha, "Virtual universities in the third millennium: an assessment of the implications of teleworking on university buildings and space planning," *Facilities*, vol. 18, no. 5/6, pp. 235–244, 2000.

[37] J. O'Hearn, "Challenges for service leaders: setting the agenda for the virtual learning organization," *International Journal of Contemporary Hospitality Management*, vol. 12, no. 2, pp. 97–106, 2000.

[38] H. Abuhassna, W. M. Al-Rahmi, N. Yahya, M. A. Z. M. Zakaria, A. B. M. Kosnin, and M. Darwish, "Development of a new model on utilizing online learning platforms to improve students' academic achievements and satisfaction," *International Journal of Educational Technology in Higher Education*, vol. 17, no. 1, pp. 1–23, 2020.

[39] A. E. P. Atmojo and A. Nugroho, "EFL classes must go online! Teaching activities and challenges during COVID-19

pandemic in Indonesia," *Register Journal*, vol. 13, no. 1, pp. 49–76, 2020.

[40] L. Woon, J. Wang, and R. Ryan, *Building Autonomous Learners. Perspectives from research and practice using self-determination theory*, Springer, New York, 2016.

[41] E. L. Deci and R. M. Ryan, "Motivation, personality, and development within embedded social contexts: an overview of self-determination theory," in *The Oxford Handbook of Human Motivation*, R. Ryan, Ed., pp. 85–107, Oxford University Press, New York, 2014.

[42] T. Cornwall, "Benefits of teaching grammar: teacher-2-teacher," 2010, http://www.speechwork.co.th.

[43] R. Ahmed and A. Al-Kadi, "Online and face-to-face peer review in academic writing: frequency & preferences," *Eurasian Journal of Applied Linguistics*, vol. 7, no. 1, pp. 169–201, 2021.

[44] F. Azizmohammadi and H. Barjesteh, "On the relationship between EFL learners' grammar learning strategy use and their grammar performance: learners' gender in focus," *Journal of Language Teaching and Research*, vol. 11, no. 4, pp. 583–592, 2020.

[45] A. Gurata, *The Grammar Learning Strategies Employed by Turkish University Preparatory School EFL Students, [M.S. thesis]*, Bilkent University, Turkish, 2008.

[46] K. Hong-Nam and A. Leavell, "Language learning strategy use of ESL students in an intensive English learning context," *System*, vol. 34, no. 3, pp. 399–415, 2006.

[47] F. Salahshour, M. Sharifi, and N. Salahshour, "The relationship between language learning strategy use, language proficiency level and learner gender," *Procedia - Social and Behavioral Sciences*, vol. 70, pp. 634–643, 2013.

[48] G. Zhang, "The deep impact of the ideological trend of constructivist educational thought on curriculum reform for basic education," *Globalization Societies and Education*, vol. 26, no. 6, pp. 15–18, 2010.

[49] L. Naismith, P. Lonsdale, G. Vavoula, and M. Sharples, *Literature Review in Mobile Technologies and Learning: Report 11*, Futurelab, Bristol, 2004.

[50] N. O. Keskin and D. Metcalf, "The current perspectives, theories and practices of mobile learning," *The Turkish Online Journal of Educational Technology*, vol. 10, pp. 202–208, 2011.

[51] M. Mahmoudi, "The effect of online learning on grammatical accuracy among EFL upper-intermediate learners," *Journal of Language Teaching and Research*, vol. 11, no. 6, pp. 1011–1016, 2020.

[52] A. J. Reima, "Impact of blended learning on EFL college readers," in *IADIS International Conference e-Learning*, p. 23, Lisbon, Portugal, 2007.

[53] M. O. Mohammadi, A. A. Jabbari, and A. Fazilatfar, "The impact of the asynchronous online discussion forum on the Iranian EFL students' writing ability and attitudes," *Applied Research on English Language*, vol. 7, no. 4, pp. 457–486, 2018.

[54] M. Memari, "Synchronous and asynchronous electronic learning and EFL learners' learning of grammar," *Iranian Journal of Applied Language Studies*, vol. 12, no. 2, pp. 89–114, 2020.

[55] F. Davarzani and H. Talebzadeh, "The effect of virtual and real classroom instruction on inter-language pragmatic development: microblogging versus traditional instruction of speech acts to Iranian EFL learners," *The Journal of English Language Pedagogy and Practice*, vol. 13, no. 27, pp. 72–99, 2021.

[56] M. Aghajani and M. Zoghipour, "The comparative effect of online self-correction, peer- correction, and teacher correction in descriptive writing tasks on intermediate EFL learners' grammar knowledge the prospect of mobile assisted language learning (MALL)," *International Journal of Applied Linguistics and English Literature*, vol. 7, no. 3, pp. 14–22, 2018.

[57] R. C. Gardner, *Attitude/Motivation Test Battery: International AMTB Research Project*, The University of Western Ontario, Canada, 2004.

[58] M. Alhabbash, I. Alastal, and W. Amer, *The effectiveness of online and classroom discussion on English speaking skill of 12th graders at Gaza. A thesis submitted to the faculty of education in partial fulfillment of the requirement for the Master Degree in Curricula and Methodology \ English*, The Islamic University of Gaza, 2012.

[59] A. Zarei and M. Asadi Amani, "The effect of online learning tools on L2 reading comprehension and vocabulary learning," *Journal of Teaching Language Skills*, vol. 37, no. 3, pp. 211–238, 2018.

[60] Z. G. Ge, "Exploring e-learners' perceptions of net-based peer-reviewed English writing," *International Journal of Computer-Supported Collaborative Learning*, vol. 6, no. 1, pp. 75–91, 2011.

[61] A. Sahin-Kizil, "Blended instruction for EFL learners: engagement, learning and course satisfaction," *Jalt Call Journal*, vol. 10, no. 3, pp. 175–188, 2014.

[62] W. V. Wu, L. L. Yen, and M. Marek, "Using online EFL interaction to increase confidence, motivation, and ability," *Educational Technology & Society*, vol. 14, no. 3, pp. 118–129, 2011.

[63] E. G. Chaney, "Web-based instruction in a rural high school: a collaborative inquiry into its effectiveness and desirability," *NASSP Bulletin*, vol. 85, no. 628, pp. 20–35, 2001.

● **14% Overall Similarity**

Top sources found in the following databases:

- 10% Internet database
- Crossref database
- 9% Submitted Works database

- 11% Publications database
- Crossref Posted Content database

TOP SOURCES

The sources with the highest number of matches within the submission. Overlapping sources will not be displayed.

1	**Universitas Pendidikan Indonesia on 2022-06-10** Submitted works	**2%**
2	**Alim Al Ayub Ahmed, Mulyanto Widodo, Aan Komariah, Isyaku Hassan ...** Crossref	**2%**
3	**ajol.info** Internet	**1%**
4	**academypublication.com** Internet	**1%**
5	**Jinan University on 2023-02-21** Submitted works	**<1%**
6	**digilib.uinkhas.ac.id** Internet	**<1%**
7	**jal.iaut.ac.ir** Internet	**<1%**
8	**Alim Al Ayub Ahmed, Biju Theruvil Sayed, Ismail Suardi Wekke, Mulyan...** Crossref	**<1%**

9 Waode Hanafiah, Muhammad Aswad, Harlinah Sahib, Abdul Hakim Yas... <1%
Crossref

10 mjltm.org <1%
Internet

11 journals.ut.ac.ir <1%
Internet

12 Zolfaghari Mashhadi, Vahideh, and Mohammad Reza Kargozari. "Influe... <1%
Crossref

13 elartu.tntu.edu.ua <1%
Internet

14 West Visayas State University on 2023-03-05 <1%
Submitted works

15 Hawkeye Community College on 2023-03-01 <1%
Submitted works

16 Alim Al Ayub Ahmed, Tribhuwan Kumar, Muhammad Iksan, Satya Subr... <1%
Crossref

17 core.ac.uk <1%
Internet

18 Shouket Ahmad Tilwani, Balachandran Vadivel, Yrene Cecilia Uribe-Her... <1%
Crossref

19 theartsjournal.org <1%
Internet

20 worldwidescience.org <1%
Internet

21 Hui Pan, Fang Xia, Tribhuwan Kumar, Xiang Li, Atefeh Shamsy. "Massiv... <1%
    Crossref

22 Alim Al Ayub Ahmed, Evy Segarawati Ampry, Aan Komariah, Isyaku Ha... <1%
    Crossref

23 Alim Al Ayub Ahmed, Isyaku Hassan, Harikumar Pallathadka, Muhamm... <1%
    Crossref

● **Excluded from Similarity Report**

- Bibliographic material
- Cited material
- Manually excluded sources

- Quoted material
- Small Matches (Less then 15 words)

EXCLUDED SOURCES

downloads.hindawi.com Internet	**77%**
Anna Gustina Zainal, Sayed M. Ismail, Asiyat Akhmedovna Tagibova, Sa'ida W... Crossref	**76%**
irep.iium.edu.my Internet	**76%**
hindawi.com Internet	**74%**
researchgate.net Internet	**9%**
Indrajit Patra, Tawfeeq Abdulameer Hashim Alghazali, Ekaterina G. Sokolova, ... Crossref	**8%**
Widhiya Ninsiana, Farida Imamutdinovna Gabidullina, Mulyanto Widodo, Indraj... Crossref	**6%**
doaj.org Internet	**4%**
idej.journals.pnu.ac.ir Internet	**3%**