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Research Article

The Effect of Computer-Assisted Autonomous Language Learning (CAALL) on Iranian EFL Learners' Self-Efficacy and Reading Skill Development

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Abstract

This study investigated the effect of CAALL on Iranian EFL learners' self-efficacy and reading skill development. A convenience sampling was run for the selection of the participants. A sample of 220 advanced EFL learners from four private English language institutes in Iran, participated in this study. Three instruments were used including quick placement test, self-efficacy questionnaire, and reading test. The learners' self-efficacy questionnaire and reading test were administered to all the participants. CAAL practice was implemented by autonomous and non-autonomous teachers separately for 110 participants (an experimental group and a control group). The experimental group members received CAALL in virtual mode. They were trained by two teachers on how to be autonomous in their reading performance. For the control group members, the reading practice was executed virtually. But they did not receive the practice of CAALL. They have followed the conventional teaching of reading. The practice was presented through WhatsApp Messenger. The treatment of the study was followed for 16 ninety-minute sessions. After the instructional phase, learners' self-efficacy questionnaire and reading test were administered to all the participants again. This study has some pedagogical contributions for EFL teachers, learners, Language teaching syllabus designers, and language teaching curriculum developers.

Keywords: Autonomous Learning, Learners' Autonomy, CALL, CAALL, Self-Efficacy, Reading Skill Development.

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Introduction

Computer-assisted autonomous language learning (CAALL) It involves the application of technology in learning with an autonomous approach that allows learners to develop self-constructed knowledge and understanding (Lim & Aryadoust, 2022). By integrating formal and informal learning in different and challenging situations, CAALL can help learners to move forward with their favorite learning process and experience learning with more freedom (Tafazoli et al., 2020). CAALL activities have the potential to be used as an integrated component of formal second language learning courses or as supplementary courses in first language learning courses. CAALL provides significant help to non-native L2 teachers who seek to strengthen their L2 skills and expand their knowledge. Also, students are given the opportunity to demonstrate how to realize their L2 skill acquisition outside of the classroom (Ghufron & Nurdianingsih, 2021).

CAALL can take many forms, which is the use of electronic technology used in second language learning. Tools such as computer and internet technology, wired and wireless telephone, television and radio or a combination of all of them will interact effectively in this approach (Luu et al., 2021). CAALL is based on the latest theory and studies available on second language learning, psychology and CALL. Concepts that show how to use technology in the best way to improve L2 skills in the fields of listening, speaking, reading are derived from existing theory and studies in this field (Park & Son, 2022).

Obviously, language includes a set of emotional factors, one of which is the feeling of self-efficacy, which is a debatable topic in the teaching process and refers to people's confidence in their ability to perform a specific task (Bartimoto-Afflick et al., 2016; Fathi). et al., 2021). Self-efficacy is a type of learner's confidence in their performance in solving school-related challenges, so that they can develop several tactics to adapt. Since this approach is in harmony with the principles of learners in the development of effective performance, it encourages learners to maximize the use of talents and realize the achievement of the anticipated goals through the provided inference activities (Downes et al., 2017).

Learners' trust in their performance to achieve a desired educational outcome has been defined as self-efficacy, which is closely related to students' academic progress (Kitsantas et al., 2011). Self-efficacy plays a prominent role in many emerging policies and practices around the development of students' social-emotional skills, and it has been shown that improving self-efficacy can significantly reduce learning achievement gaps (Feyzioglu, 2019; Genç et al., 2016; Ringeisen et al., 2019).

Self-efficacy is not only a key factor in predicting students' academic performance (Jin & Harp, 2020) but also a message due to the characteristic of self-regulatory cycles (Scherer & Siddiq, 2015). Searches and past can have further effects in the self-regulation stage. Therefore, instructional language with better performance and positive feedback from peers/teachers may feel

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more therapeutic (Zhang et al., 2018). Self-efficacy is based on the cognitive efforts and evaluation of people to carry out activities, lasting time in dealing with challenges and levels and improvements. High-performing learners are willing to set complex challenges, work, persevere when faced with problems, and recover after problems (Bartimote-Aufflick et al., 2016).

The main objective of any language course is to educate students on reading abilities. Reading comprehension is a fundamental skill for all language learners, including those in high school. Consequently, students must enhance their reading comprehension to pursue further education or successfully complete the various assignments assigned by their teachers. To date, numerous teaching methodologies have been implemented in the field of English education, with a specific focus on improving reading comprehension (Grabe, 2010).

The advance in technology inducement in the language teaching field emphasizes the necessity of training more autonomous students who are supposed to take responsibility for their own learning. The abundance of information around each topic may confuse students in choosing the best options from the information pool. Being autonomous has some prerequisite conditions. Two main elements of autonomy are self-regulation and self-efficacy factors. On the other hand, CAALL allows students to engage in technology-integrated training more autonomously.

Review of the Literature

One of the biggest growths of CALL is that other language teachers adhere to grammar practice as the main purpose of computer use in the classroom. The movement toward computer-mediated communication education is clearly expanding (Lee, 2022). Vocabulary software has started to become textual and includes graphics, sound recording, playback and video. More detailed error checking can help students with the feedback they receive and guide them to practice more or move them to the next step. Those who need more help with aspects of language that improve with practice can use mini-programs and mini-tasks to give them extra time and help outside of regular classroom time (Zaghlool, 2020).

Autonomy serves as a key objective in educational settings for various reasons. Learner autonomy holds significance in the realm of applied linguistics, not just because it empowers learners to steer their own learning journey, but also because it equips them to become self-reliant language users (Mehdiyev, 2020). This implies that students play an active role not only in determining what they learn, but also in setting their own objectives and devising strategies to accomplish them. Autonomy also fosters a more introspective and critical approach to students' performance, enabling them to better understand and engage with the world around them (Kashefian-Naeeini & Kouhpeyma, 2020).

The popularity of learner autonomy may be related to the growth of computer technology and the increasing use of computers in language teaching environments around the world (Marandi, 2023). CALL has much to offer to foster autonomy because of its ability to provide

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multiple and varied opportunities for self-direction and the possibility of using computers to provide strategy instruction (Shortt et al., 2023). Promoting learner autonomy, the language context is a key factor in the successful use of digital technologies for second language development (Lai 2017; 2019). According to Ariebowo (2021), promoting the independence of language teaching is a key factor in the successful use of digital technologies for second language development.

According to Tsai and Tsai (2020), CAALL refers to the process of using Internet-based materials, computers, multimedia, and technological devices in learning, emphasizing autonomous learning principles and procedures aiming to maximize both learners' level of learning autonomy and language achievement in an integrative way. Practically, CAALL is the use of technology in various forms in the learning process aiming to increase the autonomy of learners. In such an approach, the ultimate goal is to gradually transfer the responsibility of learning independently to the learners by relying on educational technologies such as social networks, blogs, wikis, and educational hyperlinks.

Bandura (1977) is credited with coining the term self-efficacy, which has since become a prominent area of research. According to Bandura, self-efficacy refers to an individual's belief in their capability to successfully carry out a specific activity or task. It involves making a judgment about one's confidence in their performance (Graham, 2022). While self-efficacy is distinct from ability and motivation, these factors are closely intertwined. In essence, self-efficacy represents an individual's personal determination of their capacity to tackle various tasks (Izadpanah, 2022). Importantly, this determination is not solely based on past experiences or existing skills, but rather on students' perceptions of their knowledge and abilities in relation to the given task or situation (Feyzioglu, 2019).

According to Bandura (2006), self-efficacy includes students' self-judgment about what they can do to accomplish certain tasks to achieve desired outcomes. In the present study, self-efficacy refers to the judgment of Iranian secondary English speakers regarding their use in performing a certain task. In practice, it refers to learners' judgments about their plans to organize and implement the courses needed to achieve a set of performance types.

The concept of self-efficacy is shaped by various factors, namely active mastery experience, vicarious experiences, social persuasion, and physiological and emotional capacity. Active mastery experience refers to practical experience, while vicarious experiences pertain to the experiences of others. Social persuasion involves evaluation or feedback from others, and physiological and emotional capacity encompasses factors such as stress, mood, pain, and past experiences (Genç et al., 2016). Among these sources, mastery experiences are considered the most influential in determining effectiveness. Once established, increased self-efficacy extends to other areas, with the greatest impact observed in activities closely related to the ones in which self-

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efficacy has been enhanced (Zhang et al., 2018). In the realm of education, self-efficacy plays a crucial role in student success as it influences learners' behavior and decision-making (Graham, 2022).

Self-efficacy plays a crucial role in influencing key performance factors, such as expressing an opinion and persisting in completing a task (Genç et al., 2016). Individuals form beliefs about their ability to handle specific situations, which can impact their behavior within their surroundings. Essentially, students have the power to shape their environment in either a positive or negative manner. Those with low self-efficacy tend to struggle with academic performance and are more prone to giving up easily when faced with challenges (Izadpanah, 2022). Consequently, students who lack confidence in their abilities may exert less effort towards achieving their goals, leading to diminished success and further erosion of their self-efficacy (Feyzioglu, 2019).

Many researches show that students' sense of efficacy affects their academic performance in different ways. It has been proven that students with a strong sense of academic self-efficacy perform challenging tasks willingly, exert more effort, show more persistence in the presence of obstacles, show lower levels of anxiety, and show flexibility in using learning strategies. They give and adjust themselves. Better than other students (Izadpanah, 2018). Students with high self-efficacy also often show accurate evaluation of their academic performance and more intrinsic interest in academic issues and achieve higher intellectual achievements (Genç et al., 2016). Students with low self-efficacy, conversely, may only perform uncomplicated academic tasks that require minimal effort and limited persistence or may avoid completing an academic assignment altogether (Graham, 2022).

However, when students perform activities or tasks, they can now increase self-efficacy. Not only is self-efficacy a predictor of learners' academic outcomes, but self-efficacy learners can adapt and cope well, even when they have prior online experience (McEown & Oga-Baldwin, 2019). However, if students feel that the information being learned about the subject or what is left to do is of little value compared to what is already known, they may still not be motivated to try (Genç et al., 2016).

Self-efficacy is a predictor of students' language success in the language and, if possible, can explain the ability to limit language in the target language (Truong & Wang, 2019). Students with different levels of self-efficacy interpret failures differently. Those with self-efficacy have usually experienced failures as a result of insufficient search. while those with low self-efficacy attribute themselves to being imperfect (Cai et al., 2021). A person's attitude may affect the amount of effort a person puts into using it, and students with low self-efficacy perform tasks. Hence, self-efficacy may affect a person's thinking, motivation, feeling, behavior and actions (Li & Yang, 2021).

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The academic progress of students is influenced by their level of knowledge. This implies that students who possess greater intellectual capacity are more likely to achieve higher levels of success compared to those with lower intellectual competencies (Graham, 2022). The perception of self-efficacy among students plays a crucial role in determining their academic performance. However, it is important to note that academic achievement is influenced by various factors, and simply possessing knowledge and skills does not guarantee success (Truong & Wang, 2019). Self-efficacy can assist students in utilizing cognitive and self-regulatory strategies within the classroom, particularly in predictable situations. Individuals with high self-efficacy are adept at employing academic self-regulation skills such as setting goals, self-evaluation, self-monitoring, time planning, and utilizing available resources (Cai et al., 2021).

Academic self-efficacy encompasses various aspects such as self-efficacy expectations, perceived self-efficacy, controlled self-efficacy, and academic self-regulation skills. Self-efficacy expectations play a crucial role in determining how individuals respond to challenging situations, the level of effort they exert, and their ability to persist despite obstacles (Truong & Wang, 2019). Perceived self-competence serves as an intrinsic motivation to feel capable and competent. Merely possessing the necessary skills or knowledge is insufficient when faced with difficult circumstances (Graham, 2022). In reality, many individuals struggle to apply their skills effectively in challenging situations. Self-efficacy emerges as a significant factor in determining their success when confronted with adversity. Students exhibit a wide range of abilities in managing academic demands (Lee & Yang, 2021).

Challenging and intricate reading involves a combination of skills such as semantics, knowledge, and problem-solving that can be cultivated in EFL/ESL settings (Nasrollahi, 2014). Insufficient reading skills can pose a significant challenge for learners, as reading proficiency plays a crucial role in vocabulary development and understanding the meaning of languages (Karimi et al., 2019). Reading holds great importance in the process of acquiring a new language (Aharony & Bar-Ilan, 2018; Cahyaningati & Lestari, 2018). It serves as a means to acquire knowledge, information, or entertainment through written words (Reed et al., 2016; Zare & Maftoon, 2014), and it begins during early school years and continues throughout students' lives. Reading is the fundamental tool for learning, and it is widely acknowledged as the most enduring and reliable L2 skill (Maro et al., 2020).

According to Grabe (2009), reading is the reading done by readers to obtain the messages conveyed by the writer through the flow of words or language. Reading is an active activity. The receiver, that is, while reading, the reader receives the information or message that the writer conveys. The reader is active while reading and performs operational activities using his/her visual and cognitive tools to interpret the symbols. The language learner sees them and interprets them to understand the read material.

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Reading skills are one of the most important requirements for effective English language learning. Acquiring reading skills can have an undeniable impact on the development of other learning skills including listening, writing and speaking. In reading skill, the learner tries to find out the meaning of words and sentences by relying on vocabulary knowledge and receiving the desired text message. In this comprehensive process, he should be actively present in stages such as thinking, meaning reconstruction and problem solving. From this point of view, reading comprehension can be considered as an attractive process for realizing reading skills (Habibian & Roslan, 2014).

Research has shown that English language learners have many problems in learning reading skills (Khansir & Gholami Dashti, 2014; McNamara, 2009; Mezhgan & Seyed, 2017). The main problems are lack of knowledge of appropriate vocabulary and insufficient knowledge of language structures (Lukhele, 2013). The main reasons for students' weakness in acquiring reading skills can be classified as follows: 1) Insufficient knowledge of vocabulary. 2) Failure to use effective strategies. 3) lack of schematic knowledge; and 4) insufficient motivation to study (Irfan, 2017).

Based on the aforementioned problems, the following research question is formulated:

RQ_1: Does computer-assisted autonomous language learning significantly affect Iranian EFL learners' self-efficacy?

RQ_2: Does computer-assisted autonomous language learning significantly affect Iranian EFL learners' reading skill?

Method

Participants

Convenience non-random sampling was run for the selection of the participants. A sample of 220 advanced EFL learners from four private English language institutes in Iran, participated in this study. To choose the related proficiency level for participants, the researcher conducted a Quick Placement Test (QPT) on all the available learners. They were both male and female advanced-level EFL learners aged from 15 to 22. From an ethical perspective, the participants signed consent forms that guaranteed the confidentiality of their participation.

Table 3.1

Demographic Background of the Participants

No. of Students	
Gender	134 Females & 86 Males
Native Language	Persian
Setting	Shokoufa Language Center (39) Kish Language Institute (42)

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	Chista Language School (51) Kanoon Language Center (88)
Time of Data Collection	Around 3 months

Instruments

The Quick Placement Test (QPT): It was conducted to ensure that all participants entered the program at the same level. Developed by Oxford University Press and the University of Cambridge Local Examinations, the QPT measured the participants' language proficiency. The test took approximately 30 minutes to complete and consisted of multiple-choice questions. Based on the test's rubric, participants who scored above 36 were considered advanced-level. Only those who achieved this score were invited to participate in further tests.

Self-Efficacy: Gaumer-Erickson et al. (2016) developed this survey, which consists of 13 items on a Likert scale ranging from "strongly disagree" to "strongly agree." Its purpose is to assess the self-efficacy levels of learners. To evaluate learners' self-efficacy magnitudes before and after the instructional phase, pre- and post-tests were conducted as part of this study. In terms of reliability, the questionnaire underwent a pilot test, and the Cronbach Alpha formula was used to calculate the reliability coefficient. Based on the existing literature in the TEFL field (Gaeta González et al., 2021; Romans et al., 2020; Vestad et al., 2022), the reported reliability coefficient was approximately 85%. This questionnaire was administered to address the second research question of the study, which aimed to examine fluctuations in learners' self-efficacy levels during the pre and post-tests phase.

Reading Comprehension Test: A reading comprehension test at an intermediate level of proficiency was taken from the British Council website. This test was used by the researcher to assess the reading comprehension performance of the learners before and after the instructional phase. To ensure reliability, the questionnaire was tested and the reliability coefficient was calculated using the Cronbach Alpha formula. In terms of validity, the researcher sought feedback from experts in the TEFL field to evaluate the test, and made revisions based on their comments. This questionnaire was administered to address the third research question, which aimed to determine the fluctuations in learners' reading comprehension ability during the pre and post-test phases of the study.

Data Collection Procedure

Before the instructional phase, the learners' self-efficacy questionnaire and reading test were administered to all the participants. CAAL practice was implemented by autonomous and non-autonomous teachers separately for 110 participants (an experimental group and a control group). The experimental group members received CAALL in virtual mode. They were trained by two teachers on how to be autonomous in their reading performance. To do this, learners were given

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the flexibility to ignore some feedback in order to focus on aspects of the writing they found most interesting, such as topic development. Instead of giving points for not correcting identified errors, the teacher simply asked the student to defend their editing and revision choices. Validity depends on the strength of the defense. As an autonomy-supportive exercise to determine learners' subjective needs and incorporate them into the daily lesson, the instructor can ask learners what they need. Another type of autonomy-supportive practice is when instructors give learners time to solve a topic in their own way, as the instructor allows learners' interests and inclinations to guide their classroom activity. The teachers informed them about the concept and practiced the principles and parameters of CAALL while teaching reading. They were encouraged to use CAALL to share and receive feedback on their own work to revise or reconstruct it. For the control group members, the reading practice was executed virtually. But they did not receive the practice of CAALL. They have followed the conventional teaching of reading. The practice was presented through WhatsApp Messenger. The treatment of the study was followed for 16 ninety-minute sessions. After the instructional phase, the learners' self-efficacy questionnaire and reading test were administered to all the participants again. The gathered data were analyzed through SPSS to answer the research questions.

Results

Analysis of the First Research Question

The first research question of this study was as follows:

RQ_1: Does computer-assisted autonomous language learning significantly affect Iranian EFL learners' self-efficacy?

The following null hypothesis was generated based on the second research question:

$H0_1$: Computer-assisted autonomous language learning does not significantly affect Iranian EFL learners' self-efficacy.

In order to answer this question, first, the descriptive statistics for pre-test scores are presented in the following table.

Table 4.1

The Descriptive Statistics for Pre-Test Scores

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
Self Eff Ex Pre	110	41	18	59	33.57	8.669	75.146
Self Eff Crl Pre	110	42	18	60	33.16	10.233	104.707

Table 4.1 displays the pre-test scores, revealing that the means are 8.669 and 10.233 for the experimental and control groups, respectively. It is worth noting that the mean for the experimental group is lower than that of the control group (10.233 > 8.669). However, it is necessary to determine whether this difference is statistically significant. In order to do so, the normality of the

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datasets was assessed initially. Given that the sample size was below 100, the Shapiro-Wilk test was conducted to examine the normality of the pre-test scores. The normality statistics for the pre-test scores can be found in Table 4.2 below.

Table 4.2

The Normality Statistics for Pre-Test's Scores

	Shapiro-Wilk		
	Statistic	df	Sig.
Self Eff Ex Pre	.957	110	.001
Self Eff Crl Pre	.887	110	.000

As indicated in Table 4.2, the significance values of the pre-test scores are 0.001 and 0.000, respectively. Both of these significance values are below the critical value of 0.05 (0.05 > 0.001 and 0.05 > 0.000), indicating that the scores do not follow a normal distribution.

The distribution diagram for the pre-test scores of the experimental group is illustrated in the figure below.

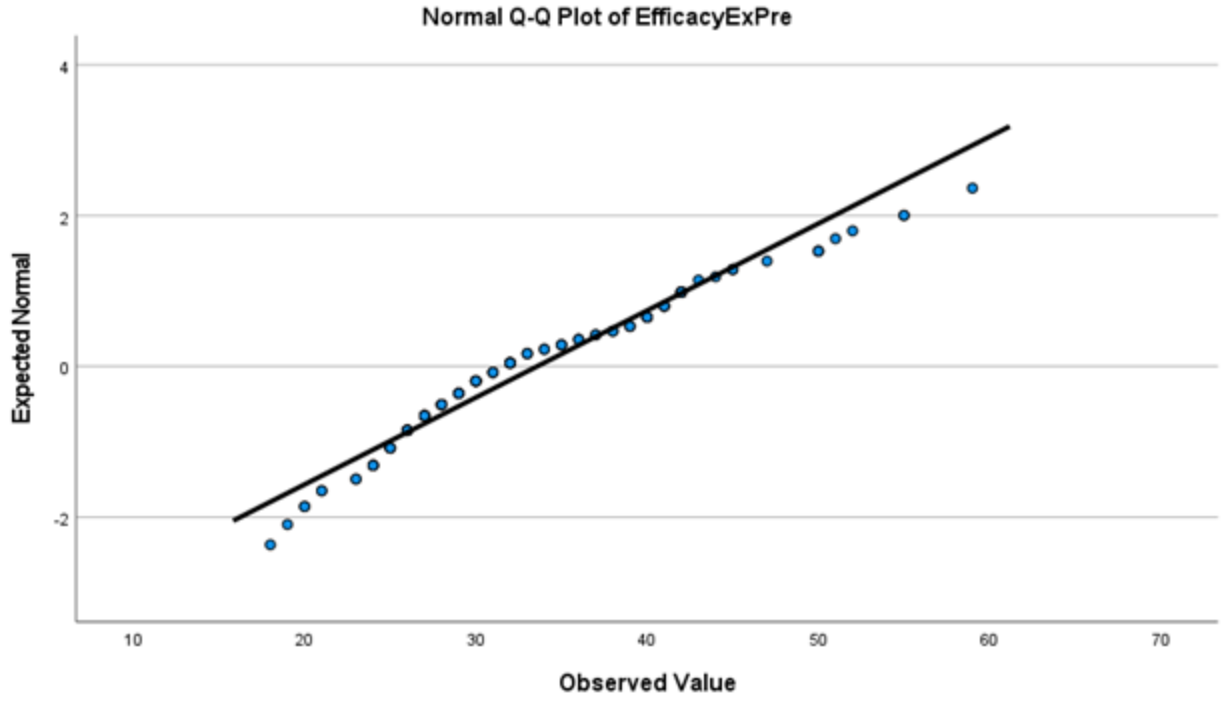

Figure 4.1 *The Distribution Diagram for Experimental Group Pre-Test Scores*

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The following figure shows the distribution diagram for the control group pre-test scores.

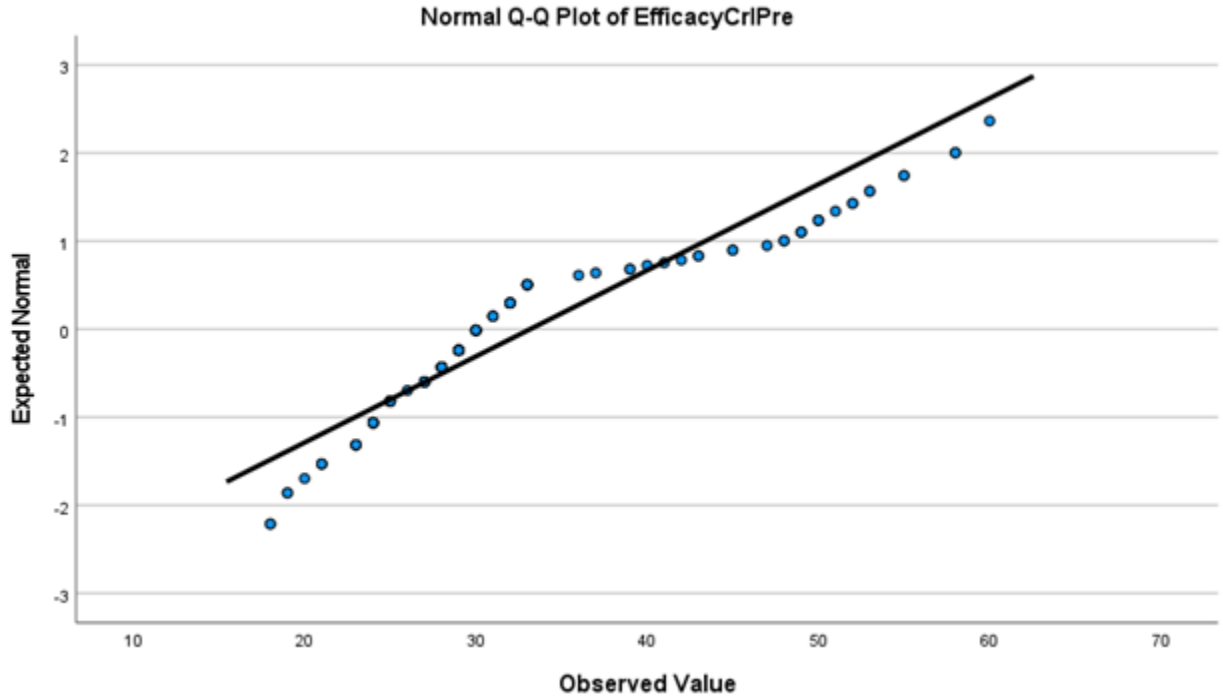

Figure 4.2 *The Distribution Diagram for Control Group Pre-Test Scores*

The researcher employed a nonparametric test, specifically the Mann-Whitney U-Test, to analyze the pre-test scores. This choice was made due to the non-normal distribution of the scores and the fact that they belonged to two distinct groups. Table 4.3 displays the inferential statistics for the pre-test scores.

Table 4.3

The Inferential Statistics for Pre-Test Scores

Self-efficacy Pre-test	
Mann-Whitney U	5628.500
Wilcoxon W	11733.500
Z	-.894
Asymp. Sig. (2-tailed)	.371

Table 4.3 displays the results, indicating that the significance value is 0.371, surpassing the critical value of 0.05 (0.371 > 0.05). This implies that there is no statistically significant difference

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between the means of the pre-test scores. Consequently, the observed disparity between the means of the two sets of scores lacks statistical significance. Moving forward with the analysis, the researcher proceeded to examine the post-test scores. To accomplish this, the descriptive statistics for the post-test scores are provided in the subsequent table.

Table 4.4

The Descriptive Statistics for Post-Test Scores

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
Self Eff Ex Post	110	47	22	69	40.07	9.351	87.444
Self Eff Crl Post	110	35	20	55	30.81	8.893	79.092

Table 4.4 displays the post-test scores with means of 40.07 and 30.81 for the experimental and control groups, respectively. The mean for the experimental group is higher than that of the control group (40.07 > 30.81), but it is crucial to ascertain the significance of this difference. The normality of the datasets was first evaluated by performing the Shapiro-Wilk test since the sample size was below 100. The normality statistics for the post-test scores are outlined in Table 4.5 below.

Table 4.5

The Normality Statistics for Post-Test Scores

	Shapiro-Wilk		
	Statistic	df	Sig.
Self Eff Ex Post	.960	110	.002
Self Eff Crl Post	.875	110	.000

Based on Table 4.5, it is evident that the significance values of the pre-test scores are 0.002 and 0.000, respectively. Since both significance values are below the critical value of 0.05 (0.05 > 0.002; 0.05 > 0.000), we can infer that the post-test scores do not follow a normal distribution. The distribution diagram for the post-test scores of the experimental group is illustrated in the subsequent figure.

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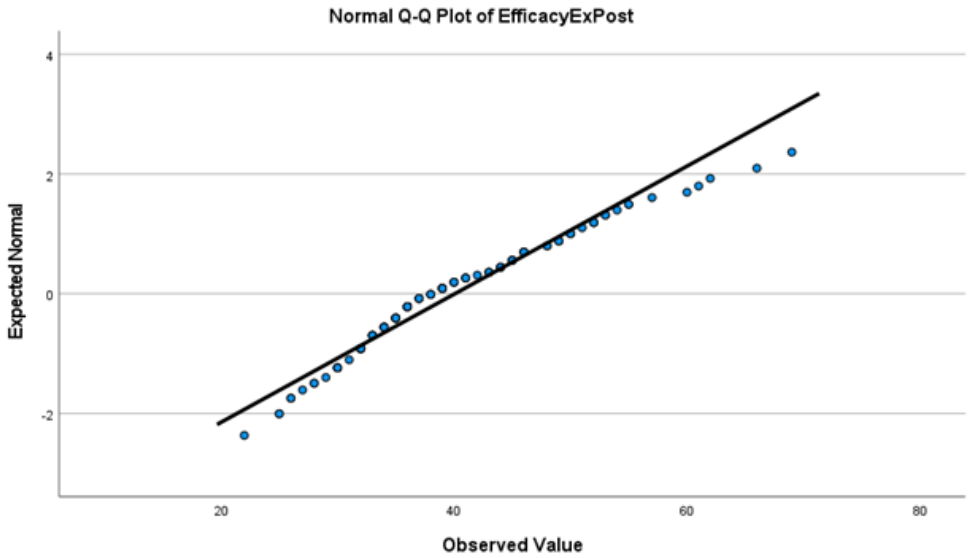

Figure 4.3 *The Distribution Diagram for Experimental Group Post-Test Scores*

The following figure shows the distribution diagram for the control group post-test scores.

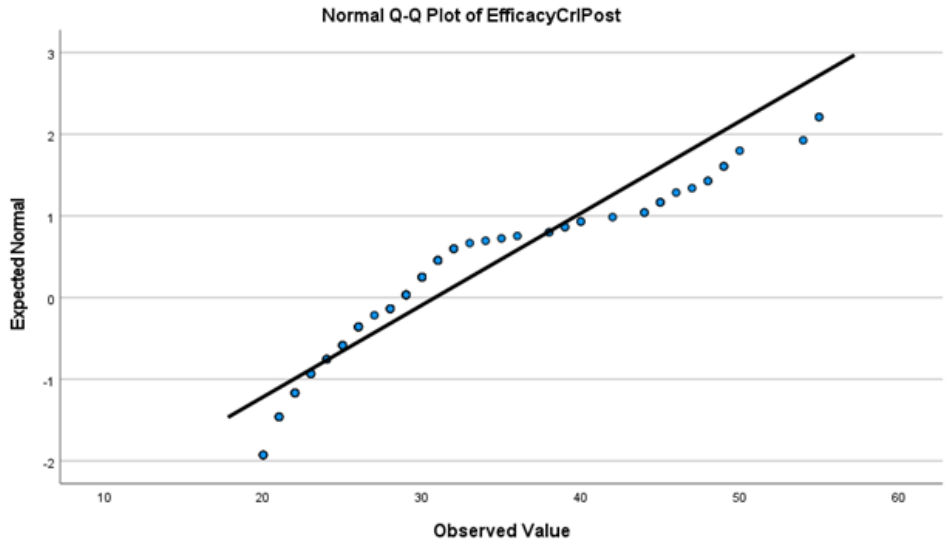

Figure 4.4 *The Distribution Diagram for Control Group Post-Test Scores*

Since the post-test scores were not normally distributed, the researcher used a nonparametric test i.e., the Mann-Whitney U-Test (because two sets of scores belonged to two different groups) to

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present inferential statistics for the comparison of means. In Table 4.6, the inferential statistics of pre-test scores are presented.

Table 4.6

The Inferential Statistics for Post-Test Scores

	Self-efficacy Post-test
Mann-Whitney U	2528.500
Wilcoxon W	8633.500
Z	-7.465
Asymp. Sig. (2-tailed)	.000

As illustrated in Table 4.6, the significance value is 0.000, which is below the critical value of 0.05 (0.000 < 0.05). This indicates that there is a statistically significant difference between the two means of post-test scores. This suggests that the disparity in means between the two sets of scores is statistically meaningful. Consequently, the researcher is able to confidently reject the second null hypothesis of the study. It can be concluded that computer-assisted autonomous language learning has a significant impact on the self-efficacy of Iranian EFL learners.

Analysis of the Second Research Question

The second research question of this study was as follows:

RQ_2: Does computer-assisted autonomous language learning significantly affect Iranian EFL learners' reading skill?

The following null hypothesis was generated based on the third research question:

$H0_2$: Computer-assisted autonomous language learning does not significantly affect Iranian EFL learners' reading skill.

In order to answer this question, first, the descriptive statistics for pre-test scores are presented in the following table.

Table 4.7

The Descriptive Statistics for Pre-Test Scores

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
Reading Ex Pre	110	9	7	16	11.54	2.309	5.334
Reading Crl Pre	110	8	8	16	11.55	2.337	5.460

Table 4.7 displays the pre-test scores, revealing means of 11.54 and 11.55 for the experimental and control groups, respectively. Notably, the mean for the experimental group is lower than that of the control group (11.55 > 11.54). However, it is necessary to determine whether this difference is statistically significant. In order to do so, the normality of the datasets was assessed initially. Given

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that the sample size was below 100, the Shapiro-Wilk test was conducted to examine the normality of the pre-test scores. The normality statistics for the pre-test scores can be found in Table 4.8 below.

Table 4.8

The Normality Statistics for Pre-Test's Scores

	Shapiro-Wilk		
	Statistic	df	Sig.
Reading Ex Pre	.949	110	.000
Reading Crl Pre	.908	110	.000

As can be seen in Table 4.8, the sig values of the pre-test scores are 0.000 and 0.000, respectively. These sig values are less than the critical value i.e., 0.05 (0.05 > 0.000 and 0.05 > 0.000). It means that the scores are not normally distributed. The following figure shows the distribution diagram for the experimental group pre-test scores.

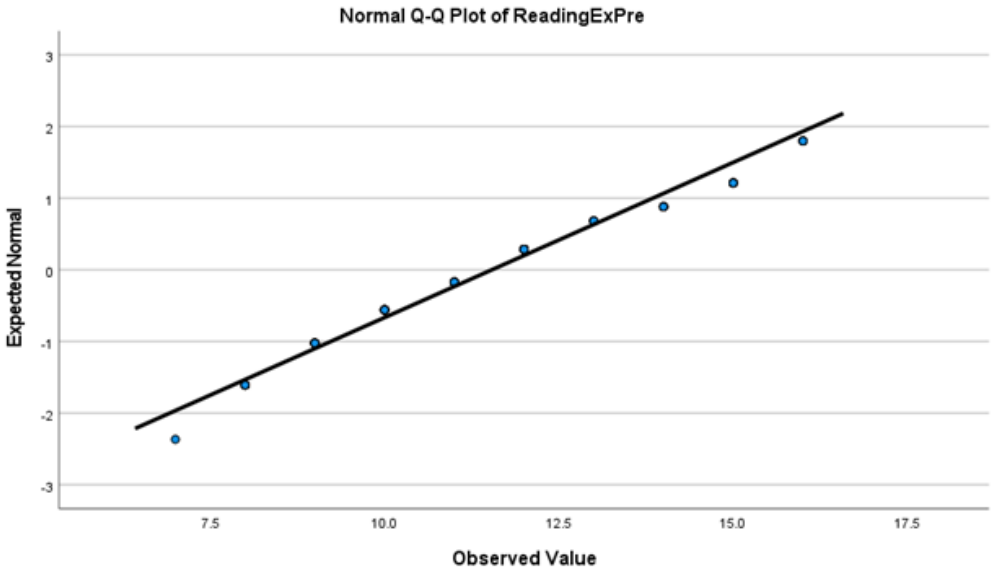

Figure 4.5 *The Distribution Diagram for Experimental Group Pre-Test Scores*

The following figure shows the distribution diagram for the control group pre-test scores.

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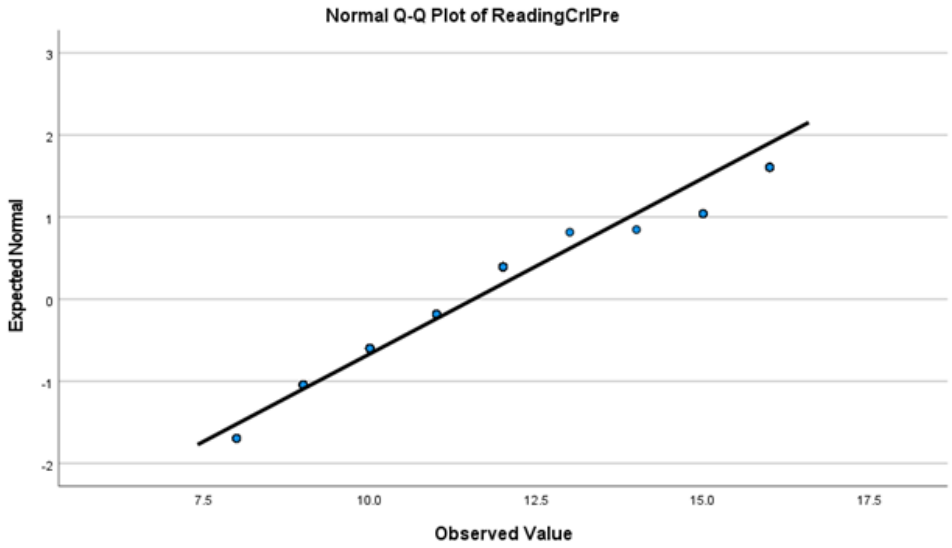

Figure 4.6 *The Distribution Diagram for Control Group Pre-Test Scores*

The researcher employed a nonparametric test, specifically the Mann-Whitney U-Test, to analyze the pre-test scores. This choice was made due to the non-normal distribution of the scores and the fact that they belonged to two distinct groups. Table 4.9 displays the inferential statistics for the pre-test scores.

TABLE 4.9

The Inferential Statistics for Pre-Test Scores

	Reading Pre-test
Mann-Whitney U	6020.500
Wilcoxon W	12125.500
Z	-.063
Asymp. Sig. (2-tailed)	.950

As illustrated in Table 4.9, the significance value is 0.950, which exceeds the critical value of 0.05 (0.950 > 0.05). This indicates that there is no statistically significant difference between the pre-test scores. The observed variance in the means of the two sets of scores is not statistically meaningful. Moving forward with the analysis, the researcher proceeded to examine the post-test scores. The descriptive statistics for the post-test scores are provided in the subsequent table for further investigation.

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Table 4.10
The Descriptive Statistics for Post-Test Scores

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
Reading Post	110	8	10	18	14.40	1.863	3.472
Reading Crl Post	110	7	8	15	10.78	1.330	1.768

In Table 4.10, it is evident that the mean post-test scores are 14.40 and 10.78 for the experimental and control groups, respectively. The mean for the experimental group surpasses that of the control group (14.40 > 10.78), however, it is essential to determine whether this variance is statistically significant. Initially, the normality of the datasets was assessed by conducting the Shapiro-Wilk test due to the sample size being less than 100. The normality statistics for the post-test scores can be found in Table 4.11 below.

Table 4.11
The Normality Statistics for Post-Test Scores

	Shapiro-Wilk		
	Statistic	df	Sig.
Reading Post	.960	110	.002
Reading Post	.908	110	.000

According to Table 4.11, the significance values for the pre-test scores are 0.002 and 0.000. Since both values are below the critical value of 0.05 (0.05 > 0.002; 0.05 > 0.000), we can infer that the post-test scores do not follow a normal distribution. The distribution diagram for the post-test scores of the experimental group is illustrated in the figure below.

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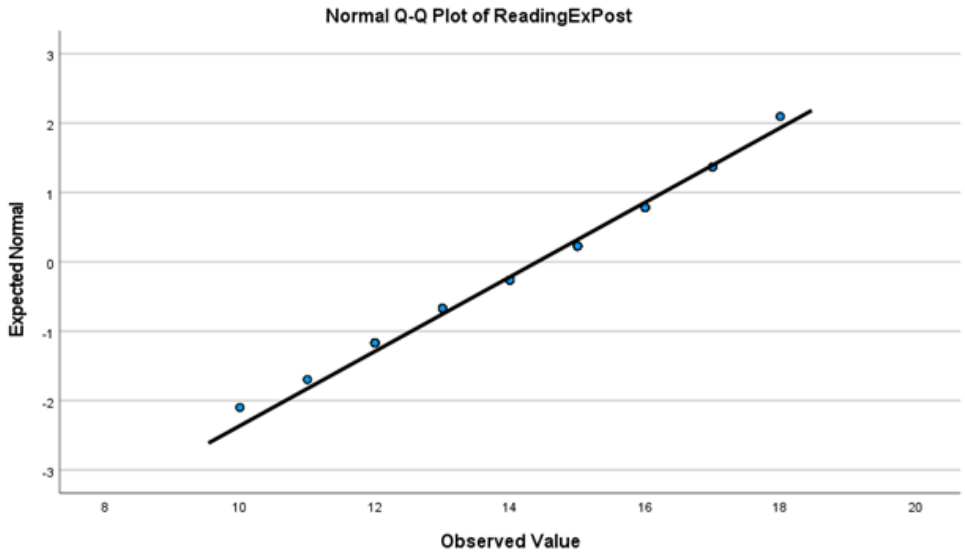

Figure 4.7 *The Distribution Diagram for Experimental Group Post-Test Scores*

The following figure shows the distribution diagram for the control group post-test scores.

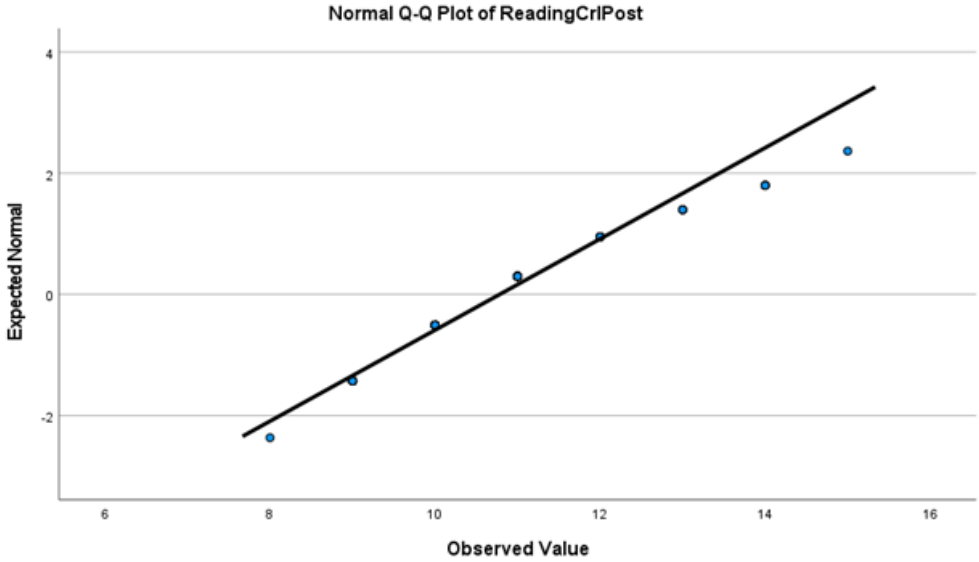

Figure 4.8 *The Distribution Diagram for Control Group Post-Test Scores*

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Since the post-test scores were not normally distributed, the researcher used a nonparametric test i.e., the Mann-Whitney U-Test (because two sets of scores belonged to two different groups) to present inferential statistics for the comparison of means. In Table 4.12, the inferential statistics of pre-test scores are presented.

TABLE 4.12

The Inferential Statistics for Post-Test Scores

Reading Post-test	
Mann-Whitney U	814.500
Wilcoxon W	6919.500
Z	-11.185
Asymp. Sig. (2-tailed)	.000

Based on the data presented in Table 4.12, the significance value is 0.000, which is below the critical value of 0.05 (0.000 < 0.05). This indicates a statistically significant difference between the post-test scores. Therefore, the researcher is justified in rejecting the second null hypothesis of the study. Moreover, it is evident that computer-assisted autonomous language learning has a significant impact on the reading skills of Iranian EFL learners.

Discussion

The analysis of data indicated a significant impact of computer-assisted autonomous language learning on the self-efficacy and reading skill development of Iranian EFL learners. The first key finding of the study highlights how the democratic nature of CAALL empowers learners to showcase their full potential, helping them overcome learning anxiety, fears, and tension. It was found that students with lower self-efficacy tend to dread learning activities, expect failure, and view challenging tasks as threats, leading to increased anxiety and feelings of shame (Wang & Bai, 2017). On the other hand, students with higher perceived competence and a sense of control are more likely to embrace challenges, anticipate success, and experience positive emotions upon achieving learning goals (Sun, 2018).

Viewing the initial discovery from a different perspective reveals that CAALL employs a method that aids learners in shaping their self-perception regarding their learning achievements. When learners witness their peers successfully completing a task, they develop positive attitudes towards their own abilities in performing the same task, thus boosting their self-efficacy (Graham, 2022). Encouragement and positive feedback play a crucial role in influencing self-efficacy. Learners tend to build strong self-efficacy in a specific task when they receive support from mentors, advisors, or superiors who are respected for their expertise in the relevant field (Cai et al., 2021). Lastly, physiological and emotional factors like fatigue and anxiety impact self-efficacy. Learners who experience low anxiety levels during task execution feel more comfortable and view

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the situation positively, thereby reinforcing their self-efficacy beliefs (McEown & Oga-Baldwin, 2019).

Based on the study's findings, CAALL has the potential to enhance learners' tolerance for ambiguity, enabling them to develop their own learning identity more independently. Recent research indicates that practicing self-efficacy can impact the level of anxiety we feel when completing tasks. Consequently, our decision-making process is influenced by self-efficacy. It is argued that self-efficacy is a more reliable predictor of success and accomplishment compared to other related factors, as students with higher self-efficacy levels exert more effort in carrying out tasks and demonstrate greater persistence than those with lower self-efficacy levels (Graham, 2022). Self-efficacy also affects an individual's emotional responses. When confronted with challenges, individuals with low self-efficacy may perceive the situation as more difficult and demanding than it actually is. This can result in heightened levels of anxiety and stress, potentially leading to demotivation when facing obstacles (Genç et al., 2016).

The recent findings of this study have been supported by other studies, indicating that self-efficacy plays a crucial role in motivating language learners. Self-efficacy beliefs impact various aspects of human functioning, including cognition, motivation, emotions, and decision-making. It is widely acknowledged that having knowledge alone is not enough for effective practice; individuals also need to possess self-efficacy beliefs to effectively apply their knowledge (Cai et al., 2021). Research has demonstrated that an increase in self-efficacy has a positive impact on motivation, achievement, and confidence (McEown & Oga-Baldwin, 2019). The sense of self-efficacy is closely intertwined with students' behavioral, cognitive, and motivational engagement, ultimately influencing their learning and achievement. As learners develop higher levels of self-efficacy, they become more engaged, leading to improved performance (Habibian & Roslan, 2014).

Conclusion

The progress in technology has led to a greater emphasis on training students to become more independent in their language learning. It is important for students to take responsibility for their own learning, as there is an overwhelming amount of information available on each topic, which can be confusing. However, being autonomous requires certain conditions to be met. Two key elements of autonomy are self-regulation and self-efficacy. Additionally, Computer-Assisted Autonomous Language Learning (CAALL) enables students to participate in technology-integrated training in a more independent manner.

Providing students with the knowledge and skills to effectively manage their own educational process is a key objective of higher education (Alyaz & Genc, 2016). Autonomy has emerged as a central theme in language education research within the evolving education system and in light of recent global developments (Rose et al., 2018). The development of self-efficacy

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among language learners throughout a course is crucial for ensuring their continued success as learners in the future. Bandura (1997) highlighted that self-efficacy is a more reliable predictor of behavior and achievement compared to other related variables. He emphasized that self-efficacy plays a significant role in human agency and decision-making processes. Bandura also argued that acquiring new skills and applying them in real-life situations are closely linked to self-efficacy beliefs, more so than other self-constructs. Therefore, self-efficacy is instrumental in understanding why individuals with similar levels of knowledge exhibit different behaviors (Cai et al., 2021).

The level of challenge individuals set for themselves, the amount of effort they exert, and their ability to persist in the face of obstacles are all influenced by their perceived self-efficacy. According to Graham (2022), perceived self-efficacy is believed to directly and indirectly impact performance achievements by influencing the goals individuals set for themselves. Perceived self-efficacy refers to an individual's belief in their ability to successfully complete a specific task. Students with high self-efficacy are more likely to actively engage in learning tasks and achieve higher academic scores compared to those with low self-efficacy. Conversely, low self-efficacy has been linked to academic failure (Li & Yang, 2021).

Reading proficiency is a crucial prerequisite for successful acquisition of the English language. The acquisition of reading skills can undeniably influence the development of other essential learning abilities, such as listening, writing, and speaking. When honing their reading skills, learners strive to comprehend the meaning of words and sentences by drawing upon their vocabulary knowledge and comprehending the intended message of the text. Throughout this comprehensive process, active engagement in various stages, including critical thinking, meaning reconstruction, and problem-solving, is imperative.

The current study's findings offer implications that can benefit English language teachers, students, EFL learners, language curriculum program policymakers, and educational syllabus designers. CAALL serves as a valuable resource for teacher educators seeking more efficient and practical teaching methods. By promoting autonomy in educational programs and incorporating reflective practices in training for both novice and experienced teachers, it is possible to explore the potential impact on student learning and teachers' professional development. Furthermore, language curriculum program policymakers and educational syllabus designers are advised to develop comprehensive plans and syllabuses for language teachers' practicum and training programs. Given the positive impact of CAALL, it is recommended that they integrate this practice into school curricula and organize training programs for EFL teachers to enhance their pedagogical skills using CAALL.

While the study conducted in this research contributes to the existing body of knowledge on self-CAALL, there are also additional avenues for further research that have emerged from this

study. The researcher encountered numerous potentialities throughout the course of this research. It appears that various factors interact and give rise to new situations, which in turn lead to new questions. These questions are proposed as a guide to formulate fresh research topics for future investigation. The present study primarily focused on examining the impact of CAALL practice on the professional development of Iranian EFL teachers' learning performance. As a result, this study offers some suggestions for future studies: 1) Exploring other forms of CAALL: investigating group CAALL practice as an independent variable could be an intriguing option for future research. 2) Currently, there is a growing inclination towards considering the psychological aspects of language learning. Therefore, the researcher recommends exploring other psychological factors such as attitude, ambiguity tolerance, and job satisfaction for future studies.

The limitations of the current study must be taken into account. The primary factor to consider is the context of the study. The researcher initially intended to conduct the study in both scholastic and institutional settings, but the Ministry of Education did not grant permission for the school-level study. Consequently, the study was limited to the institutional level. While exploring different contexts, such as EFL and ESL settings, would have been beneficial, financial constraints led the researcher to focus solely on the EFL setting. In terms of delimitations, the study was restricted in its sampling method, as convenience sampling was utilized for participant selection. Additionally, to streamline the research process, the researcher chose to concentrate solely on available EFL learners.

Conflict of interest: None

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Biodata

Mohammad Javad Tandiseh is currently a Ph.D. student in the field of English Language Teaching at Islamic Azad University, Bushehr Branch, Iran. His main areas of expertise include English language teaching and psychology. He is dedicated to exploring the interplay between language education and psychological factors in the learning process.

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این مطالعه به بررسی تأثیر CAALL بر خودکارآمدی زبان آموزان ایرانی و رشد مهارت خواندن پرداخته است. نمونه گیری در دسترس برای انتخاب شرکت کنندگان انجام شد. نمونه ای متشکل از 220 زبان آموز پیشرفته زبان انگلیسی از چهار موسسه خصوصی زبان انگلیسی در ایران در این مطالعه شرکت کردند. از سه ابزار آزمون تعیین سطح سریع، پرسشنامه خودکارآمدی و آزمون خواندن استفاده شد. پرسشنامه خودکارآمدی فراگیران و آزمون خواندن برای همه شرکت کنندگان اجرا شد. تمرین CAALL توسط معلمان خود مختار و غیر خودمختار به طور جداگانه برای 110 شرکت کننده (یک گروه آزمایش و یک گروه کنترل) اجرا شد. اعضای گروه آزمایشی CAALL، را در حالت مجازی دریافت کردند. آنها توسط دو معلم آموزش دیدند که چگونه در عملکرد خواندن خود خودمختار باشند. برای اعضای گروه کنترل، تمرین خواندن به صورت مجازی اجرا شد. اما آنها تمرین CAALL را دریافت نکردند. آنها از آموزش مرسوم خواندن پیروی کرده اند. این تمرین از طریق پیامرسان واتساپ ارائه شد. دروه آموزشی به مدت 16 جلسه نود دقیقه ای پیگیری شد. پس از مرحله آموزشی مجدداً پرسشنامه خودکارآمدی فراگیران و آزمون خواندن برای همه شرکت کنندگان اجرا شد. یافته های این مطالعه نشان داد که یادگیری زبان خودمختارانه به کمک رایانه به طور قابل توجهی خودکارآمدی و مهارت خواندن زبان

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آموزان ایرانی زبان انگلیسی را بهبود می بخشد. این مطالعه برای معلمان زبان انگلیسی، زبان آموزان، طراحان برنامه درسی آموزش زبان، و توسعه دهندگان برنامه درسی آموزش زبان، کمک های آموزشی دارد.

کلیدواژه ها: **یادگیری خودمختار، خودمختاری فراگیران، CALL، CAALL، خودکارآمدی، توسعه مهارت خواندن**