

An Investigation of Iranian Intermediate EFL Learners' L2 Motivation and Attitude in a Computer-Assisted Language Learning Environment

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Abstract

The popularity of integrating technology in language instruction and its fundamental effect on the language learning dimensions has been widely acknowledged, whereas learners' motivation and attitude are expected to be improved in a web-based computer-assisted language learning (CALL) environment. Therefore, this paper aimed to investigate the Iranian EFL learners' motivation to learn English and attitude in a CALL environment. The participants of this study were 120 intermediate EFL learners from two private English language institutes in Isfahan, Iran. They were divided into two equal groups: one experimental group (EG) and one control group (CG). Then, a motivation questionnaire pretest was administered out to check the participants' motivation at the beginning of the course. For the treatment, the EG learners were taught through CALL-based instruction and the CG learners were taught traditionally. After the treatment, a posttest of motivation and an attitude questionnaire were administered. The outcomes indicated that the CALL-based instruction promoted the participants' motivation as checked by the Motivation Questionnaire. Moreover, as measured by a 20-item A-CALL attitude questionnaire, it was discovered that the learners in the EG had positive attitudes toward using CALL-based instruction. In light of the findings, a number of conclusions are obtained, and several implications are put forward.

Keywords: Attitude, CALL, Intermediate EFL learners, Motivation, Technology

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INTRODUCTION

Multiple opportunities are provided for learners by the rapid spread of the internet and the digital technology such as the intrinsically motivated use of English through digital gaming, watching YouTube pop videos and films, general search-engine information-seeking, international communication through social media, engagement in online forums, and using language study apps. Sockett (2014) believes that digital technology provides major beneficial tools for learning English. However, there is considerable evidence that digital technology may be demotivating in formal learning environments (Evans & Tragant, 2020). Scholars have focused on broadening the authenticity gap between the action of English learners in institutional classrooms and that of online-based classrooms (Henry, 2013). English classes, when compared to their own independent online activities, might appear monotonous, crammed with dry knowledge-building exercises and geared toward exam-based credentials. This impact is not restricted to the field of English Language Teaching (ELT). Recently, a report on poor quality teaching at the United Kingdom universities was headlined in the Times newspaper as “Analogue academics are failing to inspire the digital age learners” (Hurst, 2016, p. 11).

More importantly, teachers seek to find advanced channels (such as information communication technology [ICT]) for making the learners involved in instruction in meaningful ways (Lamb & Arisandy, 2020). English as a foreign language (EFL) education is no exception. According to Chik and Ho (2017), via creative pedagogy, ICT can be beneficial to foreign language learning. Considering the growing dependence on technologies, it is essential to comprehend factors influencing their acceptance by the user (Lamb & Arisandy, 2020; Nami, 2020).

Considering the extensive use of English in the globalized world, in most countries, English lessons are taught all over the educational systems (Lomicka & Ducate, 2021). Among these countries, Iran has been an important country, over many years, that has been attempting to catch up

with the standards of other countries in English education (Mostofi, 2018). Moreover, there is a great demand among Iranian learners to learn English in both private and formal education institutions. In spite of many attempts, Iran was not completely successful in English language education for numerous years (Kiany et al., 2011). Moreover, insufficient methods to language teaching along with a lack of the affective and cognitive dimensions of foreign language learning for learners cause this failure (Mostofi, 2018). Regarding the affective dimension, motivation and attitudes are among the determinants affecting the learners' achievement in language courses (Oroujlou & Vahedi, 2011; Shirani Bidabadi, 2012). Numerous researchers believe that foreign language learning is particularly based on motivation (Muftah & Rafic-Galea, 2013; Oroujlou & Vahedi, 2011). Since foreign language learning needs great efforts and patience along with the active participation in the learning process, it depends on learners' motivation to a great extent (Lamb, 2017).

About six decades ago, studies on motivation in second language learning were initiated by Gardner and Lambert (Kormos et al., 2011). Motivation in second language learning was defined by Gardner (1985, p. 10) as "the extent within which the individual strives or works to learn the language based on the desire and the experienced satisfaction in this regard". Muftah and Rafic-Galea (2013) stated that motivated learners will be more enthusiastic and willing to dedicate time to language learning. Thus, barriers in learning a language may be caused by a lack of motivation and a negative attitude (Oroujlou & Vahedi, 2011). Acat and Demiral (2002) indicated that learners are motivated to learn a foreign language based on three reasons, including internal causes (i.e., an individual's attention in a foreign language); integrative causes (i.e., involvement in other cultures or communicating with other individuals); and instrumental causes (i.e., a person's self-benefit like career advancement).

Despite numerous pertinent studies on motivation in language learning (Ghalami & Ahangari, 2012; Warschauer, 1996), there is less information on the relation between the motivation and attitude of the

individual learner and accepting technology by her/him. This is particularly true when the motivation factors of the EFL learner are precedent variables in a strong framework appropriate within the context of computer-assisted language learning (CALL). According to Lamb (2017) and Chen et al. (2019), motivation is influenced significantly by contextual properties. Thus, it is worth mentioning that although some studies have been done to check the attitude of the learners toward CALL (Ayes, 2002; Mokhtari, 2013), the topic is worthwhile enough to be investigated more, especially these days we are dealing with Covid-19 pandemic; moreover, insufficient studies in Iranian context investigated intermediate EFL learners' attitude toward CALL-based instruction and their second language (L2) motivation in a CALL-based instructional environment.

All in all, web-based learning has the potential to increase learners' motivation, involve them in real and authentic circumstances, and present them with thoroughly interactive language experiences (Wang & Reeve, 2006). As motivation is an essential component that everyone needs for doing each task, boosting motivation among learners is the primary goal of educational programs. Teachers utilize a variety of strategies to motivate their learners as they believe that learning cannot occur without motivation. Keller and Litchfield (2012) describe motivation as an individual's willingness to pursue a goal or complete a task. The prominence of computer and Web-based technologies, as well as the scarcity of studies on their usefulness in promoting learning, highlight the necessity for research like this one. This prominence is reinforced by the fact that characteristics such as attitude and motivation play obvious roles in learning in general, and in EFL learning in particular. In order to fill the above-mentioned gaps, the present study, therefore, had two objectives. First, it aimed to check the impact of CALL on Iranian intermediate EFL learners' L2 motivation. Second, it tried to investigate the EFL learners' attitude toward implementing CALL in the teaching and learning process.

LITERATURE REVIEW

The history of the thriving area of L2 motivation and attitudes toward language learning situation as well as target language community dates back to the studies in social psychology pioneered by Wallace Lambert and Robert Gardner in Canadian context during the 1970s. Moreover, Gardner (1985) presented the first socio-educational model for L2 learning. In this model, characteristics of traditional motivational research on L2 learning are integrated, while entirely focusing on social and individual psychological perceptions stating the association between L1 and L2 communities (Dörnyei, 2009). According to Gardner (1985), the attitudes of the learners toward a specific language community will affect the success level in the incorporation of that language's aspects. By such assertion, the significance of learners' attitudes is highlighted as one of the most important motivational factors affecting L2 learning. Integrative motivation is highlighted by the socio-educational model as the cornerstone. Then, Tremblay and Gardner (1995) extended the scope of the social-psychological model of Gardner's on L2 motivation only for integrating constructs oriented socially with novel elements from other goal-oriented and cognitive motivational theories. In such a new prolonged model, the constructs of language attitudes involved attitudes toward L2 speakers, interests in a foreign language, integrative orientation, attitudes toward L2 teacher, attitudes toward L2 course, and instrumental orientation (Erdogan et al. 2008; Safdari, 2019; Wang & Reeve, 2006).

All aspects of our life, including education, were affected by ICT. The practicality and availability features of the computers make them more beneficial and attractive to be used by the teachers and learners in language learning and teaching process. Over the last ten years, computers have been extensively utilized for educational purposes, and more explicitly for foreign or second language learning since CALL has turned into an indispensable part of language learning procedure within the third millennium. Nevertheless, no single well-defined explanation of CALL-based attitude

has been presented so far. The CALL construct is determined often as incorporating computers into language learning procedures to present language learning substances, or any procedure for using a computer and, thus, improving the learner's language (Fathi & Rahimi, 2020; Ghahari & Piruznejad, 2017; Li et al., 2015; Shirani Bidabadi, 2012; Rahimi & Fathi, 2021).

The existing literature revealed that important variables including personal attitudes are the key factors affecting a person's language use and learning (Aydin, 2018; Delfabbro & King, 2021; Jahangard et al. 2020). The fundamental premise of most attitude/motivational studies in second and foreign language learning is that positive attitude toward language learning not only increase learners' motivation but it also significantly contributes to performance better in a variety of areas. Negative attitude, on the other hand, acts as a psychological obstacle to successful L2 learning (Ozer, 2018). Recent advances in SLA approved that the degree of desire to identify with the international community, international posture, intercultural communicative competence, and international citizenship play important roles in motivating L2 learners to learn and use an L2 successfully (Saglam & Sert, 2012).

Positive attitudes regarding the efficacy of CALL apps in language learning, on the other hand, might increase learners' behavioral intention to use them (Aydin, 2018; Ayres, 2002; He et al., 2015; Jahangard et al., 2020; Mollaei & Riasati, 2013). Thus, it is concluded that comprehension of language learners' attitudes toward foreign language learning and using ITC for language learning objectives enable the utilization of suitable CALL, paving the way to implement CALL-based pedagogy and using CALL applications to teach and learn languages. For example, Akbulut (2008) assessed the attitudes of Turkish university learners (N = 155) toward CALL effectiveness. All the learners had higher proficiency levels in English. The results indicated the positive attitudes of participants toward CALL since computers were found to be beneficial in maintaining independence,

collaboration, learning, empowerment, instrumental benefits, communication, and comfort.

Motivation for CALL

Motivation is widely recognized as an essential component in long-term L2 performance, and research in this field have increased dramatically in recent years (Boo et al., 2015; Meşe & Sevilen, 2021; Ucar & Kumtepe, 2020). Most of these studies have been directed toward exploiting and validating competition models of learner motivation. Among these studies are the L2 motivational self-system (L2MSS) of Dornyei (2009) and its now slightly diminished rival, the socio-educational model of L2 motivation of Gardner (1985). However, other growing lines of research have been directed to comprehend situated motivation and explore the various aspects of context which influence learners' motivation. This includes the longer-term and immediate motivational impacts of various kinds of pedagogy; a subcategory indicated the effects of CALL systems on learner motivation, outside and inside the classroom. Two prior reviews of the educational CALL benefits revealed further evidence for its positive impact on learner motivation compared to accelerating language acquisition (Macaro, Handley, & Walter, 2012). Four (overlapping) motivational benefits of utilizing CALL systems in the classroom were identified by Lamb (2017). It can increment the interest of pupils in classroom learning tasks and validate the homegrown facility of young people with digital technology. Kukulska-Hulme and Viberg (2018) claimed that positive effects are produced using mobile tools such as iPads and smartphones in language classrooms based on learner attitudes, engagement, mutual encouragement, and enthusiasm (p. 214). Moreover, it can improve the long-term motivation of learners for L2 learning by promoting learner individualization and autonomy. For instance, Ilic (2015) revealed that how learners can be motivated to do homework by collaborative activities utilizing their mobile phones. In addition, it can increment L2 learners' motivation indirectly by presenting more

opportunities for oral communication practices, as through playing online games or videoconferencing when learners may not feel as embarrassed speaking or nervous in the L2. Lastly, it can help learners build identities as L2 users, partially via self-confidence accruing successful L2 communication and opportunities provided by online platforms examine novel and alternative modes and identities of self-presentation without threatening the real-world identities and private selves of learners (Azizi & Nemati, 2018; Kukulska-Hulme & Viberg, 2018).

Moreover, Bodnar et al. (2016) concluded that the CALL systems tend to possess positive motivational effects on learners, even when wearing off initial innovation impacts. Nevertheless, it was also argued that there was no methodological and theoretical sophistication in most studies, being often just an ‘add-on’ (assessments in studying retrospective interviews or attitudes with learners) to investigate the effects on language development. They argued that one way for improving is for CALL studies for making more use of Dornyei’s (2009) L2MSS to understand and measure the global motivation of language learners, via their future self-guides, and changing it to their considered motives to study with technology.

Attitudes toward Using CALL

Attitudes toward technology play a fundamental role in the adoption of instructional technology and learners’ learning in the classroom. Attitude is also regarded as one of the effective variables in the success of incorporating technology in the second or foreign language learning process (Teo, 2006). Since attitudes toward CALL could be either negative or positive, it greatly affects the ways computers are used (Jahangard et al., 2020). For example, some researchers believed that computer competency can be hindered by negative attitudes toward CALL. Therefore, investigating the attitudes of learners toward CALL can be effective in comprehending the association between learners’ proficiency in learning and CALL. One of the most leading functions within the learning process

can be put into action through attitudes. Thus, it is essential to comprehend the use of various attitudes in fostering English language learning in educational contexts. Hence, investigating the attitudes of learners toward using computers in English language acquisition should improve the ability of curriculum teachers and designers to comprehend the attitudes of learners toward CALL. Moreover, relevant information will be hopefully provided for educators regarding the use of CALL in the same contexts. This may help the teachers and researchers who are willing to perform similar work in the future. Moreover, it is definitely advantageous for the teachers, for whom it is difficult to inspire their learners to study outside the classroom, and also those learners who are eager in taking responsibility of their learning.

Özer (2018) revealed that attitudes toward technology have a vital role in adapting learners' learning and instructional technology in the classroom. Attitude is also regarded as one of the variables effective in implementing technology successfully within the learning process of the foreign or second language. Consistent with this idea, Ayres (2002) investigated the attitudes of learners toward CALL. In their study, 80% of the learners believed that their learning needs were met by CALL-based instruction. In the viewpoint of 77% of the learners, CALL presented useful information, and 66% of the learners indicated that it was essential to use further CALL continuously in their language learning process. Furthermore, he pointed out that attitude was a key factor in promoting or inhibiting the effective implementation of any initiative. Therefore, examining the attitudes of the learners toward computers at various stages of development is important. Besides, the relationship between behavior and attitude has been confirmed by various attitude models and theories. The Theory of Reasoned Action (TRA) was introduced by Ajzen and Fishbein (1980). They indicated that an individual's behavioral intent defines his performance of specific performance. It is recognized by two things, the subjective norms and attitudes within individuals operate as the organization's cultural norms. Marcinkiewicz and Regstad (1996)

investigated the effect of subjective norms on computer use. They reported that subjective norms were the most indicator of computer use, along with self-competence, perceived innovativeness, and relevance. Furthermore, Ucar and Kumtepe (2020) reported a positive relationship between attitudes and subjective norms.

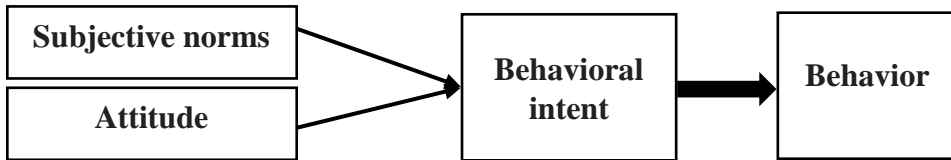


Figure 1. Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980).

In general, the utilization of CALL in this work included using technology along with the attitude of participants toward its use. We used Fishbein's (1967) Reasoned Action Theory (RAT) and constructivism as the theoretical framework for illuminating the findings of the present work. Fishbein's developed RAT is a cognitive theory for predicting and explaining any human behavior under volitional control. It copes with the associations between attitudes, beliefs, intentions, subjective norms, and behavior. It is normally utilized for investigating attitude or some specific behavior toward an object. Numerous researchers have tested, validated, and utilized the theory (Siemens, 2008; Trost et al., 2002). RAT was used by Trost et al. for evaluating the relative utility of the theory to explain physical activity behavior and intentions in African-American eighth-grade girls.

The basic premise of constructivism is that human learning is built, that learners build new information on the base of previous knowledge (Suhendi & Purwarno, 2018). This prior knowledge impacts the new or modified knowledge that an individual construct as a result of new learning experiences. Constructivism is utilized in various fields, for instance in technology-rich classrooms. According to Ghorbani and Golparvar (2020), technology seemed to be reducing on the constructivists' side trying to alter education's prevailing societal aspect. They indicated that there are

numerous observable alterations in technology-rich classrooms in contrary to traditional instruction where (a) learners are more engaged actively, (b) they learn various subjects rather than the same thing, and (c) both verbal and visual thinking is integrated instead of the verbal thinking primacy. Five principles applying constructivism on technology were described by Lebow (1993) including (1) providing a context for learning and supporting both relatedness and autonomy, (2) embedding the reasons for learning into the learning activity itself, (3) supporting self-regulation by promoting attitudes and skills, (4) strengthening the tendency of learner for engaging in intentional learning procedures, particularly by encouraging or exploring the strategic errors, and (5) Maintaining a buffer between the learner and the potentially damaging effects of instructional practices in use. These principles and changes come along with constructivism principles. According to Delfabbro and King (2021), novel technology like using multimedia can provide rich opportunities for constructivist methods in the education field. Therefore, constructivism is a proper framework in this regard since it can clarify any finding resultant from independent CALL use. Correspondingly, CALL users' attitudes will be interpreted by RAT toward its use.

PURPOSE OF THE STUDY

All in all, it is worth mentioning that the impact of CALL in the language learning process, especially in the Iranian context, did not receive enough attention it deserves. Moreover, rare studies in Iran have been done in this regard. Thus, this study was conducted to investigate the impact of CALL-based instruction in an Iranian context, and its impact on EFL learners' L2 motivation and attitude toward using CALL. Accordingly, the following research questions were raised in this study:

(1) Does using CALL-based instruction have any significant effects on Iranian intermediate EFL learners' L2 motivation?

(2) What are Iranian EFL learners' attitudes toward using CALL-based instruction?

METHOD

Participants

The participants recruited for the present study were 120 Iranian intermediate EFL learners (60 males, and 60 females) in the age range of 16 to 21 studying in two private English language institutes in Isfahan, Iran. The convenience sampling method (Dörnyei, 2009) was used to select the participants of the study. That is, sample selection followed the researchers' certain practical criteria, like the participants' "geographical proximity", "availability at a certain time", "easy accessibility", and "willingness to volunteer" in the current study (Dörnyei, 2009, p. 99). The researchers further relied on the results of the Oxford Quick Placement Test (OQPT) to choose a more homogenized group from the population. The selected participants were randomly divided into two equal groups: one CG and one EG.

Instruments

A variety of instructional and testing materials (the OQPT test/ Motivation Questionnaire/ Attitude Questionnaire) were utilized to collect the required data in the study. A description of each of these materials is provided in order:

The OQPT Test

To confirm that the participants were homogeneous regarding English language proficiency and they were all at the intermediate level, an OQPT test with 60 items was administered. The OQPT is believed to be norm-referenced as a Proficiency test and is designed to assess global language ability. This test classified learners with scores ranging from 30 to 47 (out of

60) as intermediate. The reliability of the OQPT calculated through KR-21 formula was $r = 0.89$.

Motivation Questionnaire (MQ)

The MQ adapted from Pu (2009) was utilized in this study to measure the learners' motivation toward the course and how beneficial they perceived their time spent in the CALL setting. The questionnaire had 22 multiple-choice items that were graded on a scale of one to five (never=1, rarely=2, sometimes=3, usually=4, always=5). Cronbach's alpha for these 20 items was computed to be .71. To boost the questionnaire's reliability, some positively coded and some negatively coded items were shown to the participants in tandem. Prior to actually computing the points for the motivation level, negative-worded items in the questionnaire were inverted. The Cronbach alpha coefficient value for the overall reliability analysis of the questionnaire was .89, indicating a satisfactory level of reliability above the minimum desirable level of .7 as suggested by Pallant (2005, p. 76). The total scores ranged from 22 to 110, with higher scores representing greater motivation in learning. It is worth mentioning that the MQ was given to the learners twice: Once before the treatment as the pretest and once after the treatment as the posttest.

Attitudes toward Computer-Assisted Language Learning (A-CALL)

The English version of the A-CALL scale was used to assess the attitudes toward CALL (Vandewaetere & Desmet, 2009). The A-CALL consisted of 20 items that the participants assessed on a 5-point Likert scale (ranging from 1. strongly disagree to 5. strongly agree). It has four major components: *effectiveness of CALL vs. non-CALL*, *surplus-value of CALL*, *teacher influence*, and *degree of the exhibition*. Higher scores on this measure indicated more positive attitudes toward CALL. In this study, the internal consistency of A-CALL was $=.88$ for the overall scale, ranging

between .71 and .89 for the subscales. This instrument was also utilized to collect demographic and background information about participants.

Data Collection Procedure

The participants were homogenized at the beginning of the study and then tested on their motivation. All the participants of the EG were asked to connect their computers to the internet and have a ZOOM application on their computers. ZOOM is an online media platform that is usually used for online instruction. This application is available on a variety of platforms, including personal computers, laptops, Android phones, iPhones, and tablets. ZOOM can contain up to 200 users and 3000 passive observers (Rahayu, 2020). This program enables teachers and learners to communicate in real time. Individuals in this online environment utilize a webcam and a microphone to talk in real-time, allowing interactions comparable to those found in traditional classroom settings (Rahayu, 2020). Up to 200 participants can actively engage in live sessions, while an additional 3000 participants can watch the session passively. Although this application is subscription-based, with education subscriptions starting at \$1800 per year for 20 hosts, there is a free version that limits video sessions to 40 minutes. As a result of the COVID-19 outbreak, the company has lifted the time restriction on free basic accounts for primary and secondary schools (Rahayu, 2020). During using this platform, there were some activities as follows:

1. Greet each other
2. Small talks before the lesson
3. Private conversation with the lecturer
4. Classroom lecture to all learners
5. Question and answer between learners and lecturer
6. Question and answer between learners
7. Group discussion in breakout rooms
8. Communication Slides share/shared screen materials

9. Download questions for exercise
10. Upload the answers to the exercise
11. Answer polling questions
12. Presentation of the lesson through slides share and whiteboard share by the lecturer
13. Question and answer about the lesson
14. Classroom practice through whiteboard share
15. Group work in breakout rooms

Teachers, on the other hand, must consider certain steps, according to Speroff (2016), in order to properly use this App in English language instruction in the classroom.

Step 1. Create a group

The instructor saves the phone numbers of their learners in the internal phone memory. Then, the instructor forms a group depending on their class ZOOM.

Step 2. Set the rules

Teachers must cope with their learners regarding the roles for using such an App as politeness. Then, they might tend to add their own rules about sending private messages to the teachers for learners outside the group and the information which should and should not be shared in the group such as informal chats and jokes in English.

Step 3. Set up for class use

The teacher can set it up for class use. For instance, a teacher may mandate their learners to always have their earphones with them.

Step 4. Assign the tasks

A key stipulation is that ZOOM is not a teaching instrument since it provides input to learners and a way for sharing their output in a classroom for alleviating classroom management issues (such as

large classrooms with not enough speaking time for learners). Hence, the learners are helped to enhance their speaking performance outside the class and present further opportunities for speaking and listening or assigning and collecting homework.

It should be noted that vocabulary, grammar, reading, and writing are the most important skills and subskills that were taught through the ZOOM application. Every week, ten messages related to the target words were sent to the EG. The messages contained the vocabulary, grammatical structures, a passage, or a topic. The messages included the meaning of the words, a picture demonstrating the meaning of the words, and at least three sample sentences for each word. After sending messages, a mini test was sent to the participants and the answers to the mini test were sent back after two hours. To make sure that the learners read the messages, they were asked to answer the questions and provide the meaning of the words and send them to the group.

On the other hand, the CG was taught through traditional instruction. They attended the classroom and asked not to use any applications. They were not allowed to bring their smartphones to the classroom; in fact, the researchers checked them before holding the class. In the CG, the researchers provided some information about each topic for the learners and then he played the audio file of the conversation, and after teaching each conversation, the learners were required to practice it with their partners and perform it in front of the class. After the treatment, a posttest MQ was administered. Moreover, at the end of the study, A-CALL was given to the participants in the EGs to check their attitudes toward using CALL.

RESULTS

Preliminary Analyses (Tests of Normality)

Before conducting any analyses, measures had to be taken to assure the distributions of scores on both pretest and posttest of the EG and CG

teachers were normal. To achieve this, the Kolmogorov Smirnov test of normality was conducted.

Table 1: Results of Kolmogorov Smirnov Test of Normality

	Kolmogorov-Smirnov ^a		
	Statistic	Df	Sig.
EG. MQ Pretest	.17	60	.08
EG. MQ Posttest	.23	60	.12
CG. MQ Pretest	.21	60	.23
CG. MQ Posttest	.22	60	.09

In Table 1, the *p* values under the *Sig.* column had to be examined; *p* values greater than the alpha level of significance (i.e., $p > .05$) would indicate that the distribution had been normal. Casting a look at the *p* values lined up under the *Sig.* column reveals that for all the pretests and posttests of the two groups, the assumption of normality has been met. Having assured the assumption of normality, the researchers could take a step further and conduct the parametric tests of independent samples t-test and one-way ANCOVA to find answers to the research questions of the study.

Results of the Pretest

An independent-samples t-test was used to compare the MQ pretest scores of the two groups to determine their homogeneity in terms of motivation before the treatment.

Table 2: Descriptive Statistics for the MQ Pretest

	Groups	N	Mean	Std. Deviation	Std. Error Mean
MQ Pretest	EG	60	37.06	9.17	1.18
	CG	60	39.66	10.58	1.36

The mean scores of both groups on the MQ pretest is depicted in Table 2. It was, thus, necessary to analyze the *p*-value under the *Sig.* (2-tailed) column in the t-test table to see if the difference between these two mean scores,

and, therefore, the two groups on the MQ pretest, was statistically significant or not.

Table 3: Results of Independent-Samples t-Test Comparing the MQ Pretest Scores of EG and CG

		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
MQ Pretest	Equal variances assumed	.85	.35	-1.43	118	.15	-2.60	1.80
	Equal variances not assumed			-1.43	115.66	.15	-2.60	1.80

Based on the data Table 3, there was not a statistically significant difference in the MQ pretest scores for EG ($M = 37.06$, $SD = 9.17$) and CG ($M = 39.66$, $SD = 10.58$), $t(118) = -1.43$, $p = .15$ (two-tailed). This conclusion was reached since the p -value was larger than the significance level ($p > .05$). As a result, it is reasonable to conclude that the learners in the two groups were at the same level of motivation prior to the treatment.

Effects of CALL-Based Instruction on L2 Motivation

To compare the EG and CG learners regarding their motivation after the treatment, their MQ posttests were compared using one-way ANCOVA.

Table 4. Descriptive Statistics for Comparing the MQ Posttest Scores of the EG and CG

Groups	Mean	Std. Deviation	N
EG	72.51	17.04	60
CG	40.45	12.26	60
Total	56.48	21.85	120

Table 4 shows that the EG learners' MQ posttest mean score ($M = 42.51$) was higher than that of the CG learners ($M = 40.51$). To determine whether or not this difference was statistically significant, the researchers needed to look down the Sig. column and in front of the Groups row in Table 5.

Table 5. Results of One-Way ANCOVA for Comparing the MQ Posttest Scores of the EG and CG

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	35360.13	2	17680.06	96.20	.000	.62
Intercept	7802.33	1	7802.33	42.45	.00	.26
MQPRE	4512.00	1	4512.00	24.55	.00	.17
Groups	33464.62	1	33464.62	182.09	.00	.60
Error	21501.83	117	183.77			
Total	439706.00	120				
Corrected Total	56861.967	119				

In Table 5, the p -value under the Sig. column across the Groups row (i.e., .00) is smaller than the alpha level of significance ($p < .05$), which demonstrates that the difference between the learners in EG ($M = 72.51$) and CG ($M = 40.45$) on the MQ posttest was statistically significant. Differently put, using CALL-based instruction was found to be more effective than conventional instruction so far as the motivation of Iranian EFL learners was concerned. The magnitude of this effect, shown under the Eta Squared column of this table, was found to be very large (.60) as Cohen (1988, cited in Pallant, 2005) maintains that the effect size is small for .01, moderate for .06, and large for .14.

Iranian EFL learners' Attitudes toward Using CALL-Based Instruction

The second research question of the study aimed to unearth the attitudes of the EG learners toward the treatment they received. The questionnaire findings are given in Table 5.

Table 6. Results of the Attitude Questionnaire

No.	Statements	Strongly disagree	Disagree	No opinion	Agree	Strongly agree	Mean
1	My language learning will go faster if it is aided by a computer.	0	0	4	22	34	4.50
2	Learning a foreign language with the assistance of a computer is superior to learning it through oral practice.	0	2	2	29	27	4.35
3	Computer-based language tests are almost always superior to paper-and-pencil tests.	2	0	8	26	24	4.16
4	CALL is superior than traditional language acquisition.	3	6	2	31	18	3.91
5	People who learn a language through computer-assisted learning outperform traditional language learners.	0	1	1	29	29	4.43
6	CALL is a valuable extension of the classical learning methods.	2	1	4	23	30	4.30
7	Language learning becomes more flexible with CALL.	0	1	2	19	38	4.56
8	Traditional language learning is less beneficial than CALL.	0	0	0	29	31	4.51
9	CALL can stand alone.	7	2	4	26	21	3.86
10	Learning a foreign language on a computer creates a more comfortable and stress-free environment.	0	0	0	21	39	4.65

11	Learning a foreign language using a computer improves your intelligence.	1	0	2	33	24	4.31
12	I (would) like to learn a new language by computer.	0	0	0	11	49	4.81
13	My attitude regarding the use of computers in language acquisition is heavily influenced by the teacher's attitude toward CALL.	3	2	3	33	19	4.05
14	My motivation for utilizing computers in language learning is primarily defined by the teacher's desire regarding CALL.	0	6	2	19	33	4.11
15	My attitude on computer use in language study is heavily influenced by my teacher's skill in utilizing computers in language learning.	3	2	2	28	25	4.16
16	I believe in computer-based language exams.	0	3	0	17	40	4.55
17	I believe in computer-assisted language activities.	0	0	0	16	44	4.73
18	When talking in a foreign language through computer (chat), I feel more constrained than when communicating face-to-face.	3	4	1	15	37	4.31
19	In a face-to-face learning environment (classroom) When speaking in a foreign language, I frequently suffer from anxiety.	0	0	0	12	48	4.80
20	Starting a face-to-face discussion has a higher barrier for me than starting a virtual (computer-assisted) conversation.	5	5	7	27	16	3.73

In the questionnaire illustrated in Table 6, all the mean scores of the questionnaire items were well above 3.00 (which is the average value of the choices where strongly agree receives 5.00 and strongly disagree receives

1.00). This indicates that the EG learners agreed with all the questionnaire items, which were all positive comments about CALL-based instruction and using it for increasing learners' L2 motivation. The highest mean scores in Table 5 belonged to items # 12 ($M = 4.81$), 19 ($M = 4.80$), 17 ($M = 4.73$), 10 ($M = 4.65$), and 7 ($M = 4.56$), in which the learners express their agreement with the statements claiming that (a) they like to learn a new language by computer, (b) in a face-to-face learning environment (classroom), when speaking in a foreign language, they frequently suffer from anxiety, (c) they believe in computer-assisted language activities, (d) learning a foreign language on a computer creates a more comfortable and stress-free environment, and (e) language learning becomes more flexible with CALL. In the same vein, all the other items received the learners' agreement. To see whether the degree of this agreement was statistically significant or not, a one-sample t test was conducted. To see whether the degree of this agreement was statistically significant or not, a one-sample t -test was conducted.

Table 7. Descriptive Statistics for EG Learners' Attitude Scores

	N	Mean	Std. Deviation	Std. Error Mean
Attitude	20	4.34	.31	.06

Table 7 shows that the overall mean score of the questionnaire was 4.34, which was larger than 3.00. This implies that the EG learners held positive attitudes toward the treatment they received. To see if the positive attitudes reached statistical significance, a one-sample t -test table had to be consulted.

Table 8. One-Sample t -Test Results for the EG Learners' Attitude Scores

	T	df	Sig. (2-tailed)	Mean Difference
Questionnaire	62.49	19	.000	4.34

Table 8 shows that there was a statistically significant difference between the EG learners' mean attitude score ($M = 4.34$) and the average value of the

choices (i.e. 3.00) because the p -value was smaller than the specified level of significance ($p < .05$). Consequently, it could be concluded that the degree of the EG learners' positive attitude toward the application of CALL-based instruction in English classes, especially to enhance learning motivation, was statistically significant. In other words, the application of CALL-based instruction to learn English and increasing motivation was found to be to the learners' taste.

DISCUSSION

The main purpose of this study was to check Iranian Intermediate EFL Learners' L2 motivation and attitude in a CALL-based instructional environment. The analysis of the data revealed that the use of computers helped the EG learners to improve their motivation. Before implementing the treatment through CALL-based instruction and conventional instruction for EG and CG, respectively, both groups' motivation was checked, and no significant difference was found. After the treatment, the results indicated that the EG's motivation significantly increased. Therefore, the findings revealed that CALL-enhanced instruction would exert positive effects on the participants' L2 motivation. It means that after implementing the treatment (i.e., CALL-based instruction) in the EG classroom, learners' L2 motivation highly augmented. This study confirms Warschauer's (1996) argument that CALL has a beneficial impact on learners' motivation. The current study's findings are consistent with those of Erdogan et al. (2008), who found that web-based education improves learners' learning motivation. Furthermore, the findings of this study support those of Wang and Reeve (2006). They reported that participants were more motivated after participating in Web-based learning activities. Furthermore, the findings of this study support those of Ghalami and Ahangari (2012), who found that EFL learners' motivation improved in Web-based instruction. The findings back up those of Hodge et al. (2009), who found that learners in a Web-based environment were more motivated than those in a traditional setting. The findings also

back up Shirani Bidabadi's (2012) claim that using a computer enhances the motivation of Iranian EFL learners.

The analysis of the data revealed that learners benefited from CALL-based instructional environment. CALL is differently used within the present programs to assess the perspectives of learners. Therefore, CALL contains higher face validity with learners as they consider it a valuable substitution for classroom-based learning and find it as a key and extremely suitable aspect of their investigations. The study strongly supports that, like any learning instrument, CALL works should be tightly linked within the course curriculum. Based on the data, making the connection between the course as a whole and CALL work is important. Learners finding CALL as a key part of the course also have higher motivation and observe the CALL work as related to their requirements. Despite the definite association between these factors, it is impossible to distinguish whether the relationship is causal or direction.

The main reason for increasing the motivation of EG learners is due to CALL activities. Since using a computer to learn a language is a new area, the learners felt more attracted and challenged. Computers is very popular among learners because they are associated with fun and games. Learners' motivation will increase especially when it offers a variety of activities. For example, there is a word "aisle" said by the computer, and then the student has to guess and type the letters that construct the word. By doing that activity, the student is having a fun learning while practicing their thinking and listening skill. Computers are also considered to be very fashionable. Generally, a student will feel very proud when they can operate a computer. Moreover, they learn a new language with help of a computer. That is also one of the reasons why a computer increases a student's motivation to learn a foreign language. More significantly, if a person has a high degree of motivation, it means that he or she adores online activities and will eventually devote time and energy to learning how to handle difficulties while utilizing technology (Lamb & Arisandy, 2020). Similarly,

according to the Cognitive Evaluation Theory, a higher degree of motivation will eventually lead to perceived usefulness (Henry, 2013).

This research backs up Siemens' (2008) theory of connectivism, which argues that learning occurs when a student reinforces their knowledge by establishing connections with the community's collective knowledge. These connections are made in three different contexts: biological/neural, intellectual, and social/external. Connectivists held that knowledge is not only transferred from the teachers to the learners and learning does not happen in a single place, instead, they believed that knowledge is conveyed through interpersonal communication, particularly in a digital context. According to, Connectivism theory, learners are responsible for their learning.

This study also supports Harasim's (2017) online collaborative learning theory, which places a greater emphasis on the facilities of the CALL in creating learning settings that encourage cooperation and knowledge production. Harasim (2017), like Siemens (2008), affirms the benefits of CALL and Internet-based teaching and learning, as well as large-scale networked instruction. Based on Online collaborative learning theory, learners can collaboratively solve their problems through discourse and this collaboration can help them develop their English learning.

Another major goal of this research was to determine participants' attitudes toward CALL. As findings revealed, the Iranian EFL learners feel positively toward the CALL-based instructions in general. This finding is in agreement with the study of Jahangard et al. (2020), which indicated that Iranian EFL learners generally feel positive about the effects of CALL in language learning. Similarly, in other contexts, research findings by Ayres (2002) revealed that the application of CALL within the existing programs of study ranked highly from the perspectives of learners. Like other late reports, in the current study, therefore, the utilization of computers as a support for learning and teaching a language is evaluated to be an appropriate approach that is suited to the needs of the language.

Such high overall favorable attitudes of Iranian EFL learners toward utilizing technology in EFL education is consistent with many previous studies on instructors' attitudes toward using technology in language instruction (Saglam & Sert, 2012; Mollaei, & Riasati, 2013; Özer, 2018; Aydın, 2018; Lamb & Arisandy, 2020). If other significant variables are fulfilled, such reasonable opinions can be regarded a good predictor of the potential of using technological tools in English language instruction at institutes, high schools, and universities. Nevertheless, positive attitudes are not merely enough to obtain CALL run in classroom teaching since some other factors are contributing to running CALL in teaching EFL. These factors encounter some challenges interrupting the implementation of CALL by learners in the learning process and EFL teaching. One of these challenges is the poor competence of teachers in computers considering a significant association between the computer competence of teachers and their computer technology uses in the classroom.

The finding showing that Iranian intermediate EFL learners indicated overall positive attitudes toward CALL can be explained by the fact that the ubiquity of technology, the widespread desirability and use of computers, and the incorporation of technological tools in people's lives have paved the way for language learners to utilize web-based language instructions in comparison to other traditional teaching methods. This might be the reason why we found an overall positive view toward the use of computers in Iranian learning contexts. In addition, since the Iranian learners are generally shy and they are easily intimidated by producing English output in the classroom, they believed that the use of the CALL program is essentially helpful, especially for introverts, who can undertake the task with increased ease.

Li et al. (2015) indicated that learners should be taught to learn not only computer skills but also positive attitudes toward using CALL. Through instruction, learners can be encouraged to further utilize computers in their learning. Language and computer labs need to be opened to the learners for as many hours as possible. Moreover, the university lecturers

must be encouraged to integrate more computer-based programs into their curriculum design and teaching. Moreover, it is vital for teachers to believe the higher effectiveness of CALL-based ESL courses compared to the traditional ones. They should be acquainted with CALL software and applications to give technical supports for the learners and present the most appropriate way for integrating CALL into their course designs.

CONCLUSION AND IMPLICATIONS

In conclusion, like other technologies, CALL is a teaching innovation in which each learner uses a computer to improve his/ her language. CALL not only introduces the learners to technology but also brings positive effects which are increases learners' motivation, encourages student-centered language learning, goes on with experiential learning, and helps shy learners. Hence, the teachers should consider using CALL for making language learning interesting. Learners' attitudes toward classroom activities and motivation can be increased by designing CALL-based instruction in different task-based activities. Accessing to the internet makes it simple for learners to communicate with native speakers, and their motivation can be enhanced. Therefore, it is concluded that learners' motivation can be improved by incorporating and multimedia, computer, and the internet into language teaching classrooms and designing computer-based course books; hence, their academic achievement is boosted.

In the process of learning English in an EFL context, the majority of learners possess a higher motivation level toward using computers; moreover, their opinions about the importance of English establish a considerable impact on the level of motivation, thus, some appropriate recommendations should be addressed. First, computers can be combined into the EFL learning procedure along with buying software and equipment and making them accessible to learners. Nevertheless, teachers should keep in mind that the internet has advantages and disadvantages. Therefore, prior to using this potentially effective tool for instruction, teachers must take into

account the learners' needs, course contents and objectives, and the quality of the materials. Second, if learners find English less important, they will be less motivated toward computer using in EFL learning; thus, factors influencing their beliefs need to be assessed. Moreover, EFL teachers should be aware of the negative impacts of believing their learners regarding language learning on motivation toward using the computer in EFL learning procedures. Furthermore, it is necessary for teachers to know how to enhance their learners' beliefs toward EFL learning. Third, target groups such as software developers, teachers, and curriculum developers need to be aware that gender, age, grades, optional and compulsory status, parents' educational background, the language-learning process period of the participant, types of high school, and the experience toward computer use have no impacts on the motivation level of learners toward computer utilization in EFL learning.

The findings of this research can bring about some pedagogical implications for Iranian teachers, learners, and material developers to take the advantages of the CALL-based instruction into account. Therefore, this study may persuade Iranian English teachers to incorporate technology into their teaching to reach better learning outcomes. The findings of this study can encourage Iranian English teachers to use a versatile and an engaging way to share learning content while putting more responsibility on the learners' shoulder for their own learning process. Iranian EFL learners can be the other beneficiary of this study; learners who are absent because of illness, too long distance, or any other reason, can catch up with their peers faster and easier with the CALL-based classroom model than with the traditional one. Unlike the traditional classroom model, the CALL-based classroom puts learners in charge of their own learning. By providing lectures online, teachers can give learners the opportunity to learn at their own pace. Since Iranian EFL learners do not have any interaction outside of the classrooms, the CALL-based classroom can provide them ample opportunities to use English language more communicatively. This study can help those introverted and shy learners who suffer from embarrassment

in participating in the face-to-face classroom. Furthermore, the findings of this study can encourage Iranian material developers to seriously incorporate online teaching into the Iranian syllabus in which only traditional instructions and materials are used.

While conducting the present study, some suggestions came across the researchers' mind. The first suggestion for the future studies is to include more participants to get more reliable results. The second suggestion for the next studies is to work on other language proficiency levels- elementary, upper-intermediate and advanced. The third suggestion is that future researchers are recommended to conduct similar topics in other geographical areas. The fourth recommendation is that, since the time allocated to the instruction was so limited, upcoming studies are offered to spend much more time on instruction. Finally, future researchers are offered to consider other variables such as autonomy and self-regulation in the CALL-based environment.

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References

- Acat, B. M., & Demiral, S. (2002). Sources of motivation and problems in foreign language learning in Turkey. *Journal of Educational Management in Theory and Practice*, 8(3), 312-329.

- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall.
- Akbulut, Y. (2008). Exploration of the attitudes of freshman foreign language learners toward using computers at a Turkish state university. *Turkish Online Journal of Educational Technology*, 7, 18–31.
- Aydin, S. (2018). Teachers' perceptions about the use of computers in EFL teaching and learning: The case of Turkey. *Computer-Assisted Language Learning*, 26(3), 214–233.
- Ayres, R. (2002). Learner attitudes toward the use of CALL. *Computer-Assisted Language Learning*, 15(3), 241–249.
- Azizi, M., & Nemati, M. (2018). Motivating the unmotivated: making teacher corrective feedback work. *Issues in Language Teaching*, 7(1), 87–110.
- Bodnar, S., Cucchiari, C., Strik, H., & van Hout, R. (2016). Evaluating the motivational impact of CALL systems: Current practices and future directions. *Computer-Assisted Language Learning*, 29(1), 186–212.
- Boo, Z., Dornyei, Z., & Ryan, S. (2015). L2 motivation research 2005–2014: Understanding a publication surge and a changing landscape. *System*, 55, 145–157.
- Chen, C. M., Chen, L. C., & Yang, S. M. (2019). An English vocabulary learning app with self-regulated learning mechanism to improve learning performance and motivation. *Computer-Assisted Language Learning*, 32(3), 237–260.
- Chik, A., & Ho, J. (2017). Learn a language for free: Recreational learning among adults. *System*, 69, 162–171.
- Cohen, J. (1988) *Statistical power analysis for the behavioral sciences (2nd ed.)* Hillsdale, NJ: Erlbaum.
- Delfabbro, P. H., & King, D. L. (2021). The behaviour-attitude divide: Understanding public attitudes towards gambling. *International Gambling Studies*, 21(1), 153–167.
- Dörnyei, Z. (2009). The L2 motivational self-system. In Z. Dörnyei & E. Ushioda (Eds.), *Motivation, language identity and the L2 self* (pp. 9–42). Bristol: Multilingual Matters.
- Erdogan, Y., Bayram, S., & Deniz, L. (2008). Factors that influence academic achievement and attitudes in web-based education.

International Journal of Instruction, 1(1), 31-48.

- Evans, M., & Tragant, E. (2020). Demotivation and dropout in adult EFL learners. *TESL-EJ* 23(4), 1-20.
- Fathi, J., & Rahimi, M. (2020). Examining the impact of flipped classroom on writing complexity, accuracy, and fluency: A case of EFL learners. *Computer Assisted Language Learning*, 1-39.
- Fishbein, M. (1967). *Attitude and the prediction of behavior*. In M. Fishbein (Ed.), *Readings in attitude theory and measurement* (pp. 477-492). New York: John Wiley & Sons.
- Gardner, R. (1985). *Social psychology and second language learning: The role of attitudes and motivation*. London: Edward Arnold.
- Ghahari, S., & Piruznejad, M. (2017). Recast and explicit feedback to young language learners: Impacts on grammar uptake and willingness to communicate. *Issues in Language Teaching*, 5(2), 209-187.
- Ghalami, N. A., & Ahangari, S. (2012). The impact of computer-assisted language learning on Iranian EFL learners tasked-based listening skill and motivation. *Journal of Academic and Applied Studies*, 2(1), 39-61.
- Ghorbani, M. R., & Golparvar, S. E. (2020). Modeling the relationship between socioeconomic status, self-initiated, technology-enhanced language learning, and language outcome. *Computer-Assisted Language Learning*, 33(5-6), 607-627.
- Harasim, L. (2017). *Learning theory and online technologies*. New York: Taylor and Francis.
- He, B., Puakpong, N., & Lian, A. (2015). Factors affecting the normalization of CALL in Chinese senior high schools. *Computer-Assisted Language Learning*, 28(3), 189-201.
- Henry, A. (2013). Digital games and ELT: Bridging the authenticity gap. In E. Ushioda (Ed.), *International perspectives on motivation* (pp. 133-155). Basingstoke: Palgrave Macmillan.
- Hodge, A., Richardson, J. C., & York, C. S. (2009). The impact of a Web-based homework tool in University Algebra courses on student learning and strategies. *Journal of Online Learning and Teaching*, 5(4), 618-629.
- Hurst, G. (2016). Analogue academics 'are failing to inspire learners of the digital age'. *The Times*. Retrieved from <https://www.thetimes.co.uk>.

- Ilic, P. (2015). The effects of mobile collaborative activities in a second language course. *International Journal of Mobile and Blended Learning*, 7(4), 16–37.
- Jahangard, A., Rahimi, A., & Norouzizadeh, M. (2020). Learners' attitudes towards computer-assisted language learning and its effect on their EFL writing. *International Journal of Learning and Teaching*, 12(3), 144–152.
- Keller, J. M., & Litchfield, B. (2001). Motivation and performance. In R. A. Reiser & J. V. Dempsey (Eds.). *Trends and issues in instructional design and technology*. Upper Saddle River, NJ: Merrill/Prentice Hall.
- Kiany, G. R., Mirhosseini, S. A., & Navidinia, H. (2011). Foreign language education policies in Iran: Pivotal macro considerations. *Journal of English Language Teaching and Learning*, 53(222), 49–70.
- Kormos, J., Kiddle, T., & Csizs, K. (2011). Systems of goals, attitudes, and self-related beliefs in second-language-learning motivation. *Applied Linguistics*, 32(5), 495–516.
- Kukulka-Hulme, A., & Viberg, O. (2018). Mobile collaborative language learning: State of the art. *British Journal of Educational Technology*, 49(2), 207–218.
- Lamb, M. (2017). The motivational dimension of language teaching. *Language Teaching*, 50(03), 301–346.
- Lamb, M., & Arisandy, F. E. (2020). The impact of online use of English on motivation to learn. *Computer-Assisted Language Learning*, 33(1-2), 85–108.
- Lambert, W. E., & Gardner, R. C. (1970). Motivational variables in second-language acquisition. *Canadian Journal of Psychology*, 13, 266-272.
- Lebow, D. (1993). Constructivist values for instructional systems design: Five principles toward a new mindset. *Educational Technology, Research and Development*, 41(3), 4-16.
- Li, J., Snow, C., Jiang, J., & Edwards, N. (2015). Technology use and self-perceptions of English language skills among urban adolescents. *Computer-Assisted Language Learning*, 28(5), 450-478.
- Lomicka, L., & Ducate, L. (2021). Using technology, reflection, and noticing to promote intercultural learning during short-term study abroad. *Computer-Assisted Language Learning*, 34(1-2), 35-65.

- Macaro, E., Handley, Z., & Walter, C. (2012). A systematic review of CALL in English as a second language: Focus on primary and secondary education. *Language Teaching*, 45(01), 1–43.
- Marcinkiewicz, H. R., & Regstad, N. G. (1996). Using subjective norms to predict teachers' computer use. *Journal of Computing in Teacher Education*, 13(1), 27-33.
- Meşe, E. & Sevilen, Ç. (2021). Factors influencing EFL learners' motivation in online learning: A qualitative case study. *Journal of Educational Technology & Online Learning*, 4(1), 11-22.
- Mokhtari, H. (2013). Iranian EFL learners' attitude towards CALL. *Procedia - Social and Behavioral Sciences*, 70, 1630-1635.
- Mollaei, F., & Riasati, M. J. (2013). Teachers' perceptions of using technology in teaching EFL. *International Journal of Applied Linguistics and English Literature*, 2(1), 13-22.
- Mostofi, A. (2018). The main reasons for failure in language learning among Iranian high school learners. *Journal of Applied Linguistics and Language Research*, 5(6), 155-174.
- Muftah, M., & Rafic-Galea, S. (2013). Language learning motivation among Malaysian pre-university learners. *English Language Teaching*, 6(3), 92–103.
- Nami, F. (2020). Towards more effective app-assisted language learning: the essential content and design features of educational applications. *Issues in Language Teaching*, 9(1), 245-278.
- Oroujlou, N., & Vahedi, M. (2011). Motivation, attitude, and language learning. *Procedia- Social and Behavioral Sciences*, 29, 994–1000.
- Özer, Z. (2018). An investigation of prospective ELT teachers' attitudes towards using computer technologies in foreign language teaching. *Journal of Language and Linguistic Studies*, 14(1), 328-341.
- Pallant, J. (2005). *SPSS survival manual: A step by step guide to data analysis using SPSS for Windows*. New York: McGraw-Hill
- Pu, M. (2009). *An investigation of the relationship between college Chinese EFL learners' autonomous learning capacity and motivation in using computer-assisted language learning*. (Unpublished doctoral dissertation), University of Kansas.

- Rahayu, D. (2020). Learners' e-learning experience through a synchronous zoom web conference system. *Journal of ELT Research: The Academic Journal of Studies in English Language Teaching and Learning*, 5(1), 68-79.
- Rahimi, M., & Fathi, J. (2021). Exploring the impact of wiki-mediated collaborative writing on EFL learners' writing performance, writing self-regulation, and writing self-efficacy: a mixed methods study. *Computer Assisted Language Learning*, 1-48. <https://doi.org/10.1080/09588221.2021.1888753>.
- Safdari, S. (2019). Imagination, senses and motivation: how are sensory styles, imagery capacity and gender related to motivational attributes of Iranian EFL learners? *Issues in Language Teaching*, 8(2), 275-303.
- Saglam, A. L. G., & Sert, S. (2012). Perceptions of in-service teachers regarding technology integrated English language teaching. *Online Submission*, 3(3), 1-14.
- Shirani Bidabadi, F. (2013). Motivational English language learning strategies through computers among EFL learners. *International Journal of Foreign Language Teaching and Research*, 1(2), 103-112.
- Siemens, G. (2008). *What is the unique idea in connectivism?* Retrieved May 21, 2021, from <http://www.connectivism.ca/?p=116>.
- Sockett, G. (2014). *The online informal learning of English*. Basingstoke: Palgrave Macmillan.
- Speroff, Y. (2016). Using apps for speaking and listening practice (paper presented on *TESOL Greece 37th Annual Convention 2016 in Athens, Greece*). Retrieved on December, 2020 from <https://yuliyasperoffblog.wordpress.com/2016/09/11/using-whatsapp-for-speaking-and-listening-practice/>.
- Suhendi, A., & Purwarno, P. (2018). Constructivist learning theory: The contribution to foreign language learning and teaching. *KnE Social Sciences*, 3(4), 87-95.
- Teo, T. (2006). Attitudes toward computers: A study of post-secondary students in Singapore. *Interactive Learning Environments*, 14(1), 17-24.
- Tremblay, P. F., & Gardner, R. C. (1995). Expanding the motivation construct in language learning. *Modern Language Journal*, 79(4), 505-520.

- Trost, S. G., Pate, R. R., Dowda, M., Ward, D. S., Felton, G., & Saunders, R. (2002). Psychosocial correlates of physical activity in white and African-American girls. *Journal of Adolescent Health, 31*(3), 226-233.
- Ucar, H., & Kumtepe, A. T. (2020). Effects of the ARCS-V-based motivational strategies on online learners' academic performance, motivation, volition, and course interest. *Journal of Computer Assisted Learning, 36*(3), 335-349.
- Vandewaetere, M., & Desmet, P. (2009). Introducing psychometrical validation of questionnaires in CALL research: The case of measuring attitude towards CALL. *Computer-Assisted Language Learning, 22*, 349–380.
- Wang, S. & Reeve, T. (2006). The effects of a web-based learning environment on student motivation in a high school earth science course. *Educational Technology, Research and Development, 54*(6), 597-621.
- Warschauer, M. (1996). Motivational aspects of using computers for writing and communication. In M. Warschauer (Ed.), *Telecollaboration in foreign language learning: Proceedings of the Hawaii symposium* (pp. 29–46). Honolulu, HI, U.S.A.: University of Hawaii, Second Language Teaching & Curriculum Center.